STORMWATER MONITORING PLAN

West Lake Landfill Remedial Design
Operable Unit 2 (OU-2)
Bridgeton, Missouri

Prepared for

Bridgeton Landfill LLC

Submitted by

Geosyntec consultants

engineers | scientists | innovators

Revision No. 1 - July 2021

October 2020

30490029

TABLE OF CONTENTS

`

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDICES

LIST OF ACRONYMS

BMPs	Best Management Practices
BOD	biochemical oxygen demand
CN	curve number
COC	contaminants of concern
COD	chemical oxygen demand
CFR	code of federal regulations
DQO	data quality objectives
MQO	measurement quality objectives
ECLD Pond	Earth City Levee District stormwater detention pond
ELGs	effluent limitation guidelines
gpm	gallons per minute
HDPE	high density polyethylene
ISL	Inactive Sanitary Landfill
LCS	Laboratory Control Samples
MS	Matrix Spike
MSD	Matrix Spike Duplicate
MDNR	Missouri Department of Natural Resources
O&M	operations and maintenance
QA/QC	quality assurance/quality control
OU-1	Operable Unit 1
OU-2	Operable Unit 2
OU-3	Operable Unit 3
PPE	personal protective equipment
QA/QC	quality assurance/quality control
RA	Remedial Actions
RD	Remedial Design
RD Work Plan	Remedial Design Work Plan
ROD	Record of Decision
SCS	US Soil Conservation Service
SIC	standard industrial code
SU	Standard Units
SWM Plan	Stormwater Monitoring Plan
SWPPP	Stormwater Pollution Prevention Plan
TDS	total dissolved solids
THA	Task Hazard Analysis
TMDL	total maximum daily loads
USEPA	United States Environmental Protection Agency
VOC	volatile organic compounds
WLLF	West Lake Landfill

SECTION 1

INTRODUCTION

This Stormwater Monitoring Plan (SWM Plan) was prepared by Geosyntec Consultants, Inc. (Geosyntec) on behalf of Bridgeton Landfill, LLC (BLF) for the Remedial Design (RD) at the West Lake Landfill (WLLF) Superfund Site Operable Unit 2 (OU-2) located in Bridgeton, Missouri (Site). This document is in support of the design investigation to the Remedial Design Work Plan (RD Work Plan), prepared by Civil & Environmental Consultants, Inc. (CEC) and approved by the United States Environmental Protection Agency (USEPA) on May 8, 2020.

1.1 Background

WLLF is located in Bridgeton, Missouri near the Missouri River and consists of three operable units (OU) identified by the USEPA. OU-1 consists of two landfill areas and adjacent areas which have been shown to contain radiologically impacted material (RIM). OU-2 consists of the other landfill areas without RIM. OU-3 includes site-wide groundwater underneath OU-1 and OU-2.

The OU-2 ROD describes the ISL Selected Remedy as providing containment for the landfilled waste materials in accordance with relevant and appropriate closure and post-closure care requirements including surface water runoff or stormwater management control. For the SWM Plan, surface water runoff and/or stormwater are defined as any rainfall that does not contact waste. Any water that contacts waste will be managed as leachate.

1.2 Purpose and Scope

This SWM Plan outlines sampling methodology and proposed locations for a field and laboratory monitoring program to assess baseline stormwater discharge characterization and flow. Monitoring will be conducted using existing ISL drainage patterns and shall be performed in accordance with Section 402 of the Clean Water Act (33 U.S.C. §1251) with provisions for compliance with the USEPA data quality objectives (DQO) process.

This ***initial version*** of the SWM Plan will be updated during the RD as stormwater runoff controls are designed as part of the RD stormwater management plan. The SWM Plan is part of the overall stormwater management program that will evolve over time and will include provisions for stormwater monitoring during RD (baseline), Remedial Action (RA), and ongoing operations and maintenance (O&M) during post closure. Section 3.4 will discuss the different project phases and when the SWM Plan will be updated. Results collected as part of the initial stormwater monitoring during the RD will assess if benchmark or effluent limits are warranted. During the next phase (RA), the SWM Plan will assess the effectiveness of implemented control measures and the overall stormwater management program. Stormwater management of commingled areas and conducting

the detailed drainage analysis will be addressed after the USEPA's approval of the OU-1 Design Investigation Evaluation.

Evaluation of the stormwater management program will include inspections, flow measurement and monitoring (i.e., sampling) of specified stormwater discharges. This SWM Plan will be used in conjunction with a Stormwater Pollution Prevention Plan (SWPPP), which includes documentation of control measures, or Best Management Practices (BMPs), implemented to control or abate the discharge of pollutants to surface water during RA. The SWPPP will also provide instruction for O&M of BMPs. The SWPPP will be developed as stormwater controls are designed in conjunction with the RD or Remedial Action Work Plan.

Stormwater sampling, detailed in this SWM Plan, provides quantitative (i.e., numeric) data to determine pollutant concentrations in runoff to establish the baseline condition. The baseline condition will be utilized during the RA to evaluate the degree to which BMPs are effectively minimizing contact between stormwater and pollutant sources, and the success of the stormwater control approach in meeting applicable discharge requirements. This SWM Plan includes responsibilities for field personnel, sample design, sampling procedures, and quality assurance/quality control (QA/QC) procedures.

This initial version of the SWM Plan, provides baseline monitoring associated with existing conditions (or pre-RD implementation). The SWM Plan will evolve with further development of the RD Plan, construction phases associated with the RA, and as needed for post-construction/long-term (O&M) monitoring associated with validation of the final RD/cap-system performance. Revisions will be required for significant changes to stormwater sheet-flow/drainage paths during RA that potentially impact stormwater discharge sampling locations from the ISL. Revisions will also be required for any changes to identified contaminants of concern (COC), including temporary changes during RA construction phases.

SECTION 2

EXISTING SITE CONDITIONS

2.1 Existing West Lake Landfill Monitoring Programs

WLLF Superfund Site contains several different operable and permitted landfill units and currently there are two existing stormwater monitoring programs. The first monitoring program manages stormwater from the two permitted units at the WLLF Superfund Site: (1) Bridgeton Landfill and (2) Closed Demolition Landfill and discharge stormwater through an NPDES Permit (Permit No. MO-0112771). The permitted NPDES Outfalls 003, 004, 005, 007, 008 and 009 are shown on **Figure 2-1**. As discussed below, several of the permitted NPDES Outfalls also discharge stormwater from OU-1 and OU-2.

The second existing stormwater monitoring program is related to the OU-1 RD and consists of twelve stormwater locations (EMSI, 2020). Four locations are OU-1 only stormwater discharge locations, three are commingled with NPDES permitted Outfalls (007 and 009), and the remaining five are inspection/monitoring locations (EMSI, 2020).

2.2 Existing ISL Stormwater Drainage Pattern and Discharge Locations

Surface runoff at the ISL area follows the existing topography as shown in **Figure 2-2**. The high point on the northern portion drains radially, the ISL southern portion drains toward the south; and the western slope drains toward the Earth City Levee District stormwater detention pond (ECLD Pond). Along the southern half of the western slope, there is an existing berm that directs stormwater runoff to the south as shown on **Figure 2-2**.

Per the RD Work Plan's preliminary existing drainage area map (**Figure 2-2**), the ISL portion of OU-2 consists of an approximately 48-acre surface drainage area with stormwater runoff directed toward several different discharge locations. Each sub catchment and their corresponding discharge location are summarized below:

- Runoff from Sub Catchment 1A (8.7 acres in the northwest area of the ISL) is first conveyed through two 18-inch diameter high density polyethylene (HDPE) culvert pipes into a stormwater ditch that flows south into ISL Sub Catchment 1B. ISL Sub Catchment 1A and ISL Sub Catchment 1B (10.5 acres in southwest) combine and jointly discharge into two 16-inch diameter metal culvert pipes, which then drains (to the northwest) through a grass swale into the ECLD Pond.
- ISL Sub Catchment 2 (20.0 acres along majority of eastern half of the ISL) discharges to Bridgeton Landfill NPDES Outfall 003;
- ISL Sub Catchment 3 (8.9 acres at the northeast end of the ISL) discharges to Bridgeton Landfill NPDES Outfall 007;

- ISL Sub Catchment 4 (0.3 acres at the north end of ISL), discharges to OU-1, Area 2 (OU-1-010 [EMS, 2020]); and
- ISL Sub Catchment 5 (1.5 acres along the northwest perimeter slope), discharges via sheet flows directly into the ECLD Pond.

2.3 Commingled Surface Water Runoff Areas

As discussed above, ISL Sub Catchments 2 and 3, approximately 28.9 acres total, discharge through NPDES permitted outfalls associated with the Bridgeton Landfill. ISL Sub Catchment 2 stormwater mainly flows east and then to the south along an existing perimeter berm; where it is discharged into the retention basin/pond located southwest of the Bridgeton Landfill and then through NPDES Outfall 003, as shown in **Figures 2-1 and 2-2**.

ISL Sub Catchment 3 flows to the east and is eventually discharged through the NPDES Outfall 007. Additionally, drainage areas that discharge through NPDES Outfall 007 include WLLF OU-1, OU-2 Demolition Landfill, asphalt plant and container storage area west of the office building and the transfer station. The WLLF is currently constructing additional BMPs to address stormwater discharge from this outfall.

In the northwest corner of the ISL, two small drainage areas commingle stormwater to and from OU-1. ISL Sub Catchment 4 (0.3 acres) flows to the north onto OU-1, Area 2, and the northern tip of ISL Sub Catchment 1A includes a portion OU-1, Area 2 (approximately 0.4 acre). During the RD, Geosyntec will coordinate with the OU-1 RD contractor to minimize the commingling of stormwater between these operable units.

Section 5 of this SWM Plan will discuss some conceptual modifications to address commingling of surface water runoff between the ISL and the other WLLF waste units. Stormwater management of commingled areas and conducting the detailed drainage analysis may be addressed after the USEPA's approval of the OU-1 Design Investigation Evaluation.

SECTION 3

USEPA DQO PROVISIONS

This section discusses the specific Data Quality Objectives (DQOs) for the SWM Plan and associated RD detailed drainage analysis. As defined in the USEPA Guidance on Systematic Planning Using the Data Quality Objectives Process (2006) document, DQOs are qualitative and quantitative statements that:

- Define the problem(s) that necessitates the study (Problem Statement);
- Describe how environmental data will be used in solving the problem and identify alternative outcomes (Goal of Study);
- Identify data and information needed to answer study questions (Information Inputs);
- Define the characteristics of interest, spatial limits, and scale of inference (Boundaries of Study);
- Define parameters of interest, type of inference, and develop logic for drawing conclusions from the findings (Analytical Approach);
- Specify probability limits for false rejection and false decision errors, or develop performance criteria for new data being collected or acceptable criteria for existing data being considered for use (Performance or Acceptance Criteria); and
- Select the resource-effective sampling and analysis plan that meets the performance criteria (Plan for Obtaining Data).

Geosyntec utilized Work Sheet #11, *Project/Data Quality Objectives*, from the Intergovernmental Data Quality Task Force *Optimized Uniform Federal Policy for Quality Assurance Project Plans* to develop the DQOs. Each of the above identified DQO criteria is further described for each of the investigative components of the RD activities.

3.1 Problem Statement

3.1.1 Description of the Problem

The general objective of the remedial activities listed in the 2008 OU-2 ROD is to "protect public health and the environment by preventing actual or potential human exposure to the Site's contaminants and by preventing or mitigating contaminant migration." This includes controlling surface water runoff and erosion and minimizing infiltration and potential resulting contamination of groundwater.

As part of these efforts, the SWM Plan will estimate the baseline quality and quantity of stormwater discharge from the ISL to offsite areas through development of a detailed drainage analysis as part of the RD. The detailed drainage analysis will address the quality and quantity of stormwater discharge per applicable or relevant and appropriate requirements (ARARs) at the time of the ROD (2008) as discussed below:

- MDNR Clean Water Commission 10 CSR 20-7.031(4) - general water quality shall be free of oil, scum, floating debris, unsightly color or turbidity, odor, solid waste, substances or conditions which result in toxicity to human, animal or aquatic life or their watering, not cause formation of harmful deposits, not impair natural biological community, or prevent maintenance of beneficial uses;

- MDNR Clean Water Commission 10 CSR 20-7.031(5) – specific water quality shall follow the criteria in the tables of the rule for maximum chronic toxicity, toxic substances, bacteria, temperature, pH, Taste- and odor-producing substances, turbidity and color, solids, radioactive materials, dissolved oxygen, total dissolved gases, sulfate and chloride limit for protection of aquatic life, carcinogenic substances, nutrients and chlorophyll, and follow the methods of sample collection, preservation and analysis;

- MDNR Clean Water Commission 10 CSR 20-7.015 – stormwater discharge will follow the effluent limitations and monitoring requirements;

- MDNR Solid Waste Management 10 CSR 80-3.010(8)(B)1.F(III) - onsite drainage structures and channels shall be designed to collect and control stormwater volume resulting from a 25-year, 24-hour storm event;

- MDNR Solid Waste Management 10 CSR 80-3.010(8)(C) – runoff shall be diverted through ditches and berms and the landfill will be graded to promote rapid surface water runoff without excessive erosion. Regrading will be completed as required during and after construction to avoid ponding of water, and water quantities coming in contact with the solid waste shall be treated as leachate and minimized by the daily operational practices; and

- Section 402 of the Clean Water Act for point sources.

3.1.2 Conceptual model of the problem

Stormwater runoff is currently discharged from the ISL at several discharge locations as discussed in Section 2. During the RD, stormwater discharge locations may be moved or added based on the final landform grading and stormwater management plans. The detailed drainage analysis will calculate the drainage or sub catchment areas, the quantity and rate of flow. Stormwater quality

will be assessed through analysis of baseline grab samples collected prior to implementation of the RA to be utilized for comparison purposes during the RA to assess the effectiveness of the SWPPP.

3.1.3 Establishing the planning team

The planning team includes the OU-2 Respondent, the project coordinator (EMSI), and the design prime contractor (Geosyntec). This SWM Plan will be approved by the lead regulatory agency, USEPA Region 7, and USEPA is supported by the Missouri Department of Natural Resources (MDNR) and assisted by subcontractors of its own.

3.1.4 Intended use of the collected data

Data collected during this initial phase of the SWM Plan will be utilized for the RD phase of the project to design best management practices (BMPs) that will be incorporated into the RD and associated SWPPP. The SWPPP will address the implementation of BMPs during the RA to minimize potential impacts to surface water quality during construction.

3.1.5 Identifying available resources, constraints, and deadlines

As shown on **Figure 2-2**, there are two ISL only stormwater discharge locations: (1) discharge from two 16-inch pipe culverts from ISL Sub Catchment 1 – labeled as ISL SW-A; and (2) sheet flow from ISL Sub Catchment 5 – labeled as ISL SW-B. The proposed approach of this SWM Plan is to perform qualitative or quantitative assessments of the ISL runoff, which will take into account the constraints imposed by the existing drainage patterns. As part of the RA phase, berms or swales may be constructed to minimize or eliminate the comingling of stormwater from other landfill units.

ISL stormwater that commingles with other landfill units will be monitored in conjunction with the other two existing stormwater monitoring programs (Bridgeton NPDES Permit and OU-1).

3.2 Study Goals

The primary goal of the study is to establish the existing or baseline stormwater quality at the ISL. The secondary study goal is to collect the necessary information to perform a detailed drainage analysis as part of the RD as discussed in Section 2.2.3 of the RD Work Plan (CEC, 2020). The necessary information for the detailed drainage analysis is provided in **Table 3-1**. Lastly, the effectiveness of BMPs will be a study goal during RA and O&M periods.

3.3 Information Inputs

The necessary information inputs are presented in **Table 3-1** to address the study goals presented in Section 3.2. The details of the sampling and analysis methods for the information inputs are also included in **Table 3-1**.

3.4 Study Boundaries

The study spatial boundaries will include the entire ISL waste boundary and any other adjacent properties where stormwater will flow onto the ISL (stormwater run-on). A road was constructed to prevent surface water run-on from, and runoff to, adjacent areas (isolating ISL stormwater drainage). While the OU-1 Design Investigation is ongoing, the USEPA requests the stormwater monitoring program focus on sampling only. Stormwater management of commingled areas and conducting a detailed drainage analysis may be addressed after the USEPA's approval of the OU-1 Design Investigation Evaluation.

The study temporal boundaries are defined by the following phases:

- RD (2021 through 2023);
- RA or Construction Phase (TBD); and
- O&M or Post-Closure Phase (TBD).

3.5 Analytical Approach

The analytical approach has been developed for the primary and secondary study goals discussed in Section 3.2, and to resolve the problem defined in Section 3.1. The SWPPP, developed as part of the RD, will provide the analytical approach to evaluate the BMPs. The analytical approach has been formulated to achieve study/monitoring goals as the project progresses to the RA/construction phase and finally the O&M phase as discussed within Section 3.4. The approach will consider the needs for future permitting requirements and ARARs to ensure adequate data are available at sufficiently sensitive detection limits. This includes collecting data during the RD phase and using the arithmetic mean and geometric mean to establish baseline values to be used for performance criteria.

The primary parameters of interest for this study include flow rates and COCs to establish baseline levels during the RD. Provided in the list below are COCs, action levels, estimators, and estimation procedures required for developing baseline performance values and making foreseeable result-based decisions.

(A) RD Phase (2021-2022):

(A)(1) The study will estimate the arithmetic mean, geometric mean, and median of COCs (see **Table 3-1**) at each ISL sample location. Individual location estimates will be evaluated using professional judgement to select the most appropriate baseline estimate for each COC based on the following sources:

- USEPA's Multi-Sector General Permit for Stormwater Discharges Associated with Industrial Activity;

- Effluent limitation guidelines under 40 CFR Part 445 Landfill Point Source Category;
- Feasibility of implementing best management practices as part of the RD; and
- Temporal variation in stormwater quality data.

Rationale for the selected COCs is provided in Section 3.7.

(A)(2) Flow measuring procedures at sample locations, see Section 4.5, will be used to estimate total runoff from the ISL and compare with precipitation gage data and calculated runoff from the detailed drainage analysis. The model will be run based on an individual rainfall event to account for temporal differences. The runoff curve number and time of concentration in the detailed drainage analysis will be calibrated (i.e., model inputs adjusted) to correlate the predicted runoff to the measured flow conditions and the individual storm event.

(B) RA or Construction Phase (TBD):

(B)(1) Making decisions about Construction-Type BMPs. ***Action Level:*** During this phase, the SWM Plan will be updated to include the baseline monitoring results from the RD phase and proposed benchmark thresholds (if necessary). ISL discharge results measured during RA will be compared to the proposed benchmark thresholds. ***Theoretical Decision Rule:*** If sample results during the RA phases indicate concentrations above baseline values established during the RD, then perform inspection per SWPPP, as developed during the RD.

(B)(2) Making decisions about Construction Related Stormwater Management. ***Action Level:*** Stormwater runoff from a 25-year, 24-hour precipitation event exceeds capacity of a stormwater management controls. ***Theoretical Decision Rule:*** Provide modifications as needed to BMPs to prevent another Action Level exceedance during construction activities. Document exceedances and corresponding modifications within the SWPPP.

(C) Post-Closure and Long-Term Maintenance (TBD):

(C)(1) Making decisions about Permanent-Type BMPs. ***Action Levels:*** Perform regular inspections as part of the O&M Plan to assess the effectiveness of the BMPs.

(C)(2) Certification of No Exposure. Discontinue stormwater monitoring under a certification of no exposure. A condition of no exposure exists when all industrial materials and activities are protected by a storm-resistant shelter to prevent exposure to rain, snow,

snowmelt, and/or runoff. This includes material handling equipment or activities, industrial machinery, raw materials, intermediate products, by-products, final products or waste products. Material handling activities include the storage, loading and unloading, transportation, and conveyance of raw materials, intermediate product, final product or waste product. A No Exposure Certification form is typically submitted after the landfill has been certified closed (after RA). The form will be completed as appropriate and submitted to the regional USEPA office and MDNR for approval.

Note, any further analytical methods considered during RA should be selected appropriately given discharge flow conditions, reasonably expected potential contaminants, and downstream receiving waters. The ISL outfalls will be stormwater discharge only and will not consist of constant effluent discharge from an industrial process. The downstream receiving water is not an impaired water per the Bridgeton Landfill NPDES permit.

3.6 Performance or Acceptance Criteria

One of the primary purposes behind this study, as part of this initial RD monitoring phase, is to develop baseline values from data collected prior to implementation of RA for use in evaluating future construction (e.g. RA), BMPs, and long-term O&M.

Performance criteria will be established using baseline results collected during the RD, federal effluent limitation guidelines (ELGs) and state benchmark thresholds. Please note that benchmark thresholds are not limits but values used to assess the need for improved or additional BMPs. Specific performance or acceptance criteria used during RD will follow Section A.7 of the Quality Assurance Project Plan (QAPP). Data quality will be assessed by precision, accuracy, representativeness, completeness, comparability ("PARCC" parameters), and laboratory detection limits.

3.7 Plan for Obtaining Data

Water quality samples will be collected from the two non-commingled ISL discharge locations (i.e. two 16-inch HDPE pipes [ISL SW-A] and sheet flow from western slope [ISL SW-B] as shown on **Figure 2-2**). The vegetated cover on Sub Catchments 1A, 1B and 5 is consistent with the cover over the entire ISL area; and therefore, will provide the best representative samples of offsite stormwater discharge from the ISL. Commingled flows from Sub Catchments 2, 3, 4 are collected and tested for quality under the existing NPDES permit at the Bridgeton Landfill.

Geosyntec reviewed the following federal and state guidance to develop the proposed stormwater parameter list:

- USEPA ELGs for wastewater discharges associated with the operation and maintenance of landfills (ELG 40 code of federal regulations [CFR] Part 445 Landfill Point Source Category);

- USEPA Multi-Sector General Permit, dated 2015, Part 8, Subpart L – Landfills, Land Application Sites and Open Dumps;

- Missouri State Operating Permit MO-R80H000[1] for standard industrial code (SIC) 4953 (establishments primarily engaged in the collection and disposal of refuse by processing or destruction or in the operation of incinerators, waste treatment plants, landfills or other sites for disposal of such materials); and

- Common constituents in municipal, construction and demolition, and industrial solid waste, and therefore, are COCs at the ISL.

Table 3-2 provides the sampling list and reporting limits for the RD SWM Plan. Additionally, **Table 3-2** also provides the rationale for inclusion of the various proposed sampling parameters. Additional discussion on the proposed parameter list is provided below:

- ELG parameters such as: biological oxygen demand (BOD), chemical oxygen demand (COD), α-terpineol, benzoic acid, p-Cresol, and phenol are not anticipated to be present since the landfill is capped with an interim cover. These ELG parameters will be monitored during the RD baseline events to verify this assumption. If not present, these parameters will be removed from the parameter list per approval by the USEPA.

- Radionuclides were not included on the proposed parameter list since there is no data that indicates that RIM material was placed at the surface for any areas of OU-1 where stormwater previously had flowed onto the ISL.

  A boring (A2-SB-080) was recently drilled at the northern end of the catchment that historically drained toward the ISL. RIM was detected in a soil sample collected 16 feet below ground surface, but no RIM was detected near the surface. Additionally, there was no indication of RIM in the downhole gamma or core scan. Therefore, stormwater that falls on this portion of OU-1 Area 2 does not contact RIM and therefore cannot entrain or transport radionuclides from OU-1 Area 2 onto the ISL in this area.

[1] Note 1(a) indicates that General Permit No. MO-R80H000 does not apply to landfills. Geosyntec utilized General Permit No. MO-R80H00 for guidance on sampling parameters since the appropriate SIC code was utilized.

SECTION 4

FIELD SAMPLING PLAN AND QAPP ADDENDUM

4.1 Project Organization and Contact List

The USEPA Region 7 Remedial Project Manager will provide federal regulatory oversight and enforcement of the project. The Missouri Department of Natural Resources (MoDNR) Federal Facilities Section will provide state regulatory oversight and enforcement of the project.

The contact details for key project members are provided below.

USEPA Region 7
11201 Renner Blvd
Lenexa, KS, 66219

Jamie Schwartz (Regional Project Manager, Superfund and Emergency Management Division)
Cell: 913.551.7910
Email: schwartz.jamie@epa.gov

Bridgeton Landfill, LLC (Respondent)
13570 St. Charles Rock Road
Bridgeton, MO, 63044

Erin Fanning
Cell: 209.227.9531
Email: efanning@republicservices.com

Engineering Management Support, Inc. (Project Coordinator)
25923 Gateway Drive
Golden, CO 80401

Paul Rosasco (Respondent's Project Coordinator - responsible for oversight for the project and will provide the interface between the USEPA and MoDNR, the Respondent, and Geosyntec.)
Cell: 303.808.7227
paulrosasco@emsidenver.com

Geosyntec Consultants, Inc.
1420 Kensington Road, Suite 103
Oak Brook, Illinois 60523

James Stout (Project Director –responsible for providing oversight and guidance to the Project Manager .)
Cell: 281.467.7400
Email: jstout@geosyntec.com

Jesse Varsho, P.E. (Project Manager – responsible for oversight of project and will provide the interface between the USEPA and MoDNR, the Respondent, and Geosyntec.)
Cell: 630.803.2659
Email: jvarsho@geosyntec.com

James Bannantine (Health and Safety Officer – responsible for non-radiological health and safety of field sampling team members.)
Cell: 414.339.5630
Email: jbannantine@geosyntec.com

Julia Klens-Caprio (Quality Assurance Manager – responsible for coordination between the field sampling teams and the analytical laboratory and will be responsible for data validation activities.)
Cell: 865.207.8081
Email: jklenscaprio@geosyntec.com

Feezor Engineering, Inc. (Field Sampling)
3377 Hollenberg Drive
Bridgeton, MO 63044

Jonathan Wilkinson, P.E. (Field Sampling Lead – responsible for the day-to-day oversight of field sampling teams and field sampling equipment.)
Cell: 636.578.8635
jwilkinson@feezorengineering.com

TekLab, Inc. (Laboratory)
5445 Horseshoe Lake Road
Collinsville, IL 62234

Emily Pohlman (Laboratory Contact – responsible for sample and data coordination)
Office: 618.344.1004
epohlman@teklabinc.com

Qualifications for laboratory subcontractors in accordance with Section VIII, paragraph 21 of the Third Amendment to the Administrative Settlement Agreement and Order on Consent (VII 94-F-0025), are included in **Appendix A** as part of the laboratory QA manual(s).

4.2 Health and Safety

All field personnel must wear personnel protective equipment (PPE) onsite including steel toe boots, nitrile gloves, safety glasses, when performing stormwater sampling or field inspections. **Appendix B** includes the site-specific task hazard analysis (THA) prepared for the stormwater sampling activities and includes the response procedures in the event of an emergency.

4.3 Field Coordination

This section provides a description of the general procedures for coordinating day-to-day activities between various project team members.

4.3.1 Logistical Coordination

A Field Technician will provide field sampling and observation services during the stormwater monitoring and sample collection activities. The responsibilities of the Field Technician are described below.

- Review the requirements of the THA.
- Conduct a brief "tailgate" meeting each morning prior to starting work to coordinate the day's planned activities with subcontractors, if applicable, and review the project health and safety requirements.
- Maintain a daily log of activities.
- Procure and maintain field supplies, as needed.
- Collect samples and deliver or ship samples for laboratory testing.

4.3.2 Communications

Communications between Respondent personnel and Geosyntec; will be as described below unless otherwise approved during sampling activities. A project specific contact information list will be provided to all team members.

1. At the end of each sampling event, the Field Technician will:
    i. Procure field supplies, if needed, for the next day.
    ii. Make copies of all field notes, inspection reports, photos and data records for that day and retain a copy of the field records.
    iii. Photograph or scan field records and email them to the Project Manager within five business days.

iv. Notify the Project Manager about the day's progress and any changes to the work schedule that results from access difficulties, lack of stormwater discharge, equipment failure, etc.

4.4 Stormwater Monitoring Location(s), Frequency and Timing

Stormwater monitoring procedures will be performed at each monitoring location as shown on **Figure 2-2** and **Table 3-3**. Monitoring locations may evolve during the RD; proposed change to stormwater monitoring locations or procedures will be subject to USEPA's approval.

The following list provides stormwater monitoring timing and frequency requirements:

- If a rainfall event of 0.2[2] inch or greater occurs, as measured by the Bridgeton Landfill meteorological station, then the following shall occur within 24-hours of the rainfall event;
    - Inspection of each monitoring location;
    - Observations of stormwater discharge including color, odor, clarity, and presence of oil sheen and/or foam; and
    - Flow rates measurements at each sample location.
- Water quality sampling and reporting will occur on a quarterly basis. The following stipulations shall be applied in water quality sampling:
    - If a water quality sample is collected from a given sample location during a given quarter, then no further water quality sampling will be required at that location for the remainder of the quarter;
    - If a quarterly water quality sample is collected within the last nine days of a quarter, then a subsequent water quality sample will not be collected from that sample location for the following quarter's event until at least nine days has passed since the previous sample;
    - If a discharge does not occur at a given sample location within the reporting period, then report that sample location as "no discharge"; and
    - Stormwater sampling will continue to be conducted on a quarterly basis until otherwise directed by the UEPA.

[2] A precipitation threshold of 0.2 inches was selected for monitoring based on the existing drainage area consisting of pervious surfaces.

4.5 Sampling Procedures

Stormwater samples will be collected from the two ISL monitoring locations using grab methodology. Field analysis will measure for pH, using a YSI probe or equivalent. Analytical methods for the stormwater samples are summarized in **Table 3-2**. Once the proven method for each location is decided upon, the SWM Plan will be amended with the procedures utilized.

The stormwater samples will first be observed qualitatively, see Section 4.4, which will be documented in either a field logbook or on field forms. Surface water samples will be collected via grab sample in accordance with EPA Method 1669 as outlined below.

- Whenever possible, samples will be collected facing upstream and upwind to minimize introduction of contamination.
- Surface samples will be collected using a grab sampling technique, filling an unpreserved sample bottle by rapid submersion in water and capping to minimize exposure to airborne particulate matter.
- Recommended order for parameter collection is summarized below:
    - Volatile organic compounds (VOCs);
    - Semi-volatile organic compounds;
    - Metals;
    - COD; and
    - Nutrients and total suspended solids.

4.5.1 VOC Sampling

VOC sampling will be performed utilizing a hydrochloric acid as a preservative as provided by laboratory supplied sample bottles/vials. The following procedures will be utilized for VOC sampling collection:

- Open sample bottle/vial and set cap on clean surface and collect sample directly from grab sample;
- Fill sample bottle/vial to slight overfilling condition such that a convex meniscus is developed on the top of the sample bottle/vial;
- Carefully place cap on sample bottle/vial and screw on without overtightening; and

- Invert sample bottle/vial and tap; observe for the presence of air bubbles. If air bubbles are present, discard the sample and collect a new one using the steps above.

4.5.2 Sheet Flow Sampling

The following procedures may be utilized at locations that have sheet flow (i.e. ISL SW-B) in order to concentrate the stormwater flow to collect a grab sample:

- Concentrate sheet flow by excavating a small depression in an existing ditch or other location where stormwater runoff flows;
- Install a trough, gutter or ditch to intercept and concentrate stormwater flow; and
- Install "speed" bumps to convey and concentrate a large area of sheet flow.

At this time, it is anticipated that a small depression will be installed adjacent to the existing fence along the ISL western slope to collected sheet flow from the slope. The exact location and size of the depression will be assessed based on field conditions and sheet flow characteristics. The initial sampling event will document the location and size of the sample location depressional area.

4.5.3 Field Filtration

Sample parameter(s) (e.g. chromium [VI], dissolved) that required field filtration, will be collected in a dedicated sample container via a grab sample. Samples for dissolved metals will be pumped from the dedicated container and filtered through a 0.45 µm capsule filter at the field site. The sample in the dedicated bottle will be continuously agitated during pumping. After transfer and filtering, the samples will be double-bagged and iced immediately. Sample containers will be shipped to the analytical laboratory.

Provisions will be made at each sample location to ensure stormwater sample collection is obtainable. For instance, at the sample location ISL SW-A (two 16-inch culvert pipes), a control valve may be added to control flow/collect samples. (see example to left from *Industrial Stormwater Monitoring and Sampling Guide*, USEPA 832-B-09-003, March 2009).

4.6 Flow Measurement Procedures

Two procedures may be used to measure flow at the ISL stormwater monitoring locations: (1) volumetric measurement, or (2) flow rate estimate utilizing velocity estimates. It is anticipated that procedure one will be utilized at sample location ISL SW-A (concentrated flow at culvert) and the second procedure will be utilized at sample location ISL SW-B (sheet flow along ISL western

slope). Once the proven method for each location is decided upon, the SWM Plan will be amended with the procedures utilized.

4.6.1 Procedure 1: Volumetric Measurement

The following procedure will be utilized to estimate flow rate based on USEPA recommendations (Meals et al., 2013):

1. Estimate the volume of flow over one minute of time (i.e. one cup of flow);
2. Utilize a measuring cup or equivalent and measure the time to achieve the volume of flow assessed in step 1;
3. Repeat step 2 to collect three readings; and
4. Calculate the flow rate by dividing flow volume by measured time.

The flow rates (three readings and average) will be converted into gallons per minute (gpm) and reported on field forms. If the stormwater flow is significant, a larger vessel such as a five-gallon bucket may be utilized.

4.6.2 Procedure 2: Area-Velocity Technique

The following procedure will be utilized to estimate flow rate utilizing the area-velocity procedures (Meals et al., 2013):

1. Measure the depth of flow near the sample location;
2. Measure the width of flow near the sample location; and
3. Calculate the flow velocity by selecting a flow length and then measuring the time to travel that flow length.

The flow rate will be calculated by multiplying the flow area (width x depth of flow) by the flow velocity and then converting units into gpm and report on field forms.

4.7 Instrumentation/Equipment, Inspection & Maintenance

Field instrument/equipment testing (i.e. pH field testing) will occur at the onset of the field activities and will be recorded. Equipment will be inspected after each sampling event to ensure that the instrument is operating within the manufacturer's specifications; results will be recorded on the field calibration sheet. Routine maintenance of the field meters will occur as specified in the manufacturer's user manual. Laboratory instrumentation will be tested, inspected and maintained in accordance with the selected laboratory's quality assurance plan.

4.8 Equipment Decontamination

General decontamination of non-disposable field equipment (i.e. field pH meter) of will proceed under the following decontamination steps: i) scrub with Liquinox soap solution; and ii) rinse with deionized (DI) water.

4.9 Sampling Identification

Sample identification will be as described below:

- Surface water samples will be identified as "SW-N-YYYYMMDD", where 'SW' represents surface water, 'N' represents the sample location as noted in **Figure 2-2**, and 'Y', 'M', and 'D' represent the date as described above.

- The equipment blank will be identified as "EB-YYYYMMDD", where 'Y', 'M', and 'D' represent the date as described above.

4.10 Field Reporting

4.10.1 Field Reporting

A daily field report or forms will be completed by the Field Technician for each day of work onsite. It is anticipated that each sampling event will be completed in one day, dependent of flow. The report will summarize the day's activities, work completed, planned activities for the following day, and any problems, issues, and resolutions. A chronological summary of the day's events will be developed as the work progresses. Example of a daily field forms are provided in **Appendix C**.

Records documenting field-related activities will be archived and retrievable upon request for a minimum of six years after commencement of construction of any remedial action.

4.10.2 Chain of Custody

Custody of all samples will be tracked using a chain of custody form provided by the laboratory and a copy will be kept on hand by WLLF for reference. A chain-of-custody form, signed by the sampler, will be included with each shipping container identifying, at a minimum, the following information for each sample in the container:

- Unique sample number according to the Sample Identification System;

- Time and date of sample collection;

- Name of person(s) collecting sample;

- Preservative used, and what kind used, if any;

- Analysis to be performed;
- Sample matrix; and
- Any special instructions such as turnaround time.

An example of the chain-of-custody form is located in Appendix C.

4.11 Laboratory Testing

Table 3-2 provides a summary of the proposed laboratory testing along with the associated laboratory test methods and reporting limits.

4.11.1 QA/QC Samples

Field and laboratory accuracy and precision will be assessed using QA/QC samples.

Field QC samples will be collected with the analytical laboratory samples to identify whether all work performed, and data produced are of known, documented, and satisfactory quality. The following field QC samples will be obtained:

- One field duplicate will be collected per sampling event. Field duplicates will be indistinguishable by the laboratory from other samples (blind duplicates).
- One field blank sample will be collected during each sampling event by filling bottles with distilled water and leaving them uncapped during the collection of the stormwater sample. No filtration of the field blank samples will be performed and the field samples will be stored with the stormwater samples.

It is assumed that the analytical laboratory will provide, at a minimum, the following QA/QC sample results for each analysis:

- Method blank;
- Trip blank sample for VOC analysis at a frequency of one sample per shipment to laboratory;
- Matrix spike and matrix spike duplicate (MS/MSD); and
- Laboratory control samples (LCS).

These samples will be run as part of the laboratory's normal QA/QC protocols.

4.11.2 Data Validation

Following receipt of the analytical data, Geosyntec will review all laboratory data as follows:

- Identify qualifiers and review associated laboratory QA/QC as appropriate;
- Check that the chain-of-custody was completed accurately;
- Check for transcription errors in chains-of-custody, field forms, or laboratory reports;
- Check that all data requested were received;
- Check that analyses were completed within method holding times; and
- Data will be evaluated on an as-needed basis to evaluate if laboratory qualifiers, field or equipment blanks, or other parameters indicate the data quality merits rejection.

Laboratory QA manual(s) are provided in **Appendix A**[3].

4.12 QAPP Approval Page and Distribution List

This QAPP addendum is focused on additional sampling for the SWM Plan. The prior addendum was submitted on September 21, 2020 and was subsequently approved by the USEPA. The previously approved QAPP remains the guiding document and will be followed as approved except as supplemented or modified through this addendum.

REMEDIAL DESIGN ENVIRONMENTAL
QUALITY ASSURANCE PROJECT PLAN (QAPP)
WEST LAKE LANDFILL OU-2 FACILITY
SIGNATURE / APPROVAL PAGE

Approved by:

Ms. Jamie Schwartz – USEPA Region 7 Regional Project Manager	Date

[3] Eurofins Lancaster Environmental, LLC (subcontracted through TekLab, Inc.) will perform the analysis for Chromium (VI), dissolved; therefore, Eurofins QA manual is provided in Appendix A.

Ms. Diane Harris – USEPA Region 7 Quality Assurance Manager	Date
Mr. Jesse Varsho – Geosyntec Project Manager	Date
Mr. Jim Stout – Geosyntec Project Director	Date
Ms. Julia Klens Caprio – Geosyntec Quality Assurance Manager	Date

DISTRIBUTION LIST

The following individuals will receive copies of the approved Remedial Design (RD) Environmental Quality Assurance Project Plan (QAPP) and subsequent revisions:

- Jamie Schwartz, Remedial Project Manager, USEPA Region
- Ryan Seabaugh, PE, Federal Facilities Section, Missouri Department of Natural Resources (MoDNR)
- Paul Rosasco, PE, Project Coordinator, Engineering Management Support, Inc. (EMSI)
- Jesse Varsho, PE, PG, Project Manager, Geosyntec
- Jim Stout, BECS, Project Director, Geosyntec
- Julia Klens-Caprio, ASQ-CMQ/OE, Quality Assurance Manager, Geosyntec

Courtesy copies will be provided to others, including Respondent and Respondent's individual contractors.

SECTION 5

MODIFICATIONS DURING RD PROCESS

5.1 Establish Baseline Values

Baseline values will be established during the initial phase of this SWM Plan and prior to starting construction of the landfill engineered cap system as part of the RA. Baseline values will be established from field collected and laboratory data as part of this SWM Plan over the course of 2021 to 2022. This includes rainfall/runoff measurements, water quality field/laboratory results, and observations of the existing ISL stormwater discharge locations. The stormwater management and water quality results of the existing system will be the baseline from which the cap design can be formulated, as it will identify existing issues that need to be mitigated through design and rule-out issues that were of concern prior to the SWM Plan (such as contaminants of concern).

5.2 Monitoring during Remedial Actions

The SWM Plan will be revised as needed to include appropriate monitoring locations and procedures appropriate during RA construction activities. During RA construction, there is increased potential of stormwater parameter discharges due to altered stormwater drainage directions and exposed soil/erosion during grading activities. The baseline stormwater values will be critical for evaluating if construction activities or interim measures are causing stormwater quality issues. Stormwater monitoring during RA will provide performance evaluation of construction BMPs included in the SWPPP.

5.3 Completion of Remedial Actions

The SWM Plan will be updated with procedures to validate the performance of the constructed ISL stormwater management system per required design parameters outlined in the RD. These procedures will include continuing stormwater sampling at the identified discharge locations to measure stormwater runoff quality during the O&M period.

The established baseline values will be compared against post-construction results to see if the stormwater management system and BMPs are resolving any previous identified issues as intended or unexpectedly creating new issues.

A final version of the SWM Plan will be incorporated into the ISL SWPPP. Laboratory results from the stormwater discharge samples will indicate the performance of the stormwater management plan to prevent erosion associated with stormwater runoff. Further, inspection of the stormwater management features for damage, blockage, proper vegetation establishment, and signs of erosion will be incorporated as either part of this monitoring plan or in conjuncture with the SWPPP.

5.4 Anticipated Modifications during RD and RA

It is anticipated that the following modifications during the RD will require updates to the SWM Plan:

- The RD will incorporate berms or perimeter stormwater ditches to divert stormwater runoff from the eastern portion of the ISL from the Bridgeton LF permitted Outfalls Nos. 003 and 007 to the existing ISL discharge location (i.e. proposed ISL stormwater sample location SW-A).

- Geosyntec will coordinate with the OU-1 RD contractors, to the extent feasible, to minimize the comingling of ISL stormwater with OU-1 stormwater.

- During the RD process, a SWPPP will be developed that will include BMPs for implementation during both construction of RA and the O&M period. It is anticipated that visible observation locations will be include as part of the SWPPP to evaluate the effectiveness of BMPs installed for the RA.

- After completion of RA, if stormwater monitoring data indicates that the construction landfill cap and associated vegetation cover address stormwater runoff quality; the site may submit a certification of no exposure to the USEPA to cease stormwater monitoring.

SECTION 6

REPORTING REQUIREMENTS

6.1 Introduction

This section of the SWM Plan provides a description of the requirements for reporting stormwater sampling activities, data and other information that will be reported to the USEPA and MoDNR.

6.2 Record-Keeping

Correspondence, laboratory reports, plans and reports will be filed either electronically or in hard copy form at the Bridgeton Landfill. Signed inspection sheets and sampling records will be provided to BLF to verify that activities have been completed. Sampling records will include chain-of-custody forms, sampling sheets, shipping receipts, laboratory results, and laboratory and field QA/QC records.

Validated stormwater sampling data will be submitted in monthly reports to the USEPA and MoDNR in an electronic data deliverable (EDD) format. The reports will be prepared by consultants and BLF. The reports will contain a summary of stormwater analytical data, monthly stormwater activities memoranda, data deliverables from the laboratory, and documentation of data verification/validation. Difficulties encountered during field activities or laboratory analyses will be documented.

SECTION 7

REFERENCES

Civil Environmental & Consultants, Inc (CEC), (2020a). "Remedial Design Work Plan (RD Work Plan), West Lake Landfill Superfund Site, Operable Unit 2 (OU-2), Bridgeton, Missouri." Revised May 22, 2020. Phoenix, Arizona.

Engineering Management Support, Inc. (EMSI), (2020). "Revised Draft Stormwater Monitoring Plan West Lake Landfill Operable Unit 1, Bridgeton, Missouri" Revised May 29, 2020

Huff, F.A. & Angel, J.A. (MCC), (1992). "Bulletin 71 Rainfall Frequency Atlas of the Midwest" Midwestern Climate Center and Illinois State Water Survey, MCC Research Report 92-03.

MDNR (2018). "Missouri State Operating Permit, MO-0112771, Bridgeton Landfill." Effective Date March 1, 2018.

Meals, D.W. & Dressing, S.A. (2008). "Surface water flow measurement for water quality monitoring projects, Tech Notes 3, March 2008. Developed for USEPA by Tetra Tech, Inc. Fairfax, VA, 16 p. https://www.epa.gov/sites/production/files/2016-05/documents/tech_notes_3_dec2013_surface_flow.pdf

Missouri Code of State Regulations (10 CSR Section 20-7.015)

NOAA's National Weather Service Hydrometeorological Design Studies Center Precipitation Frequency Data Servers (PFDS), https://hdsc.nws.noaa.gov/hdsc/pfds/

TR-55 (1986) "*TR-55 Urban Hydrology for Small Watersheds TR-55*" United States Department of Agriculture, Technical Release 55, June 1986.

United States Environmental Protection Agency (USEPA) (2006). "Guidance on Systematic Planning Using the Data Quality Objectives Process" EOA QA/G-4. February 2006.

USEPA, (2008). "Record of Decision: West Lake Landfill Site, Bridgeton, Missouri, Operable Unit 2." July 2008, Region VII, Kansas City, Kansas.

USEPA, (2009). "*Industrial Stormwater Monitoring and Sampling Guide.*" USEPA 832-B-09-003, March 2009.

TABLES

Table 3-1 Information Inputs			
Model Input		**Sampling Method**	**Analysis Method**
Existing or Baseline Stormwater Quality			
Existing Flow		See Section 4.6	NA
Stormwater Grab Sample		EPA Method 1669	See Table 3-2
Detailed Drainage Analysis			
Drainage or Sub Catchment Areas		Aerial and Ground Survey by Professional Land Surveyor	NA
Runoff Coefficient or Curve Number		Visible Observations and Existing Hydraulic Conductivity Data	Rational Method Or TR-55 (1986)
Design Storm Event	Rainfall Depth and Intensity	25-year, 24-hour storm event	NOAA's Precipitation Frequency Data Server (PFDS)
	Rainfall Distribution	NA	Huff 1st Quartile or SCS Type-II
Time of Concentration		NA	TR-55 (1986)

Table 3-2 Stormwater Sampling List					
Analyte	**Units**	**Sample Type**	**Analytical Method**	**Reference[1]**	**MQO (Reporting Limit)[2]**
Flow	gal/min	Field Measurement	See Section 4.6	NA	NA
Precipitation	in.	N/A	Bridgeton Landfill Met Station	NA	NA
Color	NA	Field Observation	NA	NA	NA
Odor	NA		NA	NA	NA
Clarity	NA		NA	NA	NA
Oil Sheen	NA		NA	NA	NA
Foam	NA		NA	NA	NA
pH	SU	Field Measurement	Field Measurement with YSI Probe or equivalent	A, B and C	NA
5-day Biochemical Oxygen Demand (BOD^5)	mg/L	Grab Sample	SM 5210 B	A, B	5
Total Suspended Solids (TSS)	mg/L		SM 2540 D	A, B, and C	6
Ammonia (as N)	mg/L		SM 4500-NH3	A, B	0.1
α-Terpineol	mg/L		EPA 625.1	A, B	0.010
Benzoic Acid	mg/L		EPA 625.1	A, B	0.050
p-Cresol	mg/L		EPA 625.1	A, B	0.010
Phenol	mg/L		EPA 625.1	A, B	0.005
COD	mg/L		SM 5220 D	B	50
Oil and Grease	mg/L		EPA 1664A	B	6
Iron, Total	µg/L		EPA 200.7	B	40

Table 3-2 Stormwater Sampling List					
Analyte	**Units**	**Sample Type**	**Analytical Method**	**Reference[1]**	**MQO (Reporting Limit)[2]**
Zinc, Total	µg/L		EPA 200.7	A, B, and C	10
Settleable Solids	mL/L/hr		SM 2540 F	C	0.1
Chloride + Sulfate	mg/L	Grab Sample	SM 4500-Cl E EPA 375.2 Rev 2.0	D	Cl = 5 SO_4 = 10
Benzene	µg/L		EPA 624.1	D	2
Aluminum, Total	µg/L		EPA 200.7	D	25
Antimony, Total	µg/L		EPA 200.8	D	1
Arsenic, Total	µg/L		EPA 200.8	D	1
Chromium (VI), Dissolved[4]	µg/L		EPA 218.1 or 218.6	D	0.5
Copper, Total	µg/L		EPA 200.7	D	5
Selenium, Total	µg/L		EPA 200.8	D	1
Thallium, Total	µg/L		EPA 200.8	D	1
Beryllium, Total[3]	µg/L		EPA 200.7	D	0.5
Cadmium, Total[3]	µg/L		EPA 200.8	D	2
Chromium (III), Total[3]	µg/L		EPA 200.7	D	10
Lead, Total[3]	µg/L		EPA 200.7	D	1
Mercury, Total[3]	µg/L		EPA 245.1	D	0.2
Nickel, Total[3]	µg/L		EPA 200.7	D	5

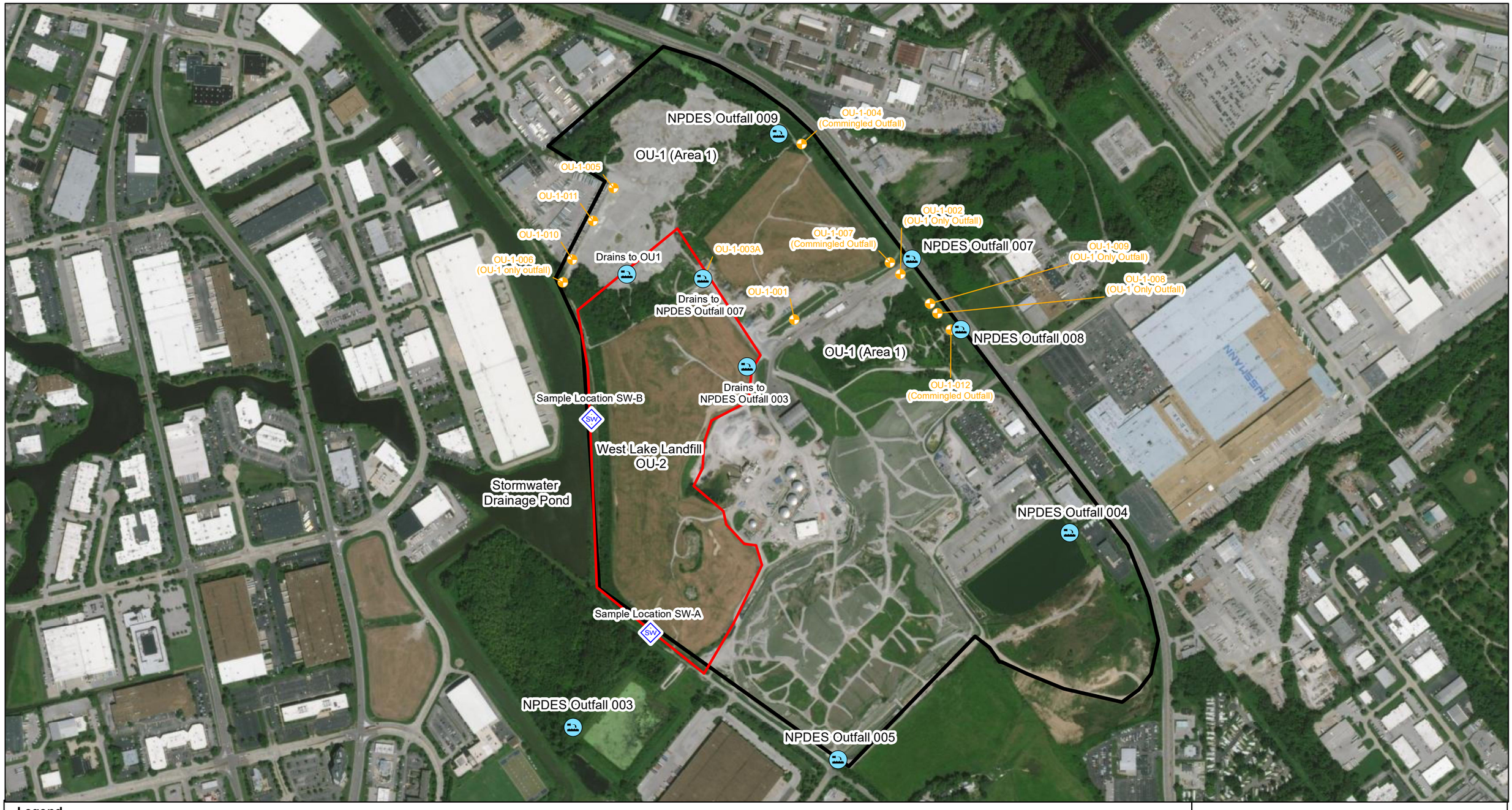
Notes:

1. Reference sources
   A. 40 CFR 445.21 ELGs for Landfills Point Source Category,
   B. USEPA Multi-Sector General Permit, dated 2015, Part 8, Subpart L – Landfills, Land Application Sites and Open Dumps;
   C. Missouri State Operating Permit – General (MO-R80H000),
   D. Typical COC at landfill sites.
2. Reporting limits for physical / chemical analytes subject to sample condition (e.g., matrix interference effects from solids).
3. After remedial action is completed, the metal parameters will be sampled on an annual basis until a certificate of no exposure is approved by the appropriate regulatory agencies.
4. Eurofins Lancaster Environmental, LLC (subcontracted through TekLab, Inc.) will perform the analysis for Chromium (VI), Dissolved.

Table 3-3 Stormwater Sampling Locations		
Location/Sample No.	**Type**	**Location Description**
ISL SW-A	Sample/Inspection	Existing two 16-inch diameter culverts on southern limits of the ISL
ISL SW-B	Sample/Inspection	Sheet flow from ISL western slopes to ECLD Pond

`

FIGURES



Legend

- OU-1 Stormwater Locations
- Site Outline
- Point of Discharge to NPDES Outfall
- Sampling Location
- OU-2 ISL Boundary

N

0 760 Feet

West Lake Landfill Site Layout Map

West Lake Landfill
Bridgeton, Missouri

Geosyntec consultants

St. Louis | July 2021

Figure 1

\\Oakbrook-01\Data\Oak Brook Projects\CHE8424 - West Lake LF OU2 RD\Technical\GIS\20210707_Westlake Site Map.mxd 7/15/2021 2:01:25 PM

ISL SUBCATCHMENT 4
OUTFALL TO OU1 AREA 2
AREA = 0.3 AC
PERVIOUS = 0.3
IMPERVIOUS = 0

ISL SUBCATCHMENT 3
TO OUTFALL 007
AREA = 8.9 AC
PERVIOUS = 8.5
IMPERVIOUS = 0.4

ISL SUBCATCHMENT 1A
AREA = 8.4 AC
PERVIOUS =8.0
IMPERVIOUS =0.4

ISL SUBCATCHMENT 5
SHEET FLOWS TO EARTH CITY
LEVEE DISTRICT
AREA = 1.5 AC
PERVIOUS = 1.5
IMPERVIOUS = 0

ISL SW-B

ISL SUBCATCHMENT 2
TO OUTFALL 003
AREA = 20 AC
PERVIOUS = 19.4
IMPERVIOUS =0.6

TWO 18-INCH
HDPE CULVERTS

ISL SUBCATCHMENT 1B
AREA = 10.5 AC
PERVIOUS = 10
IMPERVIOUS = 0.5

ISL SW-A

EXISTING TWO 16-INCH
CULVERTS

ISL SUBCATCHMENT 1
POINT DISCHARGE

LEGEND

- DRAINAGE AREA BOUNDARY
- EXISTING DRAINAGE FEATURES
- DRAINAGE FLOW ARROW
- 490 — EXISTING GRADE MAJOR CONTOUR (5-FT INTERVAL)
- ISL WASTE BOUNDARY
- ISL SW-A — ISL SW SAMPLE LOCATION

0 250’ 500’
SCALE IN FEET

N

FIGURE 2-2
SITE DRAINAGE AND
SAMPLE LOCATION MAP

Geosyntec consultants

PROJECT NO: CHE8424 | JUNE 2021 | FIGURE 2-2

P:\R\WEST LAKE\STORMWATER\SW MONITORING PLAN 06.2021 - Last Saved By: OCovert on 6/17/21

`

APPENDIX A

LABORATORY QA PLAN(S)

Teklab, Inc.
Quality Assurance Manual

Corporate HQ Collinsville
5445 Horseshoe lake Road
Collinsville, IL 62234
Phone (618) 344 1004
Fax: (618) 344 1005
Fax (217) 698-1005

Corporate	Signature	Date
John H. Riley - *Chief Executive /Marketing Officer - Ext.30*	John Riley	12/21/16
James S. Riley – *President/Chief Financial Officer – Ext. 15*		12/21/16
Tony A. Lynn – *Laboratory Director – Ext. 12*		12/21/16
Marilyn V. Slaven – *Technical Director – Ext. 43*	M Valerie Slaven	12/21/16
Elizabeth Hurley – *Director of Customer Service Ext. 33*	Elizabeth A Hurley	12/21/16
Claire T. Bogner – *Quality Assurance Officer-Ext.13*		12/15/16
Stacy A. Mathis – *Quality Assurance Officer-Ext.13*	Stacy Mathis	12/21/16

Teklab Air Laboratory
1355 N. Bluff road
Collinsville, IL 62234
Phone (618) 344 7697

Heather Riley – Director of Operations/Analyst — Heather Riley 12/21/16

See Table of Contents for major organizational units covered by this quality manual.

Table of Contents

Section 1 - INTRODUCTION AND SCOPE

(TNI V1:M2 – Sections 1,2,3)

Teklab is an Environmental/Chemical testing laboratory. Consultants, landfills, municipalities, industry and state and federal government routinely use Teklab's services. A wide variety of analyses are performed on air, drinking water, aqueous samples, solid samples, and non-aqueous liquids in accordance with environmental regulations such as drinking water standards, NPDES permits, pre and post treatment standards, RCRA, UST/LUST standards and TCLP. Air Testing is a new service added in 2009.

This manual dictates Teklab's Quality Assurance Program. It is designed to ensure the precision, accuracy and completeness of all data generated for every client. This document describes the specific protocols which will be followed for sampling, sample handling and storage, chain of custody, and laboratory (and field) analysis. All Teklab, Inc. organizational units are subject to this manual.

Teklab, Inc. will protect Clients' confidential information and proprietary rights, as directed by local, state or federal laws. All confidential information and/or proprietary rights claimed by any Client and/or Vendor must be clearly identified in writing, prior to initiation of any business activity. Teklab, Inc. will voluntarily treat information generated by Teklab, Inc. (analytical results, sampling information, associated quality control results, etc.) as confidential in nature only without the fear of retribution. That is, Teklab, Inc. will not accept any liability for the inappropriate or accidental release of information, unless specifically agreed to under mutually binding contractual obligations. See Teklab, Inc. NELAP Policy Client Confidential Information for additional information and procedures.

All QA/QC procedures are in accordance with applicable professional technical standards, U.S. Environmental Protection Agency and Illinois Environmental Protection Agency requirements. Teklab uses only methods mandated by legal requirements, recognized published methods or methods developed and validated by Teklab. Methods are not used for reporting results unless competence for each particular matrix is demonstrated.

Chief Executive Officer — 12/21/16 Date — President — 12/21/16 Date

Teklab, Inc.
5445 Horseshoe Lake Road
Collinsville, IL 62234-7425
(618) 344-1004

SIC Code 8734
Tax ID 37-1208950
CAGE Code OZZ46
CEC Number 02-695-3349

1.1 Teklab Inc

Teklab prominently displays its most recent NELAP accreditation certificate in the customer service/sample reception area of the laboratory. The most recent NELAP accredited fields of testing are also available in Appendix D of this manual, on the Teklab server and on the company website (www.teklabinc.com). Any reports or general literature such as catalogs, advertising, business solicitations, proposals, quotations, or other materials that use the accrediting authorities name or the TNI/NELAP logo, do not imply endorsement by the accrediting authority and must be accompanied by at least the phrase "NELAP Accredited" and the laboratory accreditation number.

Teklab is a full service environmental/chemical-testing laboratory. Seven basic analytical departments exist: air (volatile and semi-volatile), volatile organic, semi-volatile organic, automated inorganic, wet chemistry, metals, and microbiology analysis. Semi-volatile and metals departments are further divided into instrumental and sample preparation. Volatile air analysis is performed at the Teklab Air Laboratory. See Quality Manual Appendix B for Teklab's Organizational Charts.

Technicians prepare samples for analysis and analysts perform the analysis. Due to personnel and fiscal restraints, Teklab personnel may operate as both technician and analyst.

The purpose of this Quality Manual is to outline the management system for Teklab Inc. The Teklab Inc Quality Manual defines the policies, procedures, and documentation that assure analytical services continually meet a defined standard of quality that is designed to provide clients with data of known and documented quality and, where applicable, demonstrate regulatory compliance.

This Quality Manual also sets the standard under which all laboratory operations are performed, including the laboratory's organization, objectives, and operating philosophy. It has been prepared to assure compliance with the 2009 TNI Environmental Laboratory Sector Standard – Volume 1 – Management and Technical Requirements for Laboratories Performing Environmental Analysis (EL-V1-M1 through M7-ISO-2009). This Standard is consistent with ISO/IEC 17025:2005 requirements that are relevant to the scope of environmental testing services and thus, the laboratory operates a quality system in conformance with ISO/IEC 17025:2005(E). In addition, the policies and procedures outlined are compliant with the various accreditation and certification programs listed in Appendix D.

1.2 Scope of Testing

The laboratory's scope of analytical testing services includes those listed in Appendix D – Laboratory Certifications.

1.3 Table of Contents, References and Appendices

The Table of Contents starts on Page 2 of this Quality Manual and the Appendices start after Section 29.

The Teklab Inc Quality Manual uses the references included in Modules 1-7 in the 2009 TNI Environmental Laboratory Sector Standard – Volume 1 – Management and Technical Requirements for Laboratories Performing Environmental Analysis.

1.4 Acronyms

Quality control terms are generally defined within the Section that describes the activity.

1.4.1 Acronyms

A list of acronyms used in this document and their definitions are:

AB	-	Accreditation Body
ADOC	-	Annual Demonstration of Capability
CCB	-	continuing calibration blank
CCV	–	Continuing calibration verification
COC	–	Chain of custody
EPA	–	Environmental Protection Agency
FoPT	-	Fields of Proficiency Testing
g/L	–	grams per liter
GC/MS	–	gas chromatography/mass spectrometry
ICB	-	initial calibration blank
ICP	–	inductively coupled plasma
ICV	–	Initial calibration verification
IDOC	–	Initial Demonstration of Capability
LCS	–	Laboratory control sample
MBLK	-	Method Blank
MDL	–	method detection limit
mg/Kg	–	milligrams per kilogram
mg/L	–	milligrams per liter
MS	–	matrix spike
MSD	–	matrix spike duplicate
NELAC	–	National Environmental Laboratory Accreditation Conference
NELAP	–	National Environmental Laboratory Accreditation Program
NIST	–	National Institute of Standards and Technology
PQL	–	Practical Quantitation Limit
PT	–	Proficiency Test(ing)
PTOB	-	Proficiency Testing Oversight Body
PTPA	-	Proficiency Testing Provider Accreditor
QA	–	Quality Assurance
QC	–	Quality Control
RL	–	Reporting limit
RPD	–	Relative percent difference
RSD	–	Relative standard deviation
SOPs	–	Standard operating procedures
SQL -	-	Structured Query Language
std	–	standard
TNI	-	The NELAC Institute
ug/L	–	micrograms per liter

1.5 Management of the Quality Manual

The Quality Department is responsible for maintaining the currency of the Quality Manual.

The Quality Manual is reviewed at least annually by the Quality Department to ensure it reflects current practices and meets the requirements of any applicable regulations or client specifications. When sections of the manual are updated, the revision number is increased by one and the effective date is updated. The cover sheet and the first page of Section 1 of the Quality Manual must also be re-signed. To ensure consistency, the table of contents is updated whenever a Section is updated.

The Quality Manual is considered confidential within Teklab Inc and may not be altered in anyway except by approval of the Quality Department. If it is distributed to external users, it is for the purpose of reviewing Teklab Inc's management system and may not be used for any other purpose without written permission.

Section 2 - ORGANIZATION

(TNI V1:M2 – Section 4.1)

The laboratory is a legally identifiable organization. Teklab Inc's Tax ID number is noted in section 1 of this Quality Manual. The laboratory is responsible for carrying out testing activities that meet the requirements of the TNI Standard, the ISO/EIC 17025 Standard, and that meet the needs of the client. Through application of the policies and procedures outlined in this Section and throughout the Quality Manual:

- The laboratory ensures that it is impartial and that personnel are free from undue commercial, financial, or other undue pressures that might influence their technical judgment.

- Management and technical personnel have the authority and resources to carry out their duties and have procedures to identify and correct departures from the laboratory's management system.

- Personnel understand the relevance and importance of their duties as related to the maintenance of the laboratory's management system.

- Ethics and data integrity procedures ensure personnel do not engage in activities that diminish confidence in the laboratory's capabilities (see Appendix A, Section 3 "Management" and Section 17 "Data Integrity Investigations" for more information on data integrity).

- Confidentiality is maintained.

2.1 Organization

Teklab Inc. is a full-service environmental commercial laboratory established in 1982. A variety of laboratory services are provided to serve industries specializing in air, drinking water, wastewater, sludge, soil, oil, and special waste testing. The following listed service centers are owned and operated by Teklab, Inc. Teklab operates in Collinsville, Illinois (Corporate Headquarters and Air Laboratory), Springfield, Illinois (Service center), Downers Grove, Illinois (Service center) and Lenexa, Kansas (Service Center).

Service Centers:

1. Springfield Service Center
   3920 Pintail Suite A
   Springfield, IL 62711
   (217)698-1004

The Springfield Service Center (SFSC) opened February 9th, 2009. The Springfield Service Center serves as a bottle order collection and sample drop off point for our clients in Central Illinois. This service center also has a sample courier service for bottle or air canister delivery and sample pick-up.

2. Kansas City Service Center
   8421 Nieman Road
   Lenexa, KS 66214
   (913)541-1998

The Kansas City/Lenexa Service Center opened its doors in the summer of 2007. The Kansas City Service Center serves as a bottle order collection and sample drop off point for our clients in Western Missouri and Eastern Kansas. This service center also has a sample courier service for bottle delivery and sample pick-up.

3. Downers Grove Service Center
   1319 Butterfield Road, Suite 502
   Downer's Grove, IL 60515
   (630)800-8639

The Chicago Area Service Center opened in July of 2015 and serves as a bottle order collection and sample drop off point for our clients throughout the Chicago Metropolitan Area

We are committed to providing the services our customers require, and as customer needs change, so will the analysis we perform.

The laboratory's organizational charts can be found in Appendix B of this Quality Manual. Additional information regarding responsibilities, authority and interrelationship of personnel who manage, perform or verify testing is included in Section 3 –"Management Roles and Responsibilities" and Section 18 – "Personnel and Training". These Sections also include

information on supervision, training, technical management, job descriptions, quality personnel, and appointment of deputies for key managerial personnel.

The laboratory has the resources and authority to operate a management system that is capable of identifying departures from that system and from procedures during testing, and initiates actions to minimize or prevent departures.

2.2 Conflict of Interest and Undue Pressure

Teklab is organized so that confidence in its independence of judgment and integrity are maintained at all times. It has processes to ensure that its personnel are free from any commercial, financial and other undue pressures which might adversely affect the quality of their work. Teklab has a proactive program for prevention and detection of improper, unethical or illegal actions.

All new employees are trained during orientation and all personnel are trained, at least annually, on data integrity, ethical behavior, legal responsibilities and conflict of interest. Each Teklab job description includes an agreement with the employee that they are aware of their ethical responsibilities and will avoid any conflict of interest. See Teklab Inc. NELAP Policy Ethics, Legal Responsibility, & Conflict of Interest for topics discussed during training.

Section 3 - MANAGEMENT

(TNI V1:M2 – Section 4.2)

The laboratory maintains a management system that is appropriate to the scope of its activities.

3.1 Management Requirements

Top management includes the CEO, President, Chief Financial Officer, Chief Marketing Officer, Laboratory Director, Technical Director (however named), Quality Officers and Supervisors.

Management's commitment to good professional practice and to the quality of its products is defined in the Quality Policy statement in Section 3.3.

Management has overall responsibility for the technical operations and the authority needed to generate the required quality of laboratory operations. Management ensures communication within the organization to maintain an effective management system and to communicate the importance of meeting customer, statutory, and regulatory requirements. Management assures that the system documentation is known and available so that appropriate personnel can implement their part. When changes to the management system occur or are planned, managers ensure that the integrity of the system is maintained.

Management is responsible for carrying out testing activities that meet the requirements of the TNI Standard, the ISO/IEC 17025 Standard and the needs of the client.

Management implements, maintains, and improves the management system, and identifies noncompliance with the management system of procedures. Managers initiate actions to prevent or minimize noncompliance (See Section 12 "Improvement, Section 13 "Corrective Action and Section14 "Preventive Action").

Management ensures technical competence of personnel operating equipment, performing tests, evaluating results, or signing reports, and limits authority to perform laboratory functions to those appropriately trained and/or supervised. See Section 18 "Personnel" for details on personnel requirements.

Management is responsible for defining the minimal level of education, qualifications, experience, and skills necessary for all positions in the laboratory and assuring that technical staff have demonstrated capability in their assigned tasks.

Training is kept up to date as described in Section 18 – "Personnel" by periodic review of training records and through employee performance review.

Management has specific responsibility for maintenance of the management system. This includes defining roles and responsibilities of personnel, approving documents, providing required training, providing a procedure for confidential reporting of data integrity issues, and periodically reviewing data, procedures, and documentation. The assignment of responsibilities, authorities, and interrelationships of the personnel who manage, perform, or verify work affecting the quality of environmental tests is documented in employee job descriptions and section 18 of this Quality Manual.

Management ensures that audit findings and corrective actions are completed within required time frames.

Designated deputies are appointed by management during the absence of the Technical Director if the absence is for more than 15 days.

3.2 Management Roles and Responsibilities

3.2.1 Corporate: Chief Executive Officer / Chief Marketing Officer

3.2.1.1 Responsibilities

- Establishes current and long range goals, objectives, plans and policies.
- Plans, coordinates and controls the daily operation of the organization through organization's managers.
- Dispenses advice, guidance, direction and authorization to carry out major plans, standards and procedures, consistent with established policies.
- Meets with organization's other executives to ensure that operations are being executed in accordance with the organization's policies.
- Oversees the adequacy and soundness of the organization's financial structure.
- Plans and directs all investigations and negotiations pertaining to mergers, joint ventures, acquisition of businesses or the sale of major assets.

- Establishes and maintains an effective system of communication throughout the organization.
- Represents the organization with major customers, shareholders, the financial community and the public.
- Establishes strategic marketing plans to achieve corporate objectives for products and services.
- Develops, executes and directs comprehensive marketing plans and programs, both short and long range, to support sales and revenue objectives of the organization.
- Plans and oversees advertising and promotions activities.
- Designates, directs, advises and evaluates Teklab's sales staff.
- Works with Teklab's Project Management and Customer Service Departments to be a liaison for the customers, communicate customer needs and to develop and promote outstanding customer service.
- Establishes and maintains relationships with industry influencers and key community and strategic partners.

3.2.2 Corporate: Laboratory Director

The Laboratory Director provides the resources necessary to implement and maintain an effective quality and data integrity program.

3.2.2.1 Responsibilities

- Monitors standards of performance in quality control and quality assurance of laboratory practice.
- Monitors the validity of the analyses performed and data generated to assure reliable data.
- Directs laboratory in good automated lab practices.
- Works with the IT department regarding all aspects of Teklab's Laboratory Information Management System.
- Responsible for an in depth understanding of methodology and regulatory requirements.
- Works with the Technical Director to coordinate method development, solve LIMS related issues, interpret test results and troubleshoot analytical/instrumentation issues.
- Provides technical assistance to laboratory personnel.
- Ensures availability of laboratory resources.
- Involved with instrument optimization and maintenance.
- When absent for a period of time exceeding 15 consecutive calendar days, the Chief Financial Officer will temporarily perform this function.

3.2.3 Corporate: President/Chief Financial Officer

3.2.3.1 Responsibilities

- Establishes current and long range goals, objectives, plans and policies, subject to approval by the Board of Directors.
- Manages the operations of the laboratory through subordinate managers to ensure that the current and long range goals, objectives, plans and policies are met in a financially responsible manner.
- Dispenses advice, guidance, direction, and authorization to carry out major plans, standards and procedures, consistent with established policies and Board approval.
- Oversees the adequacy and soundness of the organization's financial structure.
- Determines agencies and suppliers of record, and negotiates contract terms and conditions for major services and suppliers.
- Directs company finance and purchasing.
- Represents the organization with major customers, shareholders, the financial community and the public.
- Designates, directs, advises and evaluates the laboratory Supervisors to achieve timely data reporting, while maintaining high safety and quality standards.
- Assists in the planning and implantation of safety policies and procedures in compliance with local, state and federal Occupational Safety and Health Administration (OSHA) rules and regulations.
- Directs, advises and coordinates personnel in their role in the analytical and operational activities of the laboratory to safely produce high quality data as quickly as possible.
- Identifies, analyzes and resolves, and/or assists personnel in solving operational problems.
- Ensures that laboratory resources are available.
- Handles difficult or highly technical situations with clients as needed.
- When absent for a period of time exceeding 15 consecutive calendar days, the Laboratory Director will temporarily perform this function.
- If this absence exceeds 35 consecutive calendar days, the primary accreditation body shall be notified in writing.

3.2.4 Corporate: Technical Director

3.2.4.1 Responsibilities

- Responsible for standards of performance in quality control/quality assurance, the validity of the methodologies and technologies of the analyses performed and the data generated in the laboratory to assure reliable data
- Designates, directs, advises and evaluates Teklab's QA/QC program to maintain quality assurance following NELAC quality systems requirements. Some of these functions include, but are not limited to, quality control, document control, accreditations, audits, data integrity, data validation and report review.
- Implements, facilitates and oversees Teklab's Training program.

- Responsible for in depth understanding of methodology and regulatory requirements.
- Oversees method research, development, reviews, implementation and updates. Responsible for implementing and approving standard operating procedures as related to methods.
- Involved with instrument optimization and maintenance.
- When absent for a period of time exceeding 15 consecutive calendar days, the Laboratory Director will temporarily perform this function.
- If this absence exceeds 35 consecutive calendar days, the primary accreditation body shall be notified in writing.

The Technical Director (however named) or designee:

1. is not the technical manager of more than one accredited environmental laboratory.
2. is a full-time laboratory staff member and supervises laboratory operations and data reporting.
3. meets the general and education requirements and qualifications found in Sections 4.1.7.2 and 5.2.6.1 of the TNI Standard - EL-V1M2-2009.

The Technical Director's proof of experience in the fields of accreditation may be found on the Teklab Server in Employees Electronic Training File.

3.2.5 Corporate: Quality Officer

The Quality Officer (or designee) is responsible for the oversight and review of quality control data, and is independent from laboratory operations. The Quality Officer's training and proof of experience in QA/QC procedures, knowledge of analytical methods, and the laboratory's management system are available in employee training record files, which are stored on the Teklab Inc server.

3.2.5.1 Responsibilities

- Perform and maintain Certificate/Accreditation functions
- Provide QA/QC expertise to staff and supervisors
- Supervise and/or maintain performance testing program
- Supervise and /or prepare and maintain Quality Manual
- Notify laboratory supervisors of quality system deficiencies and monitor Corrective actions
- Supervise and/or perform test data validation and data entry validation for Inorganic and Metals Departments
- Supervise and/or perform Level 3 and Level 4 quality control data review
- Responsible for in depth understanding of methodology and regulatory requirements
- Approve and/or prepare laboratory Standard Operating Procedures
- Perform internal QA/QC audits
- Respond to corrective actions from both internal and external audits
- Supervise and/or maintain method related QA/QC documentation according to the 2009 TNI standard
- Perform Quality Assurance Unit (QAU) duties as defined in GALP

- Supervise and/or maintain document control and data archiving

3.2.6 Corporate: Director of Customer Service

3.2.6.1 Responsibilities

- Responsible for designating and supervising project managers and customer service specialists
- Provides initial and ongoing orientation, safety and quality training of direct reports
- Analyzes and resolves, or assists workers in resolving customer service problems
- Establishes or adjusts department work procedures to meeting testing schedules
- Identifies and either provides on the job training or seeks training opportunities to ensure that project management and customer service quality meets TNI standards
- Confers with Laboratory Supervisors to achieve timely data reporting to clients, while maintaining the high safety and quality standards
- Confers with the Chief Marketing Officer on customer service and project related needs or issues and to keep abreast of the status of future and potential workload

3.2.7 Collinsville Air laboratory: Director of Operations/Analyst

3.2.7.1 Responsibilities

- Responsible for standards of performance in quality control/quality assurance, the validity of the methodologies and technologies of the analyses performed and the data generated in the laboratory to assure reliable data.
- Designates, directs, advises and evaluates Teklab's QA/QC program to maintain quality assurance following NELAC quality systems requirements. Some of these functions include, but are not limited to, quality control, data integrity, data validation and report review.
- Responsible for in depth understanding of methodology and regulatory requirements.
- Oversees method research, development, reviews, implementation and updates. Responsible for implementing and approving standard operating procedures as related to methods.
- Involved with instrument optimization and maintenance.
- Provide QA/QC expertise to staff
- Maintain method related QA/QC documentation according to the 2009 TNI standard
- Identifies, analyzes and resolves, and/or assists personnel in solving operational problems.
- Ensures that laboratory resources are available.
- Handles difficult or highly technical situations with clients as needed.

- When absent for a period of time exceeding 15 consecutive calendar days, the Corporate Laboratory Director or the Corporate Chief Financial Officer will temporarily perform this function.
- If his absence exceeds 35 consecutive calendar days, the primary accreditation body shall be notified in writing.

3.3 Quality Policy

Management's commitment to quality and to the management system is stated in the Quality Policy below, which is upheld through the application of related policies and procedures described in the laboratory's Quality Manual, SOPs and policies.

Teklab's Management is committed to ensuring compliance with the TNI Standard and shall strive to continually improve the effectiveness of the Management System. Teklab's overall Quality objective is adhere to good professional practices and to develop and implement procedures for field sampling, chain of custody, laboratory analysis and reporting, that will provide results that are legally defensible in a court of law. Specific procedures for sampling, chain of custody, laboratory instrument calibration, laboratory analysis, reporting of data, internal quality control, audits, preventive maintenance of equipment and corrective actions are described in the applicable 1000 series SOPs and other sections of this manual. The purpose of this section is to address the overall objectives that produce accurate, precise, complete, representative and comparable data. The Teklab QA/QC program is communicated and monitored by Teklab's Quality Department.

The Teklab QA/QC program must provide technicians, analysts, and managers with the direction and information necessary to consistently produce reliable and valid analytical data. These results are best attained by rigorously following the validated standard operating procedures and this Quality Manual. This Quality Manual has been developed by Teklab and is available to each Department in an electronic format.

SOP reading is completed at least annually. New laboratory employees are required to read method SOPs once per quarter for six quarters. SOP reading is tracked using controlled reading forms or in controlled Department databases. Employees note the revision and date read for each SOP. Documentation of reading provides evidence that employees have read, understood, and are using the latest version of Teklab Inc. SOPs.

New employees will read the Teklab Quality Manual in their first year of employment. Other laboratory personnel will read the Quality manual when a revision is made.

Teklab provides all employees with on-the-job training specific to their job assignment. Safety, Quality and Ethics training are provided upon hiring and in ongoing programs. Every Teklab employee must ensure that the generation and reporting of quality analytical data is a fundamental priority. All employees are trained annually on ethical principles and procedures surrounding the data that is generated. The laboratory maintains a strict policy of client confidentiality. Off site training is provided on an as needed basis. The following is a partial listing of the types of training provided by Teklab:

- Safety

- Technical training specific to job assignment
- Data Integrity, Ethics and Conflict of Interest
- NELAP quality systems

3.4 Ethics and Data Integrity System

The laboratory has an Ethics and Data Integrity policy that is included in Appendix A. The laboratory's Ethics and Data Integrity program, training and investigations are discussed in Section 17 – "Data Integrity Investigations". Slides of Teklab's Data Integrity Training can be found in the Quality Documents folder on the Teklab Server.

3.5 Documentation of Management/Quality System

The management system is defined through the policies and procedures provided in this Quality Manual and written laboratory Standard Operating Procedures (SOPs) and policies.

3.5.1 Quality Manual (TNI 2009 V1M2 4.2.8.3)

The Quality Manual contains the following required items:

3.5.1.1 document title;

3.5.1.2 laboratory's full name and address;

3.5.1.3 name, address (if different from above), and telephone number of individual(s) responsible for the laboratory;

3.5.1.4 identification of all major organizational units which are to be covered by this quality manual and the effective date of the version;

3.5.1.5 identification of the laboratory's approved signatories;

3.5.1.6 the signed and dated concurrence (with appropriate names and titles), of all responsible parties including the quality Officer(s), technical Director(s), and the laboratory director;

3.5.1.7 the objectives of the management system and contain or reference the laboratory's policies and procedures;

3.5.1.8 the laboratory's official quality policy statement, which shall include management system objectives and management's commitment to ethical laboratory practices and to upholding the requirements of this Standard; and

3.5.1.9 a table of contents, and applicable lists of references, glossaries and appendices.

This Quality Manual contains or references all required elements as defined by the TNI Standard - V1:M2, Section 4.2.8.4.

3.5.2 Standard Operating Procedures (SOPs)

The laboratory has documented procedures for making and controlling revisions to SOPs. The following information is included on each page of the SOPs:

- SOP number;
- Revision date;
- Revision letter;
- Current page number and total pages of a section.

The effective date of the SOP is the date the SOP is signed by a Quality Officer or other approving authority. Standard operating procedures (SOPs) represent all phases of current laboratory operations and are available to all personnel. They contain sufficient detail to allow someone with similar qualifications to perform the procedures. There are two types of SOPs used in the laboratory:

1) test method SOPs, which have specific requirements as outlined below
2) general use SOPs which document general procedures.

See SOP1010 for more information on SOPs.

Each accredited analyte or method has an SOP. Sometimes an SOP is a copy of a method, and any additions are clearly described. The laboratory's test method SOPs are listed in SOP1010. SOPs should contain or reference the following information where applicable.

i. identification of the method;
ii. applicable matrix or matrices;
iii. limits of detection and quantitation;
iv. scope and application, including parameters to be analyzed;
v. summary of the method;
vi. definitions;
vii. interferences;
viii. safety;
ix. equipment and supplies;
x. reagents and standards;
xi. sample collection, preservation, shipment and storage;
xii. quality control;
xiii. calibration and standardization;
xiv. procedure;
xv. data analysis and calculations;
xvi. method performance;
xvii. pollution prevention;
xviii. data assessment and acceptance criteria for quality control measures;
xix. corrective actions for out-of-control data;
xx. contingencies for handling out-of-control or unacceptable data;
xxi. waste management;
xxii. references; and
xxiii. any tables, diagrams, flowcharts and validation data.

3.5.3 Order of Precedence

In the event of a conflict or discrepancy between policies, the order of precedence is based upon whichever policy the most strict (if applicable); otherwise the order is as follows:

- Quality Manual
- SOPS
- Reference Methods
- Policies

Section 4 - DOCUMENT CONTROL

(TNI V1:M2 – Section 4.3)

A controlled document is one that is uniquely identified, issued, tracked, and kept current as part of the management system.

An approved document is one that has been reviewed, and either signed and dated, or acknowledged in writing or by secure electronic means by the issuing authority (ies).

Retired documents are documents that have been superseded by more recent versions or are no longer needed.

Documents can be "SOPs, policy statements, specifications, calibration tables, charts, textbooks, posters, notices, memoranda, software, etc. These may be on various media, whether hard copy or electronic, and they may be digital, analog, photographic or written." (TNI 2009 V1M2 4.3.1). See section 5 for information on control of records.

Procedures for document control and management include controlling, distributing, reviewing, and accepting modifications. The purpose of document control is to preclude the use of invalid and/or obsolete documents.

4.1 Controlled Documents

Documents are reviewed at least annually to ensure their contents are suitable and in compliance with the current management system requirements, and accurately describe current procedures.

Approved copies of documents are available to staff at all locations where operations are essential to the effective functions of the laboratory. Superseded or obsolete paper and electronic documents must be promptly removed from all points of issue and archived following the procedures in SOP 1291. SOPs are located on the Teklab Inc server in the Quality Documents folder. A copy of the current SOP for any analysis is in the appropriate laboratory section performing that analysis. The Quality Department maintains the original Microsoft Word copy of the most current SOP revision and retired revisions of all SOPs.

Controlled internal documents are uniquely identified with :

1) revision date
2) revision letter

Plus the following for SOPs and the Teklab Quality Manual:

3) unique identification (text or number)
4) page number
5) the total number of pages (or a mark to indicate the end of the document)
6) the signatures of the approving authority

SOPs and the Teklab QAM are reviewed annually. To comply with KEDP and ODEQ requirements, the review date of method SOPs is noted on the PDF copy of each. A review date is not required when an SOP is revised in the same year. Review dates are tracked in the Training Database located in the Quality folder on the Teklab Server.
SOPs may be prepared by anyone at Teklab, Inc. All SOPs are prepared in a standard layout containing the same sections (See SOP1010). Documents must be reviewed, revised (as appropriate) and approved for use prior to issue by an "approving authority" which is one of the following staff - Quality Officer, Laboratory Management or Laboratory Supervisor. See SOP 1010 "SOPs and Controlled Documents" for guidelines. Where a laboratory's quality manual contains the necessary requirements, a separate SOP or policy is not required.

A master list of SOPs, which includes SOP number, SOP title, revision and review dates is maintained by the Quality Department and is updated each time a revision is made to an SOP or an SOP is reviewed. The master list is stored in the Quality Department's Training Database, located on the Teklab Inc server. The Controlled Document database, located on the Teklab server, tracks QA manual and other controlled document revisions and can be modified to track any controlled document when required.

The current QA manual is accessible to laboratory personnel via the Quality Documents folder on the Teklab Inc server.

Photocopies of controlled documents or reprints of electronic documents made out with the QA Department are not controlled. As such, it is the responsibility of the document holder to ensure that they have the most current revision.

4.1.1 Changes to Controlled Documents

4.1.1.1 Paper Document Changes

Document changes are approved by an approving authority (Section 4.1 lists approving authorities). Modifications to paper documents that require a revision change shall be clearly written on the document and given to the Quality Department for review. Once the review is complete, the document can be approved and signed by an approving authority. The document will then be processed by the Quality Department and issued to the relevant departments.

Changes that are not process modifications but clarifications (also called minor revisions) may be performed without changing the revision letter of the document. The Quality department shall be notified of any minor revisions. The modified document shall then copied and distributed to the applicable department/s, and obsolete documents shall be removed from all points off use and noted as such in the master list of controlled documents. Minor amendments/modifications to documents are incorporated into a new

revision and reissued when the document is reviewed and updated on or before its scheduled review cycle.

A reason for the minor modification or change is written on the document itself and is provided as historical information. This is not required if the reason for the modification is evident (e.g. to correct a spelling error).

4.1.1.2 Electronic Document Changes

A Microsoft Word copy of the document (if available) may be requested from the Quality Department. The document will be emailed to the reviewer and should be downloaded to the C Drive of their personal computer before making any changes. All editing must be tracked following the guidelines in SOP 1010. The final document must then be emailed back to the Quality Department. Revised 1000 series SOPs are reviewed by the Quality Department and Method SOPs are reviewed by technical reviewers; such as the Technical Director or the Quality Training Officer. Once the document has passed review, it can be approved and signed by an approving authority. When signed, the document will then be processed by the Quality Department and issued to the relevant areas of the laboratory.

Intermediate revisions can be made directly into PDF copies of SOPs or the Quality Manual located in the Quality Documents folder. These revisions must be approved by either the Department Supervisor or a member of the Quality Department.

Changes to documents are processed following the guidelines in SOP 1010.

4.2 Obsolete Documents

All invalid or obsolete documents are removed from general distribution, or otherwise prevented from unintended use. The master copy of an obsolete document is marked with the word “retired”, a retired date and is archived in accordance with SOP 1291 “Record Retention and Access”. Archived documents may be in paper or electronic format. All copies of obsolete documents must be removed from point of use and destroyed. Documents must be securely stored for at least five years before being destroyed. If documents have been scanned and stored on the Teklab Inc Server, related hard copies can be destroyed at the discretion of the applicable department. Storage boxes are maintained in the Teklab storage area until archived to an off-site storage facility. Both the on-site and off-site storage areas have all access documented in an access log maintained at the respective sites. Both storage facilities are protected against fire, theft, loss, environmental deterioration, and vermin. Electronic records are protected from electronic or magnetic sources in a fire proof safe. Details of all stored (and labeled) storage boxes (current and destroyed) are recorded in a Microsoft Access Database by the Quality Department for tracking purposes. Controlled electronic documents are stored on the Teklab server indefinitely (where applicable). The Teklab server is backed up on a daily basis. Two Iomega storage units, that can be located via the Teklab Inc network, are also available to archive documentation. Each has a built in raid configuration to provide data redundancy.

Note: See section 5 of this QA manual for specific guidelines on the control and archival of laboratory records.

In the event that the laboratory goes out of business, documents will be maintained at the off-site storage facility until they can be securely destroyed. If the laboratory transfers ownership, records and documentation shall be transferred to the new ownership. In the event the laboratory transfers geographic location, records and documentation shall be maintained at the off-site storage facility until the records can be securely destroyed.

Section 5 - CONTROL OF RECORDS

(TNI V1:M2 – Section 4.13)

Records may be on any form of media, including electronic and hard copy. Records allow for the historical reconstruction of laboratory activities related to sample-handling and analysis. See Section 4 for information on control of documents.

5.1 Records Maintained

The laboratory maintains a record keeping system that facilitates the retrieval of working files and archived records for inspection and verification purposes by the NELAP accrediting authority.

The laboratory documents and maintains records related to all procedures and activities to which a sample is subjected, including:

a) Identity of personnel involved in sampling, preparation and testing;

b) Sample preservation, including but not limited to: sample container and compliance with holding times;

c) Sample identification code, receipt, log-in, acceptance or rejection;

d) Sample storage and tracking, including: shipping receipts, transmittal form, and internal routing and assignment records;

e) Sample preparation including: cleanup and separation procedures, extract or digestate identification codes, volumes, weights, instrument printouts, meter readings, calculations, reagents;

f) Sample analysis;

g) Standard and reagent origin, receipt, preparation and use;

h) Equipment receipt, use specification, operating conditions and preventative maintenance

i) Calibration criteria, frequency and acceptance criteria

j) Method performance criteria including quality control requirements

k) Quality control protocols and assessment;

l) All automated sample handling systems;

m) Calculations and statistical formulae used by the laboratory,

n) written procedures for all calculations are available for review;

o) representative calculations are available and indicate that routine calculations are consistent with the written procedures;

p) all raw data and supporting information needed to recreate calculations are available for review;

q) the appropriate number of significant figures are carried out through all recorded data and calculations; and

r) the least precise step is identified in the calculations and the number of significant figures is an accurate reflection of the actual tolerances of the instrument or equipment used in this step.

s) Procedures to verify that the reported data is free from transcription and calculation errors;

t) Data handling, including but not limited to: reduction, review, confirmation, interpretation, assessment or validation, and reporting;

u) QC measurements, including procedures to select samples on which to perform QC measurements, and assessment of method performance;

v) Requirements specified in sample acceptance and receipt section of this manual;

w) Electronic records, including but not limited to; copies of final reports, PT studies, bench sheets, instrument strip charts or printouts, data calculations, and data reports for five years or for as long as is required by the applicable regulatory program, whichever is greater. These records include an input summary and copy of the PT study final reports from the PT vendor used by the laboratory;

x) Data review and cross-checking forms

y) All information necessary to produce unequivocal, accurate records that document the laboratory activities associated with the sample receipt, preparation, analysis and reporting; and

z) Procedures that maintain an unequivocal link with the unique field identification and the laboratory identification code assigned each sample.

5.2 Records Management and Storage

The laboratory maintains a record management system for control of laboratory records. See SOP# 1010, 1060, 1290 and 1291 for more information on tracking, reporting and storage.

Data is recorded immediately and legibly in permanent ink (data generated by automated data collections systems is recorded electronically.) Corrections are initialed and dated with the reason noted for corrections other than transcription errors. A single line strikeout is used to make corrections so that the original record is not obliterated.

Excel data sheets used for data entry in the laboratory are coded to allow tracking and automatic documentation of all changes made within that file. The worksheet containing the tracking information is stored within the workbook for the life of the file.

Electronic corrections in LIMS are tracked via SQL files which log all changes made. SQL files are retained securely on the Teklab server for at least 5 years.

The Teklab Server, Exchange Server, Teklab-Files Server and Tekweb Server are backed up daily Monday to Friday. The SQL database is backed up every two hours with a full back up every night. A duplicate back-up of the Teklab Server is saved to an external hard-drive and taken off site every Monday.

Where computers or automated equipment is used for the capture, processing, manipulation, recording, reporting, storage or retrieval of test data, the laboratory:

- Maintains computer and automated equipment to ensure proper functioning and provide environmental and operating conditions necessary to maintain the integrity of calibration and test data
- Performs software and hardware audits
- Establishes and implements procedures for the maintenance of security of data, including the prevention of unauthorized access to, and the unauthorized amendment of, computer records and
- Maintains hard copy or write protected backup copies of records that are stored or generated by computers.

The laboratory controls access to all programs that are used to acquire, process, record or report data. All programs have limited access and are dependent on the security permissions that are assigned to each employee. An employee is granted access depending on his/her responsibilities and job description.

Records, including electronic records, are easy to retrieve, legible, and protected from deterioration or damage; held secure and in confidence; and are available to accrediting

bodies for a minimum of five years or as required by regulation or contract. Records that are stored only on electronic media are supported by the hardware and software necessary for their retrieval. Access to protected records is limited to applicable department personnel. Procedures for identification, access, filing, storage, maintenance and disposal of quality and technical records can be found in SOPs 1010, 1060 and 1291. Quality records shall include reports from internal audits as well as records of corrective and preventive actions.

The laboratory maintains the record management system for control of all applicable information, in an organized, chronological order. Hard copy records are segregated by type (i.e. laboratory data packets, Teklab Reports etc.), in chronological order, and placed in storage boxes. The exterior of the storage box indicates the contents. Storage boxes are maintained in the Teklab storage area until archived to an off-site storage facility. Both the on-site and off-site storage areas have all access documented in an access log maintained at the respective sites. Additional information regarding control of data is included in Section 21.5 – "Control of Data".

Paper records must be safely stored, held secure, and in confidence to the client. All information necessary for the historical reconstruction of the data must be maintained. Non-drinking water records must be retained for 5 years from generation of last entry in records. Drinking water chemical analysis records from public water systems serving at least 25 persons or having at least 15 service connections must be maintained for 10 years from the generation of the last entry in the records. Lead and copper drinking water records for must be maintained for 12 years from generation of last entry. Per Louisiana regulations all air analysis records must be kept for at least 10 years. Records may be stored longer at client request.

Metals and Inorganics data is scanned and kept on the server per the regulation retention times noted above. Hard copies of scanned Metals and Inorganics data are kept for one year. VOA and Organics data is electronically generated and is stored on the Teklab Server for at least five years.

Data for all other environmental analyses that are associated with the laboratory's accreditation is stored for a minimum of five years, unless otherwise specified in another regulation. Pertaining to all suppliers from whom it obtains support services or supplies required for test, for a minimum of five years.

In the event that the laboratory transfers ownership or goes out of business, records are maintained or transferred according to client instructions. Appropriate regulatory and state legal requirements concerning laboratory records shall be followed.

5.3 Legal Chain of Custody Records

Evidentiary sample data are used as legal evidence. Procedures for evidentiary samples are outlined below and can also be found in SOP1065.

The laboratory establishes and maintains the following basic requirements for evidentiary chain-of-custody:

- The evidentiary chain-of-custody records accounting for an unbroken possession of the sample while it is in the laboratory's custody.
- The evidentiary chain-of-custody records include signatures of all individuals who were involved with physically handling the samples and the time of day and calendar date that the sample was physically transferred from one individual to the next individual or to and from a controlled access storage area. A sample is considered to be in someone's custody only if it is in one's actual physical possession, if it is in one's view, after being in one's physical possession, or if it is kept in a secured area restricted to authorized personnel only.
- A minimum number of persons shall be involved in sample handling.
- The laboratory limits the number of documents that are required to establish evidentiary chain-of-custody.
- The evidentiary chain-of-custody forms remain with the samples during transport or shipment.
- The laboratory controls access to all evidentiary samples and sub-samples, and documents this control as described in the Sample Acceptance and Receipt section of this manual.
- Transfer of samples, sub-samples, digestates or extracts to another laboratory is subject to all of the requirements for evidentiary chain-of-custody.
- The laboratory ensures that sample containers that are shipped, are sealed in such a manner so that tampering by unauthorized personnel is immediately evident. If any seals are not intact, the laboratory notes this on the chain-of custody.
- The laboratory ensures that, if required, individual sample containers are sealed in such a way as to prevent tampering.
- The laboratory maintains records of sample disposal practices including, where appropriate, the date of sample or sub-sample disposal and the name of the responsible person.
- The disposal of the physical sample occurs only with the concurrence of the affected legal authority, sample data user and submitter of the sample.
- The laboratory documents and retains a record of all conditions of disposal and all correspondence between all parties concerning the final disposition of the physical sample.
- The sample records indicate the date of disposal, the nature of disposal (such as depleted, sample manifested to a hazardous waste facility, sample returned to client), and the identity of the individual who performed the task.
- The laboratory has waste collection, storage, recycling, and disposal procedures and policies as part of their SOPs. Where disposal practices are included as part of an approved test method, the laboratory strictly follows the approved test method's disposal practices. While more specific disposal criteria are not an aspect of this manual, the laboratory applies appropriate Federal, state, and local disposal practices as a part of good laboratory practices.

Section 6 – REVIEW OF REQUESTS, TENDERS AND CONTRACTS

(TNI V1:M2 – Section 4.4)

The review of all new work assures that requirements are clearly defined, the laboratory has adequate resources and capability, and the test method is applicable to the customer's needs. This process ensures that all work will be given adequate attention and avoid shortcuts that may compromise data quality.

Contracts for new work may be formal bids, signed documents; verbal, or electronic. The client's requirements, including the methods to be used, must be clearly defined, documented and understood. The review must also cover any work that will be subcontracted by the laboratory.

See SOP1015 for details on Review of Requests, Tenders and Contracts and SOP 1100 for Subcontracting guidelines.

Section 7 - PURCHASING SERVICES AND SUPPLIES

(TNI V1:M2 – Section 4.6)

The laboratory ensures that purchased supplies and services that affect the quality of environmental tests are of the required quality by using approved suppliers and products.

7.1 Procedure for Purchasing

Supplies and Services that affect the quality of environmental tests are purchased by the Chief Financial Officer, who also reviews and approves the suppliers of services and supplies.

Purchase orders are automatically assigned unique order numbers and are generated from the LIMS. The Vendor section of the LIMS contains information that adequately describes the services and supplies ordered. Order details are stored under each vendor/supplier and allows for tracking and evaluation of past purchases.

Clipboards with Supply Order Forms are available in all departments of the laboratory. The form contains information such as the department, date (the date the item was added to the form), a description of the item and a priority code. Priority codes run from 1 (need immediately) to 3 (order within the next 2 weeks). Priority code 4 is reserved for special request/new items. When an item is ordered, the order date is noted beside the applicable item. A copy of the form is then given to the Customer Service department. When the goods are delivered to Teklab, the Customer Service department can use the Supply Order Form to expedite the distribution of supplies to the relevant departments. The laboratory strives to maintain an adequate supply of critical items to ensure continued analysis without interruption.

Purchased supplies that affect the quality of tests are inspected for breakage, leaks or any other damage when received. The supplies are stored according to manufacturer's

recommendations, laboratory SOPs or test method specifications. See SOP1260 for information on supply receipt procedures.

Copies of calibration documentation (e.g. weight calibrations, NIST thermometer calibrations, balance maintenance/calibrations) are kept on file by the Quality Department. Certificate of Analysis details are logged into the LIMS. A copy of the certificate is scanned and linked to information in the LIMS by the relevant department or a member of the Quality Department. See Section 23 "Reagents and Standards" and SOP1250 for more information.

7.2 Approval of Suppliers

The Chief Financial Officer maintains a list of approved suppliers in the Teklab LIMS. Vendors that are no longer used are inactivated through the same system.

Evaluation Procedure
Evaluation and selection of suppliers/ vendors is performed, in part, on the basis of the quality of their products, their ability to meet the demand for their products/services, the quality of their service, their past history and competitive pricing. To ensure that critical consumables and equipment conform to specified requirements, all purchases from specific vendors are approved by a member of the management staff.

If problems with supplies (or services) arise after the product has entered the laboratory, the deficiency information can be relayed by the relevant department directly to the Chief Financial Officer or via Teklab's weekly management meetings. Critical deficiencies (that impact safety or the quality of data) must be relayed to the Chief Financial Officer as soon as possible. All returns are dealt with on a case by case basis.

Section 8 - SUBCONTRACTING OF ENVIRONMENTAL TESTS

(TNI V1:M2 – Section 4.5)

8.1 Procedure

When Teklab must subcontract analysis due to workload, need for further expertise, temporary incapacity, or on a continuing basis, work is placed with a laboratory accredited under NELAP for the test to be performed or with a laboratory that meets the applicable statutory and regulatory requirements for performing the tests and submitting the results of test performed. All subcontracted analyses and the name of the subcontracted laboratory are documented in the case narrative of the final report. Any non-NELAP accredited work does not have the letters "NELAP" in the qualifier column. The intent to subcontract analysis is specified in the project quote when Teklab intends to subcontract any part of a project. When possible, Teklab will advise the client in writing of any subcontracted analysis. Teklab maintains a register of all subcontractors that it uses for environmental tests and a record of the evidence of compliance for each. A record of subcontracted analysis is retained at Teklab and is archived in accordance with this manual. Teklab will ensure that the

subcontract laboratory is provided all necessary information to meet the same commitments made to the client by the primary laboratory.

See SOP1100 for Subcontracting procedures and guidelines and SOP 1015 for review of requests, tenders and contracts.

Section 9 - SERVICE TO THE CLIENT

(TNI V1:M2 – Section 4.7)

The laboratory collaborates with clients and/or their representatives in clarifying their requests and in monitoring laboratory performance related to their work. Each request is reviewed to determine the nature of the request and the laboratory's ability to comply with the request within the confines of prevailing statutes and/or regulations without risk to the confidentiality of other clients.

9.1 Client Confidentiality

Teklab Inc's confidentiality policy is to not divulge or release any information to a third party without proper authorization. Third party requests for data and information are referred to the client. Data and records identified as proprietary, privileged, or confidential are exempt from disclosure.

All electronic data (storage or transmissions) are kept confidential, based on technology and laboratory limitations, as required by client or regulation.

Teklab, Inc. will protect Clients' confidential information and proprietary rights, as directed by local, state or federal laws. All confidential information and/or proprietary rights claimed by any Client and/or Vendor must be clearly identified in writing, prior to initiation of any business activity. Teklab, Inc. will voluntarily treat information generated by Teklab, Inc. (analytical results, sampling information, associated quality control results, etc.) as confidential in nature only without the fear of retribution. That is, Teklab, Inc. will not accept any liability for the inappropriate or accidental release of information, unless specifically agreed to under mutually binding contractual obligations. See Teklab, Inc. NELAP Policy Client Confidential Information for additional information and procedures.

Teklab quality training includes training on procedures for protecting clients' confidential information. Clients' names or client's sample identifications are not listed in any laboratory data packets. Information in the laboratory data packets is identified with Teklab generated laboratory identifications only. Printed records containing client information are shredded before disposal. See Teklab Inc. NELAP Policy Client Confidential Information for policy and procedural details discussed during training.

9.2 Client Support

Communication with the client, or their representative, is maintained to provide proper instruction and modification for testing. Technical staff are available to discuss any technical questions or concerns the client may have.

The client, or their representative, may be provided reasonable access to laboratory areas to witness testing.

Delays or major deviations to testing are communicated to the client immediately, where possible, by email or phone by the applicable Project Manager, a member of the Customer Service Team or the Chief Marketing Officer.
Teklab will provide the client with all requested information pertaining to the analysis of their samples.

9.3 Client Feedback

The laboratory seeks both negative and positive feedback following the completion of projects and/or periodically for ongoing projects. Feedback provides acknowledgement, corrective actions where necessary, and opportunities for continuous improvement. Methods of receiving feedback may include conversations with customers (phone or email), website and email questionnaires.

Negative customer feedback is documented as a customer complaint (see Section 10 – "Complaints").

Section 10 - COMPLAINTS

(TNI V1:M2 – Section 4.8)

The purpose of this section is to ensure that customer complaints are addressed and corrected, and done so in a timely manner. This includes requests to verify results or analytical data. Complaints provide the laboratory an opportunity to not only improve client satisfaction but also laboratory operations.

Customer complaints are dealt with on a case by case basis. All customer complaints are documented by the person receiving the complaint and addressed to the responsible manager. Complaints concerning areas such as turnaround time or pricing, are handled solely at the discretion of Teklab management. The Technical Director, Quality Officer or Teklab Management handle all QA/QC complaints. An investigation determines the validity of the complaint. If it is determined that the complaint has merit, the procedures outlined in Section 13 – Corrective Action are utilized. If it is determined that a complaint is without merit, it is documented, and the client is contacted by the appropriate Project Manager.

A complaint such as a concern that data is repeatedly late should be reviewed for preventive action (see Section 14 – "Preventive Action") to minimize a future occurrence.

The laboratory has a documented policy and procedures for the resolution of complaints received from clients or other parties about the laboratory's activities.

The laboratory audits the laboratory activities as required in this manual resulting from a complaint, or any other circumstance that impacts the laboratory's compliance with:

1. The laboratory's policies and procedures;

2. The requirements of this manual; and

3. The quality of the laboratory's tests.

The laboratory documents and maintain records of the complaint/s, the laboratory's subsequent actions, and any corrective actions and/or revised reports.

Section 11 - CONTROL OF NON-CONFORMING ENVIRONMENTAL TESTING WORK

(TNI V1:M2 – Section 4.9)

Non-conforming work is work that does not meet acceptance criteria or requirements. Non-conformances can include departures from standard operating procedures, test methods or unacceptable quality control results (see Section 26 – "Quality Assurance for Environmental Testing"). Identification of non-conforming work can come via customer complaints, quality control, instrument calibration, evaluating consumable materials, staff observation, final report review, management reviews and internal and external audits.

11.1 Exceptionally Permitting Departures from Documented Policies and Procedures

Requests for departures from laboratory procedures are approved by the Technical Director or his/her designee and documented on a case by case basis with the applicable analytical data or final report. Planned departures from procedures or policies do not require audits or investigations.

If a client requests a departure from laboratory procedures, the laboratory does not have to consider that departure as a nonconformance that requires corrective action. However, that nonconformance must be documented as a nonconformance (or however named) that was approved by management.

11.2 Non-Conforming Work

The laboratory policy for control of non-conforming work is to identify the non-conformance and take appropriate action. All employees have the authority to stop work on samples when any aspect of the process does not conform to laboratory requirements.

The responsibilities and authorities for the management of non-conforming work are detailed in SOP#1280 and Section 13 "Corrective Actions". The procedure for investigating

and taking appropriate corrective actions for non-conforming work are also described in Section 13. Section 13.3 outlines the procedures for Technical Corrective Actions. Formal corrective action procedures must be followed for non-conforming work that could reoccur (beyond expected random QC failures) or where there is doubt about the laboratory's compliance to its own policies and procedures.

The investigation and associated corrective actions for non-conforming work involving alleged violations of the company's Ethics and Data Integrity policies must follow the procedures outlined in Section 17 – "Data Integrity Investigations".

The reporting of non-conforming work involving alleged violations of the company's Ethics and Data Integrity policies must be reported to a member of the Management Team. Procedures described in Section 17 – "Data Integrity Investigations" are followed.

The laboratory evaluates the significance of the non-conforming work, and takes corrective action immediately. The customer is notified if their data has been impacted. The laboratory allows the release of non-conforming data only with approval of the Technical Director or his/her designate on a case-by-case basis. Non-conforming data is clearly identified in the final report (see Section 27 – "Reporting the Results").

The discovery of a nonconformance for results that have already been reported to the customer must be immediately evaluated for significance of the nonconformance, its acceptability to the customer, and determination of the appropriate corrective action.

See Section 13 "Corrective Action" and SOP1280 for details on managing non-conforming work.

11.3 Stop Work Procedures

Laboratory supervisors, the Quality Department, and the Management team have authorization to halt non-conforming work at any time. Samples are not analyzed until the problem causing the deviation is corrected. If applicable, the system is monitored until 10 consecutive data points are within control chart limits. After corrective actions successfully eliminate the problem, the corrective actions taken, individual(s) involved, samples affected, and date are noted on corrective action forms and in the appropriate logbooks. Only the Technical Director (or their designee) can authorize the resumption of affected tests. See section 13 for more information on Corrective Actions.

Section 12- IMPROVEMENT

(TNI V1:M2 – Section 4.10)

Improvement in the overall effectiveness of the laboratory management system is a result of the implementation of the various aspects of the laboratory's management system: quality policy and objectives (Section 3 – "Management"); internal auditing practices (Section 15 – "Internal Audits"); the review and analysis of data (Section 26 – "Quality Assurance for Environmental Testing"); the corrective action (Section 13 – "Corrective Action") and preventive action (Section 14 – "Preventive

Action") process; and the annual management review of the quality management system (Section 16 – "Management Reviews") where the various aspects of the management/quality system are summarized, and evaluated and plans for improvement are developed.

Section 13 - CORRECTIVE ACTION

(TNI V1:M2 – Section 4.11)

Corrective action is the action taken to eliminate the causes of an existing non-conformity, defect, or other undesirable situation in order to prevent recurrence. Deficiencies cited in external assessments, internal quality audits, data reviews, customer feedback/complaints, control of nonconforming work or managerial reviews are documented and require corrective action. Corrective actions taken are appropriate for the magnitude of the problem and the degree of risk.

The following section dictates the decision process, procedures and initiation process for corrective actions. It identifies the data used to determine if a problem exists and the actions to be taken.

13.1 General Procedure

The laboratory uses the LIMS database to document and track corrective actions. See SOP#1280 for more information on Corrective Actions.

All deficiencies are first investigated to identify root cause and a corrective action plan is then developed and implemented if deemed necessary. The implementation is also monitored for effectiveness. Teklab technicians, analysts, and supervisors are responsible for initiating corrective actions on routine data reviews where a nonconformance is found that could reoccur (beyond expected random QC failures) or where there is doubt about the compliance of the laboratory to its own policies and procedures. Project Management and the QA Department must be informed immediately if the problem will or may affect client sample results.

Department supervisors are responsible for implementing the corrective action and tracking analysis until the system is in control again. Corrective actions may be entered into the LIMS by any Teklab Personnel. The final corrective action is reviewed by the Quality Department for completeness. The Technical Director and Quality Officer must approve and close out the completed corrective action in LIMS.

13.1.1 Cause Analysis

When failures due to systematic errors have been identified, the first step is an investigation to determination of the root cause(s) of the problem. When there are non-systematic errors, where the initial cause is readily identifiable or an expected random failures (e.g. failed quality control), a formal root cause investigation is not required.

13.1.2 Selection and Implementation of Corrective Actions

After the root cause(s) has been defined (where applicable), a corrective action plan is then selected and implemented (see Section 13.3 "Technical Corrective Actions" and SOP1280 "Corrective Actions and Root Cause Analysis").

Where uncertainty arises regarding the best approach for analysis of issues that require corrective action, applicable personnel will recommend corrective actions that are appropriate to the magnitude and risk of the problem and that will most likely eliminate the problem and prevent recurrence

Teklab Management and the Quality Department shall ensure that corrective actions are discharged within the agreed upon time frame. Corrective Action records are maintained in the LIMS database. The records contain details of both the root cause(s) investigation and the corrective action plan. PDF copies of all signed corrective action reports are stored on the Teklab server.

13.1.3 Monitoring of Corrective Action

The Quality Department and Department supervisors (where applicable) will monitor implementation and documentation of the corrective action to assure that the corrective actions were effective. Internal audits may also be used to verify the effectiveness of corrective actions. See SOP 1280 for more information on monitoring corrective actions.

13.2 Additional Audits

Where the identification of non-conformances or departures from normal lab procedures cast doubt on the laboratory's compliance with its own policies and procedures, or on its compliance with the TNI Standard, the laboratory ensures that the appropriate areas of activity are audited in accordance with Section 15 – "Internal Audits" as soon as possible.

13.3 Technical Corrective Action

Sample data associated with a failed quality control are evaluated for the need to be reanalyzed or qualified. Unacceptable quality control results are documented, and if the evaluation requires root cause analysis, the cause and solution are recorded (see Section 11 "Control of Nonconforming Environmental Testing Work"*).*
Analysts routinely implement corrective actions for data with unacceptable QC measures. First level correction may include re-analysis without further assessment. If the test method SOP addresses the specific actions to take, they are followed. Otherwise, corrective actions start with assessment of the cause of the problem.

Corrective action procedures for non-systematic errors or expected random failures are detailed in SOP#1280. All corrective actions are stored in the LIMS and on completion are stored in PDF format on the Teklab server. Corrective actions for non-conformances that may reoccur (beyond expected random QC failures) or where there is concern that the

laboratory is not in compliance with its own policies and procedures require that a Corrective Action to be completed (see Section 13.1).

Whenever possible, samples are only reported if all quality control measures are acceptable. If a sample associated with unacceptable quality control measures must be reported, the deviation is clearly documented in the case or sample narrative of the final report. Whenever possible, corrective actions are undertaken to bring the system back in control.

Supervisors, the Quality Department and/or Management may review Corrective Action responses and suggest improvements, alternative approaches, and procedures where needed.

13.4 Data Evaluation

Teklab tracks the precision and accuracy of each analysis through the use of control charts. These control charts are based on the Relative Percent Difference (RPD), Laboratory Control Sample recoveries (LCS) and Matrix Spike recoveries (MSR). The RPD, LCS and MSR are calculated for each run of analysis. Independently verified Quality Control Samples (QC samples) also are used to determine if the analysis is in control. If the data exceeds the control chart or manufacturer specified limits, the analysis is checked for calibration, standard quality and analytical technique, and the analysis is stopped and corrective action taken.

Section 14 - PREVENTIVE ACTION

(TNI V1:M2 – Section 4.12)

The preventive action plan establishes the process to investigate and track potential non-conformances in Teklab Inc's Quality Management System. The foundation of preventive action is written and accessible documentation of actions taken and subsequent monitoring to determine that preventive actions have been implemented and documented.

Preventive Action Plan

Preventive action plans are part of a proactive process for improvement rather than a reaction to problems or complaints. Preventive action includes the utilization of measurable quality objectives and requirements such as validation and review processes, audits (internal and external), management review, feedback and complaints, and quality system requirements to detect, analyze and remove potential causes of non-conformance. All personnel have the authority to offer suggestions for improvements and to recommend preventive actions, however management is responsible for the actual implementation of preventive action.

The preventive action proactive process consists of:

- reviewing potential problems; deciding the potential cause of the problems;
- deciding the course of action to eliminate the problem from occurring;

- implementing the plan; and then ensuring or verifying the action solved the problem and/or is effective over time.
- Once identified, Preventive action plans are initiated by starting a corrective action in the LIMS.

Monitoring the effectiveness of the preventive action includes, but not limited to, the following:

- control charts;
- performance studies;
- training;
- customer input;
- employee suggestions and input;
- audits;
- management reviews;
- staff meetings
- Scheduled instrument maintenance

Needed improvements and/or potential sources of non-conformance (either technical or Quality related) are identified. If preventive action is required, action plans shall be developed, implemented and monitored to reduce the likelihood of the occurrence of such non-conformances and to take advantage of the opportunities for improvement. A corrective action in the LIMS shall be initiated once a potential nonconformity is identified. Preventive actions shall be monitored by the supervisor of the relevant department (or their designee); the Quality Department and management. Weekly Management meetings, as part of the management review program, will also monitor the status of preventive action plans. The Quality Assurance Officer is responsible for follow-up and ensuring the action plans are completed.

Teklab's laboratory management reviews the Quality Assurance Plan to ensure its continuing suitability, effectiveness, and compliance with TNI Standards at least annually. This review is documented and includes at least the following:

- Quarterly reports from the quality department concerning the quality system and its testing and calibration activities
- Resources and training
- Reports from any management and supervisory personnel
- Outcomes of any recent internal audits
- Assessments by external bodies
- Results of interlaboratory comparisons or proficiency tests
- Changes in the volume or type of work undertaken
- Feedback from clients
- Complaints
- Corrective and preventative actions

The outcome of this review is to introduce any necessary changes or improvements in the quality system and laboratory operations. A record of this review, its findings and the resulting actions/changes is maintained in the management review file and is archived in accordance with this manual.

A preventative maintenance program is maintained for each instrument. Any equipment found to be out of calibration or indicating problems is taken out of service until the problems are corrected. Records are maintained which document preventive maintenance and repairs to instrumentation and general laboratory equipment. Equipment failures or problems are noted as follows: the nature of the problem, corrective actions taken, the person performing corrective actions and the date. See Section 22 and SOP 1210 for additional information on equipment maintenance.

LIMS Preventive Action
Teklab has a preventive system to plan and test deployments of LIMS modifications to avoid or minimize the potential disruption associated with a LIMS failure.

- Production database: the live LIMS database used throughout the laboratory
- Development database: allows the application programmer to evaluate modifications to the LIMS without affecting live data. These changes are then re-evaluated through test databases.
- Test database: Test databases do not use real time data. They are distributed, by the applications programmer, to designated members of staff. These databases allow modifications to be assessed for potential conflicts and/or errors before updates are finally integrated into the production LIMS.

Section 15 - AUDITS

(TNI V1:M2 – Section 4.14)

15.1 Internal Audits

Audits measure laboratory performance and verify compliance with the TNI Standard, certification requirements, and management system requirements; including analytical methods, SOPs, the Quality Manual, ethics policies, data integrity, and other laboratory policies.

Audits provide management with an on-going assessment of the management system. They are also instrumental in identifying areas where improvement in the management system will increase the reliability of data. Results of the audits (and any associated corrective actions) are reported to the Teklab Board of Directors at least annually.

On a weekly basis,, Teklab, Inc. management, reviews the day to day implementation of policies and procedures that affect the Quality System (see section 16 Management Review and Section 14 Preventive Action).

It is the responsibility of the Quality Officer to plan and organize audits as required by the schedule and requested by management. These audits are carried out by trained and qualified personnel who are, wherever resources permit, independent of the activity to be audited.

These annual audits examine the above stated items as well as the following:

- Personnel training
- SOPs
- Log-In and chain of custody procedures
- Housekeeping
- Balance and micropipette calibrations
- Refrigerator, oven and incubator temperatures
- Fume hood operation and face velocity determinations
- Reagent, solvent and standard documentation
- Instrument maintenance logs
- Corrective action procedures and reports
- Data collection, reduction, validation and reporting
- Waste disposal

The Quality Officer, or their representative, is also responsible for incorporation and/or documentation of changes, including but not limited to, changes in the approved test methods, changes in laboratory equipment, or changes in laboratory personnel. The area audited, the audit findings, and corrective actions are recorded. Audits are reviewed after completion to assure that corrective actions were implemented and effective.

In addition to scheduled internal audits, it may sometimes be necessary to conduct special audits as a follow-up to corrective actions, PT results, complaints, regulatory audits or alleged data integrity issues. These audits or investigations address specific issues. Review of their effectiveness may occur during the next scheduled audit unless findings are observed that cast doubt on the validity of data; in which case the review must take place as soon as possible.

15.2 External Audits

Management shall ensure that all areas of the laboratory are accessible to auditors as applicable and that appropriate personnel are available to assist in conducting the audit.

All records must be made available to Teklab's Accreditation Bodies.

15.2.1 Confidential Business Information (CBI) Considerations

During on-site audits, on-site auditors may come into possession of information claimed as business confidential. A business confidentiality claim is defined as "a claim or allegation that business information is entitled to confidential treatment for reasons of business confidentiality or a request for a determination that such information is entitled to such treatment." When information is claimed as business confidential, the laboratory must place on (or attach to) the information at the time it is submitted to the auditor, a cover sheet, stamped or typed legend or other suitable form of notice, employing language such as "trade secret", "proprietary" or "company confidential". Confidential portions of documents otherwise non-confidential must be clearly identified. CBI may be purged of references to client identity by the responsible laboratory official at the time of removal from the laboratory. However, sample identifiers may not be obscured from the information.

15.3 Performance Audits

Performance audits may be Proficiency Test Samples, internal single-blind samples, double-blind samples through a provider or client, or anything that tests the performance of the analyst and method.

Proficiency Test Samples are discussed in Section 26 – "Quality Assurance for Environmental Testing".

15.4 System Audits

The Laboratory's management system is audited though scheduled management reviews. Refer to Section 16 "Management Review" for more information.

15.5 Handling Audit Findings

Internal or external audit findings are responded to within an agreed time frame. The response may include action plans that could not be completed within the response time frame. A completion date is established by management for each action item and included in the response.

The development and implementation of corrective actions for findings is the joint responsibility of the Quality Department and the relevant Department supervisor (where applicable). Corrective actions are documented through the corrective action process described in Section 13 – "Corrective Actions".

Where the results of the internal audit indicate that operations or procedures are not in compliance, corrective actions must be taken. These corrective actions may include termination of all applicable analysis until the source of the problem can be identified and corrected. Laboratory supervisors, the Quality Department, and the Management team have authorization to halt non-conforming work at any time. All affected samples must be identified and clients whose samples were affected must be notified, in writing, within one week of the problem identification. The analysis cannot be resumed until the problem is demonstrated to be corrected (by the analysis of samples of known concentration), the reason for the problem and all corrective actions are documented and the Technical Director (or their designee) approves the resumption of analysis. All investigations that result in findings of inappropriate activity are documented and include any disciplinary actions involved, corrective actions taken, and all appropriate notifications of clients. See Section 17 (Data Integrity Investigation) for additional procedures for handling inappropriate activity.

Section 16 - MANAGEMENT REVIEWS

(TNI V1:M2 – Section 4.15)

16.1 Management Review Topics

The following are reviewed (where applicable) to ensure their suitability and effectiveness:

16.2 Procedure

Laboratory management shall continuously review the Quality Assurance Plan to ensure its ongoing suitability, effectiveness, and compliance with NELAP/TNI Standards. The review process includes (but is not limited to) the following:

- Customer service meetings
- Weekly management meeting – attended by management, supervisors, department representatives including the QA department. Minutes of these meetings are recorded by a member of the management team.
- Board of Director meetings

Staff meetings are part of the overall quality system and provide comprehensive departmental interaction that can aid in the planning and co-ordination of activities that may have a laboratory wide impact. Suggested improvements to the quality system, as well as potential sources of non-conformance are discussed as part of the laboratory Preventive Action Plan. The results of these meetings are documented and are incorporated into the laboratory planning system and include the goals, objectives and action plans for the coming year.

Management shall also receive monthly reports from the Quality Department regarding the status of Quality issues including (but not limited to) safety checks, current corrective actions and required laboratory SOP reading. When an ongoing problem is identified in the Quality System that requires attention; it is forwarded to management who assists the Quality Department in monitoring the problem and ensures the issue is resolved in a timely manner where possible.

Section 17 - DATA INTEGRITY

(TNI V1:M2 – Section 4.16)

In addition to covering data integrity investigations, this Section covers all topics related to ethics and data integrity policies, procedures and training.

Teklab Inc is committed to ensuring the integrity of its data and providing valid data of known and documented quality to its clients. The elements in Teklab's Ethics and Data Integrity program include:

- Documented data integrity procedures signed and dated by top management.
- An Ethics and Data Integrity Statement (included in job description) signed by all management and staff upon hiring.

- An Ethics and Data Integrity Statement signed after annual data integrity training. Teklab's Ethics and Data Integrity Policy can be found in the Quality Documents folder on the Teklab Server.
- Appendix A of this Quality Manual.
- Procedures for confidential reporting of alleged data integrity issues.
- An audit program that monitors data integrity (see Section 15 – "Audits") and procedures for handling data integrity investigations and client notifications.

17.1 Ethics and Data Integrity Procedures

The Ethics and Data Integrity Policy provides an over view of the program. Written procedures that are considered part of the Ethics and Data Integrity program include:

- Teklab's Ethics and Data Integrity Policy: "Ethics, Legal Responsibility, & Conflict of Interest" (Appendix A)
- Corrective action procedures (SOP#1280 and Section 13 of this QAM)
- Procedure for Data Integrity Investigations (See Section 17.4 Investigations)
- Data Integrity training procedures (See Section 17.2 Training)
- Internal audit procedures (SOP#1270 and See Section 15 of this QAM)

17.2 Training

Data integrity training is provided as a formal part of new employee orientation and a refresher is given annually for all employees. Training courses in data integrity, ethical and legal responsibilities, include the potential punishments and penalties for improper, unethical or illegal actions. Attendance for required training is mandatory and is monitored through a signature attendance sheet.

Evidence must be on file that each employee has read, acknowledged and understood their personal, ethical and legal responsibilities including the potential punishments and penalties for improper, unethical or illegal actions.

Data integrity training emphasizes the importance of proper written narration on the part of the analyst with respect to those cases where analytical data may be useful, but are in one sense or another partially deficient. Topics covered are provided in writing and provided to all trainees.

17.3 Confidential Reporting of Ethics and Data Integrity Issues

Confidential reporting of data integrity issues is assured through the following procedures:

- Teklab Inc's Ethics and Data Integrity Policy ("Ethics, Legal Responsibility, & Conflict of Interest" see Appendix A)
- Procedures for reporting Data integrity and Ethics issues outlined in initial and ongoing annual training. Training slides are available in the Quality Documents folder on the Teklab server.

17.4 Investigations

All investigations resulting from data integrity issues are conducted confidentially. They are documented and notifications are made to clients who received any negatively affected data that did not meet the client's data quality requirements. Procedures for investigation are detailed below:

- Any Teklab personnel who learn of a non-compliance related incident through the reporting protocol should immediately inform a member of Teklab Management verbally or in writing.
- Any ethical matters discussed with management personnel will remain confidential within Teklab's management. In cases involving possible violations of the law or TNI regulations, Teklab may be required to reveal information to the proper authorities.
- Teklab management is responsible for determining the seriousness of the incident.
- Teklab's management team shall thoroughly investigate each incident and retain all evidence and records.
- Investigation Documentation Includes:
    - Date of investigative Report
    - Date Incident First Reported
    - Date of Incident Occurrence
    - Type of Issue / Incident
    - Full Description of Issue
    - Description of Investigation
    - Description of Resolution

Section 18 – PERSONNEL AND TRAINING

(TNI V1:M2 – Section 5.2)

Teklab Inc employs competent personnel based on education, training, experience and demonstrated skills as required. The laboratory's organization chart can be found in Appendix B.

18.1 Overview

All personnel are responsible for complying with all quality and data integrity policies and procedures that are relevant to their area of responsibility.

All personnel who are involved in activities related to sample analysis, evaluation of results or who sign test reports, must demonstrate competency in their area of responsibility. Appropriate supervision is given to any personnel in training and the trainer is accountable for the quality of the trainees work. Personnel are qualified to perform the tasks they are responsible for based on education, training, experience and demonstrated skills as required for their area of responsibility.

The laboratory provides goals with respect to education, training and skills of laboratory staff. These goals are outlined in the 1031 SOP and the employee's job description. Training needs are identified at the time of employment and when personnel are moved to a new position or new responsibilities are added. Ongoing training, as needed, is also provided to personnel in their current jobs. The effectiveness of the training must be evaluated before the training is considered complete.

A log of names, initials, and signatures for all individuals who are responsible for signing or initialing any laboratory records is maintained and stored in hard copy by the Quality Department.

18.2 Job Descriptions

Job descriptions are available for all positions that manage, perform, or verify work affecting data quality, and are located in each employee's electronic training file located on the Teklab Inc Server. These files are stored securely. An overview of top management's responsibilities is included in Section 3 – "Management".

18.3 Training

All personnel must perform a successful Initial Demonstration of Capability prior to initiation of assigned analysis (See SOP#1031 for IDOC and Certification Statement Requirements).

All new personnel are trained on their applicable analysis by an experienced Teklab employee. Additional training needs for each individual are determined through review of their resume and work experience and one on one interaction with the individual's supervisor and/or trainer. All personnel must successfully complete an IDOC prior to termination of training. Ongoing training is determined on a case by case basis by the individual's supervisor or a representative of the Quality Department. See SOP#1031 and Section 19 of this QA Manual for more information on IDOCs/ADOCs.

The Quality Department is responsible for tracking all initial introductory training. Department Supervisors are responsible for initiating, coordinating and monitoring on the job training for analysts within their department. Training records maintained by the Quality Department are stored securely on the Teklab Inc Server and include personnel qualifications, education, experience and training pursuant to the requirements set forth in sections 4, 5 and 19 of this Quality manual. Training files are considered up-to-date when the following items are present:

- Certification that the employee has completed initial safety and quality training.
- Documentation of Initial Demonstration of Capability (IDOC).
- Certification that the employee has read, understood, and is using the latest version of the laboratory's in-house quality documentation, which relates to their job responsibilities.
- Certification that the technician has read, understood and agreed to perform the most recent version of the approved standard operating procedure.

- Documentation of academic education and of training courses or workshops on specific equipment, analytical techniques, or laboratory procedures.
- Job description signed by the employee that includes an agreement that they are aware of their ethical and legal responsibilities and will avoid any conflict of interest.
- Documentation of Annual Demonstration of Capability (ADOC) on applicable methods.

18.3.1 Ethical/Legal Responsibilities and Conflict of Interest

Teklab is organized so that confidence in its independence of judgment and integrity are maintained at all times and has processes to ensure that its personnel are free from any commercial, financial and other undue pressures which might adversely affect the quality of their work. Teklab has a proactive program for prevention and detection of improper, unethical or illegal actions. See Appendix A for Teklab's Ethics and Data Integrity Policy and Section 17 for more on Data Integrity.

All new personnel are trained during orientation and all personnel are trained, at least annually, on data integrity, ethical behavior, legal responsibilities and conflict of interest. Each Teklab job description includes an agreement with the employee that they are aware of their ethical responsibilities and will avoid any conflict of interest. See also Teklab Inc. NELAP Policy Ethics, Legal Responsibility, & Conflict of Interest for policy discussed during training.

Teklab Inc's legally responsible parties are the signatories in Section 1 (Introduction and Scope) of the Quality Manual.

18.3.2 Training for New Staff

All new staff members are given introductory training and orientation upon arrival. The training is documented on a training attendance sheet that outlines what was covered during the training sessions.

Training topics include (but not limited to):

- Data Integrity training
- Safety training
- Quality training

Initial Laboratory Training:

- All documentation involved with a new and unfamiliar task is read and understood by the trainee. Reading forms are initial and dated by the employee confirming that they have read and understood the material.
- Training is under the direct supervision of a qualified analyst.
- During the time the analyst is in training, the trainee may sign laboratory notebooks, logbooks, worksheets, etc. But they must be co-signed by the trainer who is responsible for the data generated.

- The trainee demonstrates competency in the new task before they can operate independently. The competency for a test method is accomplished by a successful IDOC as defined in Section 19 of this Quality Manual.
- Training documentation is maintained in the employees training record, which is stored electronically on the Teklab Inc server.

18.3.3 Ongoing Training

The employee attests, through signature, that they have read, understood, and agree to perform the latest version of any SOPs or policies that the analyst is responsible for following:

- Annual refresher Data Integrity Training.
- Annually, the analyst shows continued proficiency in each method they perform (see Section 19 on IDOC s and ADOCs)
- Attending training related to job function as applicable.
- Maintaining training documentation in the employees training record.
- Monthly Safety training.
- Monthly Quality training.

18.3.4 Education/Experience

Job descriptions for all Teklab personnel are maintained by the quality department. Each employee must read and sign their job description upon hiring or changing positions within the laboratory. The signed job descriptions are placed in each employees training file.

18.3.4.1
The laboratory ownership shall designate at least one individual as LABORATORY DIRECTOR. The laboratory director shall have overall responsibility for the technical operation of the laboratory. The laboratory director shall also:

1) Hold a minimum of a bachelor's degree in chemistry or a related science or have completed enough course work in chemistry to equal a minor in chemistry.
2) Have at least 5 years non-academic analytical experience and at least 2 years experience managing a laboratory.
3) The laboratory director shall be an employee of the laboratory and on-site at least 50% of the time.
4) The laboratory director shall be responsible for:
   a) analytical and operational activities of the laboratory;
   b) supervision of personnel employed by the laboratory;
   c) assuring that sample acceptance criteria are met, that samples are logged into the sample tracking system, that samples are properly labeled and that samples are properly stored;
   d) the production and quality of data reported by the laboratory;
   e) designating laboratory supervisors; and
   f) designating at least one individual as the quality assurance officer and or technical director.

18.3.4.2

The laboratory director and/or ownership shall designate at least one individual as the Technical Director (or however named). These persons shall also:

1) Hold a bachelor's degree in the chemical, environmental, biological sciences, physical sciences or engineering, with at least twenty-four (24) college semester credit hours in chemistry
2) Have at least two (2) years of experience in the environmental analysis of representative inorganic and organic analytes for which the laboratory seeks or maintains accreditation. A master's or doctoral degree in one of the above disciplines may be substituted for one (1) year of experience.
3) Have a general knowledge of the analytical methods for which data review is performed.
4) Be responsible for:
   A) Responsible for standards of performance in quality control/quality Assurance and;
   B) Assuring the validity of the methodologies and technologies of the analyses performed and the data generated in the laboratory to assure reliable data and;
   C) Direct laboratory staff to fulfill all essential functions necessary to assure legally defensible data and Quality Assurance following TNI Quality Systems requirements.

See the TNI Standard V1M2 Section 5.2.6.2 for a list of Technical Director qualification exceptions.

18.3.4.3

The laboratory director and/or ownership shall designate at least one individual as the Quality Officer. These persons shall also:

1) Hold a bachelor's degree in chemistry or related sciences or have completed enough course work to equal a major in science; and/or
2) Have a minimum of one year experience as an analyst in a laboratory and/or
3) Have documented training in quality assurance and quality control (QA/QC) and at least 3yrs of experience in a Quality Assurance setting
4) Where applicable, have functions independent from laboratory operations;
5) Have a general knowledge of the analytical methods for which data review is performed;
6) Be an employee of the laboratory, but free from outside or managerial influence, so that they may objectively perform assessments and evaluate data, and
7) Be responsible for
   A) coordinating QA/QC procedures and analytical data review procedures in the laboratory;
   B) notifying the management of deficiencies in the quality system and monitor corrective action;
   C) verifying that the requirements of TNI and IL ELAP are met; and
   D) overseeing internal audits of the entire laboratory operation annually

18.3.4.4
The laboratory director and/or ownership shall designate at least one individual as LABORATORY SUPERVISOR. The laboratory supervisor(s) shall:

1) Hold a minimum of a bachelor's degree in chemistry or related sciences or have completed enough course work in chemistry to equal a major in chemistry, or;
2) Have had a minimum of five years experience in the analyses pertaining to the applicable fields of testing, and;
3) Be an employee of the laboratory and
   Be responsible for;
   - A) supervising analysts, analysts-in-training and technicians in the area of analytical responsibility;
   - B) reviewing and verifying data produced by an analyst-in-training; and
   - C) reviewing and verifying data produced by a technician.

The laboratory ownership may designate a laboratory supervisor as laboratory director. The Laboratory director/supervisor must fulfill the requirements of sections 18.3.4.1 and 18.3.4.4 above.

18.3.4.5
The laboratory director or supervisors shall designate the ANALYSTS. Analysts shall:

1) Hold a bachelor's degree in chemistry or related sciences or have completed enough course work in chemistry to equal a major in chemistry; or
2) Have had a minimum of two years experience in the analysis pertaining to the applicable fields of testing for which the laboratory is accredited; or
3) For those instruments listed in 18.3.4.6 below:
   - A) either:
     - i) have satisfactorily completed a minimum of four hours training that is offered by the equipment manufacturer, a professional organization, a university or another qualified training facility; or
     - ii) served a two-week period of apprenticeship under an experienced analyst; and
   - B) After appropriate training pursuant to subsection 18.3.4.5(3A), perform the Initial Demonstration of Capability (IDOC) study as specified in Section 19 of this Quality Manual and the TNI 2009 Standard (See SOP1031 for IDOC procedure); and
   - C) Have on file annual documentation indicating one of the following:
     - Acceptable performance on a blind sample,
     - Another Initial demonstration of capability (IDOC),
     - four consecutive in-control laboratory control samples,
     - a documented process of analyst review using quality control (QC) samples
     - a certification that the technician has read, understood and agreed to perform the most recent version of the method, the approved method or standard operating procedure.

   Such documentation shall demonstrate that the required training is up-to-date.

4) Be an employee of the laboratory, contract employee, or contracted temporary agency staff; and
5) Be responsible for reviewing and verifying data produced by analysts-in-training or technicians when a laboratory supervisor does not review and verify the data.

The Technical director or supervisors may designate individuals as ANALYSTS-IN-TRAINING. Analysts-in-training must at least meet the requirements in subsection 18.3.4.5.1 or 18.3.4.5.2 and be in the process of meeting the requirements of subsection 18.3.4.5 (3a). A laboratory supervisor, analyst or data auditor shall review and verify all data produced by analysts-in-training.

18.3.4.6
Analyses performed utilizing Automated Colorimetric (AC), Gas Chromatograph (GC), Gas Chromatograph/Mass Spectrometer (GC-MS), Inductively Coupled Plasma (ICP), Inductively Coupled Plasma Mass Spectrometer (ICP-MS), are only acceptable for the purposes of this manual when performed by a laboratory employee who meets the requirements in subsection 18.3.4.5 above.

18.3.4.7
A TECHNICIAN is a person who holds a minimum of a high school diploma or its equivalent. Any exceptions to this must be noted in the technicians job description. A technician must:

1) either:
   A) Have satisfactorily completed a minimum of four hours training that is offered by the equipment manufacturer, a professional organization, a university or qualified training facility; or
   B) Served a two-week period of apprenticeship under an experienced analyst or technician;
2) After appropriate training pursuant to subsection 18.3.4.7(1), perform the Initial Demonstration of Capability (IDOC) study as specified in Section 19 of this Quality Manual and the TNI 2009 Standard (See SOP1031 for IDOC procedure); and;
3) Have on file annual documentation indicating one of the following:
   - Acceptable performance on a blind sample,
   - another Initial Demonstration of Capability (IDOC),
   - four consecutive in-control laboratory control samples,
   - a documented process of analyst review using quality control (QC) samples
   - a certification that the technician has read, understood and agreed to perform the most recent version of the method, the approved method or standard operating procedure.

   Such documentation shall demonstrate that the required training is up-to-date.

18.3.4.8

A person may be allowed to serve in any capacity as defined in subsections 18.3.4.1 through 18.3.4.7 when the person does not meet the training, educational, or experience requirements for the position under one of the following conditions:

A) Experience as an offset for educational requirements (one year of experience performing the applicable duties equals one year of education);

B) Education as an offset for experience requirements (one year of applicable education beyond a bachelor's degree equals one year of experience);
C) For analysts and technicians, have six months laboratory experience as offset for the training and apprenticeship requirements set forth in 18.3.4.5 or 18.3.4.7 as applicable. Laboratory experience must be in the analytical technique for which the offset is requested.
D) For analysts and technicians, demonstration of ability to properly perform representative test procedures.

Section 19 - IDOC & ADOC

(TNI V1:M4 – Section 1.6)

19.1 Initial Demonstration of Capability (IDOC)

The IDOC is a procedure to establish the ability of the analyst to generate analytical results of acceptable accuracy and precision.

Before reporting any data with a given method, a satisfactory IDOC is performed. Thereafter, each analyst demonstrates continuing proficiency through the procedures outlined in Annual Demonstration of Capability below.

Each analyst performs an IDOC prior to initiation of assigned sample analysis, unless the IDOC is not applicable to the approved test method, such as total volatile solids, pH, color, odor, temperature, dissolved oxygen or turbidity. Thereafter, continuing demonstration of method performance is accomplished per the QCI for the method. IDOC studies are repeated whenever there is a change in analyst, instrument type, or approved test method that requires a change to the procedure in the SOP..

Teklab documents the completion of each demonstration of capability on a certification statement form. IDOCs are stored in the Teklab LIMS, and documented in the Employee Training Database (on the Teklab server), and in the employee's electronic training files which are stored on the Teklab Inc Server. All records related to the demonstration are retained.

IDOCs (Demonstration of Capability) are performed:

- Before using any method
- Each time there is a change in instrument type, personnel or *method and
- If the laboratory or analysts has not performed the method in a twelve-month period.
- When an analyte not currently found on the laboratory's list of accredited analytes is added to an existing accredited method, an IDOC shall be performed for that analyte

*Changes in method are assessed by the Technical Director (or their designee) and the applicable laboratory Supervisor. Changed deemed as significant require an IDOC to be performed.

The IDOC(s) for each analyst is stored in the Teklab LIMS, and documented in the Employee Training Database, in the employee's electronic training file and on employee electronic Demonstration of Capability (DOC) Forms which are all stored on the Teklab Inc Server. The DOC identifies the analyst(s) involved in preparation and/or analysis; matrix; analyte(s), class of analyte(s), or measured parameter(s); the method(s) performed; the laboratory-specific SOP used for analysis; and the date(s) of analysis. The LIMS and server copy of the IDOC also contain a summary of the results used to calculate the mean recovery and standard deviations.

All raw data, preparation records, and calculations for each IDOC are retained and are available for review.

IDOC procedures are outlined in SOP#1031 - IDOCs and ADOCs

Interim Data Generation
Data produced by analysts and instrument operators while in the process of obtaining the required training or experience is acceptable when reviewed and validated by a fully qualified analyst or the immediate supervisor.

19.2 Annual Demonstration of Capability (ADOC)

After the initial demonstration of capability is completed, on-going proficiency is maintained and demonstrated at least annually. Each analyst is expected to consistently meet the QC requirements of the method, the laboratory SOP, client requirements and/or the TNI Standard. ADOCs are documented in the Employee Training Database (by the Quality Department), and in the employee's electronic training files which are stored on the Teklab Inc Server. All records related to the demonstration are retained.

Teklab can use the following procedures to demonstrate ongoing DOC:

a) acceptable performance of a blind sample (single blind to the analyst);
   Note: Successful analysis of a blind performance sample on a similar method using the same technology (e.g., GC/MS volatiles by purge and trap for Methods 524.2, 624 or 5030/8260) would only require documentation for one of the tests.
b) another initial DOC;
c) at least four (4) consecutive laboratory control samples with acceptable levels of precision and accuracy. The laboratory shall determine the acceptable limits for precision and accuracy prior to analysis. The laboratory shall tabulate or be able to readily retrieve four (4) consecutive passing LCSs for each method for each analyst each year;
d) a documented process of analyst review using QC samples. QC samples can be reviewed to identify patterns for individuals or groups of analysts and determine if corrective action or retraining is necessary;

e) if a) through d) are not technically feasible, then analysis of real-world samples with results within a predefined acceptance criteria (as defined by the laboratory or method) shall be performed.

Section 20 - ACCOMODATIONS AND ENVIRONMENTAL CONDITIONS

(TNI V1:M2 – Section 5.3)

20.1 Environmental

Prior to the initiation of new work, the laboratory management reviews the work to ensure that it has the appropriate facilities and resources to accomplish the work. Management also provides adequate workspaces to ensure an unencumbered work area for performing the approved test methods.

The laboratory is designed, operated and arranged so that incompatible analyses are separated and the potential for sample contamination is minimized. Such environmental conditions include:

- The volatile organic laboratory has a separate ventilation system. Access to the volatile organic laboratory is limited to use only as necessary. Air volatile analysis is isolated at a separate facility located at the Teklab Air Laboratory.

- The microbiology lab has access restricted to only microbiology and quality assurance department personnel. All fecal coliform analyses are performed at a separate time from any other microbiology analysis, with proper disinfection of the area between analysis times.

- The laboratory has one exhaust hood for sample receipt, three for inorganic analysis, one for metals prep, and three for organic prep. Organic analysis also has three fume absorbers.

Environmental conditions are monitored as required by the relevant specifications, methods and procedures or where they influence the quality of the results. Environmental tests are stopped and corrective actions are taken and documented when the environmental conditions jeopardize the results of environmental tests.

New laboratory facilities shall be designed, operated and arranged so that all of the specifications of this section are met.

20.2 Work Areas

Teklab's facilities are maintained to permit the production of analytical data that meets the data quality of objectives of the applicable environmental regulation. Areas that affect the quality of laboratory activities are defined as any area within the physical boundaries of the building, except for the restrooms, lunch room and all hallways.

Good housekeeping is stressed. Employees must keep work spaces, instrumentation, and equipment clean and unencumbered.

The laboratory procedure for good housekeeping includes such measures as

- A part-time janitor
- periodic dedicated clean up days
- employees responsible for cleanliness of their own work area

20.3 Floor Plan

Floor plans can be found in Appendix C of this QA Manual.

20.4 Building Security

Areas that affect the quality of laboratory activities are secure areas and access is limited to Teklab, Inc. employees, anyone else entering these areas must be escorted by a Teklab, Inc. employee. Access to the laboratory facilities, during non-business hours, is controlled through a monitored building alarm system. The parking lot is also under video surveillance.

Section 21 - ENVIRONMENTAL METHODS AND METHOD VALIDATION

(TNI V1:M2 – Section 5.4 and Sections 1.4, 1.5 and 1.6 of Technical Modules TNI V1:M 3-7)

Methods and/or procedures are available for all activities associated with the analysis of the sample including preparation and testing. For purposes of this Section, "method" refers to both the sample preparation and determinative methods.

All methods are in accordance with applicable professional technical standards, U.S. & Illinois EPA requirements. Teklab uses only methods mandated by legal requirements, recognized published methods or methods developed and validated by Teklab. Methods are not used for reporting results until competence for each matrix is demonstrated. Personnel are not permitted to depart from approved procedures without the proper validations and approval of the Technical Director and/or the Quality Assurance Officer, and approval of the client.

All analytical methods performed at Teklab have internally written Standard Operating Procedures (SOPs) or are copies of published methods, with any changes or selected options documented. Methods are based on the applicable reference method or methods (i.e. SW846, EPA 600, Standard Methods, NIOSH, IDPH, etc.).

Before being put into use, a test method is confirmed by a method validation process.

21.1 Method Selection

The laboratory selects methods that are appropriate to the customer needs. When the regulatory authority mandates or promulgates methods for a specific purpose, only those methods will be used.

If a method proposed by a customer is considered to be inappropriate or out-of-date, the customer is informed and the issue resolved before proceeding with analysis of any samples (see Section 6 – Review of Requests, Tenders and Contracts). If a method is not specified by the customer, an appropriate method will be selected using the process outlined below:

When a method is not specified by the customer, or the proposed method is inappropriate, the laboratory will select a method that is appropriate to the end use of the data. The laboratory selects methods that are appropriate to the customer needs. The customer will be informed of the selected method and must approve its use before being used to report data. When the regulatory authority mandates or promulgates methods for a specific purpose, only those methods will be used (see Section 6 – Review of Requests, Tenders and Contracts).

If there is not a regulatory requirement for the parameter/method combination, the parameter/method combination need not be validated as a non-reference method if it can be analyzed by another similar reference method of the same matrix and technology. (TNI V1 M4 1.4 - Method Selection)

21.2 Method Validation

Method Validation (MV) studies are used to verify the analytical procedure at different concentrations. An MV study is performed for each new analysis or test method and whenever a modification in methodology occurs that could affect the quantitation range of the analysis. MV studies include the determination of the following:

- sMDL (statistical method detection limit) – A statistical number that represents the minimum concentration of 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 (40CFR Part 136, Appendix B).

- MDL or LIMS MDL (method detection limit) – A laboratory determined number that quantifies the minimum amount of an analyte that can be detected by the method procedure. The number is used in LIMS and appears on final reports and will hereafter be referred to as the MDL. The MDL is used to accommodate variances in multiple instrument sMDL determinations and to minimize ongoing adjustments to the reporting limits.

- PQL (practical quantitation limit) – The lowest level or concentration of an analyte that can be reported with a specific degree of confidence. For test methods utilizing a calibration curve, the PQL is equivalent to the lowest calibration standard. The PQL must be greater than the sMDL and no greater than ten times the MDL.

- Precision and Bias of the method - The following steps should be utilized when performing an MV study (see SOP 1030 for detailed instructions):

1. Determine the sMDL and MDL with an initial MDL study. MDL determination is not required if spiking solutions or QC samples are not available (e.g., temperature, pH, Conductivity).

2. Validate the MDL by qualitative identification of the analytes:

    a. Single analyte tests – Analyze a QC sample containing the analyte at 2-3 times the MDL.
    b. Multiple analyte tests – Analyze a QC sample containing the analytes at 1-4 times the MDL.

3. Determine the PQL. The PQL may be set at 1-10 times the MDL or equal to the lowest standard of the calibration curve. PQL determination is not required if spiking solutions or QC samples are not available.

4. Validate the PQL by analyzing a QC sample containing the analyte at 1-2 times the PQL. PQL validation is not required if the precision and bias of the method is evaluated at the PQL.

5. Evaluate the Precision and Bias of the method using the process defined by the method. If no evaluation process is defined, one of the following may be used:

    a. For reference methods, see SOP 1031 for the DOC (Demonstration of Capability) procedures.
    b. For non-reference methods, precision and bias are determined across the calibration range through the analysis of low, mid-range, and high QC samples.

MDL studies are used to determine or validate the MDL at least annually, or as required by the method, and whenever a modification in methodology occurs that could affect the quantitation range of analysis.

1. Prepare a sample, in the appropriate matrix, in which the concentration of the analyte(s) of interest is at or below the PQL. Analyze eight aliquots of the sample through the entire analytical procedure per SOP 1030.

2. If necessary, the MDL study may be verified by following steps 2 and 4 above (validation of the MDL and PQL).

<u>Selectivity</u>

Selectivity is evaluated by following the checks established within each method. Examples are mass spectral tuning, second column confirmation, ICP inter-element interference checks, chromatograph retention time windows, instrument blanks, spectrochemical absorption or fluorescence profiles, co-precipitation evaluations, electrode response factors, and correlation coefficients. The acceptance criteria for mass spectral tuning is documented in the appropriate method SOP.

21.3 Estimation of Uncertainty of Measurement

Estimation and uncertainty of measurement are provided to clients upon request.

- If the standardized test method contains guidance to the uncertainty of evaluation, the method guidance is used for determination.
- If the standardized test method gives a typical uncertainty of measurement for test results this figure is quoted, provided there was full compliance with the test method in the performance of the test.
- If a standardized method implicitly includes the uncertainty of measurement in the test results, the results are reported accordingly.

Otherwise the estimation of uncertainty of measurement will be reported as follows:

The confidence interval for the test method determined from the standard deviation of Laboratory Control samples or QC samples utilized by the laboratory in determining batch acceptance for the test method will be provided with the data as a statement of uncertainty of measurement. If the sample measurement is near the reporting limit or detectable limit, additional information will be given on the variability of low level data. A statement of sample homogeneity will also be included, as well as any other sample related factors that may have lead to uncertainty of measurement.

In cases where the test method precludes rigorous, metrologically and statistically valid calculation of uncertainty of measurement, all the components of uncertainty of measurement are identified, a reasonable estimation on uncertainty is made, and the result is reported with explanation on the uncertainty.

21.4 Outliers

An outlier is defined a data point which has a significant effect on the pool of data. An outlier is removed from the data set in question so more statistically meaningful data can be obtained. Several methods exist for determination of whether or not a data point is an outlier. A few examples would be:

1) Rule of Huge Error
2) Dixon Test for Outlying Observations
3) Grubbs Test for Outlying Observations

For general purposes Teklab will use the Dixon or Grubbs Test for Outlying Observations. Reference Quality Assurance of Chemical Measurements, by John Keenan Taylor, 6th Printing 1989, pg. 35 - 36 and pg. 270 -271. Note that the 95% confidence interval for accurate rejection must be used by Teklab personnel when performing this test.

21.5 Control Charts

Control charts are used to monitor the accuracy and precision of the procedures used at Teklab. They are used to determine what types of bias, if any, are occurring in analysis and to determine when an analysis or procedure is out of control.

PRECISION CONTROL CHARTS:
The precision control chart checks the duplicity of our methodologies. It uses the relative percent difference (RPD) between duplicate analyses.

ACCURACY CONTROL CHARTS:
The accuracy control chart checks the percent recovery of our methodologies. These check the percent recovery from LCSs and MSRs (Matrix Spike recoveries). This control chart cannot be made until at least twenty observations are made using samples of a known concentration. The Shewhart X-bar type chart is used for this measurement. The center line is the mean %R, the UWL and LWL (Upper and Lower Warning Limits) are calculated and plotted at +/- 2*sd; this represents a limit within which 95% of all subsequent %R calculations should fall, to ensure that the analysis/methodology is under control. The UCL and LCL (Upper and Lower Control Limits) are +/- 3*sd; this represents a limit within which 99% of all subsequent %R calculations should fall to ensure that the analysis/methodology is under control.

FREQUENCY AND CONSTRUCTION OF CONTROL CHARTS:
Data for accuracy and precision control charts will be updated continuously via the LIMS. The need to monitor a control chart for a particular analysis will be evident to the department supervisor if the quality control indicators for the test are not falling around the mean of the upper and lower control limits for the test. Data used to create control chart limits must be thoroughly reviewed for obvious outliers before inclusion in the control chart data set. Laboratory control limits for accuracy and precision will be updated as needed, with approval from the Technical Director.

INTERPRETATION OF CONTROL CHARTS:
The control charts are used to trend results and look for problems or bias in the way an analysis is run. If a condition exists which indicates an out of control process or process bias, as defined by typical analysis of Shewhart control charts (example: Seven points on same side of an X-bar chart or a point above or below the UCL or LCL), a significant event will have occurred. In that event the Quality Assurance Officer, Technical Director and any needed technicians or analysts will conduct an investigation to determine the cause or causes of the event and corrective action shall be implemented. After determination of a significant event, the applicable control charts will be updated with every new data point until the analysis is once again in control. A minimum of 10 data points will be plotted before the analysis can be said to be in control, once again.

21.6 Control of Data

To ensure that data are protected from inadvertent changes or unintentional destruction, the laboratory uses procedures to check calculations and data transfers (both manual and automated). See Sectioun 5 – Control of Records for more information.
Note: Employees should not save important documents to the C Drive of their PCs, as information may be lost if the computer's hard drive fails. Documents should either be saved to designated folders on the F Drive or user-defined U Drives; both of which are located on the Teklab Server.

21.6.1 Computer and Electronic Data Requirements

The laboratory assures that computers, user-developed computer software, and automated equipment used for the acquisition, processing, recording, reporting, storage, or retrieval of environmental test data are:

- documented in sufficient detail and validated as being adequate for use;
- protected for integrity and confidentiality of data entry or collection, data storage, data transmission and data processing;
- maintained to ensure proper functioning and are provided with the environmental and operating conditions necessary to maintain the integrity of environmental test data; and
- held secure including the prevention of unauthorized access to, and the unauthorized amendment of, computer records. Data archive security is addressed in Section 5 “Control of Records” and building security is addressed in Section 20 “Accommodations and Environmental Conditions”.

Computers and instrumentation are tracked via a database that contains information such as the PC/instrument name, operating system and associated software. Purchased Microsoft Office open licenses are also tracked in the database. The database is stored securely in the IT folder on the Teklab Server.

21.6.2 Data Reduction

The analyst calculates final results from raw data or appropriate computer programs provide the results in a reportable format. The test methods or SOPs provide required concentration units, calculation formulas and any other information required to obtain final analytical results.

The laboratory has manual integration procedures that must be followed when integrating peaks during data reduction. See SOP4026 Manual Integrations.

Data is collected and reported by analysts after completion of a run of analysis in which all Quality control parameters are within the specified limits.

Calculations used to determine concentrations of the analytes for each parameter are included or referenced in each SOP. The calculations involve calibration factors that relate a known concentration to a measured concentration. The units are based on the calibration concentrations that are also defined in each SOP. Raw data and final results are recorded in the analysis logsheet (by the analyst), or the original printed data package from the instrument is retained. The raw results and corresponding quality control results are downloaded or manually entered into the Laboratory Information System (LIMS). The lab supervisor or other data validator reviews the calculated results, ensures that the data is free from transcription and calculation errors and checks the corresponding quality control information (ICB, ICV, CCBs, CCVs, MS/MSDs and RSD/RPD results). If the quality control information is within specified limits and the calculations are correct, the lab supervisor or other data validator validates the records in the LIMS. See the applicable SOP (1020, 1270, 1280 and 1290) for identification of individuals responsible for assessing each QC data type.

Data for pH, temperature, Dissolved Oxygen, Turbidity, ORP and conductivity is read directly from the instrument. All other data must be calculated manually to some degree. It is the responsibility of the analyst to convert raw data into reportable values and the lab supervisor or other data validator to ensure calculations are correct and that quality control checks are within specified limits.

All analysis have their own individual data packet to record analysis, unless computer generated reports are deemed acceptable by the Quality Assurance Officer and/or Technical Director. See SOP 1291 Record Retention and Access. Data packets and/or computer-generated reports are maintained by the analysts responsible for performing the analysis and kept in the appropriate area of the laboratory. The data packet contains a cover sheet and a data sheet or sheets to record reagent and standard solution lot numbers. The data packets also contain information on any cleanup or separation procedure, sample ID codes, volumes and weights, if applicable. Problems noted during analysis are documented on the cover sheet of the data packet or computer generated report.

All raw data must be either retained in hard copy format and/or scanned to PDF and is maintained as described in Section 5 “Control of Records”.

21.6.3 Data Review Procedures

Data review procedures are located in Section 26.4 – “Data Review”.

Section 22 - CALIBRATION REQUIREMENTS: Equipment and Instruments

(TNI V1:M2 – Sect 5.5 and Section 1.7 of Technical Modules TNI V1:M4)

22.1 General Equipment Requirements

Any equipment procured in the support of tests must be of adequate quality to sustain confidence in the laboratory's tests, as specified by the SOP for each analytical method. Laboratory supervisors are responsible for informing the quality department of new equipment procurements and creating a maintenance log on the LIMS system. Where no independent assurance of the quality of the equipment is available, the equipment must be shown to produce acceptable results for the test method, within quality control limits of the test, before onset of sample analysis.

See General Equipment Maintenance SOP1210 for details on performance and documentation of equipment maintenance, inspection and cleaning. Manuals provided by the manufacturer of the equipment provide information on use, maintenance, handling and storage of the equipment. Any item of equipment subjected to overloading or mishandling which gives questionable results, or has been shown by verification or otherwise to be defective, shall be taken out of service. That equipment shall be clearly identified with a sign stating "OUT OF SERVICE" and wherever possible, stored in the rear storage area until it has been repaired and shown by calibration, verification or test to perform satisfactorily. The laboratory shall examine the effect of this defect on previous calibrations or tests. If it is shown that previous tests are affected, then procedures for nonconforming work are followed and results are documented (see Section 11 – "Control of Nonconforming Environmental Testing Work" and Section 13 – "Corrective Action"). The laboratory shall maintain documentation of all maintenance, calibration and instrument operation activities.

Proper instrument maintenance is essential to the success of any analytical laboratory. Teklab's policy is to include instrument troubleshooting and maintenance as standard training for its analysts. Analysts gain a more thorough understanding of the analytical methodology and produce higher quality analytical results when they are capable of solving problems associated with instrument operation. Teklab employs service agreements and/or onsite/offsite service support to supplement our maintenance program whenever the analytical instrumentation requires expertise beyond our capabilities or safety concerns dictate the use of individuals with specialized training.

All instruments must be clearly labeled with unique identification (e.g. Milestone MPR-600/6S, Microwave 1).

Equipment is operated only by authorized and trained personnel (see Section 18 – "Personnel"*)*.

Test equipment, including hardware and software, are safeguarded from adjustments that would invalidate the test result measurements by limiting access to the equipment and using password protection where possible (see Sections 21.6 – "Control of Data" and 5.2 "Records Management and Storage").

Each item of equipment and software used for testing and significant to the results is uniquely identified. Records of equipment and software are maintained and include the following:

a) identity of the equipment and its software;

b) manufacturer's name, type identification, serial number or other unique identifier;

c) checks that equipment complies with specifications of applicable tests;

d) current location;

e) manufacturer's instructions, if available, or a reference to their location;

f) dates, results and copies of reports and certificates of all calibrations, adjustments, acceptance criteria, and the due date of next calibration;

g) maintenance carried out to date; documentation on all routine and non-routine maintenance activities and reference material verifications;

h) any damage, malfunction, modification or repair to the equipment;

See Section Appendix F for a current list of Teklab equipment.

The laboratory documents and maintains records, whether hard copy or electronic, of instrument and equipment calibrations, including at a minimum:

- Calibration procedures, calibration frequency, calibration acceptance criteria;
- Procedures to label all calibration curves, including the date, approved test method, analyte, standard concentrations, and instrument response; and
- Procedures to label the axes of the calibration curve.

For electronic data processing systems, which automatically compute the calibration curve, the system records the equation for the curve and correlation coefficient. Laboratory personnel record correlation coefficient when the calibration curve is prepared manually.

See Section 5 of this manual for more information on Control of Records.

22.2 Support Equipment

The laboratory has equipment that is applicable to its accreditation**.**

Support Equipment includes, but is not limited to: balances, ovens, refrigerators, freezers, incubators, temperature measuring devices, and volumetric dispensing devices.

Before being placed into service, support equipment shall be calibrated or checked to establish that it meets the laboratory's specification requirements and complies with the relevant standard specifications. All support equipment is maintained in proper working order. Records are kept for all repair and maintenance activities, including service calls. Balances are calibrated annually by a member of the Quality Department. Records of calibrations are stored in the Quality Folder on the Teklab server.

All raw data records, where applicable, are retained to document equipment performance. These records include logbooks, data sheets, or equipment computer.

See SOP1210 for more information.

22.2.1 Support Equipment Maintenance

Regular maintenance of support equipment, such as balances is conducted at least annually. Maintenance on other support equipment, such as ovens, refrigerators, and thermometers is conducted on an as needed basis.

Records of maintenance to support equipment are documented in Instrument Maintenance Logs located in the LIMS or hard copy maintenance logbooks.

22.2.2 Support Equipment Calibration

Relevant SOPs:
SOP 1180 - Balance use, maintenance and calibration
SOP 1190 - Auto Pipet and Syringe use, maintenance and calibration
SOP 1200 - Dessicant maintenance
SOP 1210 - General Equipment Maintenance
SOP 1220 - Thermometer use, maintenance and calibration.
SOP 1230 - Refrigerator and freezer use, maintenance and calibration.
SOP 1240 - Oven use, maintenance and calibration.

All support equipment is calibrated or verified at least annually over the entire range of use using NIST traceable references where available. The results the calibration of support equipment is within specifications, otherwise:

- equipment is removed from service until repaired
- records are maintained of correction factors to correct all measurements. If correction factors are used this information is clearly marked on or near the equipment.

Support equipment such as balances, ovens, refrigerators, freezers, and water baths are verified with a NIST traceable reference if available, each day prior to use, to ensure operation is within the expected range for the application for which the equipment is to be used. Acceptance criteria can be found in the applicable calibration SOP.

The laboratory identifies each refrigerator, freezer, thermometer, oven, and incubator in a way that establishes their use and distinguishes them from other similar equipment in the laboratory.

Volumetric dispensing devices (except Class A glassware and Glass microliter syringes) are checked for accuracy on a quarterly basis.

The laboratory checks the calibration of infra-red thermometers at least quarterly against a NIST-traceable thermometer. The comparisons are made at the temperature at which the thermometer will be used.

The laboratory shall monitor and control method specific temperature requirements for incubators, heating blocks and water baths each day of use. The laboratory maintains documentation of the results.

The calibration temperatures of laboratory hot blocks used for digestion are checked at least annually and after repairs. When digital readout is in units other than temperature, correlation of the digital readout to the temperature required for the test is documented. Temperature or digital readout is documented each day of use.

Laboratory personnel calibrate turbidimeters on a daily basis or before each use, whichever is less frequent, pursuant to section 5.2.1 of "Manual for the Certification of Laboratories Analyzing Drinking Water".

See applicable calibration SOPs for more information. See Sections 4 "Document Control" and 5 "Record Control" for details regarding documentation.

A pH meter having the accuracy of at least +/- 0.05 pH units and a scale readability of at least 0.01 pH units must be used for pH analysis.

A conductivity meter with an error not exceeding 1% or one μmhos/cm, whichever is greater, must be used by the laboratory.

All glassware used for purposes that may subject it to damage from heat or chemicals shall be of borosilicate glass. All volumetric glassware used for standard preparation shall be ASTM class A.

Teklab uses Class S or NVLAP approved certified weights to calibrate balances. The laboratory re-certifies its reference weights at least once every five years. Other laboratory weights are calibrated annually by a member of the Quality Department. Records of the calibrations are stored in the Quality Folder on the Teklab Server.

The laboratory ensures that the NIST traceable thermometer is calibrated at least once every five years.

22.3 Analytical Equipment

22.3.1 Maintenance for Analytical Equipment

All equipment is properly maintained, inspected, and cleaned.

Maintenance of analytical instruments and other equipment may include regularly scheduled preventive maintenance or maintenance on an as-needed basis. Instrument malfunction is documented in the LIMS, which become part of the laboratory's permanent records.

22.4 Instrument Calibration

Initial instrument calibration and continuing instrument calibration verification are an important part of ensuring data of known and documented quality. Calibration requirements are included in laboratory SOPs. Generally, procedures and criteria regarding instrument calibrations are provided or referenced in the individual SOPs.

Section 22.2.2 includes information on calibration of support equipment. The following Section covers calibration of analytical equipment.

22.4.1 Initial Instrument Calibration

Verification of instrument calibration will include a blank (ICB) and either an Initial Calibration Verification (ICV) or QC sample (independent reference sample) at the beginning and end of each run of analysis and at least once every 20th sample in between (CCB/CCV) unless the analytical method does not require it, such as in methods which utilize internal standards. Any ICV off by more than the limits specified for that analysis or any QC sample outside the concentration range provided with the sample will cause the run to be rejected and require corrective action. All new instruments must have method detection limit (MDL) studies and method validation studies performed before the analysis of any samples. See the applicable method SOP for more information on calibration, ICB/ICV/CCB/CCV acceptance criteria and equipment maintenance requirements.

The laboratory performs an initial calibration of all instrumentation and equipment as specified in the approved laboratory SOP. The laboratory uses calibration standards traceable to national standards where available. When traceability is not applicable, the laboratory produces evidence of correlation of results through the analysis of a sample of known concentration which is traceable to national standards (proficiency testing), independent analysis or use of a suitable interlaboratory comparison.

22.4.1.1 Records

Initial instrument calibration records includes calculations, integrations, acceptance criteria, and associated statistics referenced in the applicable test method SOP either in the data packet or in Teklab LIMS.

Sufficient raw data records are collected to allow reconstruction of the initial instrument calibration. These include, at a minimum, calibration date, test method, instrument, analysis date, analyte names, analysts signature or initials, concentration and response, calibration curve or response factor, or unique equation or coefficient used to reduce instrument responses to concentration.

Calibration date and expiration criteria is documented in the applicable SOP for equipment requiring calibration, where practicable (see Section 22.1).

22.4.1.2 Number of Standards and Concentrations:

This section dictates the general calibration procedures and frequency for all instrumentation at Teklab. The number of standards required for calibration is indicated and the minimum correlation factor (R) for the curve is indicated in the applicable SOP.

For instrumentation where single point calibration is recommended by manufacturer's instructions, such as with some ICP and ICP/MS technologies (with a zero and single point calibration), the following apply:

1) Prior to the analysis of samples, the zero point and single point calibration are analyzed and the linear range of the instrument are established by analyzing a series of standards, one of which must be at the lowest quantitation level. Sample results within the established linear range will not require data qualifier flags.
2) Zero blank and single point calibration standards are analyzed with each analytical batch for methods where they are specified.
3) A standard corresponding to the limit of quantitation must be analyzed with each analytical batch and must meet established acceptance criteria when using single point plus zero blank calibrations.
4) The linearity of single point plus zero blank calibrations is verified at a frequency established by the method or the manufacturer.

If the reference or mandated method does not specify the number of calibration standards, the minimum number of points for establishing the initial instrument calibration shall be three (TNI 2009 M1V4 Section 1.7.1.1j). When not specified by the test method, the appropriate number of standards for use in the initial calibration curve is determined using the following procedure:

Determine a percent relative standard deviation (%RSD) of:

- The analysis of a minimum of seven replicate measurements of a standard with a concentration at one to three times the MDL; or
- The response factors (internal standard calibration) or calibration factors that cover the expected calibration range.

Determine the minimum number of calibration standards to be used in the initial calibration curve by correlating the %RSD with the number of required calibration standards:

%RSD	**Number of Calibration Standards**
0 -<2	1**
2 -<10	3
10-<25	5
>25	7

**Assumes linearity through the origin (0,0).

For analytes for which there is no origin (such as pH), at least a two point calibration curve is used.

The number of calibration standards (as determined from the applicable SOP) and a blank shall be used to generate the initial calibration curve of the approved test method.

If the calibration curve is not linear as defined in subsection 22.4.1.3(d) and the approved test method allows for the use of non-linear calibration curves; additional calibration standards shall be used to define the calibration.

If the approved test method specifies the generation and use of a calibration curve, all sample results shall be reported from sample analyses within the range of the calibration curve, except, when the approved test method specifically allows otherwise (for example ICP analysis above the highest calibration standard concentration but within the linear dynamic range as established by the laboratory pursuant to the applicable approved test method). See 22.4.1.2(1-4) for exception procedures.

The lowest calibration standard is the lowest concentration for which quantitative results can be reported without qualification. The lowest calibration standard is at or below the Practical Quantitation Limit (PQL) and is greater than the Method Detection Limit (MDL). Results that are less than the PQL are considered to have increased uncertainty, and are reported with "J" qualifiers as defined in the case narrative of the final report.

The highest calibration standard is the highest concentration for which quantitative results can be reported. Data reported exceeding the highest calibration standard without dilutions is considered to have increased uncertainty and are reported with "E" qualifiers as defined in the case narrative of the final report.

22.4.1.3 Evaluation, Verification and Corrective Action

All initial instrument calibrations are verified with a standard obtained from a second source traceable to a national standard when commercially available. If a second source is not available, a standard prepared from a vendor certified different lot may be used.

a) ICV check standards are prepared at the concentrations specified in the approved test method. If the approved test method does not specify the concentration for the ICV check standard, a concentration at 10% to 50% of the maximum calibration range is used. Exceptions may be made for multi analyte tests in which the ICV is prepared using standard mixes.

b) The laboratory utilizes the ICV check standards' acceptance criteria specified in the approved test method. If the approved test method does not specify the ICV acceptance criteria, the results of the analyses of the ICV check standard shall be within CCV criteria, or within 15% of the true value or within the 95% confidence interval determined from a minimum of 20 analysis of the ICV check standards.

If the analysis of the ICV check standard fails to meet the acceptance criteria specified in subsections 22.4.1.3(b) above, the laboratory shall either:

c) Suspend sample analysis and take corrective action to be followed immediately by a reanalysis of the ICV check standard; or

d) Immediately reanalyze the ICV check standard; and evaluate the subsection 22.4.1.3(c) ICV check standard reanalysis results as follows:

- The laboratory may continue sample analysis for the analytes for which the results of the reanalysis of the ICV check standard meet the acceptance criteria specified in subsection 22.4.1.3 (b).
- The laboratory shall terminate sample analysis or reject sample analysis data for the analytes for which the results of the reanalysis of the ICV check standard fail to meet the acceptance criteria specified in subsection 22.4.1.3 (b).
- The laboratory may proceed with sample analysis for the analytes for which the acceptance criteria were not met only after the establishment and verification of a new initial calibration curve pursuant to this Section.
- In the instance samples were ran after a failing ICV, and re-analysis is impossible, any data reported with a failing ICV shall be reported with data qualifying codes.

Quantitation is always determined from the initial calibration unless the test method or applicable regulations require quantitation from the continuing instrument calibration verification.

All initial calibration curves are subject to a calibration linearity test.

e) The calibration linearity shall be determined by the following as directed in the test method:

- *A linear regression analysis of the calibration curve;*
- *Determining the %RSD of the response factors (internal standard calibration); or*
- *Determining the %RSD of the calibration factors (external standard calibration).*

f) The initial calibration curve is considered linear when:

- *The correlation coefficient from the linear regression analysis is 0.995 or greater (Unless otherwise stated in the method)*
- *The %RSD of the response factor is 15% or less; or*
- *The %RSD of the calibration factors is 30% or less.*

g) If the initial calibration curve is linear as determined pursuant to:

- *The correlation coefficient in 22.4.1.3 (f), the laboratory utilizes the linear regression to determine the analytical results;*

- *The response factor in 22.4.1.3 (f), the laboratory utilizes the average response factor to determine the analytical result; or*

- *The calibration factor in 22.4.1.3(f), the laboratory utilizes the average calibration factor to determine the analytical results.*

Corrective actions are performed when the initial calibration results are outside acceptance criteria. Calibration points are not dropped from the middle of the curve unless the cause is determined and documented. If the cause cannot be determined, the calibration curve is re-prepared. If the low or high calibration point is dropped from the curve, the working curve is adjusted and sample results outside the curve are qualified. See Section 11 – "Control of Nonconforming Environmental Testing".

22.4.2 Continuing Instrument Calibration

22.4.2.1 Records

Sufficient raw data records are retained to allow reconstruction of the continuing instrument calibration verification. Continuing instrument calibration verification records connect the continuing verification date to the initial instrument calibration. The laboratory documents all activities related to calibration and standardization as specified

Where appropriate, the laboratory has manual integration procedures (SOP 4026) that are adhered to when evaluating calibration data.

22.4.2.2 Frequency

The laboratory analyzes a continuing calibration blank when required by the test method. The analysis of the CCV check standard must meet the acceptance criteria specified in 22.4.2.3.1

The laboratory initially analyzes a CCV check standard;

1. At the approved test method specified concentration, or if the approved test method does not specify the concentration for the CCV check standard, the concentration shall be at 25% to 50% of the maximum of the calibration range. Exceptions may be made for multi analyte tests in which the ICV is prepared using standard mixes.

2. The laboratory shall analyze a CCV check standard at the beginning and end of each analytical batch. Further frequency of the CCV shall be determined by the SOP for that particular test. For instruments using internal standards, the laboratory shall analyze a CCV check standard at the beginning of each analytical batch..

3. A CCV must be repeated whenever it is expected that the analytical system may be out of calibration or might not meet the verification acceptance criteria.
4. A CCV must be repeated if the time period for calibration or the most previous calibration verification has expired.

22.4.2.3 Evaluation, Verification and Corrective Actions

To verify the continued acceptability of the initial calibration, the laboratory prepares and performs the analysis of a CCV check standard for all instrumentation and equipment according to the following procedure:

a) The laboratory utilizes a CCV check standard prepared from the initial calibration curve standards or from a second source material.

b) The laboratory prepares a CCV check standard at a concentration within the range of the initial calibration standards.

c) Whenever the laboratory does not prepare an initial calibration curve on the day of analysis, the laboratory verifies the integrity of the initial calibration curve prior to sample analysis, by analyzing continuing calibration verification with each analytical batch.

22.4.2.3.1 Acceptance Criteria

The laboratory utilizes the CCV check standards' acceptance criteria specified in the approved test method SOP. If the approved test method does not specify the CCV acceptance criteria, the CCV check result shall be within 15% of the true value or within the 95% confidence interval determined from a minimum of 20 analysis of the CCV check standard at a single concentration.

22.4.2.3.2 Acceptance Criteria failure

If the analysis of the CCV check standard fails to meet the acceptance criteria specified above the laboratory suspends sample analysis and makes routine corrective action to be noted on the raw data package and followed by an immediate reanalysis of the CCV check standard. Evaluate the check standard reanalysis results as follows:

a) The laboratory continues sample analysis for the analytes for which the results of the second analysis of the CCV check standard meet the acceptance criteria specified in subsection 22.4.2.3.1.
b) The laboratory terminates sample analysis or rejects sample analysis data for the analytes for which the results of the second analysis of the CCV check standard fail to meet the acceptance criteria specified in subsection 22.4.2.3.1.
c) The laboratory may proceed with sample analysis for the analytes for which the acceptance criteria were not met only after the establishment and verification of a new initial calibration curve pursuant to this section.

22.4.3 Unacceptable Continuing Instrument Calibration Verifications

If routine corrective action for continuing instrument calibration verification fails to produce a second consecutive (immediate) calibration verification within acceptance criteria, then a new calibration is performed or acceptable performance is demonstrated after corrective action with two consecutive calibration verifications.
For any samples analyzed on a system with an unacceptable calibration, some results may be useable under the following conditions:

a) If the acceptance criteria are exceeded high (high bias) and the associated samples are below detection, then those sample results that are non-detects may be reported as non-detects.

b) If the acceptance criteria are exceeded low (low bias) and there are samples that exceed the maximum regulatory limit, then those exceeding the regulatory limit may be reported.

Section 23 – Standards and Reagents

(TNI V1:M2 – Section 5.6)

Measurement quality assurance comes in part from traceability of standards to certified materials.

All equipment used affecting the quality of test results are calibrated prior to being put into service and on a continuing basis (see Section 22 "Calibration Requirements"). These calibrations are traceable to national standards of measurement where available.

If traceability of measurements to SI units is not possible or not relevant, evidence for correlation of results through interlaboratory comparisons, proficiency testing, or independent analysis is provided.

23.1 Reference Standards

Reference standards are standards of the highest quality available at a given location, from which measurements are derived (e.g. ASTM Class 1 weights, NIST traceable reference thermometers).

Reference Standards, such as ASTM Class 1 weights, are used for calibration only and for no other purpose. Reference standards, such as ASTM Class 1 weights, are calibrated by an entity that can provide traceability to national or international standards. The following reference standards are sent out to be calibrated to a national standard as indicated in Section 22 – "Calibration Requirements"

23.2 Standards and Reagents

Reference materials, where commercially available, are traceable to national standards of measurement, or to Certified Reference Materials, usually by a Certificate of Analysis.

Upon receipt, all reagents and standards shall be inspected, receipt dated, initialed, the lot number shall be recorded and an expiration date shall be assigned. No reagents or standards shall be used beyond their expiration date without verification of their continued validity.

All reagents and standards shall be of adequate quality to sustain confidence in the laboratory's test, as specified by the SOP for each analytical method. Laboratory supervisors are responsible for scanning and linking all Certificates of Analysis of standards into Teklab LIMS. Where no independent assurance of the quality of reagents or standards is available, the standard or reagent must be shown to produce acceptable results for the test method, within quality control limits of the test, before onset of sample analysis. See SOP1250 "Reagents and Standards" for more information.

23.3 Transport and Storage

The laboratory handles and transports reference standards and materials in a manner that protects the integrity of the materials. Reference standard and material integrity is protected by separation from incompatible materials and/or minimizing exposure to degrading environments or materials.

Reference standards and materials are stored according to manufacturer's recommendations, method SOP requirements and separately from samples.

23.4 Labeling

The laboratory has procedures for purchase, receipt and storage of standards, reagents and reference materials. Purchase procedures are described in Section 7 – "Purchasing Services and Supplies".

All containers of prepared standards and reagents are labeled with a unique identification number (using the LIMS identification system) and an expiration date (where applicable). This information is documented in the LIMS and all records retained.

23.4.1 Stock Standards and Reagents

The laboratory retains records supplied by the manufacturer/vendor, which include the manufacturers' Certificate of Analysis or purity for standards, the date of receipt, recommended storage conditions and an *expiration date after which the material shall not be used unless its reliability is verified by the laboratory. These documents are retained for the same length of time as that required for the retention of documentation associated with the analytical results for which the standards or reagents were used.

If reference materials cannot be purchased with a Certificate of Analysis, the laboratory produces evidence of correlation of results through the analysis of a sample of known concentration which is traceable to national standards (proficiency testing), independent analysis or use of a suitable interlaboratory comparison.

Records shall include:

- the manufacturer/vendor name (or traceability to purchased stocks or neat compounds)
- the manufacturer's Certificate of Analysis or purity (if supplied)
- the date of receipt
- recommended storage conditions

This information is logged into the applicable section of the LIMS. Certificates of Analysis for Standards are scanned and linked to the LIMS by the applicable department or a member of the quality department.

In methods where the purity of reagents is not specified, analytical reagent grade is used. If the purity is specified, that is the minimum acceptable grade**.** Purity is verified and documented according to Section 7 – "Purchasing Services and Supplies".

*If the original container does not have an expiration date provided by the manufacturer or vendor, it is not required to be labeled with an expiration date.

23.4.2 Prepared Standards and Reagents

Preparation of standard solutions are documented to include; date of preparation, expiration date (expiration of the standard shall not exceed the preparation date of the parent standard or stock solution), concentration of the parent standard or stock solution, concentration of standard working solution and the initials of the person preparing the solution. All standard solutions are prepared using class A or equivalent glassware and analytical balances. Standard concentrations (or a dilution thereof) are checked using an independent reference standard.

Reagent purity is checked through the use of Laboratory Control Blanks. Any contamination discovered in a reagent will be noted and that lot of reagent shall not be used.

The laboratory documents and maintains records concerning the receipt, use and traceability of analytical reagents and standards, including at a minimum:

- Verification of standards traceable to national standards. If traceability to a national standard is not possible, the lab demonstrates by appropriate means (e.g. analyses of PT samples) that the instrumentation/equipment is properly calibrated;
- Certificate of the origin, purity and traceability of all standards. These records include the date of receipt, storage conditions, and the date of opening.
- Procedures to ensure the traceability of working and intermediate standards to purchased stock standards or neat compounds which include the date of preparation and preparer's initials; and
- Procedures to clearly identify all prepared reagents and standards, including preparation date, concentrations, and preparer's initials;

See Section 5 of this Quality Manual for more information on control of records.

Section 24 - COLLECTION OF SAMPLES

(TNI V1:M2 – Section 5.7)

Regardless of the laboratory's level of control over sampling activities, all the requirements of this section are essential to ensure sample integrity and valid data and shall be followed by the laboratory. Sampling performed by Teklab, Inc. is governed by SOP 1150. Field sampling and any laboratory sub-sampling necessary to obtain sample aliquots for testing are covered in SOP 1150.

24.1 Sampling Containers and Kits

The laboratory offers clean sampling containers and kits for use by clients.
See the following Teklab SOPs for more information:
1081 Sample Kit Preparation
1082 Bottle Certification
1083 5035 Sampling Kit Preparation
1090 Landfill Sample Bottles

24.2 Sampling Plan

The laboratory uses sampling plans provided by clients or prepared in consultation with the client. The plan must include any factors that must be controlled to ensure the validity of the test. Sampling plans and written sampling procedures are used for sampling substances, materials or products for testing. The plan and procedures are made available at the sampling location.

The laboratory's procedures for dealing with non-conformances are used when the client requests any deviations from the sampling plan or sampling procedures. The requests are documented and included in the final test report.

See the following Teklab SOPs for more information:
1150 Sampling Instructions
1151 Groundwater Sampling

Section 25 – Sample Receipt and Storage

(TNI V1:M2 – Section 5.8 and Section 1.7 of Technical Modules TNI V1: M 3-7)

This section applies to samples received by Teklab and will be used to guide clients in sampling requirements specified in the "Federal Register, 40 CFR Part 136, Table II". Teklab does not reuse sample containers at this time except for air. See SOP 6000 SiloniteTM canisters for cleaning procedures for air containers.

25.1 Sample Receipt

When samples are received at the laboratory, the chain-of-custody is reviewed, the condition is documented, samples are given unique identifiers, and they are logged into the sample tracking system.

25.1.1 Chain of Custody

A customer service specialist or their designated representative indicates receipt of samples by signing the accompanying custody form. The supervisor or project manager reviews the signed form. The original signed custody form becomes part of the final data package that is reported to the client. The laboratory scans and files a copy of the signed custody form along with the final report as a permanent record of the sample receipt.

25.1.2 Legal/Evidentiary Chain of Custody

The laboratory has procedures for legal chain of custody services. If samples are noted as being used for legal/evidentiary purposes, special chain of custody procedures are put into place by the laboratory. See Sop1065 "Legal or Evidentiary Custody" for more information.

25.2 Sample Acceptance

Procedures for opening shipping containers and examining samples are provided in SOPs 1110 "Sample Pickup and Delivery" and 1070 "Sample Acceptance".
Teklab has a sample acceptance policy that is made available to sample collection personnel (See SOP 1070 Sample Acceptance). It emphasizes the need for use of water resistant ink, providing proper documentation (to include sample ID, location, date and time of collection, collector's name, preservation type, sample type and any special remarks about the sample), labeling of sample containers to include a unique sample ID, use of appropriate containers, adherence to holding times, and sample volume requirements. In addition the laboratory has nonconformance/corrective action procedures to handle samples that do not meet the requirements above or show signs of damage, contamination or inadequate preservation. Data will be appropriately qualified where samples are reported that do not meet sample acceptance requirements.

On samples receipt the laboratory checks for the conditions above and logs the applicable information into the LIMS Sample Checklist. This checklist becomes part of the final report. Criteria regarding preservation, holding time and sample volume requirements can be found in 1000 series SOP Appendix B

If these conditions are not met, the laboratory follows SOP1070 and the client is contacted prior to any further processing, then

1) the sample is rejected as agreed with the client,
2) the decision to proceed is documented and agreed upon with the client,
3) the condition is noted on the Chain of Custody form and/or lab receipt documents, and;
4) the data are qualified in the case narrative or sample checklist of the final report.

25.2.1 Preservation Checks

See 1000 series SOP Appendix B for information on preservation requirements.

25.3 Sample Identification

The customer service specialists use LIMS to maintain an electronic log book to record, for each sample, the person delivering the sample, the person receiving the sample, the date and time received, source of sample, sample identification and a unique laboratory ID code. The laboratory ID code is used as the link that associates the sample with the field ID code, the date and time of sample collection, the date and time of sample receipt, the requested analysis (including applicable approved test method numbers), any comments resulting from inspection for sample rejection, and other related laboratory activities. The laboratory ID code is transferred to all sub-samples, extracts, and digestates. The custodians document the condition of the sample upon receipt (i.e. unsealed, broken container, etc.). A standardized format is used for the electronic log-in book.
Each sample container is identified by affixing a durable label which specifies the unique LIMS generated laboratory ID code for each container. The LIMS generated laboratory ID code includes the work order number, the lab number and the container identifier.

A work order number is generated by the LIMS system. The first two digits in the work order number indicate the year the sample was received by the laboratory, the third and fourth digit indicate the month received, the remaining four digits indicate the consecutive COC number for the month. Following the work order number, LIMS generates a consecutive lab number for each sample on the COC preceded by a dash. The lab number is followed by a letter to uniquely identify each sample fraction received. When 2 containers or vials are received for the sample fraction, the bottle labels are numbered (i.e. 1 of 2, 2 of 2) so that the analyst can document from which sample container or vial any sub-sample was taken.

All documentation received regarding the sample, such as memos or chain of custody, are scanned and retained with the final report on the Teklab Inc Server.

25.4 Sample Aliquots / Subsampling

In order for analysis results to be representative of the sample collected in the field, the laboratory has subsampling procedures. See SOP1150 for more information.

25.5 Sample Storage

Clean, dry, isolated cabinets and/or refrigerators that can be securely locked from the outside are designated as a "sample storage security areas". In the Teklab Air Laboratory, and the Kansas, Downers Grove and Springfield Service Centers, the entire facility is considered secure. The laboratory limits access to authorized laboratory personnel only. During operating hours, all samples remain in the laboratory secure areas. During non-operating hours, all samples are locked in the storage refrigerators or cabinets in the laboratory secure areas. The laboratory controls and documents access to all samples and sub samples designated as litigation samples by the client. Details can be found in SOP 1065 “Legal or Evidentiary Custody“.

The client must inform the laboratory of any heat-sensitive, light-sensitive, radioactive, or other sample materials having unusual physical characteristics or that require special handling. The custodian shall ensure samples are properly stored and maintained prior to analysis.

The custodian distributes samples to the laboratory supervisor or the appropriate laboratory cooler (or his or her representative) responsible for the lab analysis. Sample transfers within the laboratory are monitored by a sample custodian using the LIMS sample tracking system. Where possible, distribution of samples to the analyst performing the analysis must be made by the custodians.

Laboratory personnel are responsible for the care and custody of the sample once they receive it. They must be prepared to testify that the sample was in their possession and in view or secured in the laboratory at all times from the moment it was received from the custodian, until the completion of the analysis.

Drinking water Bacteria samples are delivered to the Microbiology laboratory immediately upon receipt. They are then logged into the LIMS, prior to analysis. Aqueous and solid samples to be analyzed for Fecal Coliform are stored separately from potable water samples.

The laboratory provides sample storage facilities that prevent cross-contamination of samples and meet the conditions specified by preservation protocols. Samples are stored away from all standards, reagents, food and other potentially contaminating sources. Sample fractions, extracts, leachates and other sample preparation products are stored according to this section, SOP1120 or according to specifications in the approved test method. The laboratory verifies that cross-contamination between samples has not occurred through the examination of storage areas or through the review of analytical data on laboratory blanks that are stored with samples.

Once the sample analyses are completed, the unused portion of the sample, together with all identifying labels, must be returned to the custodian. The returned, tagged sample/s should be retained in the custody room for a period of 30 days for aqueous and drinking water samples and no less than 2 weeks for solids and special wastes. Solids and special wastes are transferred to a storage shed where they are held for an additional 4 weeks when more room is needed in the walk in cooler (unless otherwise requested by the client). Volatile air samples are retained for three days after the final report is issued to the client and then disposed of. Litigation samples are retained until permission is given from the proper authority (See SOP1065 “Legal or Evidentiary Custody” for more information on Litigation Samples).

See SOP1120 “Sample Storage, Retention and Disposal” for more information.

25.6 Sample Disposal

Teklab complies with all applicable federal, state and local laws concerning the handling and disposal of hazardous waste. Teklab also complies with all applicable laws concerning the generation of air pollutants. All laboratory samples are disposed of according to Federal, State and local regulations. Procedures are described in SOP1120 "Sample Storage, Retention and Disposal" and SOP1130 "Waste Disposal" for the disposal of samples, digestates, leachates, and extracts. Records for sample disposal are kept indefinitely

25.7 Sample Transport

Samples that are transported under the responsibility of the laboratory, where necessary, are done so safely and according to storage conditions. This includes moving bottles within the laboratory. Appropriate DOT shipping instructions will be available to clients upon request. Specific safety operations are addressed outside of this document.

Sample shipping procedures are described in SOP 1100 Subcontracting and Shipping.

Section 26 - QUALITY ASSURANCE FOR ENVIRONMENTAL TESTING

(TNI V1:M1, V1:M2 – Section 5.9 and Section 1.7 of Technical Modules TNI V1: M 3-7)

26.1 DEFINITIONS

Quality Control Indicators (QCI); such as Trip Blanks (TB), Duplicates (Dup), Initial Calibration Verification (ICV), Continuing Calibration Verification (CCV), Laboratory Control Blanks (LCB), Laboratory Control Samples (LCS), Standard Reference Materials (QC sample) and Matrix Spikes/Matrix Spike Duplicates (MS/MSD) will be analyzed to assess the quality of the data resulting from the field sampling program and in-house analysis.

Trip blanks (Equipment Blanks):
A trip is used to identify contamination from transport, shipping and site conditions. Trip blanks are analyte-free water taken to the field and returned to the laboratory unopened for analysis, to determine if contamination has occurred. Equipment blanks are used to identify contamination from sampling procedures. Equipment blanks are opened in the field, poured appropriately over or through the sample collection device and brought in for analysis to determine if contamination has occurred.

Field Blanks:
A Field Blank is exposed to the same field conditions as the sample, opened in the field. Its purpose is to assess the potential for field contamination.

Duplicate samples:
Analyzed to check for sampling and analytical reproducibility. Field duplicates are taken during sample collection. Internal duplicates are analyzed in the laboratory by splitting the sample and analyzing each split as an independent sample. See applicable SOP for frequency of matrix spike duplicates by analysis.

LCB (laboratory control blanks) or **MBLK** (method blanks):
A LCB is used to check contamination in the laboratory and is taken through the entire analytical procedure. The method blank consists of a matrix that is similar to the associated samples and is known to be free of the analytes of interest. These samples are used to verify the purity of all chemicals and reagents used in the methodologies and to prove the absence of contamination during the analytical procedure.

LCS samples (Laboratory control samples)**:**
The LCS is prepared from a matrix that is similar to the associated samples known to be free of the analytes of interest and spiked with known and verified concentrations of analytes. This sample is then taken through the entire analysis to determine batch acceptance.

QC samples:
QC samples are purchased from an independent source to verify analytical procedures and calibrations. All QC samples must be NIST traceable reference materials, when available.

If a QC sample is not taken through the entire sample preparation procedure and is used for calibration verification (ex. GFAA), a LCS which has been taken through the entire procedure must also be analyzed.

Matrix spikes:
These provide information about the effect of the sample matrix on the preparation and measurement methodology. All matrix spikes and matrix spike duplicates are hereafter referred to as MS/MSD samples. These samples are always run with another aliquot of the sample that is not spiked. Spiking a sample tells us what effect the sample matrix (i.e. aqueous, solid, non-aqueous liquid) has on the parameter being measured. Sometimes the sample matrix will hide a parameter; a matrix spike will help identify this effect by showing a low recovery. Because matrix spikes give more information about the sample and its matrix, they are preferred to running duplicates. Some analysis (pH and Temp for example) do not lend themselves to matrix spikes very easily, therefore some analysis do not use matrix spikes (inorganic/physical analysis only).

Batch:
Environmental samples that are prepared and/or analyzed together with the same process and personnel, using the same lot(s) of reagents.

Prep Batch:
Composed of one (1) to twenty (20) environmental samples of the same quality systems 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 twenty-four (24) hours

Analytical Batch:
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 quality system matrices and can exceed twenty (20) samples.

TCLP METALS AND ORGANICS**:** Every unique TCLP sample matrix will be run both with and without matrix spikes, under direction of US EPA SW-846. However, as generally accepted

laboratory practice, Teklab will not run TCLP matrix spikes on every sample, unless requested by the client. The frequency of matrix spiking (detailed in the applicable SOP) will be followed unless otherwise requested.

NOTE: Some clients may request specific types of quality control analysis. Those instances will be handled on a case by case basis.

26.2 Essential Quality Control Procedures

Teklab Inc has procedures for monitoring the validity of the testing it performs. The qualities of test results are recorded in such a way that trends are detectable, and where practicable, are statistically evaluated. To evaluate the quality of test results, the laboratory utilizes various evaluation aids such as certified reference materials, proficiency testing samples and control charting.

Quality control data are analyzed and when found to be outside pre-defined criteria, action is taken to correct the problem and to prevent incorrect results from being reported. Data associated with quality control data outside of criteria and still deemed reportable will be qualified so the end user of the data may make a determination of the usability of the data - see Section 27 – "Reporting of Results".

The quality control procedures specified in test methods are followed by laboratory personnel. The most stringent of control procedures is used in cases where multiple controls are offered. If it is not clear which is the most stringent, that mandated by test method or regulation is followed.
Teklab utilizes the quality control procedures set forth in this section if the approved test method does not specify any quality control procedures or the quality control procedures contained in the approved test method are less stringent.

Teklab assesses and evaluates the results of all quality control procedures on an on-going basis.

A) Written procedures to ensure that all results from all quality control procedures are reviewed and the decision made to accept, reject, or qualify sample data before the data is reported.
B) Written criteria for accepting, rejecting, or qualifying sample data based on each quality control procedure.
    i) Teklab uses the acceptance criteria contained in the approved test method for evaluating the results of each of the quality control procedures and for accepting, rejecting, and qualifying sample data.
    ii) If the approved test method does not specify the criteria for evaluating the results of each of the quality control procedures and for accepting, rejecting, and qualifying data, Teklab establishes written criteria.
C) If a quality control procedure results in the laboratory rejecting or qualifying sample data, the laboratory may implement corrective actions. When analyzing reference materials, the laboratory uses the acceptance criteria supplied by the manufacturer.

D) The laboratory completes corrective actions and maintains written records as required in Section 5 of this manual.

Written procedures to monitor routine quality controls including acceptance criteria are located in the test method SOPs, except where noted, and include such procedures as:

- use of laboratory control samples and blanks to serve as positive and negative controls for chemistry methods;
- use of laboratory control samples to monitor test variability of laboratory results;
- use of calibrations, continuing calibrations, certified reference materials and/or PT samples to monitor accuracy of the test method;
- measures to monitor test method capability, such as limit of detection, limit of quantitation, and/or range of test applicability, such as linearity;
- use of regression analysis, internal/external standards, or statistical analysis to reduce raw data to final results;
- use of reagents and standards of appropriate quality and use of second source materials as appropriate;
- procedures to ensure the selectivity of the test method for its intended use;
- measures to assure constant and consistent test conditions, such as temperature, humidity, etc., when required by test method;

26.3 Internal Quality Control Practices

Analytical data generated with QC samples that fall within all prescribed acceptance limits indicate the test method is deemed to be in control.

QC samples that fall outside QC limits indicate the test method are deemed to be out of control (nonconforming) and that corrective action is required and/or that the data are qualified (see Section 11 – "Control of Nonconforming Environmental Testing Work" and Section 13 - "Corrective Actions").

Detailed QC procedures and QC limits are included or referenced in test method standard operating procedures (SOPs), or where unspecified in the SOPs, are detailed in the method.

See applicable SOP for Duplicate and Matrix Spike concentrations and frequency.

26.3.1 General Controls

Teklab follows the quality control procedures and quality control indicators (QCI) specified below:

Laboratory Control Blank (LCB)
A minimum of 1 laboratory control blank (LCB) is analyzed with each preparation batch of environmental samples and carried through the entire analytical process. LCBs are not

required for approved test methods, including but not limited to: pH, temperature and conductivity, for which method blanks are not appropriate. For analysis in which no separate preparation method is used, LCBs are prepared at the beginning each batch and once every 20 samples in between.

A) A batch of drinking water sample data meets the requirements of this section only when the method blank does not contain an analyte of interest at a concentration greater than the MDL.

B) A batch of environmental sample data, except for drinking water sample data, meets the requirements of this section when the method blank does not contain an analyte of interest at a concentration greater than the highest of the following:
   i) The MDL or PQL whichever the client requires for the reporting limit
   ii) 10% of the regulatory limit for that analyte, or
   iii) 10% of the measured concentration for that analyte in any environmental sample in the batch.

C) The provisions of subsection 26.2.1 Laboratory Control Blank(B) do not apply in those instances where the method blank criteria have not been met and there are non-detect results for the corresponding analyte in the environmental samples associated with the method blank. In such instances, the non-detect results may be reported with a comment in the sample narrative.

D) The following corrective actions are to be taken when (26.2.1 Laboratory Control Blank)(A), (B), or (C) above are not met:
   i) The run of analysis is terminated (and no sample results are reported);
   ii) The source of the contamination is identified, eliminated and documented;
   iii) The samples are reanalyzed and results are reported only after the conditions of (26.2.1 Laboratory Control Blank)(A), (B) or (C) above are met.
   iv) If corrective actions cannot be taken (i.e. insufficient sample), the results may be reported with the appropriate qualifiers.

Matrix spikes (MS)

Matrix Spikes are performed at a rate of one per 20 or fewer environmental samples per matrix type, per sample extraction or preparation procedure.

A) The laboratory utilizes the spiking analytes specified in the approved test method, except when the approved test method indicates that all method analytes are to be matrix spiked. In such cases the laboratory shall spike the target analytes for the sample or any client requested analytes.

B) If there are no specified spiking analytes, the laboratory spikes per the following:
   i) For those components that interfere with an accurate assessment such as spiking simultaneously with technical chlordane, toxaphene and PCBs, the spike or spikes are chosen that represent the chemistries and elution patterns of the components to be reported.

ii) For those test methods that have extremely long lists of analytes, a representative number are chosen using the following criteria for choosing the number of analytes to be spiked.
   a. For methods that include 1-10 targets, all components are spiked;
   b. For methods that include 11-20 targets, at least 10 or 80%, whichever is greater are spiked;
   c. For methods with more than 20 targets, 16 or more components are spiked.

C) The laboratory selects samples on a rotating basis to receive matrix spike analysis from among various client samples, waste streams, monitoring locations and other applicable locations. Matrix spikes are selected randomly, unless specified by the client.

D) As is required in section 10 of this manual, the procedure used to select the sample for matrix spike analysis must be documented.

E) Matrix spikes are not required for approved test methods in which materials for matrix spiking are not available, including but not limited to: total suspended solids, total dissolved solids, total volatile solids, flash point, reactivity, pH color, odor, temperature, dissolved oxygen and turbidity.

F) Matrix spike recoveries are within the acceptance limits when:
   i) They are within the limits given in the approved method (when available), laboratory established limits, or those given by laboratory generated control charts, or
   ii) The matrix spike concentration is less than 20% of the sample concentration, or
   iii) a diluted sample, which is bench spiked, shows a spike recovery within the acceptance criteria given in (F)(i) above. (Note: the reporting limit must be elevated by the dilution factor.)

G) The following corrective actions are taken when (F)(i), (ii), (iii) above are not met:
   i) The samples are reanalyzed, if necessary, and results are reported only after the conditions of (F)(i), (ii) or (iii) above are met, or
   ii) Sample results are qualified, when reporting to customer, as showing adverse matrix effects.

Matrix spike duplicates (MSD)/sample duplicates

MSDs or Sample duplicates are performed at a rate of one per 20 or fewer environmental samples per matrix type, per sample extraction or preparation procedure.

A) Matrix spike duplicates are performed on the same environmental sample chosen for matrix spike analyses.
B) Samples are selected on a routine basis to receive sample duplicate analyses from among various client samples, waste streams, monitoring locations and other applicable locations. Matrix spike duplicates and/or matrix duplicate samples are selected randomly, unless specified by the client.

C) The laboratory documents, as required in section 10 of this manual, the procedure used to select the sample for matrix spike duplicates or sample duplicate analysis.

D) Relative Percent Differences (RPD) are within the acceptance limits when they are within the limits given in the approved method or those given by laboratory generated control charts. The matrix duplicate provides a usable measure of precision only when target analytes are found in the sample chosen for duplication.

E) The following corrective actions are to be taken when (D) above is not met:
   i) The sample is reanalyzed, if necessary and results are reported only after the conditions of (D) above are met.
   ii) Sample results for matrix spike duplicates or sample duplicates RPD, which do not meet the acceptance criteria of (D), are to be qualified when reporting to the customer as showing adverse matrix effects or problems with the samples composition.

Laboratory control samples (LCS)

LCSs are analyzed at a minimum of one per preparation batch, except for analytes for which spiking solutions are not available such as, total volatile solids, pH, color, odor, temperature, dissolved oxygen or turbidity. In those instances for which no separate preparation method is used, the batch is defined as environmental samples that are analyzed together with the same method and personnel, using the same lots of reagents, not to exceed the analysis of 20 environmental samples. Air Testing: If a calibration solution must be used for the LCS, the client shall be notified prior to the start of analysis. Also the concentration of the LCS shall be relevant to the intended use of the data and either at a regulatory limit or below it.

A) The laboratory may use the results of these LCS analyses to determine batch acceptance.

B) The LCS is a quality system matrix, known to be free of analytes of interest, spiked with a known and verified concentration of analytes. All analyte concentrations must be within the calibration range of the methods. The components to be spiked shall be as specified by the mandated test method or other regulatory requirement or as requested by the client. In the absence of specified spiking components, the laboratory shall spike per the following:
   i) For those components that interfere with an accurate assessment such as spiking simultaneously with technical chlordane, toxaphene and PCBs, the spike or spikes are chosen that represent the chemistries and elution patterns of the components to be reported.
   ii) For those test methods that have extremely long lists of analytes, a representative number are chosen. The analytes selected shall be representative of all analytes reported. The following criteria shall be used for determining the minimum number of analytes to be spiked.
      a. For methods that include 1-10 targets, all components are spiked;
      b. For methods that include 11-20 targets, at least 10 or 80%, whichever is greater are spiked;

c. For methods with more than 20 targets, 16 or more components are spiked.

C) The laboratory may use the matrix spike samples as specified in subsection 26.2.1 Matrix Spikes (A) as a LCS when the matrix spike acceptance criteria are as stringent as the LCS acceptance criteria. However, if the laboratory prepares a LCS, the laboratory shall analyze the LCS and use the results to determine batch acceptance. The laboratory shall not use the analyses of matrix spike samples as specified in subsection 26.2.1 Matrix Spikes (A) to override, ignore, or replace an LCS analysis that fails to meet the acceptance criteria. (If there is insufficient sample for reanalysis and the client is unable to re-sample, the data must be reported to the client with the appropriate qualifiers indicating the QC deviation. In control matrix spike and surrogate recoveries will help support the batch acceptance).

D) The analytes must be obtained from a second source if the LCS is to be used to verify the instrument calibration.

E) LCS recoveries are within the acceptance limits when they are within the limits given in the approved method (when available), laboratory established limits, those given by laboratory generated control charts, or client specified assessment criteria.

F) The following corrective actions are to be taken when (E) above is not met:
i) The run of analysis is terminated (and no sample results are reported);
ii) The reason for the unacceptable recovery is identified, eliminated and documented;
iii) The sample batch is reanalyzed and results are reported only after the conditions of (E) above are met.
iv) If corrective actions cannot be taken (i.e. insufficient sample), the clients involved are contacted and the samples are recollected or the results are reported with the appropriate qualifiers, according to the client's instructions.

G) If a large number of analytes are in the LCS, it becomes statistically likely that a few will be outside control limits. This may not indicate that the system is out of control; therefore, corrective action may not be necessary. Upper and lower marginal exceedance (ME) limits determine when corrective action is needed. A ME is defined as being beyond the LCS control limit (3 standard deviations), but within the ME limits. ME limits are between 3 and 4 standard deviations around the mean. Marginal exceedances must be random. If the same analyte exceeds the LCS control limit consecutively, it is an indication of a systemic problem. Marginal exceedance limits can be determined by using the control charting feature in Teklab LIMS. It is the responsibility of the laboratory supervisor utilizing a ME allowance, to monitor the LIMS data and assure random behavior. The number of allowable marginal exceedances is as follows:
1. >90 analytes in LCS, 5 analytes allowed in ME of the LCS control limit;
2. 71-90 analytes in LCS, 4 analytes allowed in ME of the LCS control limit;

3. 51-70 analytes in LCS, 3 analytes allowed in ME of the LCS control limit;
4. 31-50 analytes in LCS, 2 analytes allowed in ME of the LCS control limit;
5. 11-30 analytes in LCS, 1 analytes allowed in ME of the LCS control limit;
6. <11 analytes in LCS, 0 analytes allowed in ME of the LCS control limit.

Surrogates

Surrogate compounds are added to all samples, standards, and blanks whenever possible, when conducting analysis by approved test methods utilizing organic chromatography.

A) The compounds specified are chosen to represent the various chemistries of the target analytes in the method or the measurement quality objectives. They are often specified by the mandated method and are deliberately chosen for their being unlikely to occur as an environmental contaminant. Often this is accomplished by using deuterated analogs of select compounds.

B) The surrogate recoveries are within the acceptance limits when they are within the limits given in the approved method or, if not specified, the limits given by the laboratory generated control charts.

C) The following corrective actions are to be taken when (B) above is not met:
   i) If the surrogates are out of control for a method blank or LCS, the associated batch must be evaluated to determine if this affected any of the individual sample results. Any affected samples must be reanalyzed, if possible. If the second run of analysis shows acceptable recoveries, the reason for the initial poor recoveries must be determined, eliminated and documented. The analysis with the acceptable result is to be reported.
   ii) Sample results with out of control surrogates must be qualified when reporting to the customer as showing adverse matrix effects.

Teklab monitors tabulations and quality control charts of the results from all quality control indicators via the LIMS

A) For each approved test method, or combination of similar test methods; and
B) For each matrix.

Tabulations, quality control charts or any combination of tabulations and quality control charts of results of quality control indicators include or are linked electronically to the following information:

A) Title;
B) Identification of standard operating procedures (SOP) which requires collection of quality control procedure data;
C) Name of quality control procedure being tabulated;
D) Analytical method;
E) Analyte;
F) Analyte units of measure;
G) Matrix;

H) Fortification concentration;
I) Mean;
J) Standard deviation;
K) Upper control limit (UCL);
L) Lower control limit (LCL);
M) Upper warning limit (UWL);
N) Lower warning limit (LWL);
O) Date of analysis;
P) Sample/QC Sample ID;
Q) Analyst's identification;

References for Minimum QC Requirements:
The individual and overall level of QC effort will be, at a minimum, equivalent to the level of QC effort specified under the NELAP certification program. The level of QC effort for samples not covered by NELAP certification will be, at a minimum, the QC required by the specified test method ("SW-846, Standard Methods for the Examination of Water, Wastewater", or "Methods for Chemical Analysis of Water and Wastewater" EPA 600). The level of QC effort for testing TCLP organic (Volatile, Semi-Volatile and Pesticide/Herbicide and PCB) will conform to Protocols of SW-846.

Accuracy, Precision and Sensitivity of Analysis
The fundamental QA/QC objective with respect to accuracy, precision and sensitivity of laboratory analytical data is to achieve the QC acceptance criteria of the analytical protocols. The accuracy, precision and sensitivity of all parameters are listed or referenced in the individual SOPs

26.4 Proficiency Test Samples or Interlaboratory Comparisons

Laboratory performance is monitored internally through the review of worksheets or batches, examination of analyst techniques, internal blind QC samples and participation in performance evaluation studies. Examples of this are performance studies from approved NELAC PT providers, such as WP, WS, AE and RCRA studies and client provided blind Quality Control studies. These studies are intended to evaluate laboratory performance and help identify problems that exist.

26.4.1 Compliance to Accreditation Requirements

The laboratory must successfully analyze at least two TNI-compliant PT samples per calendar year for each accreditation Fields of Proficiency Testing (FoPT) for which the laboratory is accredited. An exception is made for analytes where there is no PT available from any PTPA approved PT provider at least twice per year. In these cases the lab will run the PTs in the minimum time frame the PTs are available and not at all if they are not available.

The successive PTs are analyzed at least five months apart and no more than 7 months apart unless the PT is being used for corrective action to reinstate accreditation or when applying for initial accreditation, in which case the dates of successive PT samples for the same accreditation FoPT is at least fifteen days apart.

To obtain and/or maintain NELAC accreditation Teklab must also:

a. Successfully complete two PT studies for each requested PT field of testing within the most recent three rounds attempted.
b. Have the most recent three rounds attempted occurring within 18 months of the laboratory's application date.
c. Continue to complete PT studies for each PT field of testing and maintain a history or at least two acceptable PT studies for each field of testing out the most recent three.
d. Obtain PT samples from an NELAC PTOB/PTPA approved PT Provider.
e. Authorize the PT provider to release all accreditation and remediation results and acceptable/not acceptable status directly to their NELAP primary accrediting authority in addition to Teklab.
f. Ensure that all PT samples are handled in the same manner as real environmental samples utilizing the same staff, methods, procedures, equipment, facilities and frequency of analysis, as normally used for routine analysis of that analyte and matrix type.
g. Ensure that corrective actions are taken for any failed studies, including determining root cause of the failure. Ensure that documentation of the any corrective actions is provided to the primary accrediting authority.
h. Make available to the assessors of the Primary Accrediting Authority, during on-site audits of Teklab, all laboratory records related to the PT samples and their reporting.

26.4.2 PT Sample Handling and Analysis

Proficiency Testing (PT) samples are treated as typical samples in the normal production process where possible, including the same analysts, preparation, calibration, quality control and acceptance criteria, sequence of analytical steps, number of replicates, and sample log-in. PT samples are not analyzed multiple times unless routine environmental samples are analyzed multiple times. Where PT samples present special problems in the analysis process, they will be treated as laboratory samples where clients have special requests.

The type, composition, concentration and frequency of quality control samples analyzed with the PT samples are the same as with typical samples.

Prior to the closing date of a study, Teklab personnel must not:

- Subcontract analysis of a PT sample to another laboratory being run for accreditation purposes.
- Knowingly receive and analyze a PT for another laboratory being run for accreditation purposes.
- Communicate with an individual from another laboratory concerning the analysis of the PT sample.
- Attempt to find out the assigned value of a PT from the PT Provider.

26.4.3 PT Reporting Procedure
(V1M2 Section 5.2)

Teklab shall evaluate and report the analytical result for accreditation Fields of Proficiency Testing (FoPT) as follows:

a) For instrument technology that employs a multi-point calibration, the laboratory shall evaluate the analytical result to the value of the lowest calibration standard established for the test method used to analyze the PT sample. The working range of the calibration under which the PT sample is analyzed shall be the same range as used for routine environmental samples.
   i. A result for any FoPT at a concentration above or equal to the lowest calibration standard shall be reported as the resultant value.
   ii. A result for any FoPT at a concentration less than the lowest calibration standard shall be reported as less than the value of the lowest calibration standard.

b) For instrument technology (such as ICP-AES or ICP-MS) that employ standardization with a zero point and a single point calibration standard, the laboratory shall evaluate the analytical result to PQL established for the test method used to analyze the PT sample. The PQL for the FoPT shall be the same as used for routine environmental samples.
   i. A result for any FoPT at a concentration above or equal to the PQL shall be reported as the resultant value.
   ii. A result for any FoPT at a concentration less than the PQL shall be reported as less than the value of the PQL.

The laboratory shall report the analytical results for accreditation and experimental FoPTs to the Proficiency Testing Provider (PTP) on or before the closing date of the study using the reporting format specified by the PTP.

On or before the closing date of the study, the laboratory shall authorize the PTP to release the laboratory's final evaluation report directly to the laboratory's Primary Accreditation Body (AB)

Teklab must ensure that corrective actions are taken for any failed studies, including determining root cause of the failure. It must also ensure that documentation of the any corrective actions is provided to the primary accrediting authority. The laboratory institutes corrective action procedures for failed PT samples following the guidelines in Section 13 – "Corrective Action".

The laboratory must maintain a copy of the online data entry summary when the PT results are submitted online. These data summary documents are stored on the server in the applicable Proficiency Testing folder. Hard copies of proficiency testing records are stored for at least five years (or longer as per regulations or client request – see section 5 for more information of record retention). Electronic copies of PT data and documentation are stored on the server or storage hardware indefinitely.

Teklab must make available to the assessors of the Primary Accrediting Authority, during on-site audits of Teklab, all laboratory records related to the PT samples and their reporting.

26.5 Data Review

The laboratory reviews all data generated in the laboratory for compliance with SOP, laboratory and, where appropriate, client requirements. See SOP1290 for information on data review.

26.6 Water Quality

Three water sources are in use at the Teklab, Inc. Collinsville facility: general deionized water, volatiles lab deionized water, and metals lab deionized water.

a. General laboratory deionized water produced by running tap water through an activated carbon filter (tank 1) followed by a cation exchange resin bed filter (tank 2) followed by an anion exchanged resin bed filter (tank 3) followed by two mixed bed resin filter (tank 4 and 5). Tank 5 serves as a backup tank. Tank 4 and 5 are monitored to ensure the resistivity is greater than 1 megohm-cm. An audible alarm will sound if resistivity is less than 1 megohm-cm.

b Volatiles lab deionized water uses general laboratory deionized water as the feed water then passes it through one more activated carbon filter, to remove all trace amounts of organics, then passes through a 0.45µm filter to trap any carbon residue that may leave the carbon filter. This water has a minimum quality of medium water quality.

c. Metals lab deionized water uses general laboratory water as the feed water then passes through a Thermo brand "high capacity" 2 bed resin filter followed by 2 Thermo brand " Ultrapure DI" filters with mixed resin beds. This water passes through an in-line resistivity meter, where all readings are greater than 15 megohm-cm with typical readings of 18megohm-cm. This water meets high quality water specifications.

Section 27 – Reporting the Results

(TNI V1:M2 – Section 5.10)

The result of each test performed is reported accurately, clearly, unambiguously, and objectively and complies with all specific instructions contained in the test method. Laboratory results are reported in a test report that includes all the information requested by the client and necessary for the interpretation of the test results and all information required by the method used. See SOP#1290 for more information on reporting of results.

The laboratory pays particular care and attention to the arrangement of the report, especially with regard to presentation of the sample results and ease of assimilation by the reader. The format is carefully and specifically designed for each type of approved test method carried out, but the headings are standardized as far as possible.

27.1 Test Reports

The laboratory issues sample data or sample result reports accurately and in a manner that is understandable to the recipient. Each test report generated contains the following information (unless the laboratory has a valid reason for not doing so, such as a written agreement with the client).

- Name, address and phone number of the laboratory;
- Name and address of client and project;
- The TNI logo with the phrase "NELAP accredited Laboratory". The laboratory's accreditation number appears on the case narrative page of each report;
- Unique identification of the report (such as work order number) and of each page and identification of the total number of pages. Each page in each section is identified as a number of the total report pages, for example 3 of 10 or 1 of 20.
- Report title, such as "Laboratory Results";
- Description and identification of samples (including client ID code);
- Date of sample receipt, sample collection and sample analysis (time of sample collection, if provided by client, and time of sample preparation(if requested by the client) and analysis, if the required holding time for either activity is less than or equal to 48 hours);

- Approved test method and preparation method utilized, including revision numbers;
- Clear indication of NELAP accredited analysis by listing the letters "NELAP" next to each accredited analyte;
- Sample results with any failures or deviations from approved test methods or QC criteria identified in the case narrative, sample narrative, and/or with data qualifiers;
- Signature and name or electronic signature and name, and title of the individuals accepting responsibility for the content of the report and date of issue;
- Clear identification, including the lab name or accreditation number of any sample results that were generated by a subcontracted laboratory;
- A description of the calculations or operations performed on the data, a summary and analysis of the data, and a statement of conclusions drawn from the analysis;
- Identification of the reporting units, such as µg/L or mg/kg;
- A statement that the report shall not be reproduced, except in full, without the written approval of the laboratory, where appropriate;
- Where applicable, a statement to the effect that the sample results relate only to the analytes of interest tested or to the sample as received by the laboratory;
- Where applicable, characterization and condition of the sample;
- Where applicable, reference to sampling procedure; and
- Clear, unequivocal identification of analytical results generated by an approved test method, for which the laboratory is accredited in accordance with the laboratory's accreditation.

27.2 Supplemental Test Report Information

When necessary for interpretation of the results or when requested by the client, test reports include the following additional information:

a) deviations from, additions to, or exclusions from the test method, information on specific test conditions, such as environmental conditions, and any non-standard conditions that may have affected the quality of the results, and any information on the use and definitions of data qualifiers;

b) a statement of compliance/non-compliance when requirements of the management system are not met, including identification of test results that did not meet the laboratory and regulatory sample acceptance requirements, such as holding time, preservation, etc.;

c) where applicable and when requested by the client, a statement on the estimated uncertainty of the measurement is available

d) Teklab does not include opinions and interpretations in laboratory reports

e) additional information which may be required by specific methods or client;

f) qualification of results with values outside the calibration range as appropriate.

27.3 Environmental Testing Obtained from Subcontractors

When Teklab must subcontract analysis due to workload, need for further expertise, temporary incapacity, or on a continuing basis, work is placed with a laboratory accredited under NELAP for the test to be performed or with a laboratory that meets the applicable statutory and regulatory requirements for performing the tests and submitting the results of test performed.

All subcontracted analyses and the name of the subcontracted lab are documented in the case narrative of the final report. Any non-NELAP accredited work does not have the letters "NELAP" in the qualifier column.

The intent to subcontract analysis is specified in the project quote when Teklab intends to subcontract any part of a project. When possible, Teklab will advise the client in writing of any subcontracted analysis.

Teklab maintains a register of all subcontractors that it uses for environmental tests and a record of the evidence of compliance for each. The subcontractors may report their results in writing or electronically. A copy of the subcontractors report is made available to the client if requested. A record of subcontracted analysis is retained at Teklab and is archived in accordance with this manual. See Section 10 for more information on Subcontracting.

27.4 Electronic Transmission of Results

The laboratory ensures that when clients require transmission of test results by telephone, tele-facsimile or other electronic or electromagnetic means, laboratory personnel follow documented procedures that ensure the requirements of the TNI Standard and associated procedures to protect the confidentiality and proprietary rights of the client are met (see Section 21- "Environmental Methods and Method Validation"). All electronic transmissions are limited to the contracting client and their designated recipients. Any transmission to a third party requires written confirmation by the contracting client.

27.4.1 Electronic Data Deliverables (EDDs)

EDDs are client driven deliverables that can be produced in various file formats; such as text and Excel files. EDDs, when requested by a client, are provided in addition to the final report. EDDs are prepared using Microsoft Access/VBA, which exports the EDD into the file type the client has requested. EDD files are prepared by Project Managers for the client. Teklab's IT Programmer develops the EDD per client request.

Some clients EDDs are developed to use Equis Data Processor (EDP) software to check the EDD file using the client provided format and reference files. The EDP software checks for, amongst other things, formatting errors and valid values. Problematic EDDs are rejected and flagged for specific errors, helping facilitate any corrections before the EDD is sent to the customer. All electronic transmissions follow Section 27.4 above.

27.5 Amendments to Test Reports

Material amendments to a test report after it has been issued are made only in the form of another document or data transfer. All supplemental reports meet all the requirements for the initial report and the requirements of this Quality Manual.

See SOP1290 for more information on revised reports.

27.6 Electronic signatures

Electronic signatures used in LIMS reports are stored securely in the LIMS SQL tables. Electronic signatures used for purposes out with the LIMS (e.g. signing SOPs, Teklab correspondence) should be stored on the users U Drive.

27.7 Report Signatories

Below is a list of parties authorized to release testing results to clients.

Elizabeth Hurley	Director of Customer Service	_____
Michael Austin	Project Manager	_____
Shelly Hennessy	Project Manager	_____
Marvin Darling	Project Manager	_____
Emily Pohlman	Project Manager	_____

Section 28 - Safety

Safety is the number one priority of every employee at Teklab, Inc. Teklab trains employees to ensure that no work is performed in an unsafe environment. Where safety practices are included as part of an approved test method, these practices are strictly followed. While more specific safety criteria are not an aspect of this manual, laboratory personnel must always apply appropriate safety practices.

The specifics of the Teklab safety program are detailed in the Teklab Chemical Hygiene Plan and are defined by the Teklab Safety Officer at monthly safety meetings. Teklab complies with and exceeds all applicable OSHA regulations concerning safe laboratory and workplace operations. See SOP 1161 for more information on Safety.

Teklab's Emergency Action Plan (EAP) is reviewed at least annually by the Safety Officer.

Fire/spill drills are conducted annually.

Section 29 - Bibliography

References:

1. The TNI Standard: Modules 1-7 in the 2009 TNI Environmental Laboratory Sector Standard – Volume 1 – Management and Technical Requirements for Laboratories Performing Environmental Analysis (EL-V1, M1 through M7, ISO-2009).

2. "Test Method For The Evaluation of Solid Wastes SW846", "Laboratory Manual Physical/Chemical Properties", volumes 1A, 1B, and 1C, 3rd edition, Office of Solid Waste and Emergency Response, Environmental Protection Agency.

3. "Standard Method for the Examination of Water and Wastewater" online

4. EPA No. 600/4-79-020, "Methods of Chemical Analysis of Water and Wastes" (March 1983).

5. "Quality Assurance of Chemical Measurements" 1989, John Keenan Taylor, Lewis Publishers, Inc.

Appendix A

Ethics and Data Integrity Policy

Ethics, Legal Responsibility, & Conflict of Interest (Rev. B)

Effective Date: 11/14/05
Reference: TNI Standard – Quality Systems

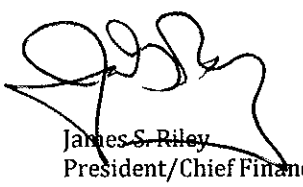
To all Teklab, Inc. Employees, Customers and Vendors,

Teklab, Inc. will not tolerate any improper, unethical or illegal actions by its employees, customers or vendors. No customer, employee or vendor shall enter into any agreement (written or implied) and shall not engage in activities which would put any commercial, financial or other pressure on an employee of Teklab, Inc. which might adversely affect the quality of that employees work. Any employee determined to be involved in such behavior will be disciplined, up to and including termination of employment at Teklab, Inc. Any customer or vendor determined to be involved in such behavior will be sanctioned, up to and including termination of any future business with Teklab, Inc.

Teklab, Inc. will use the following procedures to proactively detect any improper, unethical or illegal actions:
1.) Internal data reviews and audits
2.) Daily interactions of the management staff with employees
3.) Daily interactions with customers and vendors
4.) Confidentiality for individuals reporting potential problems (unless the problem develops to the point where Teklab, Inc. no longer has control (i.e. court orders, etc.))
5.) Internal investigations when employees identify potential problems
6.) External investigations by the appropriate authorities, when necessary
7.) Prosecution when appropriate

All Teklab, Inc. personnel must be free from any commercial, financial and any other pressures that might adversely affect the quality of their work. Teklab, Inc. shall use the following procedures to proactively detect any of those pressures:
1) Daily interactions of the management staff with employees
2) Daily interactions with customers and vendors
3) Confidentiality for individuals reporting potential problems (unless the problem develops to the point where Teklab, Inc. no longer has control (i.e. court orders, etc.))
4) Internal investigations when employees identify potential problems
5) External investigations by the appropriate authorities, when necessary
6) Prosecution when appropriate

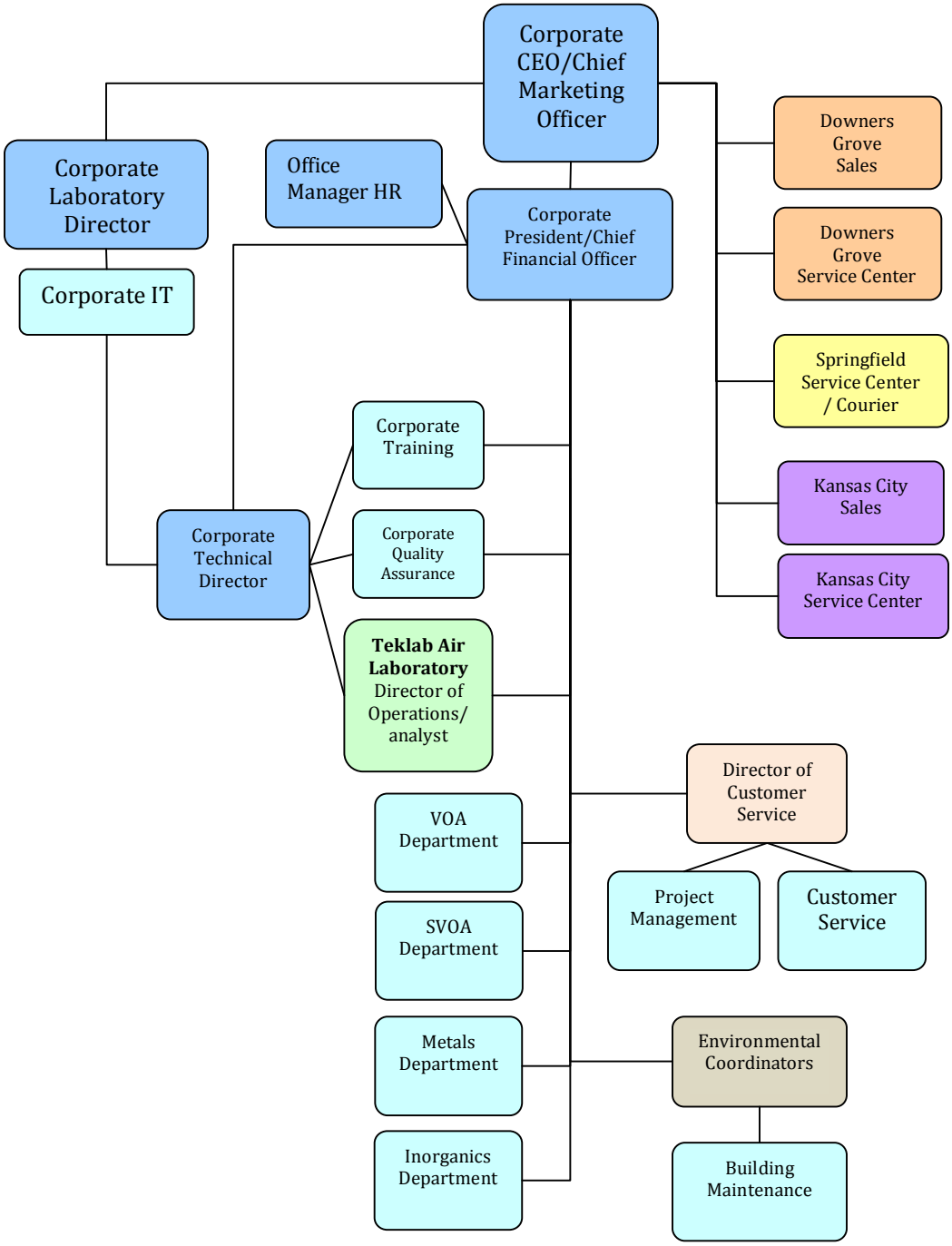
We at Teklab, Inc. take our reputation and the law seriously. We will not tolerate any improper, unethical or illegal actions. We will turn people in to the proper authorities and/or press charges, when appropriate.



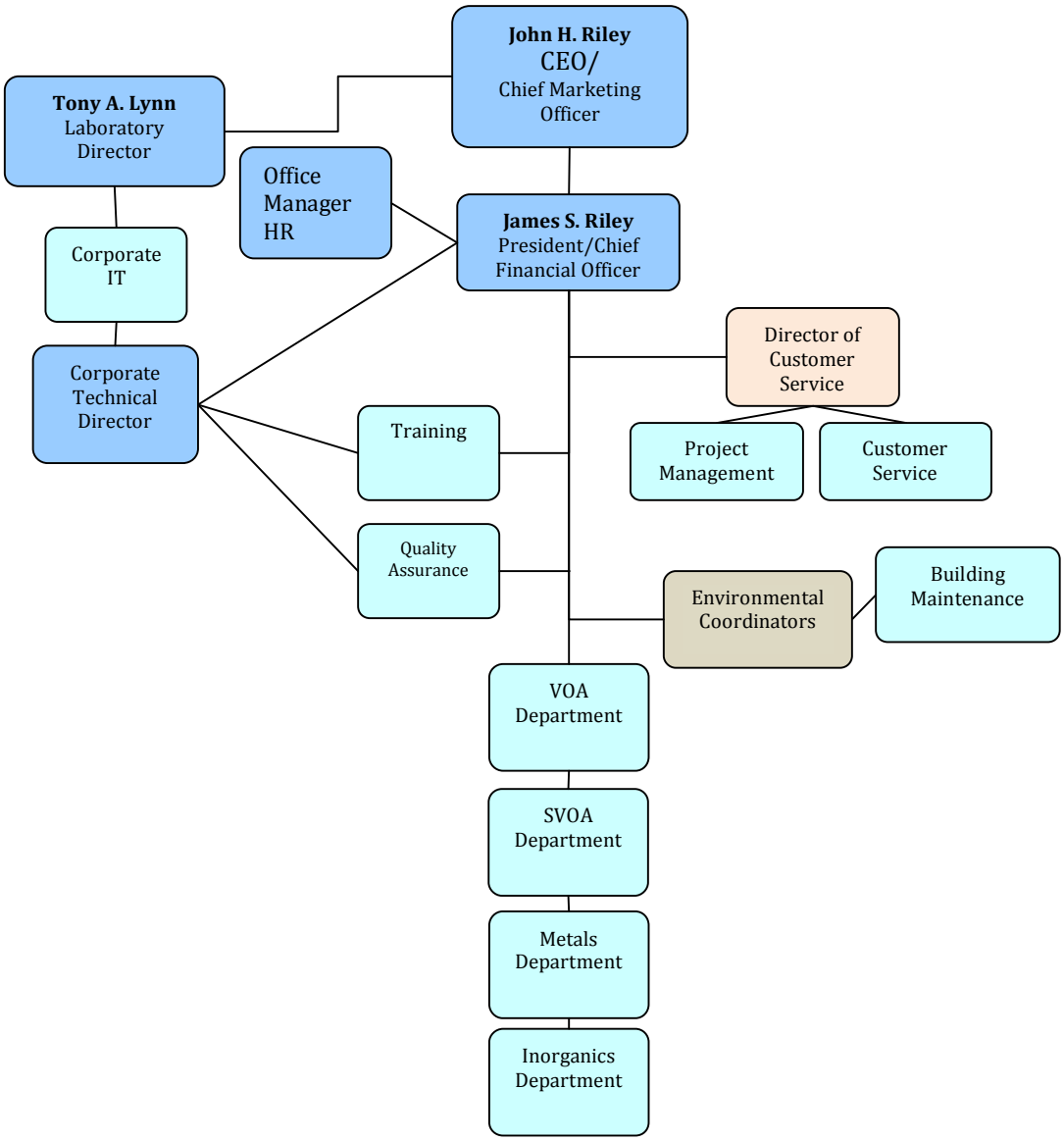
James S. Riley
President/Chief Financial Officer

Appendix B
Laboratory Organization Charts

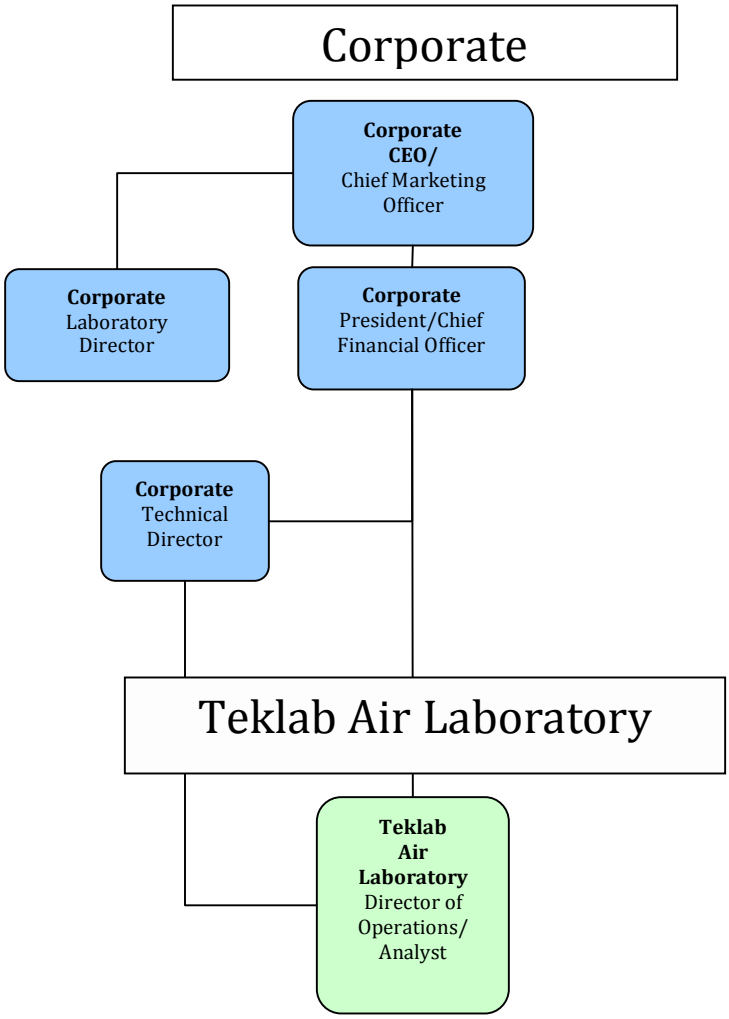
B.1 Teklab Inc



B.2 Teklab Inc – Collinsville (Corporate)



B.3 Teklab Inc – Teklab Air Laboratory



Appendix D

Laboratory Accreditation/Certification List

Teklab Inc maintains the following certifications and accreditations

State	Dept	Cert #	NELAP	Exp Date	Location
Illinois	IEPA	100226	NELAP	1/31/2022	Collinsville
Kansas	KDHE	E-10374	NELAP	4/30/2022	Collinsville
Louisiana	LDEQ	166493	NELAP	6/30/2022	Collinsville
Louisiana	LDEQ	166578	NELAP	6/30/2022	Collinsville Air
Oklahoma	ODEQ	9978	NELAP	8/31/2021	Collinsville
Illinois	IDPH	17584		5/31/2021	Collinsville
Arkansas	ADEQ	88-0966		3/14/2022	Collinsville
Kentucky	UST	0073		1/31/2022	Collinsville
Missouri (Micro)	MDNR	00930		5/31/2021	Collinsville
Missouri	MDNR	00930		1/31/2022	Collinsville

The certificates and parameter lists (which may differ) for each organization can be found on the following pages and on the Teklab Inc website.

If accreditation is terminated or suspended, the laboratory will immediately cease to use the certificate number reference in any way and inform clients impacted by the change.

STATE OF LOUISIANA
DEPARTMENT OF ENVIRONMENTAL QUALITY

Is hereby granting a Louisiana Environmental Laboratory Accreditation to

Teklab Air Laboratory
1355 North Bluff Rd Ste F
Collinsville, Illinois 62234

Agency Interest No. 166578
Activity No. ACC20210001

According to the Louisiana Administrative Code, Title 33, Part I, Subpart 3, LABORATORY ACCREDITATION, the State of Louisiana formally recognizes that this laboratory is technically competent to perform the environmental analyses listed on the scope of accreditation detailed in the attachment.

The laboratory agrees to perform all analyses listed on this scope of accreditation according to the Part I, Subpart 3 requirements and agrees to adapt to any changes in the requirements. It also acknowledges that continued accreditation is dependent on successful ongoing compliance with the applicable requirements of Part I and the 2009 TNI Standard by which the laboratory was assessed. Please contact the Department of Environmental Quality, Louisiana Environmental Laboratory Accreditation Program (LELAP) to verify the laboratory's scope of accreditation and accreditation status.

Accreditation by the State of Louisiana is not an endorsement or a guarantee of validity of the data generated by the laboratory. Accreditation of the environmental laboratory does not imply that a product, process, system, or person is approved by LELAP. To be accredited initially and maintain accreditation, the laboratory agrees to participate in two single-blind, single-concentration PT studies, where available, per year for each field of testing for which it seeks accreditation or maintains accreditation as required in LAC 33:I.4711.

Cheryl Sonnier Nolan
Administrator
Public Participation and Permit Support Division

Issued Date: 02 June 2021

Effective Date: July 1, 2021
Expiration Date: June 30, 2022
Certificate Number: 05003

STATE OF LOUISIANA
DEPARTMENT OF ENVIRONMENTAL QUALITY

Effective Date: July 1, 2021

Teklab Air Laboratory
AI Number: 166578
Activity No. ACC20210001
Expiration Date: June 30, 2022

1355 North Bluff Rd Ste F, Collinsville, Illinois 62234

Certificate Number: 05003

Air Emissions

Analyte	Method Name	Method Code	Type	AB
5105 - 1,1,1,2-Tetrachloroethane	EPA TO-15	10248803	NELAP	LA
5160 - 1,1,1-Trichloroethane	EPA TO-15	10248803	NELAP	LA
5110 - 1,1,2,2-Tetrachloroethane	EPA TO-15	10248803	NELAP	LA
5195 - 1,1,2-Trichloro-2,2,2-trifluoroethane (Freon 113a)	EPA TO-15	10248803	NELAP	LA
5165 - 1,1,2-Trichloroethane	EPA TO-15	10248803	NELAP	LA
4630 - 1,1-Dichloroethane	EPA TO-15	10248803	NELAP	LA
4640 - 1,1-Dichloroethylene	EPA TO-15	10248803	NELAP	LA
5155 - 1,2,4-Trichlorobenzene	EPA TO-15	10248803	NELAP	LA
5210 - 1,2,4-Trimethylbenzene	EPA TO-15	10248803	NELAP	LA
4585 - 1,2-Dibromoethane (EDB, Ethylene dibromide)	EPA TO-15	10248803	NELAP	LA
4695 - 1,2-Dichloro-1,1,2,2-tetrafluoroethane (Freon-114)	EPA TO-15	10248803	NELAP	LA
4610 - 1,2-Dichlorobenzene	EPA TO-15	10248803	NELAP	LA
4635 - 1,2-Dichloroethane (Ethylene dichloride)	EPA TO-15	10248803	NELAP	LA
4655 - 1,2-Dichloropropane	EPA TO-15	10248803	NELAP	LA
5215 - 1,3,5-Trimethylbenzene	EPA TO-15	10248803	NELAP	LA
9318 - 1,3-Butadiene	EPA TO-15	10248803	NELAP	LA
4615 - 1,3-Dichlorobenzene	EPA TO-15	10248803	NELAP	LA
4620 - 1,4-Dichlorobenzene	EPA TO-15	10248803	NELAP	LA
4735 - 1,4-Dioxane (1,4- Diethyleneoxide)	EPA TO-15	10248803	NELAP	LA
4862 - 1-Methyl-2-isopropylbenzene (o-Cymene)	EPA TO-15	10248803	NELAP	LA
5220 - 2,2,4-Trimethylpentane (Isooctane)	EPA TO-15	10248803	NELAP	LA
4410 - 2-Butanone (Methyl ethyl ketone, MEK)	EPA TO-15	10248803	NELAP	LA
4535 - 2-Chlorotoluene	EPA TO-15	10248803	NELAP	LA
4860 - 2-Hexanone	EPA TO-15	10248803	NELAP	LA
4542 - 4-Ethyltoluene	EPA TO-15	10248803	NELAP	LA
4995 - 4-Methyl-2-pentanone (MIBK)	EPA TO-15	10248803	NELAP	LA
4315 - Acetone	EPA TO-15	10248803	NELAP	LA
4320 - Acetonitrile	EPA TO-15	10248803	NELAP	LA
4325 - Acrolein (Propenal)	EPA TO-15	10248803	NELAP	LA
4340 - Acrylonitrile	EPA TO-15	10248803	NELAP	LA
4355 - Allyl chloride (3-Chloropropene)	EPA TO-15	10248803	NELAP	LA
4375 - Benzene	EPA TO-15	10248803	NELAP	LA
5635 - Benzyl chloride	EPA TO-15	10248803	NELAP	LA
4395 - Bromodichloromethane	EPA TO-15	10248803	NELAP	LA
4400 - Bromoform	EPA TO-15	10248803	NELAP	LA
4450 - Carbon disulfide	EPA TO-15	10248803	NELAP	LA
4455 - Carbon tetrachloride	EPA TO-15	10248803	NELAP	LA
4475 - Chlorobenzene	EPA TO-15	10248803	NELAP	LA
4575 - Chlorodibromomethane (dibromochloromethane)	EPA TO-15	10248803	NELAP	LA
4485 - Chloroethane (Ethyl chloride)	EPA TO-15	10248803	NELAP	LA
4505 - Chloroform	EPA TO-15	10248803	NELAP	LA
4525 - Chloroprene (2-Chloro-1,3-	EPA TO-15	10248803	NELAP	LA

Clients and Customers are urged to verify the laboratory's current certification status with the Louisiana Environmental Laboratory Accreditation Program.

Air Emissions

Analyte	Method Name	Method Code	Type	AB
butadiene)				
4555 - Cyclohexane	EPA TO-15	10248803	NELAP	LA
9375 - Di-isopropylether (DIPE) (Isopropyl ether)	EPA TO-15	10248803	NELAP	LA
4625 - Dichlorodifluoromethane (Freon-12)	EPA TO-15	10248803	NELAP	LA
4750 - Ethanol	EPA TO-15	10248803	NELAP	LA
4755 - Ethyl acetate	EPA TO-15	10248803	NELAP	LA
4770 - Ethyl-t-butyl ether (ETBE) (2-Ethoxy-2-methylpropane)	EPA TO-15	10248803	NELAP	LA
4765 - Ethylbenzene	EPA TO-15	10248803	NELAP	LA
4835 - Hexachlorobutadiene	EPA TO-15	10248803	NELAP	LA
4895 - Isopropyl alcohol (2-Propanol, Isopropanol)	EPA TO-15	10248803	NELAP	LA
4900 - Isopropylbenzene (Cumene)	EPA TO-15	10248803	NELAP	LA
4950 - Methyl bromide (Bromomethane)	EPA TO-15	10248803	NELAP	LA
4960 - Methyl chloride (Chloromethane)	EPA TO-15	10248803	NELAP	LA
4990 - Methyl methacrylate	EPA TO-15	10248803	NELAP	LA
5000 - Methyl tert-butyl ether (MTBE)	EPA TO-15	10248803	NELAP	LA
4975 - Methylene chloride (Dichloromethane)	EPA TO-15	10248803	NELAP	LA
5005 - Naphthalene	EPA TO-15	10248803	NELAP	LA
4836 - Propylene	EPA TO-15	10248803	NELAP	LA
5100 - Styrene	EPA TO-15	10248803	NELAP	LA
4370 - T-amylmethylether (TAME)	EPA TO-15	10248803	NELAP	LA
5115 - Tetrachloroethylene (Perchloroethylene)	EPA TO-15	10248803	NELAP	LA
5120 - Tetrahydrofuran (THF)	EPA TO-15	10248803	NELAP	LA
5140 - Toluene	EPA TO-15	10248803	NELAP	LA
5170 - Trichloroethene (Trichloroethylene)	EPA TO-15	10248803	NELAP	LA
5175 - Trichlorofluoromethane (Fluorotrichloromethane, Freon 11)	EPA TO-15	10248803	NELAP	LA
5225 - Vinyl acetate	EPA TO-15	10248803	NELAP	LA
5230 - Vinyl bromide (Bromoethane)	EPA TO-15	10248803	NELAP	LA
5235 - Vinyl chloride	EPA TO-15	10248803	NELAP	LA
5260 - Xylene (total)	EPA TO-15	10248803	NELAP	LA
4645 - cis-1,2-Dichloroethylene	EPA TO-15	10248803	NELAP	LA
4680 - cis-1,3-Dichloropropene	EPA TO-15	10248803	NELAP	LA
5240 - m+p-xylene	EPA TO-15	10248803	NELAP	LA
4435 - n-Butylbenzene	EPA TO-15	10248803	NELAP	LA
4825 - n-Heptane	EPA TO-15	10248803	NELAP	LA
4855 - n-Hexane	EPA TO-15	10248803	NELAP	LA
5090 - n-Propylbenzene	EPA TO-15	10248803	NELAP	LA
5250 - o-Xylene	EPA TO-15	10248803	NELAP	LA
4440 - sec-Butylbenzene	EPA TO-15	10248803	NELAP	LA
4420 - tert-Butyl alcohol	EPA TO-15	10248803	NELAP	LA
4445 - tert-Butylbenzene	EPA TO-15	10248803	NELAP	LA
4700 - trans-1,2-Dichloroethylene	EPA TO-15	10248803	NELAP	LA
4685 - trans-1,3-Dichloropropylene	EPA TO-15	10248803	NELAP	LA

Non Potable Water

Analyte	Method Name	Method Code	Type	AB
NONE	NONE	NONE	NONE	NONE

Solid Chemical Materials

Analyte	Method Name	Method Code	Type	AB
NONE	NONE	NONE	NONE	NONE

Biological Tissue

Analyte	Method Name	Method Code	Type	AB
NONE	NONE	NONE	NONE	NONE

STATE OF LOUISIANA
DEPARTMENT OF ENVIRONMENTAL QUALITY

Is hereby granting a Louisiana Environmental Laboratory Accreditation to

Teklab Inc
5445 Horseshoe Lake Rd
Collinsville, Illinois 62234-7425

Agency Interest No. 166493
Activity No. ACC20210001

According to the Louisiana Administrative Code, Title 33, Part I, Subpart 3, LABORATORY ACCREDITATION, the State of Louisiana formally recognizes that this laboratory is technically competent to perform the environmental analyses listed on the scope of accreditation detailed in the attachment.

The laboratory agrees to perform all analyses listed on this scope of accreditation according to the Part I, Subpart 3 requirements and agrees to adapt to any changes in the requirements. It also acknowledges that continued accreditation is dependent on successful ongoing compliance with the applicable requirements of Part I and the 2009 TNI Standard by which the laboratory was assessed. Please contact the Department of Environmental Quality, Louisiana Environmental Laboratory Accreditation Program (LELAP) to verify the laboratory's scope of accreditation and accreditation status.

Accreditation by the State of Louisiana is not an endorsement or a guarantee of validity of the data generated by the laboratory. Accreditation of the environmental laboratory does not imply that a product, process, system, or person is approved by LELAP. To be accredited initially and maintain accreditation, the laboratory agrees to participate in two single-blind, single-concentration PT studies, where available, per year for each field of testing for which it seeks accreditation or maintains accreditation as required in LAC 33:I.4711.

Cheryl Sonnier Nolan
Administrator
Public Participation and Permit Support Division

Issued Date: 02 June 2021

Effective Date: July 1, 2021
Expiration Date: June 30, 2022
Certificate Number: 05002

STATE OF LOUISIANA
DEPARTMENT OF ENVIRONMENTAL QUALITY

Effective Date: July 1, 2021

Teklab Inc
AI Number: 166493
Activity No. ACC20210001
Expiration Date: June 30, 2022

5445 Horseshoe Lake Rd, Collinsville, Illinois 62234-7425

Certificate Number: 05002

Air Emissions

Analyte	Method Name	Method Code	Type	AB
8880 - Aroclor-1016 (PCB-1016)	EPA TO-10A (GC/ECD)	10247504	NELAP	LA
8885 - Aroclor-1221 (PCB-1221)	EPA TO-10A (GC/ECD)	10247504	NELAP	LA
8890 - Aroclor-1232 (PCB-1232)	EPA TO-10A (GC/ECD)	10247504	NELAP	LA
8895 - Aroclor-1242 (PCB-1242)	EPA TO-10A (GC/ECD)	10247504	NELAP	LA
8900 - Aroclor-1248 (PCB-1248)	EPA TO-10A (GC/ECD)	10247504	NELAP	LA
8905 - Aroclor-1254 (PCB-1254)	EPA TO-10A (GC/ECD)	10247504	NELAP	LA
8910 - Aroclor-1260 (PCB-1260)	EPA TO-10A (GC/ECD)	10247504	NELAP	LA
8913 - Aroclor-1268 (PCB-1268)	EPA TO-10A (GC/ECD)	10247504	NELAP	LA
6380 - 1-Methylnaphthalene	EPA TO-13A	10248405	NELAP	LA
5795 - 2-Chloronaphthalene	EPA TO-13A	10248405	NELAP	LA
6385 - 2-Methylnaphthalene	EPA TO-13A	10248405	NELAP	LA
5500 - Acenaphthene	EPA TO-13A	10248405	NELAP	LA
5505 - Acenaphthylene	EPA TO-13A	10248405	NELAP	LA
5555 - Anthracene	EPA TO-13A	10248405	NELAP	LA
5575 - Benz(a)anthracene	EPA TO-13A	10248405	NELAP	LA
5580 - Benzo(a)pyrene	EPA TO-13A	10248405	NELAP	LA
5585 - Benzo(b)fluoranthene	EPA TO-13A	10248405	NELAP	LA
5605 - Benzo(e)pyrene	EPA TO-13A	10248405	NELAP	LA
5590 - Benzo(g,h,i)perylene	EPA TO-13A	10248405	NELAP	LA
5600 - Benzo(k)fluoranthene	EPA TO-13A	10248405	NELAP	LA
5855 - Chrysene	EPA TO-13A	10248405	NELAP	LA
5895 - Dibenz(a,h)anthracene	EPA TO-13A	10248405	NELAP	LA
6265 - Fluoranthene	EPA TO-13A	10248405	NELAP	LA
6270 - Fluorene	EPA TO-13A	10248405	NELAP	LA
6315 - Indeno(1,2,3-cd)pyrene	EPA TO-13A	10248405	NELAP	LA
5005 - Naphthalene	EPA TO-13A	10248405	NELAP	LA
6615 - Phenanthrene	EPA TO-13A	10248405	NELAP	LA
6665 - Pyrene	EPA TO-13A	10248405	NELAP	LA

Non Potable Water

Analyte	Method Name	Method Code	Type	AB
NONE	NONE	NONE	NONE	NONE

Solid Chemical Materials

Analyte	Method Name	Method Code	Type	AB
NONE	NONE	NONE	NONE	NONE

Biological Tissue

Analyte	Method Name	Method Code	Type	AB
NONE	NONE	NONE	NONE	NONE

Clients and Customers are urged to verify the laboratory's current certification status with the Louisiana Environmental Laboratory Accreditation Program.

State of Kansas

Department of Health and Environment

CERTIFICATE

This is to certify that Certification No.: E-10374

Teklab, Inc.

5445 Horseshoe Lake Road
Collinsville, IL 62234-7425

has been accredited in accordance with K.S.A. 65-1,109a under the standards adopted in K.A.R. 28-15-36 for performing environmental analyses for the parameters listed on the most current scope of accreditation. Continuous accreditation depends on successful, ongoing participation in the program. Clients are urged to verify with this agency the laboratory's certification status for particular methods and analytes.

Effective Date: 5/1/2021

Expiration Date: 4/30/2022

Director
Office of Laboratory Services

Certification Section Chief
Office of Laboratory Services

Division of Environment
Kansas Health and Environmental Laboratories
Environmental Laboratory Improvement Program
6810 SE Dwight Street
Topeka, KS 66620-0001

Kansas Department of Health and Environment

Phone: 785-296-3811
Fax: 785-559-5207
KDHE.ELIPO@KS.GOV
www.kdheks.gov/enviab

Lee A. Norman, M.D., Secretary

Laura Kelly, Governor

The Kansas Department of Health and Environment encourages all clients and data users to verify the most current scope of accreditation for certification number E-10374

The analytes tested and the corresponding matrix and method which a laboratory is authorized to perform at any given time will be those indicated in the most recently issued scope of accreditation. The most recent scope of accreditation supersedes all previously issued scopes of accreditation. It is the certified laboratory's responsibility to review this document for any discrepancies. This scope of accreditation will be recalled in the event that your laboratory's certification is revoked.

Accreditation Start: 5/1/2021 Accreditation End: 4/30/2022

EPA Number: ***IL00054*** **Scope of Accreditation for Certification Number: E-10374**

Teklab, Inc.

	Primary AB
Program/Matrix: ***CWA (Non Potable Water)***	
Method EPA 120.1	
Conductivity	IL
Method EPA 1631E	
Mercury	IL
Method EPA 1664A	
Oil & Grease	IL
Method EPA 180.1	
Turbidity	IL
Method EPA 200.7	
Aluminum	IL
Antimony	IL
Arsenic	IL
Barium	IL
Beryllium	IL
Boron	IL
Cadmium	IL
Calcium	IL
Chromium	IL
Cobalt	IL
Copper	IL
Iron	IL
Lead	IL
Magnesium	IL
Manganese	IL
Molybdenum	IL
Nickel	IL
Potassium	IL

Teklab, Inc.

	Primary AB
Program/Matrix: *CWA (Non Potable Water)*	
Selenium	IL
Silver	IL
Sodium	IL
Tin	IL
Titanium	IL
Vanadium	IL
Zinc	IL
Method EPA 200.8	
Aluminum	IL
Antimony	IL
Arsenic	IL
Barium	IL
Beryllium	IL
Boron	IL
Cadmium	IL
Calcium	IL
Chromium	IL
Cobalt	IL
Copper	IL
Iron	IL
Lead	IL
Magnesium	IL
Manganese	IL
Molybdenum	IL
Nickel	IL
Potassium	IL
Selenium	IL
Silver	IL
Sodium	IL
Thallium	IL
Tin	IL
Titanium	IL
Vanadium	IL
Zinc	IL
Method EPA 245.1	
Mercury	IL
Method EPA 335.4	
Cyanide	IL
Method EPA 350.1	
Ammonia as N	IL
Method EPA 351.2	
Total Kjeldahl Nitrogen (TKN)	IL
Method EPA 353.2	
Nitrate	IL
Nitrite	IL
Method EPA 365.4	

Teklab, Inc.

	Primary AB
Program/Matrix: *CWA (Non Potable Water)*	
Phosphorus	IL
Method EPA 375.2	
Sulfate	IL
Method EPA 410.4	
Chemical oxygen demand	IL
Method EPA 420.1	
Total phenolics	IL
Method EPA 420.4	
Total phenolics	IL
Method EPA 608.3 GC-ECD	
4,4'-DDD	IL
4,4'-DDE	IL
4,4'-DDT	IL
Aldrin	IL
alpha-BHC (alpha-Hexachlorocyclohexane)	IL
Aroclor-1016 (PCB-1016)	IL
Aroclor-1221 (PCB-1221)	IL
Aroclor-1232 (PCB-1232)	IL
Aroclor-1242 (PCB-1242)	IL
Aroclor-1248 (PCB-1248)	IL
Aroclor-1254 (PCB-1254)	IL
Aroclor-1260 (PCB-1260)	IL
beta-BHC (beta-Hexachlorocyclohexane)	IL
Chlordane (tech.)(N.O.S.)	IL
delta-BHC	IL
Dieldrin	IL
Endosulfan I	IL
Endosulfan II	IL
Endosulfan sulfate	IL
Endrin	IL
Endrin aldehyde	IL
gamma-BHC (Lindane, gamma-HexachlorocyclohexanE)	IL
Heptachlor	IL
Heptachlor epoxide	IL
Toxaphene (Chlorinated camphene)	IL
Method EPA 624.1	
1,1,1-Trichloroethane	IL
1,1,2,2-Tetrachloroethane	IL
1,1,2-Trichloroethane	IL
1,1-Dichloroethane	IL
1,1-Dichloroethylene	IL
1,2-Dichlorobenzene (o-Dichlorobenzene)	IL
1,2-Dichloroethane (Ethylene dichloride)	IL
1,2-Dichloropropane	IL
1,3-Dichlorobenzene	IL
1,4-Dichlorobenzene	IL

Teklab, Inc.

	Primary AB
Program/Matrix: ***CWA (Non Potable Water)***	
2-Chloroethyl vinyl ether	IL
Acrolein (Propenal)	IL
Acrylonitrile	IL
Benzene	IL
Bromodichloromethane	IL
Bromoform	IL
Carbon tetrachloride	IL
Chlorobenzene	IL
Chlorodibromomethane	IL
Chloroethane (Ethyl chloride)	IL
Chloroform	IL
cis-1,3-Dichloropropene	IL
Ethylbenzene	IL
Methyl bromide (Bromomethane)	IL
Methyl chloride (Chloromethane)	IL
Methylene chloride (Dichloromethane)	IL
Tetrachloroethylene (Perchloroethylene)	IL
Toluene	IL
trans-1,2-Dichloroethylene	IL
trans-1,3-Dichloropropylene	IL
Trichloroethene (Trichloroethylene)	IL
Trichlorofluoromethane (Fluorotrichloromethane, Freon 11)	IL
Vinyl chloride	IL
Method EPA 625.1	
1,2,4-Trichlorobenzene	IL
2,2'-Oxybis(1-chloropropane), bis(2-Chloro-1-methylethyl)ether	IL
2,4,6-Trichlorophenol	IL
2,4-Dichlorophenol	IL
2,4-Dimethylphenol	IL
2,4-Dinitrophenol	IL
2,4-Dinitrotoluene (2,4-DNT)	IL
2,6-Dinitrotoluene (2,6-DNT)	IL
2-Chloronaphthalene	IL
2-Chlorophenol	IL
2-Methyl-4,6-dinitrophenol (4,6-Dinitro-2-methylphenol)	IL
2-Nitrophenol	IL
3,3'-Dichlorobenzidine	IL
4-Bromophenyl phenyl ether	IL
4-Chloro-3-methylphenol	IL
4-Chlorophenyl phenylether	IL
4-Nitrophenol	IL
Acenaphthene	IL
Acenaphthylene	IL
Anthracene	IL
Benzidine	IL
Benzo(a)anthracene	IL
Benzo(a)pyrene	IL

Teklab, Inc. **Primary AB**

Program/Matrix: ***CWA (Non Potable Water)***

Benzo(b)fluoranthene	IL
Benzo(g,h,i)perylene	IL
Benzo(k)fluoranthene	IL
bis(2-Chloroethoxy)methane	IL
bis(2-Chloroethyl) ether	IL
Butyl benzyl phthalate	IL
Chrysene	IL
Di(2-ethylhexyl) phthalate (bis(2-Ethylhexyl)phthalate, DEHP)	IL
Dibenz(a,h) anthracene	IL
Diethyl phthalate	IL
Dimethyl phthalate	IL
Di-n-butyl phthalate	IL
Di-n-octyl phthalate	IL
Fluoranthene	IL
Fluorene	IL
Hexachlorobenzene	IL
Hexachlorobutadiene	IL
Hexachlorocyclopentadiene	IL
Hexachloroethane	IL
Indeno(1,2,3-cd) pyrene	IL
Isophorone	IL
Naphthalene	IL
Nitrobenzene	IL
n-Nitrosodimethylamine	IL
n-Nitrosodi-n-propylamine	IL
n-Nitrosodiphenylamine	IL
Pentachlorophenol	IL
Phenanthrene	IL
Phenol	IL
Pyrene	IL
Method SM 2120 B-2011	
Color	IL
Method SM 2130 B-2001	
Turbidity	IL
Method SM 2310 B-2011	
Acidity, as CaCO3	IL
Method SM 2320 B-2011	
Alkalinity as CaCO3	IL
Method SM 2340 B-2011	
Hardness	IL
Method SM 2510 B-2011	
Conductivity	IL
Method SM 2540 B-2011	
Residue-total	IL
Method SM 2540 C-2011	
Residue-filterable (TDS)	IL

Teklab, Inc.

Primary AB

Program/Matrix: *CWA (Non Potable Water)*

Method SM 2540 D-2011 Residue-nonfilterable (TSS)	IL
Method SM 2540 F-2011 Residue-settleable	IL
Method SM 3500-Cr B-2011 Chromium VI	IL
Method SM 4500-Cl G-2011 Total residual chlorine	IL
Method SM 4500-Cl^- C-2011 Chloride	IL
Method SM 4500-Cl^- E-2011 Chloride	IL
Method SM 4500-CN^- E-2011 Cyanide	IL
Method SM 4500-F^- C-2011 Fluoride	IL
Method SM 4500-H+ B-2011 pH	IL
Method SM 4500-NH3 G-2011 Ammonia as N	IL
Method SM 4500-$NO2^-$ B-2011 Nitrite	IL
Method SM 4500-$NO3^-$ F-2011 Nitrate-nitrite	IL
Method SM 4500-P E-2011 Orthophosphate as P	IL
Method SM 4500-$S2^-$ D-2011 Sulfide	IL
Method SM 4500-$SO3^-$ B-2011 Sulfite-SO3	IL
Method SM 5210 B-2011 Biochemical oxygen demand Carbonaceous BOD, CBOD	IL IL
Method SM 5220 D-2011 Chemical oxygen demand	IL
Method SM 5310 C-2011 Total organic carbon	IL
Method SM 5540 C-2011 Surfactants - MBAS	IL

Teklab, Inc.

	Primary AB
Program/Matrix: *RCRA (Non Potable Water)*	
Method EPA 1010A	
Ignitability	IL
Method EPA 1020B	
Ignitability	IL
Method EPA 1311	
Toxicity Characteristic Leaching Procedure (TCLP)	IL
Method EPA 1312	
Synthetic Precipitation Leaching Procedure (SPLP)	IL
Method EPA 6010B	
Aluminum	IL
Antimony	IL
Arsenic	IL
Barium	IL
Beryllium	IL
Boron	IL
Cadmium	IL
Calcium	IL
Chromium	IL
Cobalt	IL
Copper	IL
Iron	IL
Lead	IL
Lithium	IL
Magnesium	IL
Manganese	IL
Molybdenum	IL
Nickel	IL
Phosphorus	IL
Potassium	IL
Selenium	IL
Silver	IL
Sodium	IL
Strontium	IL
Thallium	IL
Tin	IL
Titanium	IL
Vanadium	IL
Zinc	IL
Method EPA 6020A	
Aluminum	IL
Antimony	IL
Arsenic	IL
Barium	IL
Beryllium	IL
Cadmium	IL
Calcium	IL

Teklab, Inc. **Primary AB**

Program/Matrix: ***RCRA (Non Potable Water)***

Chromium	IL
Cobalt	IL
Copper	IL
Iron	IL
Lead	IL
Magnesium	IL
Manganese	IL
Nickel	IL
Potassium	IL
Selenium	IL
Silver	IL
Sodium	IL
Thallium	IL
Vanadium	IL
Zinc	IL
Method EPA 7196A	
Chromium VI	IL
Method EPA 7470A	
Mercury	IL
Method EPA 8015B	
1,4-Dioxane (1,4- Diethyleneoxide)	IL
Diesel range organics (DRO)	IL
Ethanol	IL
Ethylene glycol	IL
Isobutyl alcohol (2-Methyl-1-propanol)	IL
Isopropyl alcohol (2-Propanol, Isopropanol)	IL
Methanol	IL
n-Butyl alcohol (1-Butanol, n-Butanol)	IL
n-Propanol (1-Propanol)	IL
tert-Butyl alcohol	IL
Method EPA 8081B	
4,4'-DDD	IL
4,4'-DDE	IL
4,4'-DDT	IL
Alachlor	IL
Aldrin	IL
alpha-BHC (alpha-Hexachlorocyclohexane)	IL
alpha-Chlordane, cis-Chlordane	IL
beta-BHC (beta-Hexachlorocyclohexane)	IL
Chlordane (tech.)(N.O.S.)	IL
delta-BHC	IL
Dieldrin	IL
Endosulfan I	IL
Endosulfan II	IL
Endosulfan sulfate	IL
Endrin	IL
Endrin aldehyde	IL

Teklab, Inc.

	Primary AB
Program/Matrix: ***RCRA (Non Potable Water)***	
Endrin ketone	IL
gamma-BHC (Lindane, gamma-HexachlorocyclohexanE)	IL
gamma-Chlordane	IL
Heptachlor	IL
Heptachlor epoxide	IL
Methoxychlor	IL
Toxaphene (Chlorinated camphene)	IL
Method EPA 8082	
Aroclor-1016 (PCB-1016)	IL
Aroclor-1221 (PCB-1221)	IL
Aroclor-1232 (PCB-1232)	IL
Aroclor-1242 (PCB-1242)	IL
Aroclor-1248 (PCB-1248)	IL
Aroclor-1254 (PCB-1254)	IL
Aroclor-1260 (PCB-1260)	IL
Method EPA 8151A	
2,4,5-T	IL
2,4-D	IL
2,4-DB	IL
3,5-Dichlorobenzoic acid	IL
4-Nitrophenol	IL
Acifluorfen	IL
Bentazon	IL
Chloramben	IL
DCPA di acid degradate	IL
Dicamba	IL
Dichloroprop (Dichlorprop)	IL
Dinoseb (2-sec-butyl-4,6-dinitrophenol, DNBP)	IL
MCPA	IL
MCPP	IL
Pentachlorophenol	IL
Picloram	IL
Silvex (2,4,5-TP)	IL
Method EPA 8260B	
1,1,1,2-Tetrachloroethane	IL
1,1,1-Trichloroethane	IL
1,1,2,2-Tetrachloroethane	IL
1,1,2-Trichloroethane	IL
1,1-Dichloroethane	IL
1,1-Dichloroethylene	IL
1,1-Dichloropropene	IL
1,2,3-Trichlorobenzene	IL
1,2,3-Trichloropropane	IL
1,2,4-Trichlorobenzene	IL
1,2,4-Trimethylbenzene	IL
1,2-Dibromo-3-chloropropane (DBCP)	IL
1,2-Dibromoethane (EDB, Ethylene dibromide)	IL

Teklab, Inc.

	Primary AB
Program/Matrix: ***RCRA (Non Potable Water)***	
1,2-Dichlorobenzene (o-Dichlorobenzene)	IL
1,2-Dichloroethane (Ethylene dichloride)	IL
1,2-Dichloropropane	IL
1,3,5-Trimethylbenzene	IL
1,3-Dichlorobenzene	IL
1,3-Dichloropropane	IL
1,4-Dichlorobenzene	IL
1-Chlorobutane	IL
2,2-Dichloropropane	IL
2-Butanone (Methyl ethyl ketone, MEK)	IL
2-Chloroethyl vinyl ether	IL
2-Chlorotoluene	IL
2-Hexanone	IL
2-Nitropropane	IL
4-Chlorotoluene	IL
4-Isopropyltoluene (p-Cymene,p-Isopropyltoluene)	IL
4-Methyl-2-pentanone (MIBK)	IL
Acetone	IL
Acetonitrile	IL
Acrolein (Propenal)	IL
Acrylonitrile	IL
Allyl chloride (3-Chloropropene)	IL
Benzene	IL
Bromobenzene	IL
Bromochloromethane	IL
Bromodichloromethane	IL
Bromoform	IL
Carbon disulfide	IL
Carbon tetrachloride	IL
Chlorobenzene	IL
Chlorodibromomethane	IL
Chloroethane (Ethyl chloride)	IL
Chloroform	IL
cis-1,2-Dichloroethylene	IL
cis-1,3-Dichloropropene	IL
cis-1,4-Dichloro-2-butene	IL
Dibromomethane (Methylene bromide)	IL
Dichlorodifluoromethane (Freon-12)	IL
Diethyl ether	IL
Ethyl acetate	IL
Ethyl methacrylate	IL
Ethylbenzene	IL
Hexachlorobutadiene	IL
Hexachloroethane	IL
Iodomethane (Methyl iodide)	IL
Isopropylbenzene	IL
Methacrylonitrile	IL

Teklab, Inc. **Primary AB**

Program/Matrix: ***RCRA (Non Potable Water)***

Methyl bromide (Bromomethane)	IL
Methyl chloride (Chloromethane)	IL
Methyl methacrylate	IL
Methylene chloride (Dichloromethane)	IL
m-Xylene	IL
Naphthalene	IL
n-Butylbenzene	IL
Nitrobenzene	IL
n-Propylbenzene	IL
o-Xylene	IL
Pentachloroethane	IL
Propionitrile (Ethyl cyanide)	IL
p-Xylene	IL
sec-Butylbenzene	IL
Styrene	IL
tert-Butyl alcohol	IL
tert-Butylbenzene	IL
Tetrachloroethylene (Perchloroethylene)	IL
Toluene	IL
trans-1,2-Dichloroethylene	IL
trans-1,3-Dichloropropylene	IL
trans-1,4-Dichloro-2-butene	IL
Trichloroethene (Trichloroethylene)	IL
Trichlorofluoromethane (Fluorotrichloromethane, Freon 11)	IL
Vinyl acetate	IL
Vinyl chloride	IL

Method EPA 8270C

1,2,4-Trichlorobenzene	IL
1,2-Dichlorobenzene (o-Dichlorobenzene)	IL
1,2-Diphenylhydrazine	IL
1,3-Dichlorobenzene	IL
1,4-Dichlorobenzene	IL
1,4-Naphthoquinone	IL
1-Naphthylamine	IL
2,2'-Oxybis(1-chloropropane), bis(2-Chloro-1-methylethyl)ether	IL
2,4,5-Trichlorophenol	IL
2,4,6-Trichlorophenol	IL
2,4-Dichlorophenol	IL
2,4-Dimethylphenol	IL
2,4-Dinitrophenol	IL
2,4-Dinitrotoluene (2,4-DNT)	IL
2,6-Dinitrotoluene (2,6-DNT)	IL
2-Chloronaphthalene	IL
2-Chlorophenol	IL
2-Methyl-4,6-dinitrophenol (4,6-Dinitro-2-methylphenol)	IL
2-Methylaniline (o-Toluidine)	IL
2-Methylnaphthalene	IL

Teklab, Inc. **Primary AB**

Program/Matrix: ***RCRA (Non Potable Water)***

2-Nitroaniline	IL
2-Nitrophenol	IL
3,3'-Dichlorobenzidine	IL
3,3'-Dimethylbenzidine	IL
3-Methylcholanthrene	IL
3-Methylphenol (m-Cresol)	IL
3-Nitroaniline	IL
4-Aminobiphenyl	IL
4-Bromophenyl phenyl ether	IL
4-Chloro-3-methylphenol	IL
4-Chloroaniline	IL
4-Chlorophenyl phenylether	IL
4-Methylphenol (p-Cresol)	IL
4-Nitroaniline	IL
4-Nitrophenol	IL
5-Nitro-o-toluidine	IL
7,12-Dimethylbenz(a) anthracene	IL
Acenaphthene	IL
Acenaphthylene	IL
Acetophenone	IL
Aniline	IL
Anthracene	IL
Benzidine	IL
Benzo(a)anthracene	IL
Benzo(a)pyrene	IL
Benzo(b)fluoranthene	IL
Benzo(g,h,i)perylene	IL
Benzo(k)fluoranthene	IL
Benzyl alcohol	IL
bis(2-Chloroethoxy)methane	IL
bis(2-Chloroethyl) ether	IL
Butyl benzyl phthalate	IL
Chlorobenzilate	IL
Chrysene	IL
Di(2-ethylhexyl) phthalate (bis(2-Ethylhexyl)phthalate, DEHP)	IL
Diallate	IL
Dibenz(a,h) anthracene	IL
Dibenzofuran	IL
Diethyl phthalate	IL
Dimethoate	IL
Dimethyl phthalate	IL
Di-n-butyl phthalate	IL
Di-n-octyl phthalate	IL
Diphenylamine	IL
Ethyl methanesulfonate	IL
Famphur	IL
Fluoranthene	IL

Teklab, Inc.

	Primary AB
Program/Matrix: ***RCRA (Non Potable Water)***	
Fluorene	IL
Hexachlorobenzene	IL
Hexachlorobutadiene	IL
Hexachlorocyclopentadiene	IL
Hexachloroethane	IL
Hexachloropropene	IL
Indeno(1,2,3-cd) pyrene	IL
Isodrin	IL
Isophorone	IL
Isosafrole	IL
Methyl methanesulfonate	IL
Naphthalene	IL
Nitrobenzene	IL
n-Nitrosodiethylamine	IL
n-Nitrosodimethylamine	IL
n-Nitroso-di-n-butylamine	IL
n-Nitrosodi-n-propylamine	IL
n-Nitrosodiphenylamine	IL
n-Nitrosomethylethalamine	IL
n-Nitrosopiperidine	IL
o,o,o-Triethyl phosphorothioate	IL
Pentachlorobenzene	IL
Pentachloronitrobenzene	IL
Pentachlorophenol	IL
Phenanthrene	IL
Phenol	IL
Pronamide (Kerb)	IL
Pyrene	IL
Pyridine	IL
Safrole	IL
Method EPA 9012A	
Cyanide	IL
Method EPA 9014	
Cyanide	IL
Method EPA 9020B	
Total organic halides (TOX)	IL
Method EPA 9023	
Extractable organics halides (EOX)	IL
Method EPA 9036	
Sulfate	IL
Method EPA 9040B	
pH	IL
Method EPA 9050A	
Conductivity	IL
Method EPA 9060A	
Total organic carbon	IL

Teklab, Inc. **Primary AB**

Program/Matrix: ***RCRA (Non Potable Water)***

Method EPA 9065	
Total phenolics	IL
Method EPA 9066	
Total phenolics	IL
Method EPA 9095A	
Paint Filter Test	IL
Method EPA 9214	
Fluoride	IL
Method EPA 9251	
Chloride	IL
Method KS LRH GC/MS	
Total Petroleum Hydrocarbons C5 - C8	IL
Method KS MRH/HRH GC-FID	
Total Petroleum Hydrocarbons C19 - C35	IL
Total Petroleum Hydrocarbons C9 - C18	IL

Teklab, Inc. **Primary AB**

Program/Matrix: ***RCRA (Solid & Hazardous Material)***

Method EPA 1010A	
Ignitability	IL
Method EPA 1020B	
Ignitability	IL
Method EPA 1311	
Toxicity Characteristic Leaching Procedure (TCLP)	IL
Method EPA 1312	
Synthetic Precipitation Leaching Procedure (SPLP)	IL
Method EPA 6010B	
Aluminum	IL
Antimony	IL
Arsenic	IL
Barium	IL
Beryllium	IL
Boron	IL
Cadmium	IL
Calcium	IL
Chromium	IL
Cobalt	IL
Copper	IL
Iron	IL
Lead	IL
Lithium	IL
Magnesium	IL
Manganese	IL
Molybdenum	IL
Nickel	IL
Phosphorus	IL
Potassium	IL
Selenium	IL
Silver	IL
Sodium	IL
Strontium	IL
Thallium	IL
Tin	IL
Titanium	IL
Vanadium	IL
Zinc	IL
Method EPA 6020A	
Aluminum	IL
Antimony	IL
Barium	IL
Beryllium	IL
Cadmium	IL
Chromium	IL
Cobalt	IL

Teklab, Inc. **Primary AB**

Program/Matrix: ***RCRA (Solid & Hazardous Material)***

Copper	IL
Iron	IL
Lead	IL
Magnesium	IL
Manganese	IL
Nickel	IL
Potassium	IL
Selenium	IL
Silver	IL
Sodium	IL
Thallium	IL
Vanadium	IL
Zinc	IL
Method EPA 7196A	
Chromium VI	IL
Method EPA 7471B	
Mercury	IL
Method EPA 8015B	
1,4-Dioxane (1,4- Diethyleneoxide)	IL
Diesel range organics (DRO)	IL
Ethanol	IL
Ethylene glycol	IL
Isobutyl alcohol (2-Methyl-1-propanol)	IL
Isopropyl alcohol (2-Propanol, Isopropanol)	IL
Methanol	IL
n-Butyl alcohol (1-Butanol, n-Butanol)	IL
n-Propanol (1-Propanol)	IL
tert-Butyl alcohol	IL
Method EPA 8081B	
4,4'-DDD	IL
4,4'-DDE	IL
4,4'-DDT	IL
Alachlor	IL
Aldrin	IL
alpha-BHC (alpha-Hexachlorocyclohexane)	IL
alpha-Chlordane, cis-Chlordane	IL
beta-BHC (beta-Hexachlorocyclohexane)	IL
Chlordane (tech.)(N.O.S.)	IL
delta-BHC	IL
Dieldrin	IL
Endosulfan I	IL
Endosulfan II	IL
Endosulfan sulfate	IL
Endrin	IL
Endrin aldehyde	IL
Endrin ketone	IL
gamma-BHC (Lindane, gamma-HexachlorocyclohexanE)	IL

Teklab, Inc.

	Primary AB
Program/Matrix: ***RCRA (Solid & Hazardous Material)***	
gamma-Chlordane	IL
Heptachlor	IL
Heptachlor epoxide	IL
Methoxychlor	IL
Toxaphene (Chlorinated camphene)	IL
Method EPA 8082	
Aroclor-1016 (PCB-1016)	IL
Aroclor-1221 (PCB-1221)	IL
Aroclor-1232 (PCB-1232)	IL
Aroclor-1242 (PCB-1242)	IL
Aroclor-1248 (PCB-1248)	IL
Aroclor-1254 (PCB-1254)	IL
Aroclor-1260 (PCB-1260)	IL
Method EPA 8151A	
3,5-Dichlorobenzoic acid	IL
Acifluorfen	IL
Bentazon	IL
Chloramben	IL
DCPA di acid degradate	IL
Dichloroprop (Dichlorprop)	IL
MCPA	IL
MCPP	IL
Picloram	IL
Method EPA 8260B	
1,1,1,2-Tetrachloroethane	IL
1,1,1-Trichloroethane	IL
1,1,2,2-Tetrachloroethane	IL
1,1,2-Trichloroethane	IL
1,1-Dichloroethane	IL
1,1-Dichloroethylene	IL
1,1-Dichloropropene	IL
1,2,3-Trichlorobenzene	IL
1,2,3-Trichloropropane	IL
1,2,4-Trichlorobenzene	IL
1,2,4-Trimethylbenzene	IL
1,2-Dibromo-3-chloropropane (DBCP)	IL
1,2-Dibromoethane (EDB, Ethylene dibromide)	IL
1,2-Dichlorobenzene (o-Dichlorobenzene)	IL
1,2-Dichloroethane (Ethylene dichloride)	IL
1,2-Dichloropropane	IL
1,3,5-Trimethylbenzene	IL
1,3-Dichlorobenzene	IL
1,3-Dichloropropane	IL
1,4-Dichlorobenzene	IL
1-Chlorobutane	IL
2,2-Dichloropropane	IL
2-Butanone (Methyl ethyl ketone, MEK)	IL

Teklab, Inc.

	Primary AB
Program/Matrix: ***RCRA (Solid & Hazardous Material)***	
2-Chloroethyl vinyl ether	IL
2-Chlorotoluene	IL
2-Hexanone	IL
2-Nitropropane	IL
4-Chlorotoluene	IL
4-Isopropyltoluene (p-Cymene,p-Isopropyltoluene)	IL
4-Methyl-2-pentanone (MIBK)	IL
Acetone	IL
Acetonitrile	IL
Acrolein (Propenal)	IL
Allyl chloride (3-Chloropropene)	IL
Benzene	IL
Bromobenzene	IL
Bromochloromethane	IL
Bromodichloromethane	IL
Bromoform	IL
Carbon disulfide	IL
Carbon tetrachloride	IL
Chlorobenzene	IL
Chlorodibromomethane	IL
Chloroethane (Ethyl chloride)	IL
Chloroform	IL
cis-1,2-Dichloroethylene	IL
cis-1,3-Dichloropropene	IL
cis-1,4-Dichloro-2-butene	IL
Dibromomethane (Methylene bromide)	IL
Dichlorodifluoromethane (Freon-12)	IL
Diethyl ether	IL
Ethyl acetate	IL
Ethyl methacrylate	IL
Ethylbenzene	IL
Hexachlorobutadiene	IL
Hexachloroethane	IL
Iodomethane (Methyl iodide)	IL
Isopropylbenzene	IL
Methacrylonitrile	IL
Methyl bromide (Bromomethane)	IL
Methyl chloride (Chloromethane)	IL
Methyl methacrylate	IL
Methylene chloride (Dichloromethane)	IL
m-Xylene	IL
Naphthalene	IL
n-Butylbenzene	IL
Nitrobenzene	IL
n-Propylbenzene	IL
o-Xylene	IL
Pentachloroethane	IL

Teklab, Inc.

	Primary AB
Program/Matrix: ***RCRA (Solid & Hazardous Material)***	
Propionitrile (Ethyl cyanide)	IL
p-Xylene	IL
sec-Butylbenzene	IL
Styrene	IL
tert-Butyl alcohol	IL
tert-Butylbenzene	IL
Tetrachloroethylene (Perchloroethylene)	IL
Toluene	IL
trans-1,2-Dichloroethylene	IL
trans-1,3-Dichloropropylene	IL
trans-1,4-Dichloro-2-butene	IL
Trichloroethene (Trichloroethylene)	IL
Trichlorofluoromethane (Fluorotrichloromethane, Freon 11)	IL
Vinyl acetate	IL
Vinyl chloride	IL
Method EPA 8270C	
1,2,4-Trichlorobenzene	IL
1,2-Dichlorobenzene (o-Dichlorobenzene)	IL
1,2-Diphenylhydrazine	IL
1,3-Dichlorobenzene	IL
1,4-Dichlorobenzene	IL
2,2'-Oxybis(1-chloropropane), bis(2-Chloro-1-methylethyl)ether	IL
2,4,5-Trichlorophenol	IL
2,4,6-Trichlorophenol	IL
2,4-Dichlorophenol	IL
2,4-Dimethylphenol	IL
2,4-Dinitrophenol	IL
2,4-Dinitrotoluene (2,4-DNT)	IL
2,6-Dinitrotoluene (2,6-DNT)	IL
2-Chloronaphthalene	IL
2-Chlorophenol	IL
2-Methyl-4,6-dinitrophenol (4,6-Dinitro-2-methylphenol)	IL
2-Methylaniline (o-Toluidine)	IL
2-Methylnaphthalene	IL
2-Nitroaniline	IL
2-Nitrophenol	IL
3,3'-Dichlorobenzidine	IL
3-Methylphenol (m-Cresol)	IL
3-Nitroaniline	IL
4-Bromophenyl phenyl ether	IL
4-Chloro-3-methylphenol	IL
4-Chloroaniline	IL
4-Chlorophenyl phenylether	IL
4-Methylphenol (p-Cresol)	IL
4-Nitroaniline	IL
4-Nitrophenol	IL
Acenaphthene	IL

Teklab, Inc.

	Primary AB
Program/Matrix: ***RCRA (Solid & Hazardous Material)***	
Acenaphthylene	IL
Aniline	IL
Anthracene	IL
Benzidine	IL
Benzo(a)anthracene	IL
Benzo(a)pyrene	IL
Benzo(b)fluoranthene	IL
Benzo(g,h,i)perylene	IL
Benzo(k)fluoranthene	IL
Benzyl alcohol	IL
bis(2-Chloroethoxy)methane	IL
bis(2-Chloroethyl) ether	IL
Butyl benzyl phthalate	IL
Chrysene	IL
Di(2-ethylhexyl) phthalate (bis(2-Ethylhexyl)phthalate, DEHP)	IL
Dibenz(a,h) anthracene	IL
Dibenzofuran	IL
Diethyl phthalate	IL
Dimethyl phthalate	IL
Di-n-butyl phthalate	IL
Di-n-octyl phthalate	IL
Fluoranthene	IL
Fluorene	IL
Hexachlorobenzene	IL
Hexachlorobutadiene	IL
Hexachlorocyclopentadiene	IL
Hexachloroethane	IL
Indeno(1,2,3-cd) pyrene	IL
Isophorone	IL
Naphthalene	IL
Nitrobenzene	IL
n-Nitrosodiethylamine	IL
n-Nitrosodimethylamine	IL
n-Nitrosodi-n-propylamine	IL
n-Nitrosodiphenylamine	IL
n-Nitrosomethylethalamine	IL
Pentachlorobenzene	IL
Pentachlorophenol	IL
Phenanthrene	IL
Phenol	IL
Pyrene	IL
Pyridine	IL
Method EPA 9014	
Cyanide	IL
Method EPA 9020B	
Total organic halides (TOX)	IL
Method EPA 9023	

Teklab, Inc.

	Primary AB
Program/Matrix: *RCRA (Solid & Hazardous Material)*	
Extractable organics halides (EOX)	IL
Method EPA 9034	
Sulfide	IL
Method EPA 9036	
Sulfate	IL
Method EPA 9045C	
pH	IL
Method EPA 9060A	
Total organic carbon	IL
Method EPA 9065	
Total phenolics	IL
Method EPA 9214	
Fluoride	IL
Method KS LRH GC/MS	
Total Petroleum Hydrocarbons C5 - C8	IL
Method KS MRH/HRH GC-FID	
Total Petroleum Hydrocarbons C19 - C35	IL
Total Petroleum Hydrocarbons C9 - C18	IL

Teklab, Inc.

	Primary AB
Program/Matrix: *SDWA (Potable Water)*	
Method EPA 180.1	
Turbidity	IL
Method EPA 200.7	
Aluminum	IL
Barium	IL
Beryllium	IL
Cadmium	IL
Calcium	IL
Chromium	IL
Copper	IL
Iron	IL
Magnesium	IL
Manganese	IL
Nickel	IL
Silver	IL
Sodium	IL
Zinc	IL
Method EPA 200.8	
Antimony	IL
Arsenic	IL
Barium	IL
Beryllium	IL
Cadmium	IL
Chromium	IL
Copper	IL
Lead	IL
Manganese	IL
Nickel	IL
Selenium	IL
Silver	IL
Thallium	IL
Zinc	IL
Method EPA 245.1	
Mercury	IL
Method EPA 335.4	
Cyanide	IL
Method SM 2320 B-1991	
Alkalinity as CaCO3	IL
Method SM 2340 B-1990	
Hardness	IL
Method SM 2510 B-1997	
Conductivity	IL
Method SM 4500-Cl G-1993	
Total chlorine	IL
Method SM 4500-F⁻ C-1988	

Teklab, Inc.

	Primary AB
Program/Matrix: *SDWA (Potable Water)*	
Fluoride	IL
Method SM 4500-H+ B-1990	
pH	IL
Method SM 4500-$NO2^-$ B-1988	
Nitrite	IL
Method SM 5310 C-2000	
Dissolved organic carbon (DOC)	IL
Total organic carbon	IL
Method SM 5540 C-2000	
Surfactants - MBAS	IL

End of Scope of Accreditation

STATE OF ILLINOIS

ENVIRONMENTAL PROTECTION AGENCY
NELAP - RECOGNIZED
ENVIRONMENTAL LABORATORY ACCREDITATION

is hereby granted to

Teklab, Incorporated

5445 Horseshoe Lake Rd.
Collinsville, IL 62234

NELAP ACCREDITED

Accreditation Number #100226

According to the Illinois Administrative Code, Title 35, Subtitle A, Chapter II, Part 186, ACCREDITATION OF LABORATORIES FOR DRINKING WATER, WASTEWATER AND HAZARDOUS WASTES ANALYSIS, the State of Illinois formally recognizes that this laboratory is technically competent to perform the environmental analyses listed on the scope of accreditation detailed below.

The laboratory agrees to perform all analyses listed on this scope of accreditation according to the Part 186 requirements and acknowledges that continued accreditation is dependent on successful ongoing compliance with the applicable requirements of Part 186. Please contact the Illinois EPA Environmental Laboratory Accreditation Program (IL ELAP) to verify the laboratory's scope of accreditation and accreditation status. Accreditation by the State of Illinois is not an endorsement or a guarantee of validity of the data generated by the laboratory.

Primary Accrediting Authority:Illinois

Millie Rose
Supervisor
Environmental Laboratory Accreditation Program

Certificate No: 1002262021-7
Expiration Date: 1/31/2022
Issued On: 3/23/2021

State of Illinois
Environmental Protection Agency

Awards the Certificate of Approval to:

Teklab, Incorporated
5445 Horseshoe Lake Rd.
Collinsville, IL 62234

The Illinois Environmental Laboratory Accreditation Program encourages all clients and data users to verify the most current scope of accreditation for Teklab, Incorporated.

Certificate No.: 1002262021-7

	Primary AB
Field of Testing /Matrix: ***CWA (Non Potable Water)***	
Method EPA 120.1	
Conductivity	IL
Method EPA 1631E	
Mercury	IL
Method EPA 1664A Rev: 1	
Oil & Grease	IL
Method EPA 180.1 Rev: 2	
Turbidity	IL
Method EPA 200.7 Rev: 4.4	
Aluminum	IL
Antimony	IL
Arsenic	IL
Barium	IL
Beryllium	IL
Boron	IL
Cadmium	IL
Calcium	IL
Chromium	IL
Cobalt	IL
Copper	IL
Iron	IL
Lead	IL
Magnesium	IL
Manganese	IL
Molybdenum	IL
Nickel	IL
Phosphorus	IL
Potassium	IL
Selenium	IL
Silver	IL
Sodium	IL
Thallium	IL
Tin	IL
Titanium	IL
Vanadium	IL
Zinc	IL
Method EPA 200.8 Rev: 5.4	
Aluminum	IL

Field of Testing /Matrix: ***CWA (Non Potable Water)***

Antimony	IL
Arsenic	IL
Barium	IL
Beryllium	IL
Boron	IL
Cadmium	IL
Calcium	IL
Chromium	IL
Cobalt	IL
Copper	IL
Iron	IL
Lead	IL
Magnesium	IL
Manganese	IL
Molybdenum	IL
Nickel	IL
Potassium	IL
Selenium	IL
Silver	IL
Sodium	IL
Thallium	IL
Tin	IL
Titanium	IL
Vanadium	IL
Zinc	IL
Method EPA 245.1 Rev: 3	
Mercury	IL
Method EPA 335.4 Rev: 1	
Cyanide	IL
Method EPA 350.1 Rev: 2	
Ammonia	IL
Method EPA 351.2 Rev: 2	
Total Kjeldahl Nitrogen (TKN)	IL
Method EPA 353.2 Rev: 2	
Nitrate	IL
Nitrate plus Nitrite as N	IL
Nitrite as N	IL
Method EPA 365.4	
Phosphorus	IL
Method EPA 375.2 Rev: 2	
Sulfate	IL
Method EPA 410.4 Rev: 2	
Chemical oxygen demand	IL
Method EPA 420.1	
Total phenolics	IL
Method EPA 420.4 Rev: 1	
Total phenolics	IL
Method EPA 608.3 GC-ECD	
4,4'-DDD	IL

Field of Testing /Matrix: ***CWA (Non Potable Water)***

4,4'-DDE	IL
4,4'-DDT	IL
Aldrin	IL
alpha-BHC (alpha-Hexachlorocyclohexane)	IL
Aroclor-1016 (PCB-1016)	IL
Aroclor-1221 (PCB-1221)	IL
Aroclor-1232 (PCB-1232)	IL
Aroclor-1242 (PCB-1242)	IL
Aroclor-1248 (PCB-1248)	IL
Aroclor-1254 (PCB-1254)	IL
Aroclor-1260 (PCB-1260)	IL
beta-BHC (beta-Hexachlorocyclohexane)	IL
Chlordane (tech.)(N.O.S.)	IL
delta-BHC	IL
Dieldrin	IL
Endosulfan I	IL
Endosulfan II	IL
Endosulfan sulfate	IL
Endrin	IL
Endrin aldehyde	IL
gamma-BHC (Lindane, gamma-Hexachlorocyclohexane)	IL
Heptachlor	IL
Heptachlor epoxide	IL
Methoxychlor	IL
Toxaphene (Chlorinated camphene)	IL

Method EPA 615

2,4,5-T	IL
2,4-D	IL
Dicamba	IL
Silvex (2,4,5-TP)	IL

Method EPA 624.1

1,1,1-Trichloroethane	IL
1,1,2,2-Tetrachloroethane	IL
1,1,2-Trichloroethane	IL
1,1-Dichloroethane	IL
1,1-Dichloroethylene	IL
1,2-Dichlorobenzene (o-Dichlorobenzene)	IL
1,2-Dichloroethane (Ethylene dichloride)	IL
1,2-Dichloropropane	IL
1,3-Dichlorobenzene	IL
1,4-Dichlorobenzene	IL
2-Chloroethyl vinyl ether	IL
Acetonitrile	IL
Acrolein (Propenal)	IL
Acrylonitrile	IL
Benzene	IL
Bromodichloromethane	IL
Bromoform	IL
Carbon tetrachloride	IL
Chlorobenzene	IL
Chlorodibromomethane	IL

Field of Testing /Matrix: ***CWA (Non Potable Water)***

Chloroethane (Ethyl chloride)	IL
Chloroform	IL
cis-1,3-Dichloropropene	IL
Ethylbenzene	IL
Methyl bromide (Bromomethane)	IL
Methyl chloride (Chloromethane)	IL
Methyl tert-butyl ether (MTBE)	IL
Methylene chloride (Dichloromethane)	IL
Tetrachloroethylene (Perchloroethylene)	IL
Toluene	IL
trans-1,2-Dichloroethylene	IL
trans-1,3-Dichloropropylene	IL
Trichloroethene (Trichloroethylene)	IL
Trichlorofluoromethane (Fluorotrichloromethane, Freon 11)	IL
Vinyl chloride	IL
Xylene (total)	IL

Method EPA 625.1

1,2,4-Trichlorobenzene	IL
2,2'-Oxybis(1-chloropropane), bis(2-Chloro-1-methylethyl)ether	IL
2,4,6-Trichlorophenol	IL
2,4-Dichlorophenol	IL
2,4-Dimethylphenol	IL
2,4-Dinitrophenol	IL
2,4-Dinitrotoluene (2,4-DNT)	IL
2,6-Dinitrotoluene (2,6-DNT)	IL
2-Chloronaphthalene	IL
2-Chlorophenol	IL
2-Methyl-4,6-dinitrophenol (4,6-Dinitro-2-methylphenol)	IL
2-Nitrophenol	IL
3,3'-Dichlorobenzidine	IL
4-Bromophenyl phenyl ether	IL
4-Chloro-3-methylphenol	IL
4-Chlorophenyl phenylether	IL
4-Nitrophenol	IL
Acenaphthene	IL
Acenaphthylene	IL
Anthracene	IL
Benzidine	IL
Benzo(a)anthracene	IL
Benzo(a)pyrene	IL
Benzo(b)fluoranthene	IL
Benzo(g,h,i)perylene	IL
Benzo(k)fluoranthene	IL
bis(2-Chloroethoxy)methane	IL
bis(2-Chloroethyl) ether	IL
bis(2-Ethylhexyl) phthalate (DEHP)	IL
Butyl benzyl phthalate	IL
Chrysene	IL
Dibenz(a,h) anthracene	IL
Diethyl phthalate	IL
Dimethyl phthalate	IL
Di-n-butyl phthalate	IL

Field of Testing /Matrix: ***CWA (Non Potable Water)***

Di-n-octyl phthalate	IL
Fluoranthene	IL
Fluorene	IL
Hexachlorobenzene	IL
Hexachlorobutadiene	IL
Hexachlorocyclopentadiene	IL
Hexachloroethane	IL
Indeno(1,2,3-cd) pyrene	IL
Isophorone	IL
Naphthalene	IL
Nitrobenzene	IL
n-Nitrosodimethylamine	IL
n-Nitrosodi-n-propylamine	IL
n-Nitrosodiphenylamine	IL
Pentachlorophenol	IL
Phenanthrene	IL
Phenol	IL
Pyrene	IL
Method OIA 1677-09	
Available Cyanide	IL
Method SM 2120 B-2011	
Color	IL
Method SM 2130 B-2011	
Turbidity	IL
Method SM 2310 B-2011	
Acidity, as CaCO3	IL
Method SM 2320 B-2011	
Alkalinity as CaCO3	IL
Method SM 2340 B-2011	
Hardness	IL
Method SM 2510 B-2011	
Conductivity	IL
Method SM 2540 B-2011	
Residue-total	IL
Method SM 2540 C-2011	
Residue-filterable (TDS)	IL
Method SM 2540 D-2011	
Residue-nonfilterable (TSS)	IL
Method SM 2540 E-2011	
Residue-volatile	IL
Method SM 2540 F-2011	
Residue-settleable	IL
Method SM 3500-Cr B-2011	
Chromium VI	IL
Method SM 4500-Cl E-2011	
Chloride	IL
Method SM 4500-Cl G-2011	
Total residual chlorine	IL

Field of Testing /Matrix: ***CWA (Non Potable Water)***

Method SM 4500-Cl¯ C-2011	
Chloride	IL
Method SM 4500-Cl¯ E-1997 Rev: 21st ED	
Chloride	IL
Method SM 4500-CN¯ E-2011	
Cyanide	IL
Method SM 4500-F¯ C-2011	
Fluoride	IL
Method SM 4500-H+ B-2011	
pH	IL
Method SM 4500-NH3 G-2011	
Ammonia	IL
Method SM 4500-NO2¯ B-2011	
Nitrite	IL
Method SM 4500-NO3¯ F-2011	
Nitrate plus Nitrite as N	IL
Method SM 4500-O G-2011	
Oxygen, dissolved	IL
Method SM 4500-P E-2011	
Orthophosphate as P	IL
Method SM 4500-S2¯ D-2011	
Sulfide	IL
Method SM 4500-SO3¯ B-2011	
Sulfite-SO3	IL
Method SM 5210 B-2011	
Biochemical oxygen demand	IL
Carbonaceous BOD, CBOD	IL
Method SM 5220 D-2011	
Chemical oxygen demand	IL
Method SM 5310 C-2011	
Total organic carbon	IL
Method SM 5540 C-2011	
Surfactants - MBAS	IL

Field of Testing /Matrix: ***CWA (Solid & Hazardous Material)***

Method EPA 160.4	
Residue-volatile	IL
Method EPA 200.7 Rev: 4.4	
Aluminum	IL
Antimony	IL
Arsenic	IL
Barium	IL
Beryllium	IL
Boron	IL
Cadmium	IL
Calcium	IL
Chromium	IL
Cobalt	IL
Copper	IL
Iron	IL
Lead	IL
Magnesium	IL
Manganese	IL
Molybdenum	IL
Nickel	IL
Phosphorus	IL
Potassium	IL
Selenium	IL
Silver	IL
Sodium	IL
Thallium	IL
Tin	IL
Titanium	IL
Vanadium	IL
Zinc	IL
Method EPA 245.1 Rev: 3	
Mercury	IL
Method EPA 351.2 Rev: 2	
Total Kjeldahl Nitrogen (TKN)	IL
Method EPA 353.2 Rev: 2	
Nitrate	IL
Nitrate plus Nitrite as N	IL
Nitrite as N	IL
Method EPA 365.4	
Phosphorus	IL
Method EPA 420.1	
Total phenolics	IL
Method EPA 608.3 GC-ECD	
4,4'-DDD	IL
4,4'-DDE	IL
4,4'-DDT	IL
Aldrin	IL
alpha-BHC (alpha-Hexachlorocyclohexane)	IL
Aroclor-1016 (PCB-1016)	IL
Aroclor-1221 (PCB-1221)	IL

Field of Testing /Matrix: ***CWA (Solid & Hazardous Material)***

Aroclor-1232 (PCB-1232)	IL
Aroclor-1242 (PCB-1242)	IL
Aroclor-1248 (PCB-1248)	IL
Aroclor-1254 (PCB-1254)	IL
Aroclor-1260 (PCB-1260)	IL
beta-BHC (beta-Hexachlorocyclohexane)	IL
Chlordane (tech.)(N.O.S.)	IL
delta-BHC	IL
Dieldrin	IL
Endosulfan I	IL
Endosulfan II	IL
Endosulfan sulfate	IL
Endrin	IL
Endrin aldehyde	IL
gamma-BHC (Lindane, gamma-Hexachlorocyclohexane)	IL
Heptachlor	IL
Heptachlor epoxide	IL
Methoxychlor	IL
Toxaphene (Chlorinated camphene)	IL

Method EPA 624.1

1,1,1-Trichloroethane	IL
1,1,2,2-Tetrachloroethane	IL
1,1,2-Trichloroethane	IL
1,1-Dichloroethane	IL
1,1-Dichloroethylene	IL
1,2-Dichlorobenzene (o-Dichlorobenzene)	IL
1,2-Dichloroethane (Ethylene dichloride)	IL
1,2-Dichloropropane	IL
1,3-Dichlorobenzene	IL
1,4-Dichlorobenzene	IL
2-Chloroethyl vinyl ether	IL
Acetonitrile	IL
Acrolein (Propenal)	IL
Acrylonitrile	IL
Benzene	IL
Bromodichloromethane	IL
Bromoform	IL
Carbon tetrachloride	IL
Chlorobenzene	IL
Chlorodibromomethane	IL
Chloroethane (Ethyl chloride)	IL
Chloroform	IL
cis-1,3-Dichloropropene	IL
Ethylbenzene	IL
Methyl bromide (Bromomethane)	IL
Methyl chloride (Chloromethane)	IL
Methyl tert-butyl ether (MTBE)	IL
Methylene chloride (Dichloromethane)	IL
Tetrachloroethylene (Perchloroethylene)	IL
Toluene	IL
trans-1,2-Dichloroethylene	IL
trans-1,3-Dichloropropylene	IL

Field of Testing /Matrix: ***CWA (Solid & Hazardous Material)***

Trichloroethene (Trichloroethylene)	IL
Trichlorofluoromethane (Fluorotrichloromethane, Freon 11)	IL
Vinyl chloride	IL
Xylene (total)	IL

Method EPA 625.1

1,2,4-Trichlorobenzene	IL
2,2'-Oxybis(1-chloropropane), bis(2-Chloro-1-methylethyl)ether	IL
2,4,6-Trichlorophenol	IL
2,4-Dichlorophenol	IL
2,4-Dimethylphenol	IL
2,4-Dinitrophenol	IL
2,4-Dinitrotoluene (2,4-DNT)	IL
2,6-Dinitrotoluene (2,6-DNT)	IL
2-Chloronaphthalene	IL
2-Chlorophenol	IL
2-Methyl-4,6-dinitrophenol (4,6-Dinitro-2-methylphenol)	IL
2-Nitrophenol	IL
3,3'-Dichlorobenzidine	IL
4-Bromophenyl phenyl ether	IL
4-Chloro-3-methylphenol	IL
4-Chlorophenyl phenylether	IL
4-Nitrophenol	IL
Acenaphthene	IL
Acenaphthylene	IL
Anthracene	IL
Benzidine	IL
Benzo(a)anthracene	IL
Benzo(a)pyrene	IL
Benzo(b)fluoranthene	IL
Benzo(g,h,i)perylene	IL
Benzo(k)fluoranthene	IL
bis(2-Chloroethoxy)methane	IL
bis(2-Chloroethyl) ether	IL
bis(2-Ethylhexyl) phthalate (DEHP)	IL
Butyl benzyl phthalate	IL
Chrysene	IL
Dibenz(a,h) anthracene	IL
Diethyl phthalate	IL
Dimethyl phthalate	IL
Di-n-butyl phthalate	IL
Di-n-octyl phthalate	IL
Fluoranthene	IL
Fluorene	IL
Hexachlorobenzene	IL
Hexachlorobutadiene	IL
Hexachlorocyclopentadiene	IL
Hexachloroethane	IL
Indeno(1,2,3-cd) pyrene	IL
Isophorone	IL
Naphthalene	IL
Nitrobenzene	IL
n-Nitrosodimethylamine	IL

Field of Testing /Matrix: ***CWA (Solid & Hazardous Material)***

n-Nitrosodi-n-propylamine	IL
n-Nitrosodiphenylamine	IL
Pentachlorophenol	IL
Phenanthrene	IL
Phenol	IL
Pyrene	IL
Method SM 2310 B-1997	
Acidity, as CaCO3	IL
Method SM 2320 B-1997	
Alkalinity as CaCO3	IL
Method SM 2540 F-1997	
Residue-settleable	IL
Method SM 4500-Cl G-2000	
Total residual chlorine	IL
Method SM 4500-Cl^- C-2011	
Chloride	IL
Method SM 4500-Cl^- E-1997 Rev: 21st ED	
Chloride	IL
Method SM 4500-$NO2^-$ B-2011	
Nitrite	IL
Method SM 4500-$NO3^-$ F-2000	
Nitrate plus Nitrite as N	IL
Method SM 4500-P E-1999	
Orthophosphate as P	IL
Method SM 4500-$SO3^-$ B-2000	
Sulfite-SO3	IL

Field of Testing /Matrix: ***RCRA (Non Potable Water)***

Method EPA 1010A	
Ignitability	IL
Method EPA 1020B	
Ignitability	IL
Method EPA 1311 Rev: 0	
Toxicity Characteristic Leaching Procedure (TCLP)	IL
Method EPA 1312 Rev: 0	
Synthetic Precipitation Leaching Procedure (SPLP)	IL
Method EPA 6010B Rev: 2	
Aluminum	IL
Antimony	IL
Arsenic	IL
Barium	IL
Beryllium	IL
Boron	IL
Cadmium	IL
Calcium	IL
Chromium	IL
Cobalt	IL
Copper	IL
Iron	IL
Lead	IL
Lithium	IL
Magnesium	IL
Manganese	IL
Molybdenum	IL
Nickel	IL
Phosphorus	IL
Potassium	IL
Selenium	IL
Silver	IL
Sodium	IL
Strontium	IL
Thallium	IL
Tin	IL
Titanium	IL
Vanadium	IL
Zinc	IL
Method EPA 6020A Rev: 1	
Aluminum	IL
Antimony	IL
Arsenic	IL
Barium	IL
Beryllium	IL
Boron	IL
Cadmium	IL
Calcium	IL
Chromium	IL
Cobalt	IL
Copper	IL

Field of Testing /Matrix: ***RCRA (Non Potable Water)***

Iron	IL
Lead	IL
Magnesium	IL
Manganese	IL
Molybdenum	IL
Nickel	IL
Potassium	IL
Selenium	IL
Silver	IL
Sodium	IL
Thallium	IL
Vanadium	IL
Zinc	IL

Method EPA 7196A Rev: 1

Chromium VI	IL

Method EPA 7470A Rev: 1

Mercury	IL

Method EPA 8015B Rev: 2

Diesel range organics (DRO)	IL
Ethanol	IL
Ethylene glycol	IL
Isobutyl alcohol (2-Methyl-1-propanol)	IL
Isopropyl alcohol (2-Propanol, Isopropanol)	IL
Methanol	IL
n-Butyl alcohol (1-Butanol, n-Butanol)	IL
n-Propanol (1-Propanol)	IL
tert-Butyl alcohol	IL

Method EPA 8081B

4,4'-DDD	IL
4,4'-DDE	IL
4,4'-DDT	IL
Alachlor	IL
Aldrin	IL
alpha-BHC (alpha-Hexachlorocyclohexane)	IL
alpha-Chlordane, cis-Chlordane	IL
beta-BHC (beta-Hexachlorocyclohexane)	IL
Chlordane (tech.)(N.O.S.)	IL
delta-BHC	IL
Dieldrin	IL
Endosulfan I	IL
Endosulfan II	IL
Endosulfan sulfate	IL
Endrin	IL
Endrin aldehyde	IL
Endrin ketone	IL
gamma-BHC (Lindane, gamma-Hexachlorocyclohexane)	IL
gamma-Chlordane	IL
Heptachlor	IL
Heptachlor epoxide	IL
Methoxychlor	IL
Toxaphene (Chlorinated camphene)	IL

Field of Testing /Matrix: ***RCRA (Non Potable Water)***

Method EPA 8082 Rev: 0

Aroclor-1016 (PCB-1016)	IL
Aroclor-1221 (PCB-1221)	IL
Aroclor-1232 (PCB-1232)	IL
Aroclor-1242 (PCB-1242)	IL
Aroclor-1248 (PCB-1248)	IL
Aroclor-1254 (PCB-1254)	IL
Aroclor-1260 (PCB-1260)	IL

Method EPA 8151A

2,4,5-T	IL
2,4-D	IL
2,4-DB	IL
3,5-Dichlorobenzoic acid	IL
4-Nitrophenol	IL
Acifluorfen	IL
Bentazon	IL
Chloramben	IL
Dalapon	IL
DCPA di acid degradate	IL
Dicamba	IL
Dichloroprop (Dichlorprop)	IL
Dinoseb (2-sec-butyl-4,6-dinitrophenol, DNBP)	IL
MCPA	IL
MCPP	IL
Pentachlorophenol	IL
Picloram	IL
Silvex (2,4,5-TP)	IL

Method EPA 8260B

1,1,1,2-Tetrachloroethane	IL
1,1,1-Trichloroethane	IL
1,1,2,2-Tetrachloroethane	IL
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	IL
1,1,2-Trichloroethane	IL
1,1-Dichloroethane	IL
1,1-Dichloroethylene	IL
1,1-Dichloropropene	IL
1,2,3-Trichlorobenzene	IL
1,2,3-Trichloropropane	IL
1,2,4-Trichlorobenzene	IL
1,2,4-Trimethylbenzene	IL
1,2-Dibromo-3-chloropropane (DBCP)	IL
1,2-Dibromoethane (EDB, Ethylene dibromide)	IL
1,2-Dichlorobenzene (o-Dichlorobenzene)	IL
1,2-Dichloroethane (Ethylene dichloride)	IL
1,2-Dichloropropane	IL
1,3,5-Trimethylbenzene	IL
1,3-Dichlorobenzene	IL
1,3-Dichloropropane	IL
1,4-Dichlorobenzene	IL
1-Chlorobutane	IL
2,2-Dichloropropane	IL

Field of Testing /Matrix: ***RCRA (Non Potable Water)***

2-Butanone (Methyl ethyl ketone, MEK)	IL
2-Chloroethyl vinyl ether	IL
2-Chlorotoluene	IL
2-Hexanone	IL
2-Nitropropane	IL
4-Chlorotoluene	IL
4-Isopropyltoluene (p-Cymene,p-Isopropyltoluene)	IL
4-Methyl-2-pentanone (MIBK)	IL
Acetone	IL
Acetonitrile	IL
Acrolein (Propenal)	IL
Acrylonitrile	IL
Allyl chloride (3-Chloropropene)	IL
Benzene	IL
Bromobenzene	IL
Bromochloromethane	IL
Bromodichloromethane	IL
Bromoform	IL
Carbon disulfide	IL
Carbon tetrachloride	IL
Chlorobenzene	IL
Chlorodibromomethane	IL
Chloroethane (Ethyl chloride)	IL
Chloroform	IL
Chloroprene (2-Chloro-1,3-butadiene)	IL
cis-1,2-Dichloroethylene	IL
cis-1,3-Dichloropropene	IL
cis-1,4-Dichloro-2-butene	IL
Dibromomethane (Methylene bromide)	IL
Dichlorodifluoromethane (Freon-12)	IL
Diethyl ether	IL
Di-isopropylether (DIPE) (Isopropyl Ether)	IL
Ethyl acetate	IL
Ethyl methacrylate	IL
Ethylbenzene	IL
Hexachlorobutadiene	IL
Hexachloroethane	IL
Iodomethane (Methyl iodide)	IL
Isopropylbenzene	IL
m+p-xylene	IL
Methacrylonitrile	IL
Methyl acrylate	IL
Methyl bromide (Bromomethane)	IL
Methyl chloride (Chloromethane)	IL
Methyl methacrylate	IL
Methyl tert-butyl ether (MTBE)	IL
Methylene chloride (Dichloromethane)	IL
m-Xylene	IL
Naphthalene	IL
n-Butylbenzene	IL
Nitrobenzene	IL
n-Propylbenzene	IL

Field of Testing /Matrix: ***RCRA (Non Potable Water)***

o-Xylene	IL
Pentachloroethane	IL
Propionitrile (Ethyl cyanide)	IL
p-Xylene	IL
sec-Butylbenzene	IL
Styrene	IL
tert-Butyl alcohol	IL
tert-Butylbenzene	IL
Tetrachloroethylene (Perchloroethylene)	IL
Tetrahydrofuran (THF)	IL
Toluene	IL
trans-1,2-Dichloroethylene	IL
trans-1,3-Dichloropropylene	IL
trans-1,4-Dichloro-2-butene	IL
Trichloroethene (Trichloroethylene)	IL
Trichlorofluoromethane (Fluorotrichloromethane, Freon 11)	IL
Vinyl acetate	IL
Vinyl chloride	IL
Xylene (total)	IL

Method EPA 8270C Rev: 3

1,2,4-Trichlorobenzene	IL
1,2-Dichlorobenzene (o-Dichlorobenzene)	IL
1,2-Diphenylhydrazine	IL
1,3-Dichlorobenzene	IL
1,4-Dichlorobenzene	IL
1,4-Dioxane (1,4- Diethyleneoxide)	IL
1,4-Naphthoquinone	IL
1-Naphthylamine	IL
2,4,5-Trichlorophenol	IL
2,4,6-Trichlorophenol	IL
2,4-Dichlorophenol	IL
2,4-Dimethylphenol	IL
2,4-Dinitrophenol	IL
2,4-Dinitrotoluene (2,4-DNT)	IL
2,6-Dinitrotoluene (2,6-DNT)	IL
2-Chloronaphthalene	IL
2-Chlorophenol	IL
2-Methyl-4,6-dinitrophenol (4,6-Dinitro-2-methylphenol)	IL
2-Methylaniline (o-Toluidine)	IL
2-Methylnaphthalene	IL
2-Methylphenol (o-Cresol)	IL
2-Nitroaniline	IL
2-Nitrophenol	IL
3,3'-Dichlorobenzidine	IL
3,3'-Dimethylbenzidine	IL
3-Methylcholanthrene	IL
3-Methylphenol (m-Cresol)	IL
3-Nitroaniline	IL
4-Aminobiphenyl	IL
4-Bromophenyl phenyl ether	IL
4-Chloro-3-methylphenol	IL
4-Chloroaniline	IL

Field of Testing /Matrix: ***RCRA (Non Potable Water)***

4-Chlorophenyl phenylether	IL
4-Dimethyl aminoazobenzene	IL
4-Methylphenol (p-Cresol)	IL
4-Nitroaniline	IL
4-Nitrophenol	IL
5-Nitro-o-toluidine	IL
7,12-Dimethylbenz(a) anthracene	IL
Acenaphthene	IL
Acenaphthylene	IL
Acetophenone	IL
Aniline	IL
Anthracene	IL
Benzidine	IL
Benzo(a)anthracene	IL
Benzo(a)pyrene	IL
Benzo(b)fluoranthene	IL
Benzo(g,h,i)perylene	IL
Benzo(k)fluoranthene	IL
Benzoic acid	IL
Benzyl alcohol	IL
bis(2-Chloroethoxy)methane	IL
bis(2-Chloroethyl) ether	IL
bis(2-Chloroisopropyl) ether, bis(2-Chloro-1-methylethyl) ether	IL
bis(2-Ethylhexyl) phthalate (DEHP)	IL
Butyl benzyl phthalate	IL
Carbazole	IL
Chlorobenzilate	IL
Chrysene	IL
Diallate	IL
Dibenz(a,h) anthracene	IL
Dibenzofuran	IL
Diethyl phthalate	IL
Dimethoate	IL
Dimethyl phthalate	IL
Di-n-butyl phthalate	IL
Di-n-octyl phthalate	IL
Diphenylamine	IL
Ethyl methanesulfonate	IL
Famphur	IL
Fluoranthene	IL
Fluorene	IL
Hexachlorobenzene	IL
Hexachlorobutadiene	IL
Hexachlorocyclopentadiene	IL
Hexachloroethane	IL
Hexachloropropene	IL
Indeno(1,2,3-cd) pyrene	IL
Isodrin	IL
Isophorone	IL
Isosafrole	IL
Methyl methanesulfonate	IL
Naphthalene	IL

Field of Testing /Matrix: ***RCRA (Non Potable Water)***

Nitrobenzene	IL
n-Nitrosodiethylamine	IL
n-Nitrosodimethylamine	IL
n-Nitroso-di-n-butylamine	IL
n-Nitrosodi-n-propylamine	IL
n-Nitrosodiphenylamine	IL
n-Nitrosomethylethylamine	IL
n-Nitrosopiperidine	IL
n-Nitrosopyrrolidine	IL
o,o,o-Triethyl phosphorothioate	IL
Parathion	IL
Pentachlorobenzene	IL
Pentachloronitrobenzene	IL
Pentachlorophenol	IL
Phenanthrene	IL
Phenol	IL
Pronamide (Kerb)	IL
Pyrene	IL
Pyridine	IL
Safrole	IL

Method EPA 8270C Mod LVI

Acetochlor	IL
Alachlor	IL
Atrazine	IL
Butylate	IL
Cyanazine	IL
EPTC (Eptam, s-ethyl-dipropyl thio carbamate)	IL
Metolachlor	IL
Metribuzin	IL
Pendimethalin (Penoxalin)	IL
Simazine	IL
Trifluralin (Treflan)	IL

Method EPA 9012A Rev: 1

Cyanide	IL

Method EPA 9014 Rev: 0

Cyanide	IL

Method EPA 9020B Rev: 2

Total organic halides (TOX)	IL

Method EPA 9023 Rev: 0

Extractable organics halides (EOX)	IL

Method EPA 9036 Rev: 0

Sulfate	IL

Method EPA 9040B Rev: 2

pH	IL

Method EPA 9050A Rev: 1

Conductivity	IL

Method EPA 9060A

Total organic carbon	IL

Method EPA 9065 Rev: 0

Field of Testing /Matrix: ***RCRA (Non Potable Water)***

Total phenolics IL

Method EPA 9066 Rev: 0

Total phenolics IL

Method EPA 9095A

Paint Filter Test IL

Method EPA 9214 Rev: 0

Fluoride IL

Method EPA 9251 Rev: 0

Chloride IL

Field of Testing /Matrix: ***RCRA (Solid & Hazardous Material)***

Method EPA 1010A	
Ignitability	IL
Method EPA 1020B	
Ignitability	IL
Method EPA 1311 Rev: 0	
Toxicity Characteristic Leaching Procedure (TCLP)	IL
Method EPA 1312 Rev: 0	
Synthetic Precipitation Leaching Procedure (SPLP)	IL
Method EPA 6010B Rev: 2	
Aluminum	IL
Antimony	IL
Arsenic	IL
Barium	IL
Beryllium	IL
Boron	IL
Cadmium	IL
Calcium	IL
Chromium	IL
Cobalt	IL
Copper	IL
Iron	IL
Lead	IL
Lithium	IL
Magnesium	IL
Manganese	IL
Molybdenum	IL
Nickel	IL
Phosphorus	IL
Potassium	IL
Selenium	IL
Silver	IL
Sodium	IL
Strontium	IL
Thallium	IL
Tin	IL
Titanium	IL
Vanadium	IL
Zinc	IL
Method EPA 6020A Rev: 1	
Aluminum	IL
Antimony	IL
Arsenic	IL
Barium	IL
Beryllium	IL
Boron	IL
Cadmium	IL
Chromium	IL
Cobalt	IL
Copper	IL
Iron	IL

Field of Testing /Matrix: ***RCRA (Solid & Hazardous Material)***

Lead	IL
Magnesium	IL
Manganese	IL
Molybdenum	IL
Nickel	IL
Potassium	IL
Selenium	IL
Silver	IL
Sodium	IL
Thallium	IL
Vanadium	IL
Zinc	IL

Method EPA 7196A Rev: 1

Chromium VI	IL

Method EPA 7471B

Mercury	IL

Method EPA 8015B Rev: 2

Diesel range organics (DRO)	IL
Ethanol	IL
Ethylene glycol	IL
Isobutyl alcohol (2-Methyl-1-propanol)	IL
Isopropyl alcohol (2-Propanol, Isopropanol)	IL
Methanol	IL
n-Butyl alcohol (1-Butanol, n-Butanol)	IL
n-Propanol (1-Propanol)	IL
tert-Butyl alcohol	IL

Method EPA 8081B

4,4'-DDD	IL
4,4'-DDE	IL
4,4'-DDT	IL
Alachlor	IL
Aldrin	IL
alpha-BHC (alpha-Hexachlorocyclohexane)	IL
alpha-Chlordane, cis-Chlordane	IL
beta-BHC (beta-Hexachlorocyclohexane)	IL
Chlordane (tech.)(N.O.S.)	IL
delta-BHC	IL
Dieldrin	IL
Endosulfan I	IL
Endosulfan II	IL
Endosulfan sulfate	IL
Endrin	IL
Endrin aldehyde	IL
Endrin ketone	IL
gamma-BHC (Lindane, gamma-Hexachlorocyclohexane)	IL
gamma-Chlordane	IL
Heptachlor	IL
Heptachlor epoxide	IL
Methoxychlor	IL
Toxaphene (Chlorinated camphene)	IL

Method EPA 8082 Rev: 0

Field of Testing /Matrix: ***RCRA (Solid & Hazardous Material)***

Aroclor-1016 (PCB-1016)	IL
Aroclor-1221 (PCB-1221)	IL
Aroclor-1232 (PCB-1232)	IL
Aroclor-1242 (PCB-1242)	IL
Aroclor-1248 (PCB-1248)	IL
Aroclor-1254 (PCB-1254)	IL
Aroclor-1260 (PCB-1260)	IL

Method EPA 8151A

2,4,5-T	IL
2,4-D	IL
2,4-DB	IL
3,5-Dichlorobenzoic acid	IL
4-Nitrophenol	IL
Acifluorfen	IL
Bentazon	IL
Chloramben	IL
Dalapon	IL
DCPA di acid degradate	IL
Dicamba	IL
Dichloroprop (Dichlorprop)	IL
Dinoseb (2-sec-butyl-4,6-dinitrophenol, DNBP)	IL
MCPA	IL
MCPP	IL
Pentachlorophenol	IL
Picloram	IL
Silvex (2,4,5-TP)	IL

Method EPA 8260B

1,1,1,2-Tetrachloroethane	IL
1,1,1-Trichloroethane	IL
1,1,2,2-Tetrachloroethane	IL
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	IL
1,1,2-Trichloroethane	IL
1,1-Dichloroethane	IL
1,1-Dichloroethylene	IL
1,1-Dichloropropene	IL
1,2,3-Trichlorobenzene	IL
1,2,3-Trichloropropane	IL
1,2,4-Trichlorobenzene	IL
1,2,4-Trimethylbenzene	IL
1,2-Dibromo-3-chloropropane (DBCP)	IL
1,2-Dibromoethane (EDB, Ethylene dibromide)	IL
1,2-Dichlorobenzene (o-Dichlorobenzene)	IL
1,2-Dichloroethane (Ethylene dichloride)	IL
1,2-Dichloropropane	IL
1,3,5-Trimethylbenzene	IL
1,3-Dichlorobenzene	IL
1,3-Dichloropropane	IL
1,4-Dichlorobenzene	IL
1-Chlorobutane	IL
2,2-Dichloropropane	IL
2-Butanone (Methyl ethyl ketone, MEK)	IL

Field of Testing /Matrix: ***RCRA (Solid & Hazardous Material)***

2-Chloroethyl vinyl ether	IL
2-Chlorotoluene	IL
2-Hexanone	IL
2-Nitropropane	IL
4-Chlorotoluene	IL
4-Isopropyltoluene (p-Cymene,p-Isopropyltoluene)	IL
4-Methyl-2-pentanone (MIBK)	IL
Acetone	IL
Acetonitrile	IL
Acrolein (Propenal)	IL
Allyl chloride (3-Chloropropene)	IL
Benzene	IL
Bromobenzene	IL
Bromochloromethane	IL
Bromodichloromethane	IL
Bromoform	IL
Carbon disulfide	IL
Carbon tetrachloride	IL
Chlorobenzene	IL
Chlorodibromomethane	IL
Chloroethane (Ethyl chloride)	IL
Chloroform	IL
Chloroprene (2-Chloro-1,3-butadiene)	IL
cis-1,2-Dichloroethylene	IL
cis-1,3-Dichloropropene	IL
cis-1,4-Dichloro-2-butene	IL
Dibromomethane (Methylene bromide)	IL
Dichlorodifluoromethane (Freon-12)	IL
Diethyl ether	IL
Di-isopropylether (DIPE) (Isopropyl Ether)	IL
Ethyl acetate	IL
Ethyl methacrylate	IL
Ethylbenzene	IL
Hexachlorobutadiene	IL
Hexachloroethane	IL
Iodomethane (Methyl iodide)	IL
Isopropylbenzene	IL
m+p-xylene	IL
Methacrylonitrile	IL
Methyl acrylate	IL
Methyl bromide (Bromomethane)	IL
Methyl chloride (Chloromethane)	IL
Methyl methacrylate	IL
Methyl tert-butyl ether (MTBE)	IL
Methylene chloride (Dichloromethane)	IL
m-Xylene	IL
Naphthalene	IL
n-Butylbenzene	IL
Nitrobenzene	IL
n-Propylbenzene	IL
o-Xylene	IL
Pentachloroethane	IL

Field of Testing /Matrix: ***RCRA (Solid & Hazardous Material)***

Propionitrile (Ethyl cyanide)	IL
p-Xylene	IL
sec-Butylbenzene	IL
Styrene	IL
tert-Butyl alcohol	IL
tert-Butylbenzene	IL
Tetrachloroethylene (Perchloroethylene)	IL
Tetrahydrofuran (THF)	IL
Toluene	IL
trans-1,2-Dichloroethylene	IL
trans-1,3-Dichloropropylene	IL
trans-1,4-Dichloro-2-butene	IL
Trichloroethene (Trichloroethylene)	IL
Trichlorofluoromethane (Fluorotrichloromethane, Freon 11)	IL
Vinyl acetate	IL
Vinyl chloride	IL
Xylene (total)	IL

Method EPA 8270C Rev: 3

1,2,4-Trichlorobenzene	IL
1,2-Dichlorobenzene (o-Dichlorobenzene)	IL
1,2-Diphenylhydrazine	IL
1,3-Dichlorobenzene	IL
1,4-Dichlorobenzene	IL
1,4-Dioxane (1,4- Diethyleneoxide)	IL
2,4,5-Trichlorophenol	IL
2,4,6-Trichlorophenol	IL
2,4-Dichlorophenol	IL
2,4-Dimethylphenol	IL
2,4-Dinitrophenol	IL
2,4-Dinitrotoluene (2,4-DNT)	IL
2,6-Dinitrotoluene (2,6-DNT)	IL
2-Chloronaphthalene	IL
2-Chlorophenol	IL
2-Methyl-4,6-dinitrophenol (4,6-Dinitro-2-methylphenol)	IL
2-Methylaniline (o-Toluidine)	IL
2-Methylnaphthalene	IL
2-Methylphenol (o-Cresol)	IL
2-Nitroaniline	IL
2-Nitrophenol	IL
3,3'-Dichlorobenzidine	IL
3-Methylphenol (m-Cresol)	IL
3-Nitroaniline	IL
4-Bromophenyl phenyl ether	IL
4-Chloro-3-methylphenol	IL
4-Chloroaniline	IL
4-Chlorophenyl phenylether	IL
4-Methylphenol (p-Cresol)	IL
4-Nitroaniline	IL
4-Nitrophenol	IL
Acenaphthene	IL
Acenaphthylene	IL
Aniline	IL

Field of Testing /Matrix: ***RCRA (Solid & Hazardous Material)***

Anthracene	IL
Benzidine	IL
Benzo(a)anthracene	IL
Benzo(a)pyrene	IL
Benzo(b)fluoranthene	IL
Benzo(g,h,i)perylene	IL
Benzo(k)fluoranthene	IL
Benzoic acid	IL
Benzyl alcohol	IL
bis(2-Chloroethoxy)methane	IL
bis(2-Chloroethyl) ether	IL
bis(2-Chloroisopropyl) ether, bis(2-Chloro-1-methylethyl) ether	IL
bis(2-Ethylhexyl) phthalate (DEHP)	IL
Butyl benzyl phthalate	IL
Carbazole	IL
Chrysene	IL
Dibenz(a,h) anthracene	IL
Dibenzofuran	IL
Diethyl phthalate	IL
Dimethyl phthalate	IL
Di-n-butyl phthalate	IL
Di-n-octyl phthalate	IL
Fluoranthene	IL
Fluorene	IL
Hexachlorobenzene	IL
Hexachlorobutadiene	IL
Hexachlorocyclopentadiene	IL
Hexachloroethane	IL
Indeno(1,2,3-cd) pyrene	IL
Isophorone	IL
Naphthalene	IL
Nitrobenzene	IL
n-Nitrosodiethylamine	IL
n-Nitrosodimethylamine	IL
n-Nitrosodi-n-propylamine	IL
n-Nitrosodiphenylamine	IL
n-Nitrosomethylethylamine	IL
Pentachlorobenzene	IL
Pentachlorophenol	IL
Phenanthrene	IL
Phenol	IL
Pyrene	IL
Pyridine	IL

Method EPA 8270C Mod LVI

Acetochlor	IL
Alachlor	IL
Atrazine	IL
Butylate	IL
Cyanazine	IL
EPTC (Eptam, s-ethyl-dipropyl thio carbamate)	IL
Metolachlor	IL
Metribuzin	IL

Field of Testing /Matrix: ***RCRA (Solid & Hazardous Material)***

Pendimethalin (Penoxalin)	IL
Simazine	IL
Trifluralin (Treflan)	IL
Method EPA 9012A Rev: 1	
Cyanide	IL
Method EPA 9014 Rev: 0	
Cyanide	IL
Method EPA 9020B Rev: 2	
Total organic halides (TOX)	IL
Method EPA 9023 Rev: 0	
Extractable organics halides (EOX)	IL
Method EPA 9034 Rev: 0	
Sulfide	IL
Method EPA 9036 Rev: 0	
Sulfate	IL
Method EPA 9045C Rev: 3	
pH	IL
Method EPA 9060A	
Total organic carbon	IL
Method EPA 9065 Rev: 0	
Total phenolics	IL
Method EPA 9214 Rev: 0	
Fluoride	IL

Field of Testing /Matrix: ***SDWA (Potable Water)***

Method EPA 180.1

Turbidity	IL

Method EPA 200.7 Rev: 4.4

Aluminum	IL
Barium	IL
Beryllium	IL
Cadmium	IL
Calcium	IL
Chromium	IL
Copper	IL
Iron	IL
Magnesium	IL
Manganese	IL
Nickel	IL
Silver	IL
Sodium	IL
Zinc	IL

Method EPA 200.8 Rev: 5.4

Antimony	IL
Arsenic	IL
Barium	IL
Beryllium	IL
Cadmium	IL
Chromium	IL
Copper	IL
Lead	IL
Manganese	IL
Molybdenum	IL
Nickel	IL
Selenium	IL
Silver	IL
Thallium	IL
Zinc	IL

Method EPA 245.1 Rev: 3

Mercury	IL

Method EPA 335.4 Rev: 1

Cyanide	IL

Method EPA 353.2 Rev: 2

Nitrate	IL
Nitrate plus Nitrite as N	IL

Method SM 2130 B-1994 Rev: 20th

Turbidity	IL

Method SM 2320 B-1991 Rev: 18th ED

Alkalinity as CaCO3	IL

Method SM 2340 B-1990 Rev: 18th ED

Hardness	IL

Method SM 2510 B-1997 Rev: 21st ED

Conductivity	IL

Method SM 2540 C-1991 Rev: 18th ED

Field of Testing /Matrix: ***SDWA (Potable Water)***

Total dissolved solids	IL
Method SM 4500-Cl G-1993 Rev: 20th ED	
Total chlorine	IL
Method SM 4500-F^- C-1988 Rev: 18th ED	
Fluoride	IL
Method SM 4500-H+ B-1990 Rev: 18th	
pH	IL
Method SM 4500-$NO2^-$ B-1988 Rev: 18th ED	
Nitrite	IL
Method SM 4500-P E-1988 Rev: 18th ED	
Orthophosphate as P	IL
Method SM 4500-Si E Rev: 18th ED	
Silica as SiO2	IL
Method SM 5310 C Rev: 21st ED	
Dissolved organic carbon (DOC)	IL
Total organic carbon	IL
Method SM 5540 C-2000 Rev: 21st ED	
Foaming agents	IL

End of Scope of Accreditation

Oklahoma Department of Environmental Quality
TNI Laboratory Accreditation

O K L A H O M A
DEPARTMENT OF ENVIRONMENTAL QUALITY
...for a clean, attractive, prosperous Oklahoma

State Laboratory ID: 9978
EPA ID: IL00054

Certificate #: 2020-135

Teklab, Inc.

5445 Horseshoe Lake Road
Collinsville, IL 62234

has been accredited for the analysis of environmental samples for analytes listed on the attached Scope of Accreditation.

Continued accreditation is contingent upon successful on-going compliance with OAC 252:307 which was promulgated and adopted pursuant to the Oklahoma Environmental Quality Code (Code), 27AO.S. § 2-4-101 *et seq.* Specific methods and analytes certified are cited on the laboratory's Scope of Accreditation.

The Scope of Accreditation, inspections reports and accreditation status are on file and may be obtained from:
Oklahoma DEQ, State Environmental Laboratory Services Division,
Laboratory Accreditation Program,
707 N Robinson, P.O. Box 1677, Oklahoma City, Oklahoma 73101-1677,
(405) 702-1000, www.deq.ok.gov

ISSUED: 9/1/2020

EXPIRES: 8/31/2021

Chris J. Armstrong
Chris Armstrong, State Environmental Laboratory Services Division Director

David E Caldwell
David Caldwell, Laboratory Accreditation Program

This certificate is valid proof of certification only when associated with its Scope of Accreditation.

7000-STR03-R02-091919

Oklahoma Department of Environmental Quality
TNI Laboratory Accreditation Program
Scope of Accreditation

Teklab, Inc.
5445 Horseshoe Lake Road
Collinsville, IL 62234
(618) 344-1004

Laboratory ID: IL00054
State Lab ID: 9978
TNI General Envrionmental

Certificate Number: 2020-135
Date of Issue: 9/1/2020
Expiration Date: 8/31/2021

Has demonstrated the capability to analyze environmental samples in accordance with Oklahoma Rules 252:307 and is hereby granted CERTIFICATION FOR:

Matrix/Analyte	Method	Status	Notes
Non-Potable water			
Ignitability	EPA 1010A	Good Standing	
Conductivity	EPA 120.1_1982	Good Standing	
Toxicity Characteristic Leaching Procedure (TCLP)	EPA 1311_0_1992	Good Standing	
Synthetic Precipitation Leaching Procedure (SCLP)	EPA 1312_0_1994	Good Standing	
Residue-volatile	EPA 160.4_1971	Good Standing	
Mercury	EPA 1631E	Good Standing	
n-Hexane Extractable Material (O&G)	EPA 1664A_1_1999	Good Standing	
Turbidity	EPA 180.1_2_1993	Good Standing	
Aluminum	EPA 200.7_4.4_1994	Good Standing	
Antimony	EPA 200.7_4.4_1994	Good Standing	
Arsenic	EPA 200.7_4.4_1994	Good Standing	
Barium	EPA 200.7_4.4_1994	Good Standing	
Beryllium	EPA 200.7_4.4_1994	Good Standing	
Boron	EPA 200.7_4.4_1994	Good Standing	
Cadmium	EPA 200.7_4.4_1994	Good Standing	
Calcium	EPA 200.7_4.4_1994	Good Standing	
Chromium	EPA 200.7_4.4_1994	Good Standing	
Cobalt	EPA 200.7_4.4_1994	Good Standing	
Copper	EPA 200.7_4.4_1994	Good Standing	
Iron	EPA 200.7_4.4_1994	Good Standing	
Lead	EPA 200.7_4.4_1994	Good Standing	
Magnesium	EPA 200.7_4.4_1994	Good Standing	
Manganese	EPA 200.7_4.4_1994	Good Standing	

Matrix/Analyte	Method	Status	Notes
Molybdenum	EPA 200.7_4.4_1994	Good Standing	
Nickel	EPA 200.7_4.4_1994	Good Standing	
Phosphorus, total	EPA 200.7_4.4_1994	Good Standing	
Potassium	EPA 200.7_4.4_1994	Good Standing	
Selenium	EPA 200.7_4.4_1994	Good Standing	
Silver	EPA 200.7_4.4_1994	Good Standing	
Sodium	EPA 200.7_4.4_1994	Good Standing	
Thallium	EPA 200.7_4.4_1994	Good Standing	
Tin	EPA 200.7_4.4_1994	Good Standing	
Titanium	EPA 200.7_4.4_1994	Good Standing	
Vanadium	EPA 200.7_4.4_1994	Good Standing	
Zinc	EPA 200.7_4.4_1994	Good Standing	
Aluminum	EPA 200.8_5.4_1994	Good Standing	
Antimony	EPA 200.8_5.4_1994	Good Standing	
Arsenic	EPA 200.8_5.4_1994	Good Standing	
Barium	EPA 200.8_5.4_1994	Good Standing	
Beryllium	EPA 200.8_5.4_1994	Good Standing	
Boron	EPA 200.8_5.4_1994	Good Standing	
Cadmium	EPA 200.8_5.4_1994	Good Standing	
Calcium	EPA 200.8_5.4_1994	Good Standing	
Chromium	EPA 200.8_5.4_1994	Good Standing	
Cobalt	EPA 200.8_5.4_1994	Good Standing	
Copper	EPA 200.8_5.4_1994	Good Standing	
Iron	EPA 200.8_5.4_1994	Good Standing	
Lead	EPA 200.8_5.4_1994	Good Standing	
Magnesium	EPA 200.8_5.4_1994	Good Standing	
Manganese	EPA 200.8_5.4_1994	Good Standing	
Molybdenum	EPA 200.8_5.4_1994	Good Standing	
Nickel	EPA 200.8_5.4_1994	Good Standing	
Potassium	EPA 200.8_5.4_1994	Good Standing	
Selenium	EPA 200.8_5.4_1994	Good Standing	
Silver	EPA 200.8_5.4_1994	Good Standing	
Sodium	EPA 200.8_5.4_1994	Good Standing	
Thallium	EPA 200.8_5.4_1994	Good Standing	
Tin	EPA 200.8_5.4_1994	Good Standing	
Titanium	EPA 200.8_5.4_1994	Good Standing	
Vanadium	EPA 200.8_5.4_1994	Good Standing	
Zinc	EPA 200.8_5.4_1994	Good Standing	
Mercury	EPA 245.1_3_1994	Good Standing	
Total cyanide	EPA 335.4_1_1993	Good Standing	
Ammonia as N	EPA 350.1_2_1993	Good Standing	
Total Kjeldahl Nitrogen (TKN)	EPA 351.2_2_1993	Good Standing	
Nitrate as N	EPA 353.2_2_1993	Good Standing	

Matrix/Analyte	Method	Status	Notes
Nitrate-nitrite	EPA 353.2_2_1993	Good Standing	
Nitrite as N	EPA 353.2_2_1993	Good Standing	
Phosphorus, total	EPA 365.4_1974	Good Standing	
Sulfate	EPA 375.2_2_1993	Good Standing	
Chemical oxygen demand	EPA 410.4_2_1993	Good Standing	
Total phenolics	EPA 420.1_1978	Good Standing	
Total phenolics	EPA 420.4_1_1993	Good Standing	
Aluminum	EPA 6010B_2_1996	Good Standing	
Antimony	EPA 6010B_2_1996	Good Standing	
Arsenic	EPA 6010B_2_1996	Good Standing	
Barium	EPA 6010B_2_1996	Good Standing	
Beryllium	EPA 6010B_2_1996	Good Standing	
Boron	EPA 6010B_2_1996	Good Standing	
Cadmium	EPA 6010B_2_1996	Good Standing	
Calcium	EPA 6010B_2_1996	Good Standing	
Chromium	EPA 6010B_2_1996	Good Standing	
Cobalt	EPA 6010B_2_1996	Good Standing	
Copper	EPA 6010B_2_1996	Good Standing	
Iron	EPA 6010B_2_1996	Good Standing	
Lead	EPA 6010B_2_1996	Good Standing	
Lithium	EPA 6010B_2_1996	Good Standing	
Magnesium	EPA 6010B_2_1996	Good Standing	
Manganese	EPA 6010B_2_1996	Good Standing	
Molybdenum	EPA 6010B_2_1996	Good Standing	
Nickel	EPA 6010B_2_1996	Good Standing	
Phosphorus, total	EPA 6010B_2_1996	Good Standing	
Potassium	EPA 6010B_2_1996	Good Standing	
Selenium	EPA 6010B_2_1996	Good Standing	
Silver	EPA 6010B_2_1996	Good Standing	
Sodium	EPA 6010B_2_1996	Good Standing	
Strontium	EPA 6010B_2_1996	Good Standing	
Thallium	EPA 6010B_2_1996	Good Standing	
Tin	EPA 6010B_2_1996	Good Standing	
Titanium	EPA 6010B_2_1996	Good Standing	
Vanadium	EPA 6010B_2_1996	Good Standing	
Zinc	EPA 6010B_2_1996	Good Standing	
Aluminum	EPA 6020A 2007	Good Standing	
Antimony	EPA 6020A 2007	Good Standing	
Arsenic	EPA 6020A 2007	Good Standing	
Barium	EPA 6020A 2007	Good Standing	
Beryllium	EPA 6020A 2007	Good Standing	
Boron	EPA 6020A 2007	Good Standing	
Cadmium	EPA 6020A 2007	Good Standing	

Matrix/Analyte	Method	Status	Notes
Calcium	EPA 6020A 2007	Good Standing	
Chromium	EPA 6020A 2007	Good Standing	
Cobalt	EPA 6020A 2007	Good Standing	
Copper	EPA 6020A 2007	Good Standing	
Iron	EPA 6020A 2007	Good Standing	
Lead	EPA 6020A 2007	Good Standing	
Magnesium	EPA 6020A 2007	Good Standing	
Manganese	EPA 6020A 2007	Good Standing	
Molybdenum	EPA 6020A 2007	Good Standing	
Nickel	EPA 6020A 2007	Good Standing	
Potassium	EPA 6020A 2007	Good Standing	
Selenium	EPA 6020A 2007	Good Standing	
Silver	EPA 6020A 2007	Good Standing	
Sodium	EPA 6020A 2007	Good Standing	
Thallium	EPA 6020A 2007	Good Standing	
Vanadium	EPA 6020A 2007	Good Standing	
Zinc	EPA 6020A 2007	Good Standing	
4,4'-DDD	EPA 608.3 GC-ECD	Good Standing	
4,4'-DDE	EPA 608.3 GC-ECD	Good Standing	
4,4'-DDT	EPA 608.3 GC-ECD	Good Standing	
Aldrin	EPA 608.3 GC-ECD	Good Standing	
alpha-BHC (alpha-Hexachlorocyclohexane)	EPA 608.3 GC-ECD	Good Standing	
Aroclor-1016 (PCB-1016)	EPA 608.3 GC-ECD	Good Standing	
Aroclor-1221 (PCB-1221)	EPA 608.3 GC-ECD	Good Standing	
Aroclor-1232 (PCB-1232)	EPA 608.3 GC-ECD	Good Standing	
Aroclor-1242 (PCB-1242)	EPA 608.3 GC-ECD	Good Standing	
Aroclor-1248 (PCB-1248)	EPA 608.3 GC-ECD	Good Standing	
Aroclor-1254 (PCB-1254)	EPA 608.3 GC-ECD	Good Standing	
Aroclor-1260 (PCB-1260)	EPA 608.3 GC-ECD	Good Standing	
beta-BHC (beta-Hexachlorocyclohexane)	EPA 608.3 GC-ECD	Good Standing	
Chlordane (tech.)	EPA 608.3 GC-ECD	Good Standing	
delta-BHC	EPA 608.3 GC-ECD	Good Standing	
Dieldrin	EPA 608.3 GC-ECD	Good Standing	
Endosulfan I	EPA 608.3 GC-ECD	Good Standing	
Endosulfan II	EPA 608.3 GC-ECD	Good Standing	
Endosulfan sulfate	EPA 608.3 GC-ECD	Good Standing	
Endrin	EPA 608.3 GC-ECD	Good Standing	
Endrin aldehyde	EPA 608.3 GC-ECD	Good Standing	
gamma-BHC (Lindane, gamma-HexachlorocyclohexanE)	EPA 608.3 GC-ECD	Good Standing	
Heptachlor	EPA 608.3 GC-ECD	Good Standing	
Heptachlor epoxide	EPA 608.3 GC-ECD	Good Standing	
Methoxychlor	EPA 608.3 GC-ECD	Good Standing	
Toxaphene (Chlorinated camphene)	EPA 608.3 GC-ECD	Good Standing	

Matrix/Analyte	Method	Status	Notes
2,4,5-T	EPA 615	Good Standing	
2,4-D	EPA 615	Good Standing	
Dicamba	EPA 615	Good Standing	
Silvex (2,4,5-TP)	EPA 615	Good Standing	
1,1,1-Trichloroethane	EPA 624.1	Good Standing	
1,1,2,2-Tetrachloroethane	EPA 624.1	Good Standing	
1,1,2-Trichloroethane	EPA 624.1	Good Standing	
1,1-Dichloroethane	EPA 624.1	Good Standing	
1,1-Dichloroethylene	EPA 624.1	Good Standing	
1,2-Dichlorobenzene	EPA 624.1	Good Standing	
1,2-Dichloroethane	EPA 624.1	Good Standing	
1,2-Dichloropropane	EPA 624.1	Good Standing	
1,3-Dichlorobenzene	EPA 624.1	Good Standing	
1,4-Dichlorobenzene	EPA 624.1	Good Standing	
2-Chloroethyl vinyl ether	EPA 624.1	Good Standing	
Acrolein (Propenal)	EPA 624.1	Good Standing	
Acrylonitrile	EPA 624.1	Good Standing	
Benzene	EPA 624.1	Good Standing	
Bromodichloromethane	EPA 624.1	Good Standing	
Bromoform	EPA 624.1	Good Standing	
Carbon tetrachloride	EPA 624.1	Good Standing	
Chlorobenzene	EPA 624.1	Good Standing	
Chloroethane	EPA 624.1	Good Standing	
Chloroform	EPA 624.1	Good Standing	
cis-1,3-Dichloropropene	EPA 624.1	Good Standing	
Dibromochloromethane	EPA 624.1	Good Standing	
Ethylbenzene	EPA 624.1	Good Standing	
Methyl bromide (Bromomethane)	EPA 624.1	Good Standing	
Methyl chloride (Chloromethane)	EPA 624.1	Good Standing	
Methylene chloride (Dichloromethane)	EPA 624.1	Good Standing	
Tetrachloroethylene (Perchloroethylene)	EPA 624.1	Good Standing	
Toluene	EPA 624.1	Good Standing	
trans-1,2-Dicloroethylene	EPA 624.1	Good Standing	
trans-1,3-Dichloropropylene	EPA 624.1	Good Standing	
Trichloroethene (Trichloroethylene)	EPA 624.1	Good Standing	
Trichlorofluoromethane	EPA 624.1	Good Standing	
Vinyl chloride (chloroethene)	EPA 624.1	Good Standing	
1,2,4-Trichlorobenzene	EPA 625.1	Good Standing	
1,2-Dichlorobenzene	EPA 625.1	Good Standing	
1,3-Dichlorobenzene	EPA 625.1	Good Standing	
1,4-Dichlorobenzene	EPA 625.1	Good Standing	
2,4,6-Trichlorophenol	EPA 625.1	Good Standing	
2,4-Dichlorophenol	EPA 625.1	Good Standing	

Matrix/Analyte	Method	Status	Notes
2,4-Dimethylphenol	EPA 625.1	Good Standing	
2,4-Dinitrophenol	EPA 625.1	Good Standing	
2,4-Dinitrotoluene (2,4-DNT)	EPA 625.1	Good Standing	
2,6-Dinitrotoluene (2,6-DNT)	EPA 625.1	Good Standing	
2-Chloronaphthalene	EPA 625.1	Good Standing	
2-Chlorophenol	EPA 625.1	Good Standing	
2-Methyl-4,6-dinitrophenol	EPA 625.1	Good Standing	
2-Nitrophenol	EPA 625.1	Good Standing	
3,3'-Dichlorobenzidine	EPA 625.1	Good Standing	
4-Bromophenyl phenyl ether	EPA 625.1	Good Standing	
4-Chloro-3-methylphenol	EPA 625.1	Good Standing	
4-Chlorophenyl phenylether	EPA 625.1	Good Standing	
4-Nitrophenol	EPA 625.1	Good Standing	
Acenaphthene	EPA 625.1	Good Standing	
Acenaphthylene	EPA 625.1	Good Standing	
Anthracene	EPA 625.1	Good Standing	
Benzidine	EPA 625.1	Good Standing	
Benzo(a)anthracene	EPA 625.1	Good Standing	
Benzo(a)pyrene	EPA 625.1	Good Standing	
Benzo(g,h,i)perylene	EPA 625.1	Good Standing	
Benzo(k)fluoranthene	EPA 625.1	Good Standing	
Benzo[b]fluoranthene	EPA 625.1	Good Standing	
bis(2-Chloroethoxy)methane	EPA 625.1	Good Standing	
bis(2-Chloroethyl) ether	EPA 625.1	Good Standing	
Butyl benzyl phthalate	EPA 625.1	Good Standing	
Chrysene	EPA 625.1	Good Standing	
Di(2-ethylhexyl) phthalate (bis(2-Ethylhexyl)phthalate, DEHP)	EPA 625.1	Good Standing	
Dibenz(a,h) anthracene	EPA 625.1	Good Standing	
Diethyl phthalate	EPA 625.1	Good Standing	
Dimethyl phthalate	EPA 625.1	Good Standing	
Di-n-butyl phthalate	EPA 625.1	Good Standing	
Di-n-octyl phthalate	EPA 625.1	Good Standing	
Fluoranthene	EPA 625.1	Good Standing	
Fluorene	EPA 625.1	Good Standing	
Hexachlorobenzene	EPA 625.1	Good Standing	
Hexachlorobutadiene	EPA 625.1	Good Standing	
Hexachlorocyclopentadiene	EPA 625.1	Good Standing	
Hexachloroethane	EPA 625.1	Good Standing	
Indeno(1,2,3-cd) pyrene	EPA 625.1	Good Standing	
Isophorone	EPA 625.1	Good Standing	
Naphthalene	EPA 625.1	Good Standing	
Nitrobenzene	EPA 625.1	Good Standing	
n-Nitrosodimethylamine	EPA 625.1	Good Standing	

Matrix/Analyte	Method	Status	Notes
n-Nitrosodi-n-propylamine	EPA 625.1	Good Standing	
n-Nitrosodiphenylamine	EPA 625.1	Good Standing	
Pentachlorophenol	EPA 625.1	Good Standing	
Phenanthrene	EPA 625.1	Good Standing	
Phenol	EPA 625.1	Good Standing	
Pyrene	EPA 625.1	Good Standing	
Chromium VI	EPA 7196A_1_1992	Good Standing	
Mercury	EPA 7470A_1_1994	Good Standing	
Mercury	EPA 7471B_(2007)	Good Standing	
4,4'-DDD	EPA 8081B_(11/00)	Good Standing	
4,4'-DDE	EPA 8081B_(11/00)	Good Standing	
4,4'-DDT	EPA 8081B_(11/00)	Good Standing	
Alachlor	EPA 8081B_(11/00)	Good Standing	
Aldrin	EPA 8081B_(11/00)	Good Standing	
alpha-BHC (alpha-Hexachlorocyclohexane)	EPA 8081B_(11/00)	Good Standing	
alpha-Chlordane	EPA 8081B_(11/00)	Good Standing	
beta-BHC (beta-Hexachlorocyclohexane)	EPA 8081B_(11/00)	Good Standing	
Chlordane (tech.)	EPA 8081B_(11/00)	Good Standing	
delta-BHC	EPA 8081B_(11/00)	Good Standing	
Dieldrin	EPA 8081B_(11/00)	Good Standing	
Endosulfan I	EPA 8081B_(11/00)	Good Standing	
Endosulfan II	EPA 8081B_(11/00)	Good Standing	
Endosulfan sulfate	EPA 8081B_(11/00)	Good Standing	
Endrin	EPA 8081B_(11/00)	Good Standing	
Endrin aldehyde	EPA 8081B_(11/00)	Good Standing	
Endrin ketone	EPA 8081B_(11/00)	Good Standing	
gamma-BHC (Lindane, gamma-HexachlorocyclohexanE)	EPA 8081B_(11/00)	Good Standing	
gamma-Chlordane	EPA 8081B_(11/00)	Good Standing	
Heptachlor	EPA 8081B_(11/00)	Good Standing	
Heptachlor epoxide	EPA 8081B_(11/00)	Good Standing	
Methoxychlor	EPA 8081B_(11/00)	Good Standing	
Toxaphene (Chlorinated camphene)	EPA 8081B_(11/00)	Good Standing	
Aroclor-1016 (PCB-1016)	EPA 8082_0_1996	Good Standing	
Aroclor-1221 (PCB-1221)	EPA 8082_0_1996	Good Standing	
Aroclor-1232 (PCB-1232)	EPA 8082_0_1996	Good Standing	
Aroclor-1242 (PCB-1242)	EPA 8082_0_1996	Good Standing	
Aroclor-1248 (PCB-1248)	EPA 8082_0_1996	Good Standing	
Aroclor-1254 (PCB-1254)	EPA 8082_0_1996	Good Standing	
Aroclor-1260 (PCB-1260)	EPA 8082_0_1996	Good Standing	
2,4,5-T	EPA 8151A_(1/98)	Good Standing	
2,4-D	EPA 8151A_(1/98)	Good Standing	
2,4-DB	EPA 8151A_(1/98)	Good Standing	
3,5-Dichlorobenzoic acid	EPA 8151A_(1/98)	Good Standing	

Matrix/Analyte	Method	Status	Notes
4-Nitrophenol	EPA 8151A_(1/98)	Good Standing	
Acifluorfen	EPA 8151A_(1/98)	Good Standing	
Bentazon	EPA 8151A_(1/98)	Good Standing	
Chloramben	EPA 8151A_(1/98)	Good Standing	
Dacthal (DCPA)	EPA 8151A_(1/98)	Good Standing	
Dalapon	EPA 8151A_(1/98)	Good Standing	
Dicamba	EPA 8151A_(1/98)	Good Standing	
Dichloroprop (Dichlorprop)	EPA 8151A_(1/98)	Good Standing	
Dinoseb (2-sec-butyl-4,6-dinitrophenol, DNBP)	EPA 8151A_(1/98)	Good Standing	
MCPA	EPA 8151A_(1/98)	Good Standing	
MCPP	EPA 8151A_(1/98)	Good Standing	
Pentachlorophenol	EPA 8151A_(1/98)	Good Standing	
Picloram	EPA 8151A_(1/98)	Good Standing	
Silvex (2,4,5-TP)	EPA 8151A_(1/98)	Good Standing	
1,1,1,2-Tetrachloroethane	EPA 8260B_2_1996	Good Standing	
1,1,1-Trichloroethane	EPA 8260B_2_1996	Good Standing	
1,1,2,2-Tetrachloroethane	EPA 8260B_2_1996	Good Standing	
1,1,2-Trichloro-1,2,2-trifluoroethane	EPA 8260B_2_1996	Good Standing	
1,1,2-Trichloroethane	EPA 8260B_2_1996	Good Standing	
1,1-Dichloroethane	EPA 8260B_2_1996	Good Standing	
1,1-Dichloroethylene	EPA 8260B_2_1996	Good Standing	
1,1-Dichloropropene	EPA 8260B_2_1996	Good Standing	
1,2,3-Trichlorobenzene	EPA 8260B_2_1996	Good Standing	
1,2,3-Trichloropropane	EPA 8260B_2_1996	Good Standing	
1,2,4-Trichlorobenzene	EPA 8260B_2_1996	Good Standing	
1,2,4-Trimethylbenzene	EPA 8260B_2_1996	Good Standing	
1,2-Dibromo-3-chloropropane (DBCP) (Dibromochloropropane)	EPA 8260B_2_1996	Good Standing	
1,2-Dibromoethane (EDB, Ethylene dibromide)	EPA 8260B_2_1996	Good Standing	
1,2-Dichlorobenzene	EPA 8260B_2_1996	Good Standing	
1,2-Dichloroethane	EPA 8260B_2_1996	Good Standing	
1,2-Dichloropropane	EPA 8260B_2_1996	Good Standing	
1,3,5-Trimethylbenzene	EPA 8260B_2_1996	Good Standing	
1,3-Dichlorobenzene	EPA 8260B_2_1996	Good Standing	
1,3-Dichloropropane	EPA 8260B_2_1996	Good Standing	
1,4-Dichlorobenzene	EPA 8260B_2_1996	Good Standing	
1-Chlorobutane	EPA 8260B_2_1996	Good Standing	
2,2-Dichloropropane	EPA 8260B_2_1996	Good Standing	
2-Butanone (Methyl ethyl ketone, MEK)	EPA 8260B_2_1996	Good Standing	
2-Chloroethyl vinyl ether	EPA 8260B_2_1996	Good Standing	
2-Chlorotoluene	EPA 8260B_2_1996	Good Standing	
2-Hexanone	EPA 8260B_2_1996	Good Standing	
2-Nitropropane	EPA 8260B_2_1996	Good Standing	
4-Chlorotoluene	EPA 8260B_2_1996	Good Standing	

Matrix/Analyte	Method	Status	Notes
4-Methyl-2-pentanone (MIBK)	EPA 8260B_2_1996	Good Standing	
4-Methyl-2-pentanone (MIBK)	EPA 8260B_2_1996	Good Standing	
Acetone	EPA 8260B_2_1996	Good Standing	
Acetonitrile	EPA 8260B_2_1996	Good Standing	
Acrolein (Propenal)	EPA 8260B_2_1996	Good Standing	
Acrylonitrile	EPA 8260B_2_1996	Good Standing	
Allyl chloride (3-Chloropropene)	EPA 8260B_2_1996	Good Standing	
Benzene	EPA 8260B_2_1996	Good Standing	
Bromobenzene	EPA 8260B_2_1996	Good Standing	
Bromochloromethane	EPA 8260B_2_1996	Good Standing	
Bromodichloromethane	EPA 8260B_2_1996	Good Standing	
Bromoform	EPA 8260B_2_1996	Good Standing	
Carbon disulfide	EPA 8260B_2_1996	Good Standing	
Carbon tetrachloride	EPA 8260B_2_1996	Good Standing	
Chlorobenzene	EPA 8260B_2_1996	Good Standing	
Chloroethane	EPA 8260B_2_1996	Good Standing	
Chloroform	EPA 8260B_2_1996	Good Standing	
Chloroprene	EPA 8260B_2_1996	Good Standing	
Chloroprene (2-chloro-1,3-butadiene)	EPA 8260B_2_1996	Good Standing	
cis & trans-1,2-Dichloroethene	EPA 8260B_2_1996	Good Standing	
cis-1,2-Dichloroethylene	EPA 8260B_2_1996	Good Standing	
cis-1,3-Dichloropropene	EPA 8260B_2_1996	Good Standing	
cis-1,4-Dichloro-2-butene	EPA 8260B_2_1996	Good Standing	
Dibromochloromethane	EPA 8260B_2_1996	Good Standing	
Dibromochloropropane (1,2-Dibromo-3-chloropropane) (DBCP)	EPA 8260B_2_1996	Good Standing	
Dibromomethane	EPA 8260B_2_1996	Good Standing	
Dichlorodifluoromethane	EPA 8260B_2_1996	Good Standing	
Diethyl ether	EPA 8260B_2_1996	Good Standing	
Di-isopropylether (DIPE)	EPA 8260B_2_1996	Good Standing	
Ethyl acetate	EPA 8260B_2_1996	Good Standing	
Ethyl methacrylate	EPA 8260B_2_1996	Good Standing	
Ethylbenzene	EPA 8260B_2_1996	Good Standing	
Hexachlorobutadiene	EPA 8260B_2_1996	Good Standing	
Hexachloroethane	EPA 8260B_2_1996	Good Standing	
Iodomethane (Methyl iodide)	EPA 8260B_2_1996	Good Standing	
Isopropylbenzene	EPA 8260B_2_1996	Good Standing	
Methacrylonitrile	EPA 8260B_2_1996	Good Standing	
Methyl acrylate	EPA 8260B_2_1996	Good Standing	
Methyl bromide (Bromomethane)	EPA 8260B_2_1996	Good Standing	
Methyl chloride (Chloromethane)	EPA 8260B_2_1996	Good Standing	
Methyl methacrylate	EPA 8260B_2_1996	Good Standing	
Methyl tert-butyl ether (MTBE)	EPA 8260B_2_1996	Good Standing	
Methylene chloride	EPA 8260B_2_1996	Good Standing	

Matrix/Analyte	Method	Status	Notes
Methylene chloride (Dichloromethane)	EPA 8260B_2_1996	Good Standing	
m-Xylene	EPA 8260B_2_1996	Good Standing	
Naphthalene	EPA 8260B_2_1996	Good Standing	
n-Butylbenzene	EPA 8260B_2_1996	Good Standing	
Nitrobenzene	EPA 8260B_2_1996	Good Standing	
n-Propylbenzene	EPA 8260B_2_1996	Good Standing	
o-Xylene	EPA 8260B_2_1996	Good Standing	
Pentachloroethane	EPA 8260B_2_1996	Good Standing	
p-Isopropyltoluene	EPA 8260B_2_1996	Good Standing	
Propionitrile (Ethyl cyanide)	EPA 8260B_2_1996	Good Standing	
p-Xylene	EPA 8260B_2_1996	Good Standing	
sec-Butylbenzene	EPA 8260B_2_1996	Good Standing	
Styrene	EPA 8260B_2_1996	Good Standing	
tert-Butyl alcohol	EPA 8260B_2_1996	Good Standing	
tert-Butylbenzene	EPA 8260B_2_1996	Good Standing	
Tetrachloroethylene (Perchloroethylene)	EPA 8260B_2_1996	Good Standing	
Tetrahydrofuran (THF)	EPA 8260B_2_1996	Good Standing	
Toluene	EPA 8260B_2_1996	Good Standing	
trans-1,2-Dicloroethylene	EPA 8260B_2_1996	Good Standing	
trans-1,3-Dichloropropylene	EPA 8260B_2_1996	Good Standing	
trans-1,4-Dichloro-2-butene	EPA 8260B_2_1996	Good Standing	
Trichloroethene (Trichloroethylene)	EPA 8260B_2_1996	Good Standing	
Trichlorofluoromethane	EPA 8260B_2_1996	Good Standing	
Vinyl acetate	EPA 8260B_2_1996	Good Standing	
Vinyl chloride (chloroethene)	EPA 8260B_2_1996	Good Standing	
Xylene (total)	EPA 8260B_2_1996	Good Standing	
1,2,4-Trichlorobenzene	EPA 8270C_3_1996	Good Standing	
1,2-Dichlorobenzene	EPA 8270C_3_1996	Good Standing	
1,2-Diphenylhydrazine	EPA 8270C_3_1996	Good Standing	
1,3-Dichlorobenzene	EPA 8270C_3_1996	Good Standing	
1,4-Dichlorobenzene	EPA 8270C_3_1996	Good Standing	
1,4-Dioxane (1,4- Diethyleneoxide)	EPA 8270C_3_1996	Good Standing	
1,4-Naphthoquinone	EPA 8270C_3_1996	Good Standing	
1-Naphthylamine	EPA 8270C_3_1996	Good Standing	
2,2-oxybis (1-chloropropane), bis(2-Chloro-1-methylethyl)ether	EPA 8270C_3_1996	Good Standing	
2,4,5-Trichlorophenol	EPA 8270C_3_1996	Good Standing	
2,4,6-Trichlorophenol	EPA 8270C_3_1996	Good Standing	
2,4-Dichlorophenol	EPA 8270C_3_1996	Good Standing	
2,4-Dimethylphenol	EPA 8270C_3_1996	Good Standing	
2,4-Dinitrophenol	EPA 8270C_3_1996	Good Standing	
2,4-Dinitrotoluene (2,4-DNT)	EPA 8270C_3_1996	Good Standing	
2,6-Dinitrotoluene (2,6-DNT)	EPA 8270C_3_1996	Good Standing	
2-Chloronaphthalene	EPA 8270C_3_1996	Good Standing	

Matrix/Analyte	Method	Status	Notes
2-Chlorophenol	EPA 8270C_3_1996	Good Standing	
2-Methylnaphthalene	EPA 8270C_3_1996	Good Standing	
2-Methylphenol (o-Cresol)	EPA 8270C_3_1996	Good Standing	
2-Naphthylamine	EPA 8270C_3_1996	Good Standing	
2-Nitroaniline	EPA 8270C_3_1996	Good Standing	
2-Nitrophenol	EPA 8270C_3_1996	Good Standing	
3 & 4 Methylphenol	EPA 8270C_3_1996	Good Standing	
3,3'-Dichlorobenzidine	EPA 8270C_3_1996	Good Standing	
3,3'-Dimethylbenzidine	EPA 8270C_3_1996	Good Standing	
3-Methylcholanthrene	EPA 8270C_3_1996	Good Standing	
3-Methylphenol (m-Cresol)	EPA 8270C_3_1996	Good Standing	
3-Nitroaniline	EPA 8270C_3_1996	Good Standing	
4-Aminobiphenyl	EPA 8270C_3_1996	Good Standing	
4-Bromophenyl phenyl ether	EPA 8270C_3_1996	Good Standing	
4-Chloro-3-methylphenol	EPA 8270C_3_1996	Good Standing	
4-Chloroaniline	EPA 8270C_3_1996	Good Standing	
4-Chlorophenyl phenylether	EPA 8270C_3_1996	Good Standing	
4-Methylphenol (p-Cresol)	EPA 8270C_3_1996	Good Standing	
4-Nitroaniline	EPA 8270C_3_1996	Good Standing	
4-Nitrophenol	EPA 8270C_3_1996	Good Standing	
5-Nitro-o-toluidine	EPA 8270C_3_1996	Good Standing	
7,12-Dimethylbenz(a) anthracene	EPA 8270C_3_1996	Good Standing	
Acenaphthene	EPA 8270C_3_1996	Good Standing	
Acenaphthylene	EPA 8270C_3_1996	Good Standing	
Acetophenone	EPA 8270C_3_1996	Good Standing	
Aniline	EPA 8270C_3_1996	Good Standing	
Anthracene	EPA 8270C_3_1996	Good Standing	
Benzidine	EPA 8270C_3_1996	Good Standing	
Benzo(a)anthracene	EPA 8270C_3_1996	Good Standing	
Benzo(a)pyrene	EPA 8270C_3_1996	Good Standing	
Benzo(g,h,i)perylene	EPA 8270C_3_1996	Good Standing	
Benzo(k)fluoranthene	EPA 8270C_3_1996	Good Standing	
Benzo[b]fluoranthene	EPA 8270C_3_1996	Good Standing	
Benzoic acid	EPA 8270C_3_1996	Good Standing	
Benzyl alcohol	EPA 8270C_3_1996	Good Standing	
bis(2-Chloroethoxy)methane	EPA 8270C_3_1996	Good Standing	
bis(2-Chloroethyl) ether	EPA 8270C_3_1996	Good Standing	
Butyl benzyl phthalate	EPA 8270C_3_1996	Good Standing	
Chrysene	EPA 8270C_3_1996	Good Standing	
Di(2-ethylhexyl) phthalate (bis(2-Ethylhexyl)phthalate, DEHP)	EPA 8270C_3_1996	Good Standing	
Dibenz(a,h) anthracene	EPA 8270C_3_1996	Good Standing	
Diphenylamine	EPA 8270C_3_1996	Good Standing	
Fluoranthene	EPA 8270C_3_1996	Good Standing	

Matrix/Analyte	Method	Status	Notes
Fluorene	EPA 8270C_3_1996	Good Standing	
Hexachlorobenzene	EPA 8270C_3_1996	Good Standing	
Hexachlorobutadiene	EPA 8270C_3_1996	Good Standing	
Hexachlorocyclopentadiene	EPA 8270C_3_1996	Good Standing	
Hexachloroethane	EPA 8270C_3_1996	Good Standing	
Hexachloropropene	EPA 8270C_3_1996	Good Standing	
Indeno(1,2,3-cd) pyrene	EPA 8270C_3_1996	Good Standing	
Naphthalene	EPA 8270C_3_1996	Good Standing	
Nitrobenzene	EPA 8270C_3_1996	Good Standing	
n-Nitrosodiethylamine	EPA 8270C_3_1996	Good Standing	
n-Nitrosodimethylamine	EPA 8270C_3_1996	Good Standing	
n-Nitroso-di-n-butylamine	EPA 8270C_3_1996	Good Standing	
n-Nitrosodi-n-propylamine	EPA 8270C_3_1996	Good Standing	
n-Nitrosodiphenylamine	EPA 8270C_3_1996	Good Standing	
n-Nitrosomethylethalamine	EPA 8270C_3_1996	Good Standing	
n-Nitrosopiperidine	EPA 8270C_3_1996	Good Standing	
n-Nitrosopyrrolidine	EPA 8270C_3_1996	Good Standing	
o-Toluidine	EPA 8270C_3_1996	Good Standing	
Pentachlorobenzene	EPA 8270C_3_1996	Good Standing	
Pentachloronitrobenzene	EPA 8270C_3_1996	Good Standing	
Pentachlorophenol	EPA 8270C_3_1996	Good Standing	
Phenanthrene	EPA 8270C_3_1996	Good Standing	
Phenol	EPA 8270C_3_1996	Good Standing	
Pyrene	EPA 8270C_3_1996	Good Standing	
Pyridine	EPA 8270C_3_1996	Good Standing	
Total cyanide	EPA 9012A_1_1996	Good Standing	
Total cyanide	EPA 9014_0_1996	Good Standing	
Total organic halides (TOX)	EPA 9020B_2_1994	Good Standing	
Extractable organics halides (EOX)	EPA 9023_0_1996	Good Standing	
Sulfide	EPA 9034_0_1996	Good Standing	
Sulfate	EPA 9036_0_1986	Good Standing	
Corrosivity	EPA 9040B_2_1995	Good Standing	
pH	EPA 9040B_2_1995	Good Standing	
Conductivity	EPA 9050A_1_1996	Good Standing	
Total organic carbon	EPA 9060A	Good Standing	
Total phenolics	EPA 9065_0_1986	Good Standing	
Total phenolics	EPA 9066_0_1986	Good Standing	
Free liquid	EPA 9095A_(12/96)	Good Standing	
Fluoride	EPA 9214_0_1996	Good Standing	
Chloride	EPA 9251_0_1986	Good Standing	
Temperature, deg. C	SM 2550 B-2010	Good Standing	
Nitrite as N	SM 4500-NO_3^- F-2011	Good Standing	

Matrix/Analyte	Method	Status	Notes
Solids			
Ignitability	EPA 1010A	Good Standing	
Toxicity Characteristic Leaching Procedure (TCLP)	EPA 1311_0_1992	Good Standing	
Synthetic Precipitation Leaching Procedure (SCLP)	EPA 1312_0_1994	Good Standing	
Residue-volatile	EPA 160.4_1971	Good Standing	
Aluminum	EPA 200.7_4.4_1994	Good Standing	
Antimony	EPA 200.7_4.4_1994	Good Standing	
Arsenic	EPA 200.7_4.4_1994	Good Standing	
Barium	EPA 200.7_4.4_1994	Good Standing	
Beryllium	EPA 200.7_4.4_1994	Good Standing	
Boron	EPA 200.7_4.4_1994	Good Standing	
Cadmium	EPA 200.7_4.4_1994	Good Standing	
Calcium	EPA 200.7_4.4_1994	Good Standing	
Chromium	EPA 200.7_4.4_1994	Good Standing	
Cobalt	EPA 200.7_4.4_1994	Good Standing	
Copper	EPA 200.7_4.4_1994	Good Standing	
Iron	EPA 200.7_4.4_1994	Good Standing	
Lead	EPA 200.7_4.4_1994	Good Standing	
Magnesium	EPA 200.7_4.4_1994	Good Standing	
Manganese	EPA 200.7_4.4_1994	Good Standing	
Molybdenum	EPA 200.7_4.4_1994	Good Standing	
Nickel	EPA 200.7_4.4_1994	Good Standing	
Phosphorus, total	EPA 200.7_4.4_1994	Good Standing	
Potassium	EPA 200.7_4.4_1994	Good Standing	
Selenium	EPA 200.7_4.4_1994	Good Standing	
Silver	EPA 200.7_4.4_1994	Good Standing	
Sodium	EPA 200.7_4.4_1994	Good Standing	
Thallium	EPA 200.7_4.4_1994	Good Standing	
Tin	EPA 200.7_4.4_1994	Good Standing	
Titanium	EPA 200.7_4.4_1994	Good Standing	
Vanadium	EPA 200.7_4.4_1994	Good Standing	
Zinc	EPA 200.7_4.4_1994	Good Standing	
Mercury	EPA 245.1_3_1994	Good Standing	
Total Kjeldahl Nitrogen (TKN)	EPA 351.2_2_1993	Good Standing	
Nitrate as N	EPA 353.2_2_1993	Good Standing	
Nitrate-nitrite	EPA 353.2_2_1993	Good Standing	
Nitrite as N	EPA 353.2_2_1993	Good Standing	
Phosphorus, total	EPA 365.4_1974	Good Standing	
Total phenolics	EPA 420.1_1978	Good Standing	
Aluminum	EPA 6010B_2_1996	Good Standing	
Antimony	EPA 6010B_2_1996	Good Standing	
Arsenic	EPA 6010B_2_1996	Good Standing	

Matrix/Analyte	Method	Status	Notes
Barium	EPA 6010B_2_1996	Good Standing	
Beryllium	EPA 6010B_2_1996	Good Standing	
Boron	EPA 6010B_2_1996	Good Standing	
Cadmium	EPA 6010B_2_1996	Good Standing	
Calcium	EPA 6010B_2_1996	Good Standing	
Chromium	EPA 6010B_2_1996	Good Standing	
Cobalt	EPA 6010B_2_1996	Good Standing	
Copper	EPA 6010B_2_1996	Good Standing	
Iron	EPA 6010B_2_1996	Good Standing	
Lead	EPA 6010B_2_1996	Good Standing	
Lithium	EPA 6010B_2_1996	Good Standing	
Magnesium	EPA 6010B_2_1996	Good Standing	
Manganese	EPA 6010B_2_1996	Good Standing	
Molybdenum	EPA 6010B_2_1996	Good Standing	
Nickel	EPA 6010B_2_1996	Good Standing	
Phosphorus, total	EPA 6010B_2_1996	Good Standing	
Potassium	EPA 6010B_2_1996	Good Standing	
Selenium	EPA 6010B_2_1996	Good Standing	
Silver	EPA 6010B_2_1996	Good Standing	
Sodium	EPA 6010B_2_1996	Good Standing	
Strontium	EPA 6010B_2_1996	Good Standing	
Thallium	EPA 6010B_2_1996	Good Standing	
Tin	EPA 6010B_2_1996	Good Standing	
Titanium	EPA 6010B_2_1996	Good Standing	
Vanadium	EPA 6010B_2_1996	Good Standing	
Zinc	EPA 6010B_2_1996	Good Standing	
Aluminum	EPA 6020A 2007	Good Standing	
Antimony	EPA 6020A 2007	Good Standing	
Arsenic	EPA 6020A 2007	Good Standing	
Barium	EPA 6020A 2007	Good Standing	
Beryllium	EPA 6020A 2007	Good Standing	
Boron	EPA 6020A 2007	Good Standing	
Cadmium	EPA 6020A 2007	Good Standing	
Chromium	EPA 6020A 2007	Good Standing	
Cobalt	EPA 6020A 2007	Good Standing	
Copper	EPA 6020A 2007	Good Standing	
Iron	EPA 6020A 2007	Good Standing	
Lead	EPA 6020A 2007	Good Standing	
Magnesium	EPA 6020A 2007	Good Standing	
Manganese	EPA 6020A 2007	Good Standing	
Molybdenum	EPA 6020A 2007	Good Standing	
Nickel	EPA 6020A 2007	Good Standing	
Potassium	EPA 6020A 2007	Good Standing	

Matrix/Analyte	Method	Status	Notes
Selenium	EPA 6020A 2007	Good Standing	
Silver	EPA 6020A 2007	Good Standing	
Sodium	EPA 6020A 2007	Good Standing	
Thallium	EPA 6020A 2007	Good Standing	
Vanadium	EPA 6020A 2007	Good Standing	
Zinc	EPA 6020A 2007	Good Standing	
4,4'-DDD	EPA 608.3 GC-ECD	Good Standing	
4,4'-DDE	EPA 608.3 GC-ECD	Good Standing	
4,4'-DDT	EPA 608.3 GC-ECD	Good Standing	
Aldrin	EPA 608.3 GC-ECD	Good Standing	
alpha-BHC (alpha-Hexachlorocyclohexane)	EPA 608.3 GC-ECD	Good Standing	
Aroclor-1016 (PCB-1016)	EPA 608.3 GC-ECD	Good Standing	
Aroclor-1221 (PCB-1221)	EPA 608.3 GC-ECD	Good Standing	
Aroclor-1232 (PCB-1232)	EPA 608.3 GC-ECD	Good Standing	
Aroclor-1242 (PCB-1242)	EPA 608.3 GC-ECD	Good Standing	
Aroclor-1248 (PCB-1248)	EPA 608.3 GC-ECD	Good Standing	
Aroclor-1254 (PCB-1254)	EPA 608.3 GC-ECD	Good Standing	
Aroclor-1260 (PCB-1260)	EPA 608.3 GC-ECD	Good Standing	
beta-BHC (beta-Hexachlorocyclohexane)	EPA 608.3 GC-ECD	Good Standing	
Chlordane (tech.)	EPA 608.3 GC-ECD	Good Standing	
delta-BHC	EPA 608.3 GC-ECD	Good Standing	
Dieldrin	EPA 608.3 GC-ECD	Good Standing	
Endosulfan I	EPA 608.3 GC-ECD	Good Standing	
Endosulfan II	EPA 608.3 GC-ECD	Good Standing	
Endosulfan sulfate	EPA 608.3 GC-ECD	Good Standing	
Endrin	EPA 608.3 GC-ECD	Good Standing	
Endrin aldehyde	EPA 608.3 GC-ECD	Good Standing	
gamma-BHC (Lindane, gamma-HexachlorocyclohexanE)	EPA 608.3 GC-ECD	Good Standing	
Heptachlor	EPA 608.3 GC-ECD	Good Standing	
Heptachlor epoxide	EPA 608.3 GC-ECD	Good Standing	
Methoxychlor	EPA 608.3 GC-ECD	Good Standing	
Toxaphene (Chlorinated camphene)	EPA 608.3 GC-ECD	Good Standing	
1,1,1-Trichloroethane	EPA 624.1	Good Standing	
1,1,2,2-Tetrachloroethane	EPA 624.1	Good Standing	
1,1,2-Trichloroethane	EPA 624.1	Good Standing	
1,1-Dichloroethane	EPA 624.1	Good Standing	
1,1-Dichloroethylene	EPA 624.1	Good Standing	
1,2-Dichlorobenzene	EPA 624.1	Good Standing	
1,2-Dichloroethane	EPA 624.1	Good Standing	
1,2-Dichloropropane	EPA 624.1	Good Standing	
1,3-Dichlorobenzene	EPA 624.1	Good Standing	
1,4-Dichlorobenzene	EPA 624.1	Good Standing	
2-Chloroethyl vinyl ether	EPA 624.1	Good Standing	

Matrix/Analyte	Method	Status	Notes
Acrolein (Propenal)	EPA 624.1	Good Standing	
Acrylonitrile	EPA 624.1	Good Standing	
Benzene	EPA 624.1	Good Standing	
Bromodichloromethane	EPA 624.1	Good Standing	
Bromoform	EPA 624.1	Good Standing	
Carbon tetrachloride	EPA 624.1	Good Standing	
Chlorobenzene	EPA 624.1	Good Standing	
Chloroethane	EPA 624.1	Good Standing	
Chloroform	EPA 624.1	Good Standing	
cis-1,3-Dichloropropene	EPA 624.1	Good Standing	
Dibromochloromethane	EPA 624.1	Good Standing	
Ethylbenzene	EPA 624.1	Good Standing	
Methyl bromide (Bromomethane)	EPA 624.1	Good Standing	
Methyl chloride (Chloromethane)	EPA 624.1	Good Standing	
Methylene chloride (Dichloromethane)	EPA 624.1	Good Standing	
Tetrachloroethylene (Perchloroethylene)	EPA 624.1	Good Standing	
Toluene	EPA 624.1	Good Standing	
trans-1,2-Dicloroethylene	EPA 624.1	Good Standing	
trans-1,3-Dichloropropylene	EPA 624.1	Good Standing	
Trichloroethene (Trichloroethylene)	EPA 624.1	Good Standing	
Trichlorofluoromethane	EPA 624.1	Good Standing	
Vinyl chloride (chloroethene)	EPA 624.1	Good Standing	
1,2,4-Trichlorobenzene	EPA 625.1	Good Standing	
2,4,6-Trichlorophenol	EPA 625.1	Good Standing	
2,4-Dichlorophenol	EPA 625.1	Good Standing	
2,4-Dimethylphenol	EPA 625.1	Good Standing	
2,4-Dinitrophenol	EPA 625.1	Good Standing	
2,4-Dinitrotoluene (2,4-DNT)	EPA 625.1	Good Standing	
2,6-Dinitrotoluene (2,6-DNT)	EPA 625.1	Good Standing	
2-Chloronaphthalene	EPA 625.1	Good Standing	
2-Chlorophenol	EPA 625.1	Good Standing	
2-Methyl-4,6-dinitrophenol	EPA 625.1	Good Standing	
2-Nitrophenol	EPA 625.1	Good Standing	
3,3'-Dichlorobenzidine	EPA 625.1	Good Standing	
4-Bromophenyl phenyl ether	EPA 625.1	Good Standing	
4-Chloro-3-methylphenol	EPA 625.1	Good Standing	
4-Chlorophenyl phenylether	EPA 625.1	Good Standing	
4-Nitrophenol	EPA 625.1	Good Standing	
Acenaphthene	EPA 625.1	Good Standing	
Acenaphthylene	EPA 625.1	Good Standing	
Anthracene	EPA 625.1	Good Standing	
Benzidine	EPA 625.1	Good Standing	
Benzo(a)anthracene	EPA 625.1	Good Standing	

Matrix/Analyte	Method	Status	Notes
Benzo(a)pyrene	EPA 625.1	Good Standing	
Benzo(g,h,i)perylene	EPA 625.1	Good Standing	
Benzo(k)fluoranthene	EPA 625.1	Good Standing	
Benzo[b]fluoranthene	EPA 625.1	Good Standing	
bis(2-Chloroethoxy)methane	EPA 625.1	Good Standing	
bis(2-Chloroethyl) ether	EPA 625.1	Good Standing	
Butyl benzyl phthalate	EPA 625.1	Good Standing	
Chrysene	EPA 625.1	Good Standing	
Di(2-ethylhexyl) phthalate (bis(2-Ethylhexyl)phthalate, DEHP)	EPA 625.1	Good Standing	
Dibenz(a,h) anthracene	EPA 625.1	Good Standing	
Diethyl phthalate	EPA 625.1	Good Standing	
Dimethyl phthalate	EPA 625.1	Good Standing	
Di-n-butyl phthalate	EPA 625.1	Good Standing	
Di-n-octyl phthalate	EPA 625.1	Good Standing	
Fluoranthene	EPA 625.1	Good Standing	
Fluorene	EPA 625.1	Good Standing	
Hexachlorobenzene	EPA 625.1	Good Standing	
Hexachlorobutadiene	EPA 625.1	Good Standing	
Hexachlorocyclopentadiene	EPA 625.1	Good Standing	
Hexachloroethane	EPA 625.1	Good Standing	
Indeno(1,2,3-cd) pyrene	EPA 625.1	Good Standing	
Isophorone	EPA 625.1	Good Standing	
Naphthalene	EPA 625.1	Good Standing	
Nitrobenzene	EPA 625.1	Good Standing	
n-Nitrosodimethylamine	EPA 625.1	Good Standing	
n-Nitrosodi-n-propylamine	EPA 625.1	Good Standing	
n-Nitrosodiphenylamine	EPA 625.1	Good Standing	
Pentachlorophenol	EPA 625.1	Good Standing	
Phenanthrene	EPA 625.1	Good Standing	
Phenol	EPA 625.1	Good Standing	
Pyrene	EPA 625.1	Good Standing	
Chromium VI	EPA 7196A_1_1992	Good Standing	
Mercury	EPA 7471B_(2007)	Good Standing	
4,4'-DDD	EPA 8081B_(11/00)	Good Standing	
4,4'-DDE	EPA 8081B_(11/00)	Good Standing	
4,4'-DDT	EPA 8081B_(11/00)	Good Standing	
Alachlor	EPA 8081B_(11/00)	Good Standing	
Aldrin	EPA 8081B_(11/00)	Good Standing	
alpha-BHC (alpha-Hexachlorocyclohexane)	EPA 8081B_(11/00)	Good Standing	
alpha-Chlordane	EPA 8081B_(11/00)	Good Standing	
beta-BHC (beta-Hexachlorocyclohexane)	EPA 8081B_(11/00)	Good Standing	
Chlordane (tech.)	EPA 8081B_(11/00)	Good Standing	
delta-BHC	EPA 8081B_(11/00)	Good Standing	

Matrix/Analyte	Method	Status	Notes
Dieldrin	EPA 8081B_(11/00)	Good Standing	
Endosulfan I	EPA 8081B_(11/00)	Good Standing	
Endosulfan II	EPA 8081B_(11/00)	Good Standing	
Endosulfan sulfate	EPA 8081B_(11/00)	Good Standing	
Endrin	EPA 8081B_(11/00)	Good Standing	
Endrin aldehyde	EPA 8081B_(11/00)	Good Standing	
Endrin ketone	EPA 8081B_(11/00)	Good Standing	
gamma-BHC (Lindane, gamma-HexachlorocyclohexanE)	EPA 8081B_(11/00)	Good Standing	
gamma-Chlordane	EPA 8081B_(11/00)	Good Standing	
Heptachlor	EPA 8081B_(11/00)	Good Standing	
Heptachlor epoxide	EPA 8081B_(11/00)	Good Standing	
Methoxychlor	EPA 8081B_(11/00)	Good Standing	
Toxaphene (Chlorinated camphene)	EPA 8081B_(11/00)	Good Standing	
Aroclor-1016 (PCB-1016)	EPA 8082_0_1996	Good Standing	
Aroclor-1221 (PCB-1221)	EPA 8082_0_1996	Good Standing	
Aroclor-1232 (PCB-1232)	EPA 8082_0_1996	Good Standing	
Aroclor-1242 (PCB-1242)	EPA 8082_0_1996	Good Standing	
Aroclor-1248 (PCB-1248)	EPA 8082_0_1996	Good Standing	
Aroclor-1254 (PCB-1254)	EPA 8082_0_1996	Good Standing	
Aroclor-1260 (PCB-1260)	EPA 8082_0_1996	Good Standing	
2,4,5-T	EPA 8151A_(1/98)	Good Standing	
2,4-D	EPA 8151A_(1/98)	Good Standing	
2,4-DB	EPA 8151A_(1/98)	Good Standing	
3,5-Dichlorobenzoic acid	EPA 8151A_(1/98)	Good Standing	
4-Nitrophenol	EPA 8151A_(1/98)	Good Standing	
Acifluorfen	EPA 8151A_(1/98)	Good Standing	
Bentazon	EPA 8151A_(1/98)	Good Standing	
Chloramben	EPA 8151A_(1/98)	Good Standing	
Dacthal (DCPA)	EPA 8151A_(1/98)	Good Standing	
Dalapon	EPA 8151A_(1/98)	Good Standing	
Dicamba	EPA 8151A_(1/98)	Good Standing	
Dichloroprop (Dichlorprop)	EPA 8151A_(1/98)	Good Standing	
Dinoseb (2-sec-butyl-4,6-dinitrophenol, DNBP)	EPA 8151A_(1/98)	Good Standing	
MCPA	EPA 8151A_(1/98)	Good Standing	
MCPP	EPA 8151A_(1/98)	Good Standing	
Pentachlorophenol	EPA 8151A_(1/98)	Good Standing	
Picloram	EPA 8151A_(1/98)	Good Standing	
Silvex (2,4,5-TP)	EPA 8151A_(1/98)	Good Standing	
1,1,1,2-Tetrachloroethane	EPA 8260B_2_1996	Good Standing	
1,1,1-Trichloroethane	EPA 8260B_2_1996	Good Standing	
1,1,2,2-Tetrachloroethane	EPA 8260B_2_1996	Good Standing	
1,1,2-Trichloro-1,2,2-trifluoroethane	EPA 8260B_2_1996	Good Standing	
1,1,2-Trichloroethane	EPA 8260B_2_1996	Good Standing	

Matrix/Analyte	Method	Status	Notes
1,1-Dichloroethane	EPA 8260B_2_1996	Good Standing	
1,1-Dichloroethylene	EPA 8260B_2_1996	Good Standing	
1,1-Dichloropropene	EPA 8260B_2_1996	Good Standing	
1,2,3-Trichlorobenzene	EPA 8260B_2_1996	Good Standing	
1,2,3-Trichloropropane	EPA 8260B_2_1996	Good Standing	
1,2,4-Trichlorobenzene	EPA 8260B_2_1996	Good Standing	
1,2,4-Trimethylbenzene	EPA 8260B_2_1996	Good Standing	
1,2-Dibromo-3-chloropropane (DBCP) (Dibromochloropropane)	EPA 8260B_2_1996	Good Standing	
1,2-Dibromoethane (EDB, Ethylene dibromide)	EPA 8260B_2_1996	Good Standing	
1,2-Dichlorobenzene	EPA 8260B_2_1996	Good Standing	
1,2-Dichloroethane	EPA 8260B_2_1996	Good Standing	
1,2-Dichloropropane	EPA 8260B_2_1996	Good Standing	
1,3,5-Trimethylbenzene	EPA 8260B_2_1996	Good Standing	
1,3-Dichlorobenzene	EPA 8260B_2_1996	Good Standing	
1,3-Dichloropropane	EPA 8260B_2_1996	Good Standing	
1,4-Dichlorobenzene	EPA 8260B_2_1996	Good Standing	
1-Chlorobutane	EPA 8260B_2_1996	Good Standing	
2,2-Dichloropropane	EPA 8260B_2_1996	Good Standing	
2-Butanone (Methyl ethyl ketone, MEK)	EPA 8260B_2_1996	Good Standing	
2-Chloroethyl vinyl ether	EPA 8260B_2_1996	Good Standing	
2-Chlorotoluene	EPA 8260B_2_1996	Good Standing	
2-Hexanone	EPA 8260B_2_1996	Good Standing	
2-Nitropropane	EPA 8260B_2_1996	Good Standing	
4-Chlorotoluene	EPA 8260B_2_1996	Good Standing	
4-Methyl-2-pentanone (MIBK)	EPA 8260B_2_1996	Good Standing	
4-Methyl-2-pentanone (MIBK)	EPA 8260B_2_1996	Good Standing	
Acetone	EPA 8260B_2_1996	Good Standing	
Acetonitrile	EPA 8260B_2_1996	Good Standing	
Acrolein (Propenal)	EPA 8260B_2_1996	Good Standing	
Acrylonitrile	EPA 8260B_2_1996	Good Standing	
Allyl chloride (3-Chloropropene)	EPA 8260B_2_1996	Good Standing	
Benzene	EPA 8260B_2_1996	Good Standing	
Bromobenzene	EPA 8260B_2_1996	Good Standing	
Bromochloromethane	EPA 8260B_2_1996	Good Standing	
Bromodichloromethane	EPA 8260B_2_1996	Good Standing	
Bromoform	EPA 8260B_2_1996	Good Standing	
Carbon disulfide	EPA 8260B_2_1996	Good Standing	
Carbon tetrachloride	EPA 8260B_2_1996	Good Standing	
Chlorobenzene	EPA 8260B_2_1996	Good Standing	
Chloroethane	EPA 8260B_2_1996	Good Standing	
Chloroform	EPA 8260B_2_1996	Good Standing	
Chloroprene	EPA 8260B_2_1996	Good Standing	
Chloroprene (2-chloro-1,3-butadiene)	EPA 8260B_2_1996	Good Standing	

Matrix/Analyte	Method	Status	Notes
cis & trans-1,2-Dichloroethene	EPA 8260B_2_1996	Good Standing	
cis-1,2-Dichloroethylene	EPA 8260B_2_1996	Good Standing	
cis-1,3-Dichloropropene	EPA 8260B_2_1996	Good Standing	
cis-1,4-Dichloro-2-butene	EPA 8260B_2_1996	Good Standing	
Dibromochloromethane	EPA 8260B_2_1996	Good Standing	
Dibromochloropropane (1,2-Dibromo-3-chloropropane) (DBCP)	EPA 8260B_2_1996	Good Standing	
Dibromomethane	EPA 8260B_2_1996	Good Standing	
Dichlorodifluoromethane	EPA 8260B_2_1996	Good Standing	
Diethyl ether	EPA 8260B_2_1996	Good Standing	
Di-isopropylether (DIPE)	EPA 8260B_2_1996	Good Standing	
Ethyl acetate	EPA 8260B_2_1996	Good Standing	
Ethyl methacrylate	EPA 8260B_2_1996	Good Standing	
Ethylbenzene	EPA 8260B_2_1996	Good Standing	
Hexachlorobutadiene	EPA 8260B_2_1996	Good Standing	
Hexachloroethane	EPA 8260B_2_1996	Good Standing	
Iodomethane (Methyl iodide)	EPA 8260B_2_1996	Good Standing	
Isopropylbenzene	EPA 8260B_2_1996	Good Standing	
Methacrylonitrile	EPA 8260B_2_1996	Good Standing	
Methyl acrylate	EPA 8260B_2_1996	Good Standing	
Methyl bromide (Bromomethane)	EPA 8260B_2_1996	Good Standing	
Methyl methacrylate	EPA 8260B_2_1996	Good Standing	
Methyl tert-butyl ether (MTBE)	EPA 8260B_2_1996	Good Standing	
Methylene chloride	EPA 8260B_2_1996	Good Standing	
Methylene chloride (Dichloromethane)	EPA 8260B_2_1996	Good Standing	
m-Xylene	EPA 8260B_2_1996	Good Standing	
Naphthalene	EPA 8260B_2_1996	Good Standing	
n-Butylbenzene	EPA 8260B_2_1996	Good Standing	
Nitrobenzene	EPA 8260B_2_1996	Good Standing	
n-Propylbenzene	EPA 8260B_2_1996	Good Standing	
o-Xylene	EPA 8260B_2_1996	Good Standing	
Pentachloroethane	EPA 8260B_2_1996	Good Standing	
p-Isopropyltoluene	EPA 8260B_2_1996	Good Standing	
Propionitrile (Ethyl cyanide)	EPA 8260B_2_1996	Good Standing	
p-Xylene	EPA 8260B_2_1996	Good Standing	
sec-Butylbenzene	EPA 8260B_2_1996	Good Standing	
Styrene	EPA 8260B_2_1996	Good Standing	
tert-Butyl alcohol	EPA 8260B_2_1996	Good Standing	
tert-Butylbenzene	EPA 8260B_2_1996	Good Standing	
Tetrachloroethylene (Perchloroethylene)	EPA 8260B_2_1996	Good Standing	
Tetrahydrofuran (THF)	EPA 8260B_2_1996	Good Standing	
Toluene	EPA 8260B_2_1996	Good Standing	
trans-1,2-Dicloroethylene	EPA 8260B_2_1996	Good Standing	
trans-1,3-Dichloropropylene	EPA 8260B_2_1996	Good Standing	

Matrix/Analyte	Method	Status	Notes
trans-1,4-Dichloro-2-butene	EPA 8260B_2_1996	Good Standing	
Trichloroethene (Trichloroethylene)	EPA 8260B_2_1996	Good Standing	
Trichlorofluoromethane	EPA 8260B_2_1996	Good Standing	
Vinyl acetate	EPA 8260B_2_1996	Good Standing	
Vinyl chloride (chloroethene)	EPA 8260B_2_1996	Good Standing	
Xylene (total)	EPA 8260B_2_1996	Good Standing	
1,2,4-Trichlorobenzene	EPA 8270C_3_1996	Good Standing	
1,2-Dichlorobenzene	EPA 8270C_3_1996	Good Standing	
1,2-Diphenylhydrazine	EPA 8270C_3_1996	Good Standing	
1,3-Dichlorobenzene	EPA 8270C_3_1996	Good Standing	
1,4-Dichlorobenzene	EPA 8270C_3_1996	Good Standing	
1,4-Dioxane (1,4- Diethyleneoxide)	EPA 8270C_3_1996	Good Standing	
2,2-oxybis (1-chloropropane), bis(2-Chloro-1-methylethyl)ether	EPA 8270C_3_1996	Good Standing	
2,4,5-Trichlorophenol	EPA 8270C_3_1996	Good Standing	
2,4,6-Trichlorophenol	EPA 8270C_3_1996	Good Standing	
2,4-Dichlorophenol	EPA 8270C_3_1996	Good Standing	
2,4-Dimethylphenol	EPA 8270C_3_1996	Good Standing	
2,4-Dinitrophenol	EPA 8270C_3_1996	Good Standing	
2,4-Dinitrotoluene (2,4-DNT)	EPA 8270C_3_1996	Good Standing	
2,6-Dinitrotoluene (2,6-DNT)	EPA 8270C_3_1996	Good Standing	
2-Chloronaphthalene	EPA 8270C_3_1996	Good Standing	
2-Chlorophenol	EPA 8270C_3_1996	Good Standing	
2-Methylnaphthalene	EPA 8270C_3_1996	Good Standing	
2-Methylphenol (o-Cresol)	EPA 8270C_3_1996	Good Standing	
2-Nitroaniline	EPA 8270C_3_1996	Good Standing	
2-Nitrophenol	EPA 8270C_3_1996	Good Standing	
3,3'-Dichlorobenzidine	EPA 8270C_3_1996	Good Standing	
3-Methylphenol (m-Cresol)	EPA 8270C_3_1996	Good Standing	
3-Nitroaniline	EPA 8270C_3_1996	Good Standing	
4-Bromophenyl phenyl ether	EPA 8270C_3_1996	Good Standing	
4-Chloro-3-methylphenol	EPA 8270C_3_1996	Good Standing	
4-Chloroaniline	EPA 8270C_3_1996	Good Standing	
4-Chlorophenyl phenylether	EPA 8270C_3_1996	Good Standing	
4-Methylphenol (p-Cresol)	EPA 8270C_3_1996	Good Standing	
4-Nitroaniline	EPA 8270C_3_1996	Good Standing	
4-Nitrophenol	EPA 8270C_3_1996	Good Standing	
Acenaphthene	EPA 8270C_3_1996	Good Standing	
Acenaphthylene	EPA 8270C_3_1996	Good Standing	
Aniline	EPA 8270C_3_1996	Good Standing	
Anthracene	EPA 8270C_3_1996	Good Standing	
Benzidine	EPA 8270C_3_1996	Good Standing	
Benzo(a)anthracene	EPA 8270C_3_1996	Good Standing	
Benzo(a)pyrene	EPA 8270C_3_1996	Good Standing	

Matrix/Analyte	Method	Status	Notes
Benzo(g,h,i)perylene	EPA 8270C_3_1996	Good Standing	
Benzo(k)fluoranthene	EPA 8270C_3_1996	Good Standing	
Benzo[b]fluoranthene	EPA 8270C_3_1996	Good Standing	
Benzoic acid	EPA 8270C_3_1996	Good Standing	
Benzyl alcohol	EPA 8270C_3_1996	Good Standing	
bis(2-Chloroethoxy)methane	EPA 8270C_3_1996	Good Standing	
bis(2-Chloroethyl) ether	EPA 8270C_3_1996	Good Standing	
Butyl benzyl phthalate	EPA 8270C_3_1996	Good Standing	
Chrysene	EPA 8270C_3_1996	Good Standing	
Di(2-ethylhexyl) phthalate (bis(2-Ethylhexyl)phthalate, DEHP)	EPA 8270C_3_1996	Good Standing	
Dibenz(a,h) anthracene	EPA 8270C_3_1996	Good Standing	
Fluoranthene	EPA 8270C_3_1996	Good Standing	
Fluorene	EPA 8270C_3_1996	Good Standing	
Hexachlorobenzene	EPA 8270C_3_1996	Good Standing	
Hexachlorobutadiene	EPA 8270C_3_1996	Good Standing	
Hexachlorocyclopentadiene	EPA 8270C_3_1996	Good Standing	
Hexachloroethane	EPA 8270C_3_1996	Good Standing	
Indeno(1,2,3-cd) pyrene	EPA 8270C_3_1996	Good Standing	
Naphthalene	EPA 8270C_3_1996	Good Standing	
Nitrobenzene	EPA 8270C_3_1996	Good Standing	
n-Nitrosodiethylamine	EPA 8270C_3_1996	Good Standing	
n-Nitrosodimethylamine	EPA 8270C_3_1996	Good Standing	
n-Nitrosodi-n-propylamine	EPA 8270C_3_1996	Good Standing	
n-Nitrosodiphenylamine	EPA 8270C_3_1996	Good Standing	
n-Nitrosomethylethalamine	EPA 8270C_3_1996	Good Standing	
o-Toluidine	EPA 8270C_3_1996	Good Standing	
Pentachlorobenzene	EPA 8270C_3_1996	Good Standing	
Pentachlorophenol	EPA 8270C_3_1996	Good Standing	
Phenanthrene	EPA 8270C_3_1996	Good Standing	
Phenol	EPA 8270C_3_1996	Good Standing	
Pyrene	EPA 8270C_3_1996	Good Standing	
Pyridine	EPA 8270C_3_1996	Good Standing	
Total cyanide	EPA 9014_0_1996	Good Standing	
Total organic halides (TOX)	EPA 9020B_2_1994	Good Standing	
Extractable organics halides (EOX)	EPA 9023_0_1996	Good Standing	
Sulfide	EPA 9034_0_1996	Good Standing	
Sulfate	EPA 9036_0_1986	Good Standing	
Corrosivity	EPA 9045C_3_1995	Good Standing	
pH	EPA 9045C_3_1995	Good Standing	
Total organic carbon	EPA 9060A	Good Standing	
Total phenolics	EPA 9065_0_1986	Good Standing	
Fluoride	EPA 9214_0_1996	Good Standing	
Temperature, deg. C	SM 2550 B-2010	Good Standing	

Matrix/Analyte	Method	Status	Notes

Accredited Parameter Note Detail

Authentication Signature

09/01/2020

Date

IDPH
ILLINOIS DEPARTMENT OF PUBLIC HEALTH

Awards this certificate of approval for public health laboratory service to

Teklab, Inc.

5445 Horseshoe Lake Road
Collinsville, Illinois 62234

for the following laboratory examinations:

Heterotrophic Plate Count for Water (SM 9215B)
Total Coliform (MF; SM 9222B)
E. Coli (EC-Mug; SM 9222G.1c(2))
Fecal Coliform (MF SM 9222D)

Brenda Johnson, Alicia VerDuin, Jamie Boyer, and Amber Dilallo are approved for the procedures listed above.

Registry no. 17584
Date September 3, 2019
For the period ending May 31, 2021

Ngozi Ezike

Ngozi Ezike, MD
Director

Missouri Department of NATURAL RESOURCES
dnr.mo.gov
Michael L. Parson, Governor
Carol S. Comer, Director

OCT 2 8 2019

Ms. Alicia VerDuin
Microbiology Department Supervisor
Teklab, Incorporated (MO Lab# 930)
5445 Horseshoe Lake Road
Collinsville, IL 62234

Dear Ms. Verduin:

Based upon an evaluation of laboratory data by the Missouri Department of Health and Senior Services Laboratory Certification Officer and the on-site evaluation performed by the Illinois Department of Public Health, it is the recommendation of the Laboratory Certification Officer, that Teklab, Incorporated, be reciprocally certified under the provisions of the Missouri Safe Drinking Water Regulations to perform bacteriological analyses for public water supplies in the State of Missouri for the following parameters:

Total Coliform **Fecal Coliform** ***E. coli*** **Heterotrophic Plate Count**

Enclosed please find a certificate of approval and a certified parameter list for your laboratory. The certified parameter references the parameters, methods of analysis, and personnel that have been approved by the State of Missouri to complete bacteriological testing for public water supplies. Your Missouri certification will expire on May 31, 2021, and is contingent upon no changes of the approved methods, analysts, or equipment.

Should there be any changes to your Illinois certification status, please notify this office within 30 days. Any notifications or inquiries related to the approval may be directed to Ms. Ellen Harrel of my staff, who may be reached at P.O. Box 176, Jefferson City, MO 65102, or by telephone at 573-751-1077.

Sincerely,

WATER PROTECTION PROGRAM

for Darlene Hulmig

David J. Lamb, Chief
Public Drinking Water Branch

DJL/eh

Enclosures

c: Ms. Ashley Mehmert, Department of Health and Senior Services

MISSOURI DEPARTMENT OF NATURAL RESOURCES

DRINKING WATER LABORATORY

CERTIFIED PARAMETER LIST

This is to certify that the following personnel of the

Teklab, Incorporated

located at

5445 Horseshoe Lake Road, Collinsville, Illinois 62234

have been approved to perform the indicated procedures on drinking water under the Missouri Public Drinking Water Regulations (10 CSR 60-5.020):

PERSONNEL

Alicia VerDuin– Supervisor
Brenda Johnson– Analyst
Jamie Boyer– Analyst
Amber Dilallo– Analyst

PARAMETERS AND METHODS

Total Coliform – SM 9222B Membrane Filtration (Les Endo – LTB – BG)
E. coli – SM 9222G.1c(2) EC Broth with MUG
Fecal Coliform - SM 9222D Membrane Filtration (mFC Agar)
Heterotrophic Plate Count – SM9215B Pour Plate (Plate Count Agar)

Missouri Certificate No.: 930
Expiration Date: May 31, 2021
Illinois Certificate No.: IL 17584
Original Certifying State: Illinois

State of Missouri
Department of Natural Resources

Certificate of Approval
for Microbiological Laboratory Service

This is to certify that

Teklab, Incorporated

is hereby approved to perform the analysis of drinking water as specified on the Certified Parameter List, which must accompany this certificate to be valid.

Certification Number 930

Date Issued October 28, 2019

Expiration Date May 31, 2021

Darlene Helmig for DAVID LAMB
Chief, Public Drinking Water Branch
Water Protection Program
Missouri Department of Natural Resources

Ashley Mehmert
Evaluation Officer, State Public Health Laboratory
Missouri Department of Health and Senior Services

Arkansas Department of Environmental Quality

Laboratory Accreditation Program

TEKLAB

COLLINSVILLE, IL

has earned accreditation by law in accordance with Ark. Code Ann. § 8-2-201 et seq., the State Environmental Laboratory Accreditation Program Act for the following parameters:

Acidity	Oil & Grease	Antimony	Mercury	Ignitability
Alkalinity	Orthophosphate	Arsenic	Molybdenum	TOX
Ammonia	pH	Barium	Nickel	TPH
BOD	Phenol	Beryllium	Potassium	Herbicides
CBOD	Sulfate	Boron	Selenium	PCBs
Chloride	Sulfide	Cadmium	Silver	Pesticides
Chlorine	Surfactants	Calcium	Sodium	Semi-volatiles
COD	TDS	Chromium	Thallium	Volatile Organics
Conductivity	TKN	Cobalt	Tin	
Cyanide	TOC	Copper	Titanium	
Fluoride	Total Phosphorus	Hex. Chromium	Vanadium	
Hardness	Total Solids	Iron	Zinc	
Nitrate	TSS	Lead	Fecal coliform	
Nitrate+Nitrite	Turbidity	Magnesium	DRO	
Nitrite	Aluminum	Manganese	GRO	

Laboratory ID: **88-0966**

Certificate Number: **21-025-0**

Issued Date: **14 March 2021**

Expired Date: **14 March 2022**

Becky W. Keogh
ADEQ Director

State of Missouri
Department of Natural Resources

Certificate of Approval
for Chemical Laboratory Service

This is to certify that

Teklab, Incorporated

is hereby approved to perform the analysis of drinking water as specified on the Certified Parameter List, which must accompany this certificate to be valid.

Certification No. 930

Date Issued January 16, 2019

Expiration Date January 31, 2022

Chief, Public Drinking Water Branch
Water Protection Program
Department of Natural Resources

Director, Environmental Services Program
Department of Natural Resources

Evaluation Officer, Environmental Services Program
Department of Natural Resources

MISSOURI DEPARTMENT OF NATURAL RESOURCES

DRINKING WATER LABORATORY

CERTIFIED PARAMETER LIST

This is to certify that

Teklab, Incorporated

located at

5445 Horseshoe Lake Road, Collinsville, Illinois 62234

has been approved to perform the indicated procedures on drinking water under the Missouri Public Drinking Water Regulations (10 CSR 60-5.020). Specific method numbers or references are included in parenthesis when appropriate.

INORGANIC

SM 3112B, 18Ed.
Mercury

SM 4500F-C, 18Ed.
Fluoride

SM 4500NO2-B, 18Ed.
Nitrite

EPA 200.7 R4.4
Barium; Beryllium; Cadmium; Chromium; Copper; Nickel

EPA 200.8 R5.4
Antimony; Arsenic; Barium; Beryllium; Cadmium; Chromium; Copper; Lead; Nickel; Selenium; Thallium

EPA 245.1 R3.0
Mercury

EPA 335.4 R1.0
Total Cyanide

EPA 353.2 R2.0
Total Nitrate and Nitrite; Nitrate

Expiration Date: January 31, 2022

Missouri Certificate No.: 930

Original Certifying State: Illinois

State of Kansas

Department of Health and Environment

CERTIFICATE

This is to certify that Certification No.: E-92716

Teklab, Inc.

8421 Nieman Rd.
Lenexa, KS 66214

has been accredited in accordance with K.S.A. 65-1,109a under the standards adopted in K.A.R. 28-15-36 for performing environmental analyses for the parameters listed on the most current scope of accreditation. Continuous accreditation depends on successful, ongoing participation in the program. Clients are urged to verify with this agency the laboratory's certification status for particular methods and analytes.

Effective Date: 12/11/2018

Expiration Date: 1/31/2022

Secretary
Department of Health and Environment

Section Chief
Department of Health and Environment

ANDY BESHEAR
GOVERNOR

REBECCA W. GOODMAN
SECRETARY

ENERGY AND ENVIRONMENT CABINET
DEPARTMENT FOR ENVIRONMENTAL PROTECTION

ANTHONY R. HATTON
COMMISSIONER

300 SOWER BOULEVARD
FRANKFORT, KENTUCKY 40601

February 4, 2021

Teklab Inc
5445 Horseshoe Lake Rd
Collinsville, IL 62234

Re: Laboratory Certification Renewal Approval
Agency Interest Number (AI #): 120568

Dear Certified Laboratory:

The Underground Storage Tank (UST) Branch has received your current National Environmental Laboratory Accreditation Program (NELAP) or American Association for Laboratory Accreditation (A2LA) submitted on January 29, 2021. In accordance with 401 KAR 42:250, Section 20, your laboratory certification has been approved for renewal. We have updated our database to reflect your laboratory certification expiration dates from January 26, 2021 to January 31, 2022.

This laboratory certification is only intended for the use with the Kentucky UST Branch. The approval is based on accreditation by either A2LA or by an approved state to accredit environmental laboratories in accordance with the NELAP requirements and standards. Approved laboratories must be capable of analyzing each of the parameters listed in Table 7 and Table 8 in the UST Corrective Action Manual, incorporated by reference in 401 KAR 42:060, using at least one (1) of the acceptable methods. For other analysis directed by the UST Branch not listed in Table 7 and Table 8 as referenced above, the laboratory performing the directed analysis must be currently accredited by either A2LA or by an approved state to accredit environmental laboratories in accordance with the NELAP requirements and standards. The UST Branch does not regulate or certify those laboratories providing analysis of waste required by an accepting facility.

All documents may be submitted electronically (preferred) using our website or by mail at the address below. Always refer to the appropriate site AI # when contacting the UST Branch, and include the AI # on all documents submitted.

Division of Waste Management
Underground Storage Tank Branch
300 Sower Boulevard, Second Floor
Frankfort KY 40601
www.eec.ky.gov/Environmental-Protection/Waste/underground-storage-tank

More information including UST regulations, outlines, forms and updates can be found on our website. If you have any questions regarding this letter, please contact me at 502-782-6330 or mhollingsworth@ky.gov.

Sincerely,

Melinda Hollingsworth

Melinda Hollingsworth,
UST Branch, Claims & Payment Section

Appendix E - Data Qualifiers

#	Unknown hydrocarbon
B	Analyte detected in associated Method Blank
E	Value above quantitation range
H	Holding times exceeded
J	Analyte detected below quantitation limits
M	Manual Integration used to determine area response
N	Parameter not NELAC certified
ND	Not Detected at the Reporting Limit
R	RPD outside accepted recovery limits
S	Spike Recovery outside recovery limits
X	Value exceeds Maximum Contaminant Level
DF	Dilution Factor
RL	Reporting Limit
Surr	Surrogate Standard added by lab
TNTC	Too numerous to count (>200 CFU)
Q	QC criteria failed or noncompliant CCV
NELAP	IL NELAP and NELAP accredited field of testing
IDPH	Illinois Department of Public Health
C	Client requested RL below PQL
D	Diluted out of sample
E	Value above quantitation range
MI	Matrix interference
DNI	Did not ignite

Appendix F - Instrumentation and Software list

Instrumentation and Software

The following section contains information on the type and number of instrumentation, and computer systems/software packages at Teklab, Inc.

INSTRUMENTATION

Teklab Air Laboratory:

- Instrument U-Agilent 7890A (GC)/5975C Inert XL(MS) with Entech 7500A Robotic Auto sampler, Entech 7100AR Sample Preconcentrator and Micro Computer-1 each
- Entech 4600A Dynamic Diluter and Micro Computer* -1 each
- Entech 3100A Canister Cleaner system with Thermo Scientific Oven and Micro Computer*- 1 each *the Micro Computer is shared by the two systems
- Labconco 3955200 Fume Absorber
- Mettler AE160 Analytical Balance

Corporate:

Volatile Organic Section

- Instrument A - Hewlett-Packard 5890 Series II GC / 5971 Mass Spectrometer (upgraded to 5972) with a metal quad upgrade, 60 meter Restek Rtx-624 column with 0.25mm ID, using a split/splitless injection port and glass injection port liner. No cryogenic system is used. 1 each
  - Tekmar LSC3000 sample concentrator.
  - Varian Archon autosampler.
- Instrument F - Hewlett-Packard 5890 Series II GC / 5972 Mass Spectrometer, 60 meter Restek Rtx-624 column with 0.25mm ID, using a split/splitless injection port and glass injection port liner. No cryogenic system is used.
  - Tekmar LSC3000 sample concentrator
  - Varian Archon autosampler.
- Instrument N - Hewlett-Packard 5890 Series II Plus GC / 5972 Mass Spectrometer with a metal quad upgrade, 30 meter Restek Rxi-624SilMS column with 0.25mmID, using a split/splitless injection port and glass injection port liner. No cryogenic system is used. 1 each
  - Tekmar LSC3000 sample concentrator.
  - Varian Archon autosampler.
- Instrument R - Hewlett-Packard 6890 Series GC / 5973 Mass Spectrometer, 30 meter Restek Rxi - 624SilMS column with 0.25mm ID, using a split/splitless injection port and glass injection port liner. No cryogenic system is used.
  - Tekmar LSC3000 sample concentrator
  - Varian Archon autosampler.
- Instrument T - Hewlett-Packard 6890 Series GC / 5973 Mass Spectrometer, 30 meter Restek Rxi - 624SilMS column with 0.25mm ID, using a split/splitless injection port and glass injection port liner. No cryogenic system is used.
  - Tekmar LSC3100 sample concentrator.
  - Varian Archon autosampler

- Instrument Y - Hewlett-Packard 5890 Series II GC/5972 MS, 30 meter Restek Rxi-624SilMS column with 0.25mmID, using a split/splitless injection port and glass injection port liner. No cryogenic system is used. 1 each
  - Tekmar LSC3000 sample concentrator.
  - Varian Archon autosampler.
- Mitsubishi brand AOX-200 analyzer "TOX-3" – 1 each

Organic Section
- Instrument AA - 6890 Series II GC - 5973N MS with 6890 Series Injector, with computer
- Instrument AB - 6890 Series II GC - 5973N MS with 6890 Series Injector, with computer
- Instrument B - 5890 Series II GC - 5971 MS with 7673 Series Injector, with computer
- Instrument D - 5890 Series II GC - FID with 7673A Series Injector, with computer
- Instrument E - 5890 Series II GC - Dual ECD with 7673A Series Injector, with computer
- Instrument H - 5890 Series II GC - Dual ECD with 7673 Series Injector, with computer
- Instrument I - 5890 Series II GC - FID with 7673 Series Injector, with computer
- Instrument L - 5890 Series II GC - FID with computer
- Instrument M - 5890 Series II GC - 5972 Mass Spec with 7673 Series Injector, with computer
- Instrument P - 5890 Series II GC - 5971A Mass Spec with 7673 Series Injector, with computer
- Instrument Q - 5890 Series II GC - Dual ECD with 7673 Series Injector, with computer
- Instrument S - HP – 6890 GC - 5973 MS with 6890 Series Injector, with computer
- Instrument X - 5890 Series II GC - Dual Electron Capture Detectors, with computer
- Instrument Z - HP 6890 Series II GC - 5973 MS Model 6890/5973, with computer

Organic Prep Lab
- Fisher Scientific, 550 Sonic Dismembrator and VirSonic Cell Disrupter - 6 each
- Zymark, Turbovap LV evaporator – 2 each
- Glas-Col, 3D Floor Shaker – 2 each
- VWR, Refrigerated Recirculator
- Milestone ETHOS EX microwave extraction system
- NESLAB Refrigerated/Recirculator

Metals Section
- Teledyne Leeman Labs CVAA Hydra II AA Automated Hg Analyzer
- Teledyne Leeman Labs Hydra AF Gold Plus Mercury Analyzer (CVAFS), Autosampler and Micro computer
- Varian MPX CCD Simultaneous ICP-OES – 1 each
- Agilent Technologies CCD Simultaneous ICP-OES - 1 each
- Thermo Fisher Scientific iCAP Qc ICP-MS - 2 each

Metals Prep
- Hot Block Digester, 54 Position with ETR-3200 Controller - 4 each

Inorganic Section
- Environmental Express Ammonia/OOH Micro Distillation Unit - 1 each
- Environmental Express Simple Cyanide Distillation Unit – 3 each
- Parr, Oxygen Bomb Calorimeter, with Parr Bomb Ignition Unit (2 Bomb Units) - 1 each
- Thermo Orion 720A – 1 each

- VWR Symphony B10P - 1 each
- Thermo pH Meter, Orion 3 Star
- Hach DR/2000 Direct Reading Spectrophotometer - 1 each
- Hach DR/2400 Direct Reading Spectrophotometer - 1 each
- Hach DR/2800 Direct Reading Spectrophotometer - 1 each
- Hach DRB 200 25 Position Reactor - 1 each
- Hach 25 Position Reactor – 2 each
- Environmental Express; Hexane Extraction Method/Solid Phase Extraction Manifold - 21 each
- Buchi Rotavapor R-114, waterbath B480 - 1 each
- Buchi Rotovapor R-210, waterbath B491 – 1 each
- Hach 2100 P Turbidimeter - 1 each
- YSI Model 59 Dissolved Oxygen Meter, with 5905 Probe - 1 each
- YSI Model 5000 Dissolved Oxygen Meter, with 5905 Probe - 1 each
- Skalar San++ System, with 4 autoanalyzers, 1 DOC IR detector, 4 Spectrophotmetric Detectors, 1 Amperimetric Detector, and 4 Autosamplers.
- Branson 1510 Ultrasonic Cleaner
- A.I. Scientific Digestion AIM 500-C, 50 Position Digestor
- Koehler Instrument CO. Flash Point Tester – 1 each
- Small scale Flash Point Tester
- Thermoline Type 6000 Muffle Furnace -1 each
- Equatherm Environmental Incubator -1 each
- Precision Low Temperature Incubator -1 each
- Precision Low Temperature Incubator 815 – 1 each
- Fisher Scientific Low Temperature Incubator – 1 each
- Fisher Scientific, Digital Conductivity Meter Model Accumet 30 - 1 each
- Analytical Balances capable of reading 0.1mg – 2 each
- Analytical Top Loader Balance capable of reading 0.01g – 3 each

General Lab Use
- Analytical Balances capable of reading 0.1 mg - 2 each
- Analytical Top Loader Balances capable of reading .01 g - 6 each
- Dynac II Centrifuge - 1 each

Field Use
- Orion pH/temperature meter – 1 each
- Oakton pH/ pH/conductivity/temperature meters – 4 each
- Hach Turbidity Meter Pocket Turbidimeter Cat# 52600-00 – 1 each

COMPUTER SYSTEMS & SOFTWARE PACKAGES

Teklab, Inc. software listing:

- Microsoft Server 2003 (Standard and Enterprise)

- Microsoft SQL Server 2005

- Microsoft Exchange Server 2007
- Symantec Backup Exec 11d
- Desktop Operating Systems: Windows 98, Windows 2000, Windows NT, Windows XP, Windows Vista, Windows 7 and Windows 8
- McAfee Anti-Virus Version 8.7i and 8.8
- Khemia Omega VTEN-64 ELIMS(mod) Environmental Laboratory Information Management System with EDD Module
- Microsoft Office 2003 Professional Edition (Access, Excel, Word, PowerPoint & FrontPage, Outlook) and Microsoft Office 2010 Professional Edition (Excel, Word, PowerPoint & Outlook)
- Adobe Acrobat 7.0, 8.0, 9.0, 10 ActivePDF Composer
- PaperPort 9 Deluxe and PaperPort 12
- Agilent_MSDChemStation E.02.00.493
- Entech Instruments ESP Version 2
- Entech Instruments SmartLab II V4.176
- Quick Books Pro 2014 Accounting Software
- Hewlett-Packard G1032C rev. C.01.00 GC\MS EnviroQuant
- Hewlett-Packard G1701AA rev. C.03.02 GC\MS EnviroQuant
- Hewlett-Packard G1701AA rev. A.03.00 GC\MS EnviroQuant
- Hewlett-Packard G1701BA rev. B.01.00 GC\MS EnviroQuant
- Hewlett-Packard G1701AA rev. C.03.02 GC EnviroQuant
- Hewlett-Packard G1701CA V C.00.00 GC Chemstation
- Hewlett-Packard G1701DA D.02.00 SPI GC/MS
- Thermo Fisher Scientific Qtegra iCAP Q ICP-MS Software
- Varian GC/MS Workstation 6.4.1 with EnviroPro.
- Skalar - FlowAccess Software Version 1.04.7

- 7-Zip
- Win2Pdf
- Gladwin PrintScreen Version 4.4
- Redgate SQL Toolbelt
- UltraEdit
- UltraCompare

eurofins	Always check on-line for validity. **Environmental Quality Policy Manual**	Level: **Quality Manual**
Document number: **QA-QM11872**		
Old Reference: **1-P-QM-GDL-9015377; DOD - EQPM**		
Version: **17**		Organisation level: **5-Sub-BU**
Approved by: **UDM6** Effective Date **17-JUL-2019**	Document users: **4_EUUSLA_ELLE_All_Support, 4_EUUSLA_ELLE_All_Technical**	Responsible: **5_EUUSLA_Env Quality Assurance_All**

Title Page

Environmental Quality Policy Manual

Eurofins Lancaster Laboratories Environmental, LLC (ELLE)

2425 New Holland Pike
Lancaster, PA 17601
Phone: 717-656-2300
Fax: 717-656-2681

Reviewed and Approved by:
Vice-President/Technical Director
Quality Assurance Director
(as recorded in the electronic document control system)

Revision Log

	Revision: 17	**Effective Date**: This Version
Section	**Justification**	**Changes**
Revision Log	Formatting requirement	Removed revision logs up to the previous version
Section 2.2	Correction	Changed timeline for deputies and notification to agencies
Section 2.5	Correction	Notification timelines are dictated by regulatory authority.

Section 6.3.4	Clarification	Calibration/verification is at least annual

	Revision: 16	**Effective Date**: 3/19/2019
Section	**Justification**	**Changes**
Revision Log	Formatting requirement	Removed revision logs up to the previous version
Throughout Document	No longer applicable	Removed reference to microbiological analyses at ELLE
Section 1, 1.2, 2.4, 11.1, 13.2, 13.4	Compliance to PALA	Added reference to PALA compliance
Section 6	No longer applicable	Removed section 6.4 regarding Micro, renumbered following sections
Section 8.4	Clarification	Added Note: when procedural deviations are not permitted
Section 10.1, 13.2	Enhancement	Added reference to Project Notes
Section 10.7	Enhancement	Accreditation by parameter may be reported via the certification status in LIMS
Section 11.1	Compliance to PALA	Updated from 3 to 5 year retention of internal audit records

1.0 INTRODUCTION

This *Quality Policy Manual* is based upon Eurofins Lancaster Laboratories Environmental LLC's (herein referred to as the laboratory) overall business and management philosophies, mission, and goals. This manual is written to present the policies employed by the laboratory as well as the support departments that serve the environmental laboratories and to comply with the requirements of the National Environmental Laboratory Accreditation Program (also referred to as NELAP or TNI), ISO 17025, the Department of Defense (DoD), Quebec Accreditation Program for Analytical Laboratories (PALA) as well as individual state agency requirements. These policies define the "what" we do with emphasis on management's responsibilities and commitment to quality.

Governing SOPs are in place within the organization, to ensure the proper execution of this policy document (refer to Appendix A). This manual is required reading for laboratory personnel. The most recent and up-to-date *Quality Policy Manual* and all referenced documents are available to all laboratory personnel who work in or support the laboratory. As described within this document, the laboratory actively strives for continuous improvement of its quality systems to better serve our clients.

1.1 Mission Statement

The laboratory offers analytical and consulting services in the chemical and biological sciences with comprehensive expertise in environmental laboratory applications. The company mission statement describes the corporate philosophy:

At Eurofins Lancaster Laboratories Environmental LLC we are people working together to serve the health and environmental needs of society through science and technology. We strive to be the recognized leader in all that we do.

Our mission is to provide independent laboratory services in the chemical and biological sciences with excellent quality and service. As a corporate community, we:

- Deliver quality by fully understanding and always meeting the requirements of those we serve.
- Live our values by relating to our clients, coworkers, shareholders, suppliers, and community in a fair and ethical manner.
- Manage our growth and financial resources so we can serve our clients well, provide a satisfactory return to shareholders, and maintain our meaningful and enriching workplace.

1.2 Quality Policy

The Executive Management Group recognizes quality as a key element of the laboratory's standard of service. The group supports the laboratory's commitment to quality as defined by NELAP, ISO 17025, DoD, PALA and other regulatory agencies (i.e. states) through the strict adherence to the Quality Policy Statement. The Quality Assurance Director wrote the Quality Policy Statement, with final approval from the laboratory Vice-President. The policy cannot be revised without their approval.

The Quality Policy Statement gives employees clear requirements for the production of analytical data. Employees are trained on the components of the Quality Policy Statement during their first day of orientation. Each employee signs the statement upon hire as agreement to implement the policy in all aspects of their work. Employee agreement to any subsequent revisions of the statement is obtained by documented reading and understanding of an agreement to follow the Quality Manual, which contains the current version of the statement. The statement is as follows:

As an organization, all personnel are committed to high quality professional practice, testing and data, and service to our clients.

We strive to provide the highest quality data achievable by:

- Following all documentation requirements; describing clearly and accurately all activities performed; documenting "real time" as the task is carried out; understanding that it is never acceptable to "back date" entries and should additional information be required at a later date, the actual date and by whom the notation is made must be documented.
- Providing accountability and traceability for each sample analyzed through proper sample handling, labeling, preparation, instrument calibration/qualification, analysis, and reporting; establishing an audit trail that identifies date, time, analyst, instrument used, instrument conditions, quality control samples (where appropriate and/or required by the method), and associated standard material.

- Emphasizing a total quality management process and commitment to continuous improvement which provides accuracy, and strict compliance with agency regulations and client requirements, giving the highest degree of confidence; understanding that meeting the requirements of the next employee in the work flow process is just as important as meeting the needs of the external client.

- Providing thorough documentation and explanation to qualify reported data that may not meet all requirements and specifications, but is still of use to the client; understanding this occurs only after discussion with the client on the data limitations and acceptability of this approach.

- Responding immediately to indications of questionable data, out-of-specification occurrences, equipment malfunctions, and other types of laboratory problems, with investigation and applicable corrective action; documenting these activities completely, including the reasons for the decisions made.

- Providing a work environment that ensures accessibility to all levels of management and encourages questions and expression of concern on quality issues to management.

We each take personal responsibility to provide this quality product while meeting the company's high standards of integrity and ethics, understanding that improprieties, such as failure to conduct the required test, manipulation of test procedures or data, or inaccurate documentation will not be tolerated. Intentional misrepresentation of the activities performed is considered fraud and is grounds for termination.

I understand the expectations and commit to implementation of all applicable policies and procedures and to providing quality data.

1.3 Statement of Values

Eurofins Lancaster Laboratories Environmental is a team of people who work together to serve the health and environmental needs of society through science and technology.

At Eurofins Lancaster Laboratories Environmental, our mission is to provide independent laboratory services in the chemical and biological sciences with excellent quality and service. We fulfill our mission by incorporating our values into our work every day.

As a corporate community, we embrace our heritage of integrity and strive to live by the following principles:

- Fairness and honesty in all our relationships

- Mutual trust

- A respect for ourselves and others

- A sense of caring that leads us to act responsibly toward each other and society, now and in the future

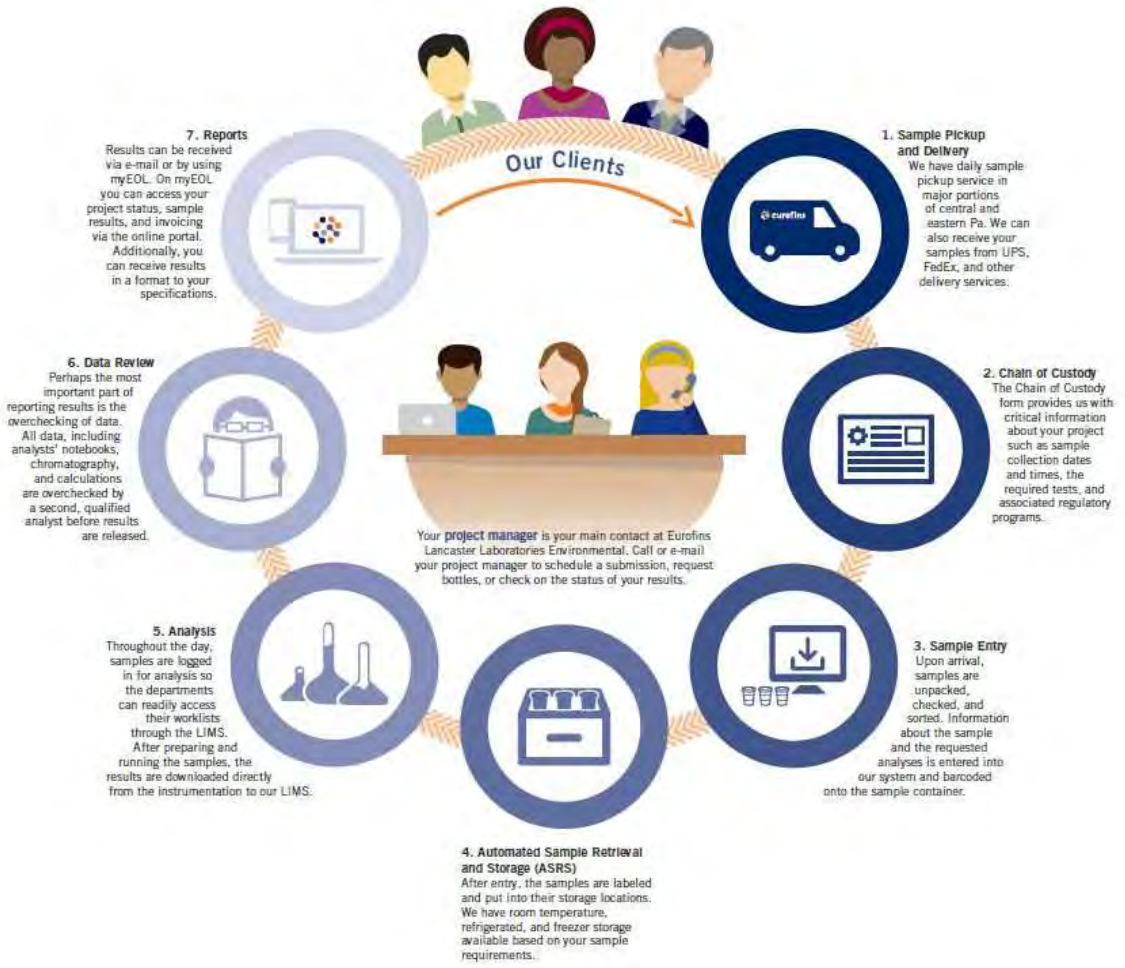
- Loyalty to our clients and one another
- A spirit of open-mindedness as we deal with all
- Dedication to service
- Good stewardship of our resources
- A commitment to flexibility and continuous improvement

We are committed to:

- Delivering quality by fully understanding and always meeting the requirements of those we serve.
- Living our values by relating to our clients, coworkers, shareholders, suppliers and community in a fair and ethical manner.
- Managing our growth and financial resources so we can serve our clients well, provide a satisfactory return to shareholders and maintain our meaningful and enriching workplace.

At Eurofins Lancaster Laboratories Environmental, we each take personal responsibility to live these values in all of our dealings, knowing full well that our pledge may involve difficult choices, hard work and courage.

1.4 Sample Flow-Through Diagram



1.5 Certifications, Accreditations, and Registrations

Accreditation/Certification is the process by which an agency or organization evaluates and recognizes a laboratory as meeting certain predetermined qualifications and/or standards. It is the one generally accepted method by which a laboratory such as ours can demonstrate its capability of generating acceptable, professional, quality test results in those areas in which it claims competence. To this end, we have actively sought accreditation by organizations offering it in those areas relevant to our technical expertise. We strive to ensure that the facilities, equipment, procedures, records, and methods used by the laboratory in the testing of environmental samples are in compliance with the requirements of these standards.

Although organizations offering accreditation differ somewhat in the details of their programs, they generally evaluate laboratories in four basic areas: personnel (adequate staffing, education, training, and experience), physical facilities, instrumentation/equipment, and quality assurance program. This evaluation is performed by one or more of the following procedures: periodic on-site inspections of the laboratory by assessors experienced in technical operations, quality systems, and management; periodic analysis of proficiency test samples; and periodic updating of the laboratory's file to reflect changes in personnel, equipment, or services offered. Some agencies offer reciprocity with other agency programs.

Appendix B lists accreditations and registrations held by the laboratory in support of environmental work. Current copies of all scopes of accreditation are available on the laboratory website https://www.eurofinsus.com/environment-testing/laboratories/eurofins-lancaster-laboratories-environmental/resources/certifications/ and are kept on file in the Quality Assurance Department.

2.0 ORGANIZATION AND PERSONNEL

2.1 Company Overview and History

The laboratory was founded in 1961 by Dr. Earl Hess in response to a need for high quality technical services by the agricultural and industrial communities in southeastern Pennsylvania. Nourished in a culture of quality and caring about all those associated with the business, the corporation became an industry leader known for innovative business practices and people-friendly policies. The company was independently owned until the retirement of Dr. Hess in 1995. At that time, the laboratory was acquired by a publicly held company, Thermo TerraTech, Inc., a Thermo Electron company. Ownership changed in September 2000, when the laboratory was acquired by Goldner, Hawn, Johnson, and Morrison, Inc. (GHJ&M), a private equity investment firm. In August 2005, the laboratory was acquired by Fisher Scientific under their BioPharma Division. On November 9, 2006, Thermo Electron and Fisher Scientific merged to form Thermo Fisher Scientific. In April 2011, Thermo Fisher Scientific sold the laboratory to Eurofins Scientific. Effective July 1, 2013, the Pharmaceutical and Environmental Divisions were split into separate business entities and the company name became Eurofins Lancaster Laboratories Environmental, LLC. The laboratory continues to operate as an independent laboratory and is incorporated by the State of Delaware.

The laboratory provides a wide array of laboratory services to clients working in environmental industries. We strive to offer high quality technical services in the chemical and biological sciences with personal attention to client needs. These services include chemical analyses and analytical method development. We are, therefore, a technical service company and do not manufacturer or distribute goods. Our "product" is accurate and timely technical information and our continued existence depends on the quality of the services we offer and efficiency with which we deliver them.

2.1.1 Business Continuity and Contigency Plans

Various policies and practices are in place to address continuity of business and contingency plans to ensure continued operations or minimal disruption in operations should unplanned events (natural disasters, unexpected management changes, etc.) occur.

Section 2.2 of this document explains the identification of deputies for key management positions. Section 3.3 discusses the disaster recovery plan. Section 6.4 addresses the security and backup of our computer systems. Section 10.8 addresses handling of client records should the company have a change in ownership or go out of business.

2.2 Organizational Structure

The laboratory President, in conjunction with the Vice-President and Director of Operations, is responsible for the daily operations of the laboratory. The Vice-President, Duane Luckenbill, is designated as the laboratory's Technical Director relative to accreditations.

The Executive Management Group is defined as the Eurofins Environment Testing US Chairman of the Board and President and Eurofins Lancaster Laboratories Environmental, LLC Vice-President.

The management staff includes directors, managers and group leaders. Organizational charts of the management staff are presented in Appendix C. Individual departmental staff lists are maintained in the company's internal intranet. The Vice-President and Quality Assurance (QA) Director have identified deputies for all key management personnel. Deputies would temporarily fill a role if the primary is absent for more than 15 consecutive calendar days. The deputies must meet the same qualifications as the primary person should they be required to take on the responsibilities. Notification to agencies is performed as noted in section 2.5.

2.2.1 Technical Director

The Technical Director ensures that the laboratory's policies and objectives for quality of testing services are documented in this quality manual. The Technical Director must assure that the manual is communicated to, understood, and implemented by all personnel concerned.

2.2.2 Quality Assurance Director

The Quality Assurance Director ensures that the quality system is followed at all times. The QA Director reports directly to the President thus ensuring corrective actions to quality issues are taken promptly and are separate from business decisions. The QA Director has no direct supervisory responsibility for the generation of technical data to avoid any conflict of interest in administrating the QA program. The QA Director has the final authority to stop work that compromises our integrity or data quality. The situation must be investigated and appropriate corrective action must be put in place before the QA Director will authorize the resumption of work. The specific duties of the QA Director are communicated in the position qualification description (PQD).

2.3 Management Responsibilities

Laboratory management duties are outlined for supervisory personnel using a job plan format, which details each individual's responsibilities along with expected results. Typically, management duties include, but are not limited to:

- Personnel hiring and training
- Supervision of personnel
- Providing resources to ensure a work environment free from commercial, financial, and other undue pressures that may adversely affect the quality of their work
- Providing resources to ensure a safe work environment
- Directing daily work operations, including scheduling of work

- Ensuring compliance with the TNI Standards, ISO 17025, Department of Defense Quality Systems Manual, regulatory programs, analytical methods, and client requirements.

- Assessing laboratory capacity and workload

- Resource allocation

- Ensuring quality of data produced

- Contributing to the continuous improvement of the laboratory operation

- Ensuring that corrective actions are carried out in an appropriate and agreed upon time-frame.

- Communicating problems and concerns to Senior and Executive Management to enlist a higher level of support for corrections and continuous improvements.

- Maintaining awareness of technical developments and regulatory requirements

2.4 Overview of the Quality Assurance Program

Quality Assurance (QA) is responsible for developing planned activities whose purpose is to provide assurance to all levels of management that a quality program is in place within the laboratory, and that it is functioning in an effective manner that is consistent with the requirements of NELAP, ISO 17025, DoD, PALA, and any other regulatory agencies (i.e. states) in which we hold accreditation. Although the laboratory is a wholly owned subsidiary of Eurofins Scientific, the Quality Assurance and Quality Systems operations described in this manual are specific to the Lancaster site and associated service centers.

The administration of the QA program is the responsibility of the QA Director in cooperation with all levels of management.

The QA program, as directed by executive management, was established to:

- Ensure accountability, accuracy, and traceability of all analytical data generated.

- Ensure that current regulatory, agency, and client requirements are being met.

- Ensure that operating procedures are in place to minimize the possible loss, damage, and tampering with data, in addition to ensuring that raw data is stored in a secured area and is maintained by designated archivists and/or system administrators.

- Ensure that curriculum vitae (CVs) and training records are maintained to document that staff members have the necessary education, training, and experience to perform their job responsibilities and functions.

- Ensure that regulatory training is provided to applicable employees on a routine and ongoing basis.

- Ensure that all procedures are available, controlled, and current.

- Ensure that documentation demonstrates that procedures are carried out in a compliant and effective manner.

- Ensure that all equipment and instrumentation is qualified, maintained, and calibrated, as appropriate, in accordance with written standard operating procedures.

- Ensure that all significant laboratory problems are investigated, evaluated for root cause and corrective action is put in place as documented

- Ensure that an internal audit program is in place to provide on-going monitoring and confirm that laboratory personnel are adhering to standard operating procedures and applicable regulations.

- Ensure that quality issues are brought to the attention of management in a timely manner.

2.5 Quality Assurance Responsibilities

The QA Director assigns tasks with input from the company President. The primary responsibilities of QA include, but are not limited to the following:

- Oversee the laboratories' internal audit program which consists of various audit types and applies to all laboratory activities (technical and administrative).

- Review and approve standard operating procedures and analytical methods.

- Review and approve validation documentation.

- Review non-conforming quality control data

- Perform tracking and trending of quality measurements and report the status and effectiveness of the quality system to management.

- Approve investigation and corrective action reports (ICARs) and audit responses to ensure that they are completed in a timely manner, evaluated for root cause, that corrective actions are implemented as needed and to monitor corrective action for effectiveness.

- Host client and regulatory agencies during facility audits and follow-up to any cited deficiencies.

- Provide regulatory guidance to the laboratory and support areas.

- Monitor Good Laboratory Practice (GLP) regulatory activities.

- Communicate quality issues to management in a timely manner

- Provide and/or coordinate on-going regulatory training (e.g., Ethics, GLP).

- Participate in the vendor and supplier approval process, including subcontractors.
- Review analytical data for compliance with our procedures.
- Prepare and review QA project plans (QAPPs) as required by EPA and client projects.
- Maintain and update this *Quality Policy Manual*.
- Maintenance of the Laboratory's accreditations, including but not limited to, administration of the proficiency test sample programs, both single and double blinds.
- Communication to the relevant regulatory authorities is required when there are management or facility changes that impact the laboratory. Changes in the technical director must be communicated within a period of time and in the manner dictated by each regulatory authority.

2.6 Communication of Quality Issues to Management

The QA Department is responsible for preparing reports to Management to keep them apprised of outstanding quality issues. Reports to management foster communication, review, and refinement of QA activities to ensure that the QA program is adequate to meet regulatory and the laboratory's quality objectives. The following reports are used to communicate quality issues and include, but are not limited to:

- Internal, client, and agency audit reports and corrective action plans
- Proficiency test reports
- Investigation and corrective action reports
- Monthly quality status reports
- Plans for corrective action

Upon review of quality issues, management and/or QA may issue a stop work notice if an issue indicates the potential for a problem on a broader scale with an analysis. The investigation would need to be completed and the issue resolved before work could continue. The information is tracked through our Investigation and Corrective Action Report (ICAR) process.

2.7 Personnel Qualifications and Responsibilities

The position qualification descriptions (PQDs) for senior staff (Vice-President/Technical Director, QA Director, Laboratory Operations Director, Science Officer, Technical Manager and Support Manager) are provided in Appendix D.

PQDs for all positions are maintained in the laboratory's document control system. Resumes (curricula vitae or CVs) are maintained on file for all staff in the training record system. Responsibilities are outlined in the PQD at the position

level. Individual responsibilities and expectations are documented in each employee's job plan. The job plan is evaluated and discussed with each employee on an annual basis. The job plan is a confidential personnel record.

2.8 Relationship of Functional Groups and Quality Assurance Program

In addition to this *Quality Policy Manual*, aspects of the QA program are documented in a series of standard operating procedures that support the proper execution of this document. Technical operation procedures with required quality components are also in place. A list of the titles of relevant SOPs is provided in Appendix E. There are a variety of mechanisms used to communicate requirements and verify compliance with the QA program, including:

- Management requires that all employees read and be trained in the policies and SOPs that are pertinent to their jobs.

- Employee job plans define individual responsibilities. All job plans include QA aspects, and performance is reviewed annually.

- Laboratory audit findings are circulated to management and require a response and follow-up to items needing corrective action.

- Cross-functional meetings, including representatives from QA, Client Services, Marketing, management, and technical operations are held regularly to review specific projects and quality issues.

2.9 Balancing Laboratory Capacity and Workload

Evaluating laboratory capacity to perform specific projects is the responsibility of the Vice-President, laboratory directors and managers, and the Client Services director and manager. These responsibilities are documented in the individual job plans for these positions.

The laboratory facilities and staff size are very large compared to other laboratories serving the environmental industry. Many analysts are cross-trained to perform a variety of tests, and there is redundant equipment available in case of malfunctions. This minimizes the need to evaluate small and medium size projects against capacity available to complete them. Large projects are reviewed against capacity estimates before bids are submitted to ensure that the client's analysis schedule is met.

Regularly scheduled meetings are held with upper management, laboratory middle management, Client Services and QA personnel to review progress with current projects, as well as special requirements of new work scheduled for the laboratory.

Laboratory capacity and backlog is tracked on a continuous basis using information from the Laboratory Sample Information System (LIMS) including turnaround time, and work in-house.

2.10 Identification of Approved Signatories

All data is reviewed and verified by a second level reviewer at the department level prior to release to the client. Based on complexity or regulatory needs, some projects are designated for secondary (technical and/or QA) review of the Analysis Reports and/or data deliverables. Approved signatories for these secondary reviews are defined in the SOP

on Data Entry, Verification, and Reporting. Directors, managers, group leaders, and other employees (such as QA, project managers, and senior technical staff) are designated, through specific LIMS roles/permissions, to approve/release Analysis Reports. Request for approval of an employee to approve/release reports must be made through the QA and IT Departments. These authorized personnel are designated in the LIMS with the "approve reports" role. A list of the employees with this LIMS permission can be obtained from IT.

2.11 Personnel Training

The experience and training received by personnel is of great importance to our clients and regulatory agencies. Curricula Vitae (CVs) and on-going training documentation are available to demonstrate how personnel have been prepared for the tasks they routinely perform. To ensure the highest quality of services at the laboratory, training programs and plans are developed to match skills with job functions. Accurate training documentation is the responsibility of both the employee and their supervisor. On a routine basis, the supervisor reviews and approves training documentation to verify that it is complete and current.

Training requirements can be met through education, prior job experience, internal and external training classes, on-the-job training, training modules, procedure reading, or any combination thereof, to enable the person to perform assigned job functions and meet regulatory compliance.

Each analyst training to perform a new analysis is required to perform an initial demonstration of capability and meet the requirements for accuracy and precision before working independently on the test method. Typically, this is accomplished by the successful analysis of four known samples (i.e. a quad study). However, there are certain tests performed that are not required by the mandated test method or regulation to perform the above procedure since they are not conducive to spiking . In this case, the analyst's documentation of proficiency is achieved by documentation of having read, understood, and agreed to follow the SOP as written, on-the-job training and observation by a senior analyst.

Management personnel are responsible for planning ongoing professional growth and development activities for an employee through on-the–job training and/or internal and external training courses so an employee can maintain a current skill set to match job responsibilities.

An annual performance review based on job responsibilities, accountabilities, objective measures, and pre-defined standards is completed by management personnel for each employee. This assessment is documented and maintained. Input is obtained from other managerial personnel as needed. Performance reviews are maintained in the employee's personnel file and are confidential.

2.11.1 New Hire Training

New employees are oriented as part of a year-long process that is designed to make the employee feel welcome and comfortable by defining our culture, traditions, philosophies, and work practices. During the orientation process an employee learns about personnel and safety policies and business strategies in addition to quality, ethics, and customer satisfaction expectations through a formal process administered by collaboration of our Human Resources staff, QA, and the management of the employee's assigned department.

New employees are required to attend "core" technical orientation, as applicable, which can entail the participation in training module exercises, short session attendance, and/or other skill training specific to their assigned department or job function. Additional job-specific training required for an employee is based upon their assigned duties and is identified by their supervisor. Technical orientation occurs during the first few weeks of employment.

Note: Seasonal and temporary employees have reduced “core” training requirements based on the assigned tasks and as defined by QA, Safety, and the assigned department management.

The orientation process is designed to enable employees to initiate and take responsibility for their personal and professional career growth at the laboratory. The orientation process is conducted without regard to employee race, color, creed, national origin, sex, age, or disability in accordance with the laboratory’s Employee Equal Opportunity (EEO) policy.

2.11.2 Ongoing Training

Refresher and ongoing training occurs through various means, which include but are not limited to, training in or independent review of new/updated standard operating procedures and work instructions; on-going regulatory training; in-house or off-site classes or seminars. The goal of this training is to ensure that employees remain current with changes to laboratory systems and practices, as applicable to their job function. Retraining and re-qualification activities occur as directed by procedures or regulations. Employees are retrained if an issue or investigation warrants that retraining is a necessary corrective action. Management directs when employee re-training is required, and the extent of the re-training.

2.12 Regulatory Training

The QA Department is responsible for coordinating and conducting initial and ongoing regulatory training (i.e., Ethics, GLP) for all applicable laboratory and support personnel. It is the responsibility of management within each department to ensure that personnel attend the required training sessions.

The choice of training format and topics covered for ongoing regulatory training is left to the discretion of QA and the trainer. All training sessions reinforce the concepts in the regulations as they are relevant to the laboratory.

Whenever possible, after training is completed, a demonstration of proficiency of the training topic is given. The demonstration of proficiency is generally in the form of a quiz although other demonstrations of proficiency are acceptable depending on the scope and content of the training. If necessary, training is presented and/or repeated one -on-one with individuals who do not demonstrate proficiency in the training topic. This is performed by QA in conjunction with applicable laboratory management personnel.

2.13 Employee Safety

The laboratory, being mindful of its responsibilities as an employer and active corporate citizen, has established the following objectives of its safety program:

- Provide a safe environment for its employees, visitors, and the community surrounding its place of business.
- Provide ongoing safety training for employees.
- Provide all necessary facilities and equipment to ensure the safety of its employees and to minimize all chemical exposure during the normal performance of their required tasks, and to take all necessary precautions to safeguard the surrounding environment.
- Provide periodic health physicals for employees.

- Foster and encourage safe operations and a proper safety attitude on the part of our employees through general operations and systems, training, and the *Chemical Hygiene Plan* (CHP).

The CHP addresses various aspects of our safety program in greater detail.

A Safety Committee works to enhance our overall safety program. The committee meets on a routine and ongoing basis and its specific responsibilities are detailed below:

- Review accident and incident reports. Make recommendations for methods of prevention to eliminate further accidents.

- Promote safety awareness and distribute safety information by various means (e.g., posters, videotapes, pamphlets, and books). Use internal communication channels to promote safety awareness.

- Enhance and recommend safety-training programs for all employees, as necessary.

- Maintain up-to-date information on employee concerns that are safety related. Offer input and information to the Chemical Hygiene Officer and/or Safety Officer, as needed.

2.14 Client Services/Project Management Responsibilities

Members of the laboratory Client Services/Project Management Group are responsible for organizing and managing client projects. Clients are assigned a project manager (a.k.a. “CSR”) who serves as their primary contact at the laboratory. It is the project manager’s responsibility to act as the client advocate by communicating client requirements to laboratory personnel and ensuring that clients provide complete information needed by the laboratory to meet those requirements. All client verbal communications are documented by the project manager in a controlled notebook. In addition to information management, Project Management responsibilities include:

- Coordinating and preparing proposals in conjunction with technical staff.

- Confirming certification status.

- Assisting QA with hosting client visits and audits.

- Coordinating and communicating turnaround time (TAT) requirements for high priority samples/projects.

- Answering common technical questions, facilitating problem resolution.

- Providing clients with sample status report or results (partial reports) prior to receipt of the final Analysis Reports.

- Scheduling sample submissions, sample containers orders, and sample pick-up via the laboratory courier service.

- Informing the client of deviation from their contract.

2.15 Confidentiality

Strict confidentiality is maintained in all of our dealings with clients. Confidentiality agreements, therefore, are willingly provided.

All employees are required to protect company data, including client names and test results from disclosure to any third party. This policy, as described in the *Eurofins Lancaster Laboratories Employee Handbook*, is provided and presented to employees during their orientation period and whenever revisions are made.

Intellectual property associated with the testing that we perform under contract for a client is the property of the client.

In an attempt to ensure the confidentiality of our systems and procedures within our laboratory, it is our policy to restrict the distribution of our internal procedures to clients. Clients are permitted to review our procedures while on-site as part of an audit or visit. Based on this policy, we would request that any documents viewed would not be shared or made available to any third parties without the permission of the laboratory.

2.16 Business Conduct

Our business conduct policy applies to all operations of the company. All employees must avoid involvement in any activities that would diminish confidence in their competence, impartiality, judgment, or operational integrity. All employees must further avoid any relationship with other individuals or organizations that might impair, or even appear to impair, the proper performance of their company-related responsibilities. Employees must avoid any situation that might affect their independence of judgment with respect to any business dealings between the company and any other organization or individual. Any employee who believes that they have such a conflict, whether actual or potential, or who is aware of any conflict involving any other employee must report all pertinent details to the Vice-President or President of the company.
The company's management vigorously enforces this policy and takes prompt and appropriate action, including termination, against any employee found to be in violation.

2.17 Operational Integrity

All employees review and sign the Employee Ethics Statement on their first day of employment and annually thereafter. All employees are instructed in regard to how ethics and data integrity are relevant to every position in the company. Employees responsible for generating, handling, or reviewing laboratory data understand that the laboratory mission is to perform all sample processing and testing with the highest level of integrity. Under no circumstances are shortcuts or generating results to suit a client's purpose rather than good scientific practice considered acceptable. Any violation of the laboratory ethics policy results in a detailed investigation that could lead to termination.

All levels of management consider the following activities unacceptable:

- Knowingly recording inaccurate data.

- Fabrication of data without performing the work needed to generate the information. This includes creating any type of fictitious data or documentation.

- Time travel or adjusting clocks on computerized systems to make it appear that data was acquired at some time other than the actual time.

- Manipulation of data for the express purpose of passing system suitability or quality control criteria.

- Selective use of data generated, or not using data that was legitimately generated and has an impact on the outcome of the test.

- Executing significant deviations from approved test methods and procedures without prior approval from the laboratory management, QA, and/or the client.

If an issue does arise which could compromise data integrity, personnel are instructed to perform the following activities:

- Clearly document the situation and maintain all data generated. There is a big difference between poor judgment and fraud. Fraud usually involves intent to conceal an action taken. Therefore, the more documentation that is maintained, the less likely an action is considered fraudulent if further scrutinized.

- When out-of-specification results or quality type issues are detected, all supporting data and relative background information must be documented and presented for management review. Problem resolution and client contact, as applicable, must also be documented.

- Review any questionable situations and decisions with a supervisor.

- Bring a questionable or uncomfortable issue directly to the QA Director or a member of the QA Department as part of our QA open door policy.

- Utilize the company's anonymous Ethics hotline service. See Section 12.4 of this manual.

3.0 BUILDING AND FACILITIES
3.1 Facility

The laboratory is located at 2425 New Holland Pike, Lancaster PA. The facility consists of two campuses with multiple buildings located on the North and South sides of Route 23. The two campuses are connected by a pedestrian bridge that spans Route 23.

Building A resides on a commercial plot measuring 13.6 acres on the north side of Route 23. Building A is a three-story building of concrete and steel construction which houses both laboratory space and administrative offices. It is approximately 108,000 square feet and consists of approximately 47,000 square feet of laboratory space; 29,000 square feet of office space; and 32,000 square feet of storage, mechanical, and common areas. On this parcel, adjacent to Building A, sit two chemical storage buildings (Buildings I and L) with a total space of 2500 square feet. In addition, a 10,500 square foot storage building houses stability chambers (Building J). The bottles packing area, which includes preservation of bottles being sent to clients for sampling, is located in a separate 3100 square foot building (Building K). In addition, there are two other buildings (Buildings G and H) with a total square footage of 20,000 square feet that host recycling, storage, workshop and facilities maintenance areas.

The remaining buildings reside on a commercial plot measuring 35.7 acres on the south side of Route 23. These building are connected to the north campus buildings via a pedestrian walkway over the highway.

Building B is a three-story building of steel and concrete construction. It is approximately 56,000 square feet and consists of approximately 17,000 square feet of laboratory space; 14,000 square feet of office space; and 25,000 square feet of storage, mechanical, and common areas.

Building C resides between buildings B and D and consists of a three-story building of steel and concrete construction. It is approximately 47,000 square feet and consists of approximately 25,000 square feet of laboratory space; 6,900 square feet of office space; and 15,100 square feet of storage, mechanical, and common areas. The first floor houses the main lobby and visitor's entrance.

Building D is connected to building C. It is a 78,000 square foot, four-story building of steel and concrete construction and provides approximately 35,000 square feet of laboratory space, 19,000 square feet of office space, and 24,000 square feet of storage, mechanical, common area.

Two small support buildings (Buildings E and F) with a combined space of approximately 800 square feet are used for chemical and waste storage on the south campus.

Building U is a 17,000 square foot stability storage building.

The Lancaster campus also utilized an adjacent parcel for a technical training center. This space is approximately 6,500 square feet.

There is an automatic fire alarm and security system hooked up at the facility. This system is monitored offsite by Choice Security. The entire campus and all exterior doors are monitored by video surveillance.

This facility is serviced by public sewer. Drinking water and the facility sprinkler system is fed by the public water supply. Laboratory process water is supplied via on-site wells. The closest surface water is the Conestoga Creek.

3.2 Security

The laboratory is considered a secure facility. All outside doors except the main lobby entrance are locked during normal business hours to prevent unauthorized entry. An attendant monitors this entrance at all times.

During evenings, weekends, and holidays, all doors are locked and Security personnel are on site to prevent unauthorized entry into the building. Video cameras are utilized by Security personnel to monitor the facility grounds.

Every employee is issued a photo ID badge which also serves as a building access card. This badge must be worn at all times while on laboratory property so that employees are easily identified. Access to secured/designated areas within the building is limited to only applicable employees through the building security system. This system is administered by Security staff.

All visitors must register with the lobby attendant and are issued a visitor badge. A staff person must accompany visitors while in the facility. Additional visitor rules are outlined in the *Visitor Security and Safety Rules* pamphlet which is provided to all guests.

Building access cards are issued on a temporary basis to contractors or service technicians (e.g., electricians and plumbers) who need access to the building to work on a project. These cards provide the contractor with limited access during the normal workday and must be returned when the work is complete.

3.3 Disaster Recovery

A disaster recovery plan is in place to provide direction for situations where normal operations of the laboratory are not possible. In the event that the building or information technology (IT) systems would be severely challenged, a designated disaster recovery team, which includes Physical Services, Maintenance, Safety, Corporate Management, Public Relations, IT, QA and other applicable personnel depending on the scope of the disaster, would assemble at a designated area to assess the situation and formulate a plan.

The plan addresses, in general terms, how to approach the following issues: electrical failures, heating/air conditioning failures, fire/building evacuation, computer failures, hazardous material spills, injury to employees, pandemic flu, disruption of phone service, and stability chamber failures.

3.4 Environmental Monitoring

The air handling system for the main laboratory is specially designed to protect sensitive instruments from harmful vapors to ensure that samples are not contaminated. The Physical Services/Maintenance Group is responsible for maintaining the HVAC and exhaust hood systems. This is particularly important in our instrumentation rooms and computer center where a controlled environment, positive pressure system is maintained.

Most refrigerators, freezers, incubators, and ovens used for analysis are monitored by a computerized system equipped with stationary thermometer temperature probes linked to a master panel that is accessed through a computer. If a unit is outside of a predefined temperature range for a specified period of time, the system alarms. Units not on the computerized system must be monitored manually by recording thermometer temperature readings twice daily.

The laboratory is set up so that there is effective separation between neighboring areas in which there is potential for contamination. Laboratory storage blanks are also used to evaluate conditions under which samples for volatile analysis are stored to monitor for cross-contamination potential. QA provides oversight of the environmental monitoring system.

QA and technical management, in consultation with facilities management as needed, evaluate any issues with environmental conditions that could have adverse effects on data to determine if alternative operational plans (moving testing to alternate laboratories, temporary shutdowns, etc.) need to be employed.

3.5 Water Systems

Well water and the public sewer system service the facility. The water system is monitored to meet the permit requirements of the Pennsylvania Department of Environmental Protection.

Reagent water is available to analysts for sample preparation (including dilution) and glassware cleaning. Two reverse-osmosis deionized water systems deliver highly purified water to a sealed fiberglass storage tank. From the storage tank the water is delivered to an ion-exchange-carbon filter system for further polishing. The water is also exposed to an in-line ultraviolet sterilization lamp before being circulated to taps throughout the laboratory.

Daily monitoring and preventive maintenance for the system is the responsibility of the Physical Services Department. Monthly and annual testing is performed as required by regulatory guidance. QA provides oversight of the water system monitoring. In addition, method blanks are tested with each batch (=20) of samples.

3.6 Housekeeping/Cleaning

The laboratory is dedicated to providing a clean workplace. A third party professional cleaning service provides routine cleaning of "common areas" that include lavatories, drinking fountains, floors, and windows. Technical staff are responsible for the cleaning (or the contract of cleaning) of specific laboratory work areas.

Detergents used for cleaning contain no to very low levels of metals, pesticides/herbicides/ fungicides, or volatile solvents.

3.7 Insect & Rodent Control

Steps are taken to prevent, monitor, and control insect and rodent infestation. The coordination of this program is the responsibility of the Physical Services Department under the direction of QA. An outside service firm is contracted to perform routine and ongoing monitoring of the facility to ensure that preventive measures which are in place are effective and are working as intended.

No insect or rodent control chemical agents in a liquid or vapor form are applied or sprayed in any laboratory building, unless there is no other option, in which case department management must be contacted for approval.

3.8 Emergency Power Supply

The laboratory is located at the junction of two power grids that supply electrical service to the facility. If one of the power grids fails, we have the ability to work with the power company to have service switched to the other grid. Various types of diesel and natural gas generators are also available on a standby basis to supply power to selected areas of the laboratory in case of a power outage.

To reduce spikes and spurious line voltage changes to laboratory instruments that can affect results or damage electronic equipment, "conditional power" is fed to these sensitive instruments. All essential computer systems are on uninterrupted power supply (UPS) which is a battery system that provides continuous conditional power for a limited time period in the event of a short power outage.

3.9 Facility Changes

Procedures are in place to manage change, ensure communication, and to minimize negative consequences through active participation of personnel involved in a facility change. The goal is to ensure that physical and environmental condition changes are adequately evaluated for impact and reduction of risk to quality, safety, health, employee, environment, property, analytical services, and business operations before and after the change is implemented.

4.0 DOCUMENT CONTROL

The administration of the document control system including tracking, filing, updating, and archiving of inactive copies is managed by the laboratory and QA staff using an electronic record keeping system. All documents are maintained and accessed through the electronic system. If an employee or department uses hardcopy versions of the documents, they are responsible to ensure that they are using the active version of the document.

It is our policy to restrict the distribution of our internal procedures to clients and we discourage the distribution of company confidential documents outside of the facility. Clients are permitted to review

our procedures while on-site as part of an audit or visit. Any documents that are distributed are only sent with the approval of QA and are considered "Uncontrolled".

The goals of the document control process are:

- Format documents according to consistent and defined standards
- Review and approve new documents
- Schedule review of existing documents
- Control of document versions and effective dates
- Review and approval of document changes
- Communicate and track employee training on SOPs
- Control document distribution and removal of obsolete documents
- Archive obsolete documents

4.1 Hierarchy of Internal Operating Procedures

The hierarchy of controlled procedures at the laboratory is defined. The levels (e.g. Policy, SOPs, work instructions, forms) are identified for each document in the document control system. These procedures and documentation are made available to promote consistency throughout the organization and to meet regulatory requirements. A list of relevant methods and procedures is located in Appendix E. The development of new procedures and the review and updating of current procedures is ongoing based on laboratory changes, new method development and regular review cycles.

4.1.1 Level 1 - Quality Policy Manual and Company Policies

The intent of these documents is to define "what" we do with emphasis on Executive and Management's responsibility for quality.

The purpose of the Quality Policy Manual is to provide a framework to outline the quality systems at the laboratory. Information on key quality system processes is described within the manual. Organizational charts, list of SOPs, a list of equipment, instrumentation, and PQDs for senior personnel are included as attachments to this manual.

- Executive Management is responsible for ensuring that adequate personnel, resources, and support are available to carry out the requirements of this Quality Policy Manual.

- Management is responsible for ensuring that SOPs, Work Instructions, or other appropriate documents are written and available to personnel to define the practices and systems which support these policies.

- All employees are responsible for conducting business in a manner which is compliant with quality and company policies and associated SOPs, Work Instructions, or other appropriate documents. Review of these policies and procedures must be documented.

Additional company policies are written to support and expand upon this Quality Policy Manual. These policies contain more detailed information about a subject with approval signatures executed at the Executive and/or Management level.

4.1.2 Level 2 - Standard Operating Procedures

The intent of these standard operating procedures is to define "who, what, where, and when." These procedures provide specific information for a process or topic so that the requirements outlined in this *Quality Policy Manual* and company policies can be achieved. The review and approval of these SOPs is performed at the director/manager/group leader level, including QA review and signoff, and the responsibility of these SOPs lies with the area or person directing the operation.

SOPs can apply to site-wide operations, the entire company, across multiple departments, or a specific operating area.

4.1.3 Level 3 - Work Instructions (at a department level)

The intent of these procedures or documents is to define in greater detail the specific "how to". The level of detail in these documents must be sufficient so any appropriately trained person can perform the task accurately. Examples include, but are not limited to departmental standard operating procedures (SOPs); maintenance and calibration procedures; and the laboratory analytical methods. Departmental level procedures/documents are reviewed and approved at the manager or group leader level including QA review and signoff.

4.1.4 Level 4 - Quality Records

The intent of these
documents is to provide documented evidence to support our quality systems and operations. Examples include but are not
limited to, data notebooks/logbooks, and preformatted data recording forms.

4.2 Document Approval, Issue, Control, and Maintenance

The document control process ensures that documents are approved and adequate for use. It ensures that documents are readily available to personnel and at locations where essential operations are performed.

Procedures are available to all employees in electronic form through our document management system. The laboratory management and QA staff is responsible for ensuring the documents in this system are in a current and accurate state. These procedures can be printed from this system for reference by employees as the corresponding task is being performed. Prior to using a printed document, the employee **must** ensure that it is the current version.

Each procedure is uniquely identified and includes effective date, version identification, designated user groups and the "approved by" employee. Document editors and reviewers are recorded in the electronic system for each version of a document. All documents are searchable and uniquely identified in the document management system.

Controlled policies, procedures, and work instructions are reviewed and approved by appropriate individuals and are formally issued and administered through the electronic document management system. The editor, reviewer and approval personnel are recorded within the document as through the document control interface. The recording of these steps is through the employee's secure network log -in and password. Designated personnel are assigned the editor, reviewer, and approval roles. Administration of the role assignments is managed by QA.

Procedures undergo scheduled annual review to ensure that they are accurate, current, and compliant. QA is the final approver and publisher on procedures which gives QA the authority to implement the procedure. Forms may be approved and published by department management. Upon the effective date of new or updated documents, all copies of obsolete documents are removed from service.

Interim amendments to procedures are not allowed. Any needed changes require a revision to the document. The document management system has a feedback function which enables information to be given to the assigned document editors. If minor edits (e.g. typos) are identified that can wait until the next review cycle, these can be communicated through the feedback function.

Forms are frequently used in logbooks. The logbooks are created by the Office Services group. The appropriate form is provided to Office Services to be made into a logbook. The logbook is given a unique identification number and is tracked by Office Services in regard to issuance to the associated department and through to subsequent archival.

4.3 Client-Supplied Methods and Documentation

Client documentation to support environmental testing at the laboratory is maintained in a centralized area. This information is organized by client/project in the Client Services/Project Management Group. Client documentation includes the following information depending on project size and scope:

- Client supplied analyte lists
- Client supplied project plans
- Client contract quality manuals with specified limits, QC criteria, etc.

- Communication/correspondence records which relate to testing requirements, interpretation of results, or reporting formats

4.4 Laboratory Notebooks, Logbooks, and Forms

Procedures are in place to ensure that all data is traceable, authentic, complete, and retrievable. The following general requirements outline our system for the issuing, control, and archival of laboratory notebook and logbooks.

- The administration of notebooks and logbooks is controlled by the Office Services Group. They maintain a master index to uniquely number and identify each book distributed.
- Notebooks and logbooks can contain blank or preformatted pages.
- Notebooks and logbooks are bound, uniquely identified and have sequentially pre-numbered pages.
- If notebooks or logbooks contain preprinted laboratory form pages:
    - A unique identification number is assigned to each form
    - Forms are approved through the electronic document management system by appropriate management personnel before they are put into use
    - Forms are reviewed on a routine basis to ensure they are still accurate and current
- Completed notebooks are returned to an archivist. Incomplete books are returned to the Office Services group:
    - Two years from the issue date
    - For employee specific notebooks – when the employee leaves the company
    - For project specific notebooks – when the project for which it was used is complete
- In specific situations, records may be bound to create books at the time of archival (e.g., temperature charts).
- At the time of archival any page(s) in the notebook or logbook that does not contain data documentation is crossed-out or a statement is written on the last page used to note that the book is complete to prevent data from being entered at a later date.
- Notebooks and logbooks identified as requiring permanent archival are assigned a designated qualifier.

4.5 Control of External Documents

Hard copy versions of external documents are controlled using an inventory form in the document management system. Any external document that is maintained in the laboratory are inventoried and listed on a department specific controlled form.

External documents such as copies of the 40 CFR and ASTM methods are stored exclusively in the QA Department. QA also keeps applicable agency documents on file, these include, but are not limited to, the TNI (The NELAC Institute) and ISO 17025 standards.

Environmental methods from the EPA or Standard Methods are available in the QA Department, but the technical areas also have copies that pertain to the tests that they perform. Some methods are available on-line and are accessed through the Internet.

It is the laboratory's understanding that the need to control external documents is to ensure that the most current version of a method is referenced or appropriate manual is being used. Regulatory methods are used as references by the laboratory and testing is performed as per written SOPs that fall under our existing document control system and have scheduled reviews. The scheduled review of SOPs is used to ensure that the proper version of a method is referenced. While using the most current version of an analytical method is our typical practice, there are specific client needs and accreditation rules that require previous versions of a method to be used.

The technical areas are responsible for ensuring that all manufacturers' manuals are current and available to analysts. The vendor provides instrument manuals when new equipment is purchased or existing instruments are updated. These manuals are kept with the instruments to which they are associated.

5.0 SAMPLE HANDLING

5.1 Sample Collection

It is the responsibility of the client to send us representative and/or homogeneous and properly preserved samples of the system from which they are drawn. The laboratory assumes that all multiple sample containers with the same designator/description and bottle type contain a homogeneous, representative sample. We also assume that it is acceptable to deplete one container and move to the next, without implications unless otherwise indicated by the client.

The laboratory provides the appropriate sample containers, required preservative, chain-of-custody (COC) forms, shipping containers, labels, and custody seals. The laboratory also provides trip blanks and analyte-free water for field blanks. Preparation of methanol containers for field preservation of volatile soil samples is available.

Sample containers are purchased pre-cleaned by the supplier. For pre-preserved bottles, each lot of preservative is checked for contaminants before use. This also serves as a check on the associated containers. An annual bottle lot check is performed to evaluate the cleanliness of any containers not already covered by the preservative checks. The evaluation is to assess cleanliness to the laboratories'

detection limits. These checks are processed through the LIMS as samples. Results are documented through the LIMS Analysis Report.

The laboratory provides instructions with all bottle orders that define how to sample, preserve, store, and ship the samples prior to their delivery at the laboratory. These instructions inform the client of the importance of proper sampling and advise them that non-compliant samples are rejected or reported with a qualifier.

As samples are analyzed at the laboratory, there are times when additional sample volume is necessary to complete testing or perform retesting. If this situation arises, "additional sample" is requested by the laboratory and/or submitted by a client to supplement current work being performed within our facility. Additional sample received is either assigned a new laboratory sample ID number and/or a comment noted on the final report to state that additional sample was received, depending on the situation. It is our goal to provide accurate traceability between sample submission and when testing is performed.

5.2 Sample Receipt and Entry

5.2.1 Sample Entry

Samples can be received at the laboratory 24 hours a day, 7 days a week, 365 days of the year. Receipt can occur in one of three ways:

- The laboratory courier services (i.e., Transportation Department
- Personal delivery
- Commercial courier

All samples received for testing are delivered to the Sample Registration group immediately upon arrival. This group is responsible for the unpacking and organizing of the samples. This process includes checking custody seals if present, paperwork agreement, signing the chain of custody, recording cooler temperatures, documenting the condition of containers, accounting for all sample bottles, and observing any safety hazards, and reporting any problems to Client Services for communication to the client. This receipt process is documented in the LIMS.

5.2.2 Sample Entry

As soon as practical after sample receipt, all samples are entered into our LIMS. Samples awaiting log-in are stored in temporary holding areas, at appropriate storage conditions to maintain sample integrity. Samples scheduled for Volatile analysis are stored separately. If there is doubt about the suitability of items received or if items do not conform to the description provided or the testing required is not clear or specified, the client is contacted and the conversation documented.

At the time of entry, the LIMS assigns a unique laboratory sample number to each sample. This number is sequentially assigned and a label is generated and is attached to the sample container. Each sample container is uniquely identified with a bottle code. the sample number and bottle code are

subsequently recorded on laboratory data records to ensure traceability from the test data to the sample container.

Samples are tracked to the minute upon arrival. This allows the client to see exactly how long it took the samples to pass through receipt, unpacking, and entry.

A sample acknowledgement is generated from the LIMS per sample entry group. Upon request, a copy of the Acknowledgement may be sent to the client on the day following sample log-in to confirm sample receipt and entry. Internally, appropriate personnel audit all applicable sample entry and client paperwork.

5.2.3 Sample Preservation Check

Sample Registration personnel check and document preservation of non-volatile liquid samples after the samples have been entered into the LIMS and before they are released to the laboratory for testing or placed into storage. Any checks of volatile samples are performed and documented at the time of analysis.

5.2.4 Sample Rejection Policy

Regulated (e.g. drinking water, NPDES) samples are rejected if receipt requirements are not met. The laboratory's Sample Acceptance Policy is communicated to clients with each bottle order. Any time a sample is received in a condition that does not meet the method, regulatory, or client requirements, the condition of the sample is clearly documented through the LIMS on a sample registration documentation log or sample problem form. This information is forwarded to the CSR and the client is contacted to discuss the best course of action. The client is given the option to resample or have the sample analyzed and reported with a qualifying comment.

5.3 Sample Identification and Tracking

A sample label is generated for each sample and, in addition to the assigned unique sample number, the following information is displayed on the label: client name, sample identification assigned by the client, sample collection information, bottle code ID, analyses requested, and any applicable notes to laboratory personnel. The label includes a barcode that is used to track this information about the sample/container and to trace each container's storage location.

To ensure accountability of results, the unique sample number assigned is used to identify the sample in all laboratory data documentation, including notebooks, instrument printouts, and final reports. The sample number is also used to identify additional containers of the sample that are created during sample preparation and analysis (e.g., subsamples, extracts, digests). Each container for a sample is tracked through the bottle code and an A.B.C… designator when there are multiple containers of the same type received. The link of the bottle code and sample number is used to identify which specific container was used for testing.

Routine sample tracking is documented using the Laboratory Sample Analysis Record (LSAR) which captures the date, time and analyst for each sample preparation and analysis. The information is

compiled in the LIMS using electronic record tracking from the data upload and entry functions. This displays, per sample, on each Analysis Report.

5.4 Sample Storage

After sample registration is complete, samples are placed in an assigned and identified storage location until needed for analysis. Room temperature, refrigerated, and frozen storage are available and samples are stored in accordance with regulatory, method, or client direction. The LIMS is used to assign storage locations, which assists in the orderly storage of samples. Sample storage locations are secured and monitored for accurate temperature control. Samples are stored separately from standards and reagents.

The central locked storage facility contains 3430 square feet of refrigerated space, including 2740 square feet equipped for automated sample retrieval. Samples are stored in the laboratory's automated storage and retrieval system (ASRS) or other assigned storage locations (separate volatiles areas) within the laboratory until completion of all analytical work.

When a sample is scheduled for analysis, the analyst requisitions it through the LIMS from the storage area. Barcode readers are used for LIMS documentation of the movement of the samples between storage and the laboratories. To maintain the integrity and security of the sample(s), the aliquot needed for analysis is removed and the sample(s) returned to storage as soon as possible.

5.5 Sample Return/Disposal

Samples remain in the storage area following analysis until the testing results have been verified and the analysis report has been generated. On a regular basis, a list is generated from the LIMS that summarizes samples that can be removed from the storage area. At a minimum, water samples are held for 1 week and soil samples for 2 weeks after reporting before they would be eligible for disposal. Samples are either returned to the client or disposed of in accordance with local, state, and federal regulations. Removal of the containers from storage for permanent discard is also documented in the LIMS using the barcode reader.

Due to the variety of waste generated at the laboratory, several general categories of wastes and waste streams have been identified. Identification of waste occurs through information provided by the client, historical information, and/or analytical testing. The laboratory uses a sophisticated, computerized LIMS, which includes programming to assist in the identification of hazardous wastes at time of discard.

For reasons of environmental liability, client confidentiality, proprietary product formulation protection, etc., wastes generated by the laboratory are disposed of via incineration at EPA licensed facilities. The three exceptions include bulk neutralized acid waste, COD analysis waste, and lab pack waste containing mercury. None of these exceptions involve containers with client information.

5.6 Legal Chain of Custody

Samples being tested for litigation require locked storage and documentation of the time and personnel

responsible when the sample was not in storage. This level of documentation is available upon client request and procedures to define these activities are in place and include the following:

- A chain-of-custody document is initiated for each bottle type submitted by the client.
- The chain of custody is signed each time the sample is stored, removed from storage, or changes hands.
- Clients requesting legal internal chain-of-custody documentation receive the completed forms after the analysis is complete.

5.7 Representativeness of Samples

Each analytical method provides specific procedures for
ensuring that a representative aliquot of the sample is used for testing. These procedures include shaking water
samples and mixing solid samples prior to removing an aliquot for testing. Analysts are also instructed in sampling
techniques that prevent contamination of samples.

6.0 TECHNICAL REQUIREMENTS - TRACEABILITY OF MEASUREMENTS

6.1 Reagents and Solvents

The reliability of our analytical results can be directly affected by the quality of reagents used in the laboratory. Procedures are in place to address labeling, storage, and evaluation of these materials. Reagents and solvents include acids, bases, indicators, buffer solutions, colorimetric solutions (CS), test solutions (TS), and volumetric solutions (VS). The *Chemical Hygiene Plan* provides safety information in regard to the storage and handling of laboratory chemicals. All reagents are stored separately from samples.

Each analytical method includes a list of reagents needed to perform the test. Reagents/solvents are fully described, including chemical name, purity, and description of preparation. Where applicable, shelf life and storage conditions are also listed. The laboratory is responsible for checking that new supplies meet the method requirements. These checks are documented and maintained.

Departmental management ensures that an adequate inventory of reagents needed to perform testing is maintained. Reagents received at the laboratory funnel through the Shipping and Receiving Department and deliveries are verified and labeled with the date of receipt. Large volume reagents (e.g., solvents, acids) are stored in a building outside of the laboratory until needed for use.

In addition to the name and concentration of the reagent, all reagents are labeled with the manufacturer/vendor, storage conditions, the date opened, and an expiration or re-evaluation date. Before using any reagent, the analyst must ensure that the material was properly stored and labeled.

If a reagent has passed its expiration date or shows signs of deterioration, the material is not to be used in the laboratory and must be discarded or segregated as expired. In some method development or research work, expired reagents may be used. These must be labeled as such or stored in a designated location.

If a re-evaluation date is reached before a reagent is completely consumed, the reagent will be inspected by physical observation for signs of degradation. Physical signs include, but are not limited to, color changes, clumping or other texture changes for solids and formation of precipitate in solutions. This evaluation is performed by an experienced chemist.

Subsequent reagent solutions or mixtures prepared at the laboratory are fully documented in a log and labeled to include: unique name, concentration, date prepared, name of analyst who prepared the reagent, storage conditions or reference to the log containing these details, and expiration/re-evaluation date. The information recorded allows these solutions to be traced to the original stock solution. The reference to the log is intended for use on containers that are too small to clearly document all of the information.

All reagent certificates and MSDSs are retained by the laboratory.

6.2 Calibration Standards

Written calibration procedures are required, where applicable, for all instruments and equipment used in the laboratory. The source and accuracy of standards used for calibration purposes are integral to obtaining quality data. Requirements for calibration are provided in each analytical method including specifications for the standards used. Where available and practicable, calibration measurements made by the laboratory must be traceable to national standards of measurement (e.g., NIST). Certificates of Analysis (C of As) are maintained for each material, as applicable.

The laboratory's ISO 17025 and DoD accreditations require calibration materials to be certified and purchased from a reference material producer accredited to ISO Guide 34 and ISO 17025, when available. A list of accredited suppliers is maintained by QA. This is applicable to the tests under these scopes of accreditation and can be met through the stock standards used for calibration; a standard processed under the calibration such as an ICV or LCS; or comparison to a separate reference material at a frequency defined by at the test level (i.e. annually).

Standards are usually purchased from commercial supply houses either as neat compounds or as solutions with certified concentrations. Upon receipt at the laboratory, the material must be labeled with the date of receipt. The accuracy and quality of these purchased standards is documented on a C of A and these certificates are maintained on file in the laboratory.

Most solutions and all neat materials require subsequent dilution to an appropriate working range. Records of all standard preparations include the dilution(s) made and a reference to the original and any intermediate mixtures. Solutions are labeled according to laboratory procedures and assigned unique names or code numbers that provide traceability to the original components.

All standards are stored separately from samples and in conditions as stipulated by the method or vendor (refrigerator, freezer, room temperature, etc.).

Each new preparation of standard is tested for integrity by comparison to standards from another source or previously prepared solutions. Standards are not used for sample analyses in the laboratory past their expiration date. In some method development or research work, expired standards may be used. These must be labeled as such or stored in a designated location.

6.3 Equipment and Instrumentation

The laboratory is equipped with all equipment and instrumentation required for testing the scope of work which it supports. All equipment and instrumentation is maintained in proper working order. A master list of our equipment and instruments is maintained by our accounting department and includes the date received and the condition at receipt (new v. used). Our major equipment and instrumentation capabilities are summarized in Appendix F. In addition, we have numerous other instruments including pH meters along with support equipment such as ovens, incubators, centrifuges, balances, etc.

6.3.1 General Requirements

Equipment/instrumentation is assigned a unique designation. This unique number or system identification is used to track the equipment or instrument within data documentation.

A maintenance logbook is established in conjunction with installation and is readily available to document all incidents and/or routine maintenance processes that pertain to the equipment or instrument as they occur. The corrective action taken, the date that the equipment/instrument is returned to service, and performance checks performed is documented.

All test, measuring, and inspection of laboratory systems, equipment, and instrumentation used at the laboratory is routinely calibrated and maintained in accordance with applicable standard operating procedures.

A member of the technical group, or designated individual, performs routinely scheduled maintenance and calibration of laboratory equipment and instruments as required by laboratory procedures. These activities are documented.

If appropriate standards or expertise for calibration or maintenance are not available in-house, the operation is conducted by an outside service firm, with appropriate accreditation. Certificates or other data generated by the service firm are reviewed by applicable the laboratory personnel to verify acceptability. This information is maintained on file.

All equipment or instruments taken out of service are tagged "DO NOT USE". The following minimum information is documented on the tag:

- Date taken out of service
- Employee who took the equipment/instrument out of service
- Reason for tag-out

6.3.2 Standard Operating Procedures

Information regarding operation, maintenance, and calibration of equipment and instrumentation is found in the respective SOPs. The procedures include, where applicable, a routine schedule for preventive maintenance and calibration along with acceptance criteria and remedial action to be taken in the event of failure. These procedures are maintained in the document control system and reviewed on a regular basis to verify they remain current and accurate. Vendor supplied manuals are also available to provide additional information in regard to operation and maintenance.

6.3.3 Maintenance

Instrument and equipment maintenance is performed as either a preventive or corrective operation. These processes and schedules are defined in the corresponding SOPs and Work Instruction documents.

Preventive maintenance procedures and schedules are developed for each instrument or piece of equipment, where applicable. Preventive maintenance operations are performed by an analyst, equipment maintenance specialist, or contracted (manufacturer's representative or service firm personnel). Documentation is maintained in the associated maintenance log for the procedure(s) performed as part of the preventive maintenance operation. It is the responsibility of departmental management to ensure that a preventive maintenance schedule is addressed by a procedure where appropriate and is followed.

Corrective maintenance is performed by an analyst, equipment maintenance specialist, or contracted (manufacturer's representative or service firm personnel) in response to indications of equipment or instrument malfunctions. The unit must be clearly tagged as out of service. All corrective actions taken to bring the unit back into service are documented in the associated maintenance log. After repair, further notation is made in the log regarding the functional status. Calibration activities are performed, as applicable, and documented in the log before the unit is placed back into service.

A supply of commonly needed replacement parts is maintained by the laboratory.

6.3.4 Calibration

Calibration is the establishment of, under specified conditions, the relationship between the values/response indicated by a measuring instrument or system and the corresponding known/certified values associated with the standards used. Some types of calibrations are performed with a set frequency (e.g. daily) while others provide intermediate checks to ensure that the instrument response has not changed significantly.

All measuring and testing instruments and equipment having an effect on the accuracy, precision, or validity of calibrations and tests are calibrated and/or verified at least annually. Methods for calibration of instruments and equipment vary widely with the nature of the device and the direction given by analytical procedures, departmental procedures, manufacturer recommendations, or regulatory requirements. Frequency of calibration can also depend on additional factors including ruggedness of the instrument or equipment and the frequency of use. The calibration procedures, schedules, and acceptance criteria are defined in the corresponding SOPs and Work Instruction documents.

Departmental management is responsible for developing or acquiring written calibration procedures for the types of instruments and equipment employed within their area, as applicable. Procedures address the following aspects: description of the calibration method, frequency/schedule for calibration, acceptance criteria, and corrective actions if failure occurs.

Calibration information is recorded in a logbook that is associated with the instrument/equipment and/or a calibration certificate is maintained and/or data is generated and filed to document the activity.

Calibration measurements are traceable to national standards of measurement (e.g., NIST) where available. Physical standards, such as NIST certified weights or thermometers are re-certified on a routine basis. Calibration certificates are maintained on file, where applicable, to indicate the traceability to national standards of measurement. These physical standards are used for no other purpose than calibration.

Calibration failures are documented in the associated logbook and/or within the data generated from the instruments or equipment. Management personnel perform an evaluation and review of failures and assess any potential impact the failure might have on previously generated data. The laboratory utilizes "real-time" controls to ensure the accuracy of the data. These controls are used to assist in assessing the impact of the situation.

After repair, adjustments, or relocation that could affect instrument response, calibration/verification activities are performed, as applicable, before the unit is returned to service.

Analytical data is not reported from instrumentation or equipment with noncompliant calibration unless the client has agreed to receipt of the data and appropriate qualifiers or comments are applied to the final Analysis Report.

6.4 Computerized Systems and Computer Software

6.4.1 Computer Usage

The laboratory provides computer equipment for employees to use as a tool in performing their work. Computer equipment is the property of the laboratory and used in accordance with defined terms and conditions. Our goal is to provide standard hardware and software that meets the needs of the user. The majority of desktop PCs and laptops in use are standardized using cloning software.

6.4.1.1 Physical Security of Computer Systems

It is company policy to protect computer hardware, software and data documentation from misuse, theft, unauthorized access and environmental hazards. The corporate computer area and computer "Hot-Site" is locked and requires identification/building card access. All vendors, contractors, or other visitors must be escorted into this area. Controlled access of the laboratory buildings is outlined in Section 3.2.

6.4.1.2 Passwords

Passwords are important for the security of company data and resources. The laboratory's primary network operating system is Windows and each employee must have a user ID and password combination to access the system. Other computer systems also require a user ID password combination for access. The following procedures apply regardless of which system(s) is being utilized:

- Passwords must be created as strong passwords in accordance with Eurofins Password Policy and must be kept confidential.
- Users must log-out of a system when not in use to prevent unauthorized access. In addition, the network access will automatically timeout after a set period of inactivity, requiring a user to log-in to access the system.
- Forgotten passwords can only be reset by the IT Department or by an appropriate System Administrator.
- Network and LIMS passwords automatically expire at designated intervals. The computer prompts a user to change the password when the expiration date nears. If the password is not changed, the user will be locked out of the system.

6.4.1.3 Viruses

The laboratory centrally and continuously monitors the computer network for computer viruses. Employees are prohibited from using the company's computer equipment to propagate any virus. Anti-virus software is employed to detect viruses on the Windows network. A notification is sent when there is a particularly dangerous or virulent data destructive program that employees need to be aware of. However, employees are instructed to always be cautious and observant even if there are no current warnings. Employees must report any virus concerns to the anti-virus administrator or IT Management as soon as possible. Employees who share files between their home computer and the laboratory should install anti-virus software on their home computer. If an employee does not have such software, the laboratory can suggest various no-cost anti-virus software products.

6.4.1.4 Internet and E-mail Systems

The e-mail system is used primarily for the laboratory's business purposes. The *Eurofins Lancaster Laboratories' Employee Handbook* provides additional information in regard to system usage. Employee access to the internet is restricted to those employees who have a business need for it. All employees have access to e-mail. Access to the internet is configured through a user's Windows network account. All internet and e-mail activity is subject to monitoring. All messages created, sent or received over the internet are company property and can be regarded as public information. E-mail and website filtering software is utilized.

6.4.1.5 The Laboratory's Intranet (LabLinks)

The Intranet is designed to be a useful tool for employees to acquire company information and to provide a company communication system. The *Eurofins Lancaster Laboratories' Employee Handbook* provides additional information in regard to usage.

6.4.1.6 Software Policy

Copyright laws protect software, and the laboratory's intent is to abide by all software agreements.

Software purchases must be formally requested and approved by management and/or validation personnel, as necessary.

All software is used in accordance with applicable license agreements.

Employees are not to install any software on computer(s) unless authorized by the IT Department.

Software upgrades must occur in accordance with applicable change control procedures.

Employees must not give software to outsiders (e.g., clients, contractors), unless approval is granted by management.

Users must not make copies of any licensed software or related documentation without permission. Any user that illegally reproduces software is subject to civil and criminal penalties including fines and imprisonment.

6.4.1.7 Computer System Backup, Data Restoration, and Data Archival

Mission critical data is stored on several computers throughout the laboratory. These computers are connected through the local area network. Selected files on these computers are backed up using an enterprise-level backup software program. The objective of this backup is to have the ability to restore data after a total loss (e.g., theft, fire, natural disaster). Procedures are in place to perform data backups and restores.

6.4.1.8 Remote Access to Computer Systems

Designated employees are able to remotely connect to the laboratory computer systems through an encrypted (SSL) login. When logging in, users are authenticated with their Windows Active Directory account and password.

6.4.1.9 Electronic Data

Instrument software used for processing data
must, when available, have password access and audit trails enabled. All data processed through the LIMS includes
tracking features to document who and when data was entered and/or
changed.

6.4.2 System and Software Verification

The laboratory LIMS is an in-house developed program. The design and updates to the system are written following typical Software Development Life Cycle (SDLC) processes for initial planning through testing and implementation. Before a new computer system/program or significant modification of an existing system/program is implemented in our laboratory, it is necessary to generate a plan to specify the level of documentation required for the new or updated application. Developers, affected area management, and QA personnel review and approve the documentation.

The following are the typical documents that are compiled for these updates:

- System Change Request document – used for documenting/tracking changes in the programming
- Requirements documents – Describe the required system functionality and specifications
- Design documents – System overview, screen design, report layout, data description, system configuration, file structure and module design
- Testing documentation for system development/verification – Structural testing of the internal mechanisms and user testing of the installation and system qualification
- Periodic Review documents – periodic retesting of the programs is performed to ensure that the systems remain in a validated state.
- Retirement documents – used for documenting when a program is taken out of service
- Standard operating procedures and/or manuals

6.5 Change Control

Procedures are in place to define how to maintain facilities, processes, instrumentation, equipment, computerized systems, and computer software in a validated or controlled state through a plan of change control. Successful changes require a thorough evaluation and testing for potential consequences prior to implementation. Planning, authorizing, testing, and reviewing of proposed changes are documented throughout the change process. Changes are planned or could be made in

response to an emergency situation. The following "general" elements apply to changes, as appropriate:

- Request to perform a change
- Evaluation of a change
- Authorization of a change request
- Preparation for an authorized change
- Execution and testing of the change
- Documentation of the change
- Approval of the change
- Change implementation and follow-up (Formal approval of the change is performed by designated responsible individuals and QA.)

Note: The DoD will be notified in advance of the migration to a new LIMS platform and/or relocation of the data center from the Lancaster site.

6.6 Labware Cleaning

Dedicated washroom personnel support the laboratory operations in regard to labware preparation, washing, rinsing, and drying. Labware can include, but is not limited to glassware, plastic ware, utensils, and pipettes. Procedures are in place to outline the washing process for each type of labware. Most labware is cleaned using a Miele glass washing machine. Some labware is still washed by hand and either air-dried or dried in specifically designed ovens.

Most of the labware used in the laboratory is "common or non-dedicated" labware (common to a department), but some of the labware used in the laboratory may be identified as "dedicated" labware and exclusively used for certain analyses. This labware is isolated and cleaned only with "like" labware.

All glassware is class A and 100% visually inspected for breakage (e.g., cracks, chips), cleanliness, and dryness before being returned to the laboratory for use.

Generally, each test has controls in place to ensure that results are not adversely affected by unclean labware. These controls include blanks to detect positive interferences and recovery controls to detect negative interferences.

7 PURCHASING EQUIPMENT AND SUPPLIES

7.1 Procurement

It is the responsibility of management personnel within each department to ensure that the appropriate supplies are available and/or ordered with sufficient lead-time to perform analytical testing or to provide support to the testing areas. The individual technical departments have trained personnel who enter the supply order into the company's purchasing system. The selection of these products is based on technical input at the analyst level and authorized by technical departmental management. The Purchasing Department maintains an ordering system in which purchase requisitions are managed. Common laboratory items (e.g., beakers, flasks, reagents) are ordered directly through the purchasing system. Purchase orders over a specified dollar amount require approval from the appropriate member (s) of the Executive Management Group before an order can be placed.

Upon receipt of an order, the Shipping and Receiving Department checks the order to ensure that all items were received as specified. Products that have specific storage requirements are taken to the technical area upon receipt. It is the technical area's responsibility to ensure that the product is stored in the appropriate manner. Any checks on the quality of the materials received for use in a specific test are the responsibility of the laboratory using them. This is based upon the experience of the laboratory with the usability of the product. Generally, each test has controls in place to ensure that test results are not adversely affected by the materials.

Any problems encountered when using a material in the laboratory must be brought to the attention of the Purchasing Department and/or Quality Assurance, as applicable, to ensure that follow-up and corrective action occur.

7.2 Supplier Evaluation

Procedures are in place to evaluate vendors who supply us with: new equipment, instrumentation, computerized systems and computer software; commercially purchased glassware, including sample bottleware, reagents, chemicals, solvents, gases, media, and standards; and contracted and subcontracted services.

The laboratory strives to ensure that our suppliers continually improve their quality systems and we reserve the right to purchase from suppliers of our choice in order to best fulfill the needs of our clients and our business. When directed by a client to purchase from a specific supplier, we will do so. In this instance it is the client's responsibility to "qualify" the specified supplier. We attempt to purchase from businesses that we have an established purchase history or have previously acquired information regarding the supplier's quality programs.

The laboratory does not evaluate every supplier. Risk assessment is taken into consideration when making this decision. The risk assessment analysis includes system, material, services, and number of samples or operations the purchase may affect or support. Evaluations are not required for computer operating systems, utilities, toolsets, or systems software. They also are not required for any off-the-shelf configurable software package that has an extensive market performance history (e.g., Microsoft Word, Excel, Access).

Additional quality systems are also in place within the laboratory to further verify and support the materials used:

- C of A for every lot of purchased chemicals, where available, are reviewed and maintained on file.
- For most chemical analyses a blank and a recovery check are routinely analyzed and serve as real time suitability testing of the reagent being used.

8 ANALYTICAL METHODS

8.1 Scope of Testing

Samples are analyzed in accordance with official published methods, standard methods, client-supplied methodology, or validated in-house methods. We recognize the importance of providing verifiable results and, therefore, use methods accepted and approved by a broad range of federal and state regulatory agencies. The laboratory can also assist in developing and validating analytical methods for specific products and matrices. All methods submitted for our review, as well as all analytical results, are considered confidential.

The laboratory performs a wide variety of environmental testing in support of the Safe Drinking Water Act (SDWA); Clean Water Act (CWA); Resource Conservation and Recovery Act (RCRA); Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA/Superfund); and the Clean Air Act (CAA). Methods approved by ASTM are also used in testing. Potable water, wastewater, soil, sediment, sludge, oils, biota, tissue, soil gas, and air are among the matrices typically analyzed.

Our areas of expertise include:

Standard Services	**Specialty Services**
• Volatiles • Semivolatiles • Metals • Pesticides/PCBs/Herbicides • Petroleum Analysis • Waste Characterization • Non-potable Water Testing • Drinking Water • Soil and Surface Water Testing • Vapor and Air Analysis • Sediment and Tissue Testing • Method Development • Shale Oil & Gas Analysis	• Dioxins & Furans • Hydrazines and NDMAs • Perchlorate • 1,4-Dioxane • Pharmaceutical Manufacturing Industry (PMI) Wastewater • EPA Method 25D • PCB Congeners • Explosives • Alkyl PAHs, Alkanes, Biomarkers • PFAS • Organic Acids • Aldehydes

All current certificates and scopes of accreditation are available on the laboratory's website at http://www.eurofinsus.com/environment-testing/laboratories/eurofins-lancaster-laboratories-environmental/resources/certifications/. A complete list of the tests routinely performed by the laboratory can be found in the *Schedule of Services*.

8.2 Analytical Test Methods

Each laboratory is required to establish and maintain analytical procedures for all the methods referenced in standard testing. The sources for these methods include the most recent versions of these compendia:

- Test Methods for Evaluating Solid Waste, SW-846
- Standard Methods for the Examination of Water and Waste
- Code of Federal Regulations, Chapter 40
- EPA 100 through 600 and 1600 series methods
- ASTM

The test methods used are re-written into a laboratory standard format, which provides consistency in content and allows the analysts to locate the information they need quickly. Procedures are in place to define the format, required approvals, and the control system for these method documents. Elements to address in SOPs are based on TNI and DoD required sections. The format requirements include, but are not limited to, the following:

- Uniquely assigned method number, which is used extensively for scheduling and documentation purposes.
- Reference to the original source of the method (e.g. SW-846)
- Scope
- Basic Principles
- Apparatus and Reagents
- Personnel Training and Qualifications
- Safety and Waste Disposal
- Detailed procedure (including any method modifications)
- Calculations
- QA/Quality Control
- Revision Log

- Review and approval by technical management and QA personnel

Analytical methods are maintained as controlled documents to ensure that analysts are always working with the most current version and are reviewed periodically for accuracy.

8.3 Client Supplied Methods

Most of the client-supplied method requirements presented to us involve achieving specific quality control criteria, limits of quantitation (LOQ), and/or method detection limits (MDL) using standard EPA methods. These requirements are communicated to the appropriate technical groups prior to the project start up. Each technical group evaluates the scope of work and the requirements to ensure the criteria can be met using the standard EPA method. The data is monitored to ensure the criteria are met throughout the project. The CSR notifies the client if there is a more appropriate method available or if the client's criteria cannot be achieved on a certain sample matrix (i.e., due to matrix or dilutions).

Occasionally, we are asked to transfer a non-standardized method from a client into our lab or to develop a new method, when one is not available. In the case of a method transfer, we set up the client's method and perform some initial evaluation. After the initial evaluation, we may make recommendations on how to improve method performance. If the method appears to be adequate, we determine linearity, specificity, precision, accuracy, MDL, and LOQ by performing calibrations, analyzing method blanks, and carrying out method detection limit and quad studies.

In the case of method development, we work with the client and/or data user to determine the level of validation required ensuring that the method meets its intended purpose. In addition to the elements above, we also determine standard and sample stability and robustness depending on the scope of the project. Typically, a standard operating procedure is written and submitted to the client with the results of the validation. These steps are completed prior to analysis of field samples. Data related to the setup of the method are archived.

8.4 Method Validation

Before new or revised analytical methods are authorized for routine use in the laboratory, validation data is required to demonstrate that the method as performed in our laboratory and analysts performing it are capable of meeting data quality objectives for precision and accuracy. A procedure is in place to outline this process.

Many methods published by USEPA include instructions for performing an initial demonstration of capability, which typically consist of determining the method detection limit and analyzing fortified samples in quadruplicate (i.e. a quad study). This demonstration is performed and compared to acceptance limits for precision, accuracy, and detection limits, when available.

Methods that do not include specific validation requirements are validated by analyzing fortified samples or standard reference materials in replicate. The results of these analyses are used to assess accuracy

and precision. Results of validation studies are documented and subject to review and approval by technical and QA management.

8.5 Procedural Deviation

Analysts are required to follow a documented method for all tests performed. Procedures are in place to ensure that deviations from analytical methods are documented, approved, and justified in an appropriate and consistent manner. We classify method deviations as either being a planned deviation or an unplanned deviation. In general, the following information is captured to document both types of situations:

- Description of the deviation
- Reason or justification for the deviation
- Impact the deviation had on the testing
- Signature/date of analyst performing the test
- Signature/date of Quality Assurance and Laboratory Management approving the deviation
- Signature/date of client approval, if necessary

Deviations to written procedures are documented in raw data records or through the ICAR (Investigation and Corrective Action Report) system. Both types of documentation require management and QA review and approval.

NOTE: Deviations to analytical methods are not permitted by PALA . If samples are analyzed for compliance to a regulatory program, deviations may be allowed with approval from the appropriate compliance officer and/or program.

9 INTERNAL QUALITY CONTROL CHECKS

9.1 Laboratory Quality Control Samples and Acceptance Criteria

Quality control (QC) samples are analyzed with each batch of samples to demonstrate that all aspects of the analysis are in control within established limits of precision and accuracy. Management is responsible for ensuring that QC is analyzed as required by the referenced method. Each analytical SOP specifies (or cross-references another procedure) the type of QC sample, frequency of analysis, acceptance criteria for QC sample results, and corrective action to be taken if QC sample results fall outside of the acceptable range.

The laboratory provides additional bottleware to the client for matrix QC sampling as determined by the method or regulatory requirements.

QA staff, at the direction of the technical department, must program the LIMS with the acceptance criteria for each QC type (other than blanks). The acceptance criteria are based on statistically generated limits from historical laboratory data, on method defined limits, government agency recommendations, or on client/project specific limits.

These limits are used to flag samples that are out of specification.

The types of QC samples and the information each provides are discussed in the following paragraphs.

9.1.1 Blanks

A blank is a designated sample designed to monitor for sample contamination during the analysis process. The blank consists of a clean matrix (i.e. reagent water, Ottawa sand, glass beads, Teflon chips) taken through the entire sample preparation and analysis process. The blank and field samples are treated with the same reagents, internal standards, and surrogate standards. Ideally, blanks demonstrate that no artifacts were introduced during the analysis process. The specific acceptance criteria for each test are usually based on the required reporting limit (MDL or LOQ).

9.1.2 Surrogates

Surrogates are organic compounds, which are chemically similar to the analytes of interest but are not naturally occurring in environmental samples. When required by the analytical method, surrogates are spiked into all the field and QC samples to monitor analytical efficiency by measuring recovery on an individual sample basis. The percent recovery is determined and compared to the acceptance criteria.

9.1.3 Matrix Spikes

A matrix spike sample is created by fortifying a second aliquot of a water or soil sample with some or all of the analytes of interest. Blanks are not used for matrix spike QC. The concentration added is known and compared to the amount recovered to determine percent recovery. Matrix spike recoveries provide information about the potential matrix effects on the data. Matrix effects can cause results to be outside of the acceptance criteria.

9.1.4 Laboratory Control Samples

Laboratory control samples (LCS) are samples of known composition that are analyzed with each batch of samples to demonstrate laboratory accuracy. Laboratory fortified blank (LFB) is another term used to describe a LCS. The samples are clean samples fortified with known concentrations. Percent recovery is calculated and compared to acceptance limits.

9.1.5 Duplicates and Matrix Spike Duplicates and Laboratory Control Sample Duplicates

A duplicate is a second aliquot of a sample that is treated identically to the original to determine precision of the test. To compare the values for each analyte, the relative percent difference (RPD) is calculated by dividing the difference between the numbers by their average. Precision for analytes that are not typically found in environmental samples (i.e., organic contaminants) is determined by analyzing a pair of matrix spike duplicates, defined as two spiked samples and comparing the RPD for the spiked compounds. The acceptance criteria are described as a maximum for the RPD value.

9.1.6 Internal Standards

Internal standards are organic compounds, which are chemically similar to the analytes of interest but are not naturally occurring in environmental samples. When required by the method, internal standards are added to every field and QC sample after extraction but prior to analysis. Comparison of the peak areas of the internal standards is used for quantitation of target analytes. Internal standard peak area and retention time also provide a check for changes in the instrument response. The acceptance criteria are stipulated in the analytical method.

9.1.7 Serial Dilutions

A serial dilution is the dilution of a sample with sufficiently high concentration by a factor of five to check for the influence of interferents. This QC check is performed for inorganics analyzed by ICP or ICP -MS. When corrected by the dilution factor, the diluted sample result must agree with the original sample within method specified limits.

9.1.8 Interelement Correction Standard

This QC check is performed for inorganics analyzed by ICP to verify interelement and background correction factors. A solution containing both interfering and analyte elements of known concentration is analyzed at the beginning and end of each analytical run or a minimum of twice per 8 hours.

9.1.9 Second Source Check

A second source check is analyzed using either the LCS and/or an Initial Calibration Verification (ICV). The second source is a standard that is made from a solution or neat purchased from a different vendor than that used for the calibration standards. For some custom mixes, the same vendor but a different lot and preparation is used. This ensures that potential problems with a vendor supply would be evident in the analysis. Some tests use the continuing calibration verification standards as a second source from the initial calibration.

9.2 Quality Control Sample Frequency and Corrective Action

Each analytical method defines the frequency for the required QC samples and the corrective action required when a QC result fails to meet the acceptance criteria.

The QC acceptance criteria are available to analysts in the laboratory through their SOPs or Work Instructions and the LIMS. If the method reference requires the use of specific limits then the laboratory uses the published limits that are documented as part of the analytical method. Many methods require that each laboratory determine their own acceptance criteria based on statistical data obtained from performance of the method. In these cases, the limits are available to the analysts and are entered into the LIMS described below. Statistically determined acceptance criteria are subject to change as the laboratory recalculates its control limits. Due to their dynamic nature, acceptance criteria are not included in this manual.

The results of all quality control samples are entered into the LIMS in the same way as the results of client samples. The LIMS compares the individual values with the acceptance limits and identifies quality control sample results that are out of specification. If the results are not within the acceptance criteria, corrective action suitable to the situation must be taken. This includes, but is not limited to, checking calculations, examining other quality control analyzed with the same batch of samples, qualifying results with a flag and/or comment stating the observed deviation, and reanalysis of the samples in the batch.

Each month, a summary of all QC entries (except blanks and surrogates) is generated from the LIMS. This summary is reviewed by QA staff and evaluated for changes in data that may indicate that an analysis is trending towards an out-of-control situation. The technical department is notified if a trend is observed. A weekly trend analysis is performed by the LIMS and any trends identified based on defined statistical parameters are communicated via email to the associated department manager.

The laboratory allows for marginal exceedances based on the number of analytes in the LCS. The exceedances are carefully monitored so that any systemic problems would be identified and corrective action taken. If the LCS is being reported based on the marginal exceedance allowance,a comment is added to the analytical report.

9.3 Quality Control Charts

The LIMS quality control system is used to report QC data to clients, to collect data for assessment of precision and accuracy statistical limits, and to generate control charts. Control charts are accessible to all employees through the LIMS interface. The system charts results from blanks, surrogates, matrix spike/matrix spike duplicates, duplicates, and laboratory control samples/laboratory control sample duplicates. These charts provide a graphical method for monitoring precision and bias over time. They can be used to detect quality problems by observation of patterns. The QA staff uses the charts in conjunction with a LIMS generated monthly QC trend report to evaluate potential data trends.

9.4 Measurement Uncertainty

Per ISO 17025-2017 section 7.6.1 "Laboratories shall identify the contributions to measurement uncertainty. When evaluating measurement uncertainty, all contributions that are of significance, including those arising from sampling, shall be taken into account using appropriate methods of analysis." This means the laboratory must determine the uncertainty contribution of all steps in the testing process such as equipment, calibration, standards, reagents, preparation, cleanups, etc. Since, in most methods, the laboratory control sample (LCS) goes through the entire process of preparation to analysis; all factors that would contribute to uncertainty is evident through the LCS results. LCSs are performed with every batch of samples where appropriate for the method. Tests that do not have LCSs (i.e. TCLP; paint filter test), are evaluated on a case-by-case basis by taking into account the uncertainty of each of the steps taken to perform the test. Our laboratory does not perform field sampling so our ability to assess uncertainty is limited to the processes that we perform. Thoroughly mixing samples prior to taking the testing aliquot minimizes the uncertainty risk with our aliquot.

Measurement Uncertainty reports are generated by each technical department on an annual basis using a LIMS program and submitted to QA. Measurement Uncertainty is calculated as two times the standard deviation of the LCS recoveries for the group and date range of data points selected for all applicable methods. This is reported as a percentage. It is not necessary to apply or report the uncertainty value with sample results. When a client requests the measurement uncertainty it is applied by multiplying the determined analyte concentration by the uncertainty percentage.

10 ASSURING QUALITY OF TEST RESULTS

10.1 Data Management

At a minimum, data management is initiated when the laboratory receives the samples from the client. More often the process begins with client communication of their needs and requirements for a specific project and/or testing. When requested, bottle orders for the client's sampling efforts are generated through the LIMS by the CSR. The CSRs are responsible for entering the information in the sample set up function of the LIMS. Upon receipt of the samples a unique tracking number for the sample group and the samples within the group is generated based on this information. At this point, the LIMS becomes an integral part of tracking the samples through laboratory operations. The flow of data from the time samples enter the laboratory until the data is reported is summarized in the following table:

Sample and Data Flow

Action	Personnel Involved
Bottle orders generated upon request · Bottles packed and shipped to the client under chain of custody documentation	Client Service Representative Bottles Preparation
Sample received at Lancaster Labs · Unpacked and reconciled against the client paper work or COC · Sample Entry Documentation log completed	Sample Registration
Sample is entered into the LIMS · Lab ID number assigned · Analyses entered · Storage location assigned · Electronic record of sample number · Labels generated · Acknowledgement printed (record of samples received and analyses entered)	Sample Registration
Preservation checks performed Sample stored in assigned location (refrigerator, freezer, etc.) · Electronic record of sample #, bottle code, and location	Sample Registration
Acknowledgment sent to client (when requested)	Sample Registration
Samples requisitioned and removed from storage for analysis · Electronic requisition of sample number by bottle code · Necessary aliquot taken	Sample Registration Technical Personnel

Action	Personnel Involved
· Remaining sample returned to storage	
Analysis is performed according to selected analytical method and applicable Project Notes* · Raw data recorded · Data Reviewed · Data uploaded to the LIMS from the instrument or manually entered by the analyst* (This is tracked by the unique sample number and batch number.)	Technical Personnel
LIMS performs calculations as programmed according to methods	Data Processing
Designated analyst or supervisor verifies raw data	Technical Personnel
Generation/release of reports (automated through LIMS)	Billing and Reporting Group
Data package deliverables are assembled, reviewed and released to client Electronic copy saved in the LIMS	Data Package Group
Electronic Data Deliverables (EDDs) are generated	EDD Group
Designated Data packages are overchecked by QA prior to release	QA
Hard copy of batch raw data is archived Electronic files are backed up and archived	Technical Personnel, Data Package Personnel, Office Services, IT

*Project Notes contain client- and agency-specific requirements (i.e. DoD, PALA, NJ DKQP, CT RCP, MA MCP)
**Analyses requiring the analyst's interpretation may involve manual data reduction before entry into the LIMS.

10.2 Data Documentation

Analytical data generated in the laboratory are collected from the instruments or associated data system or are manually documented in bound notebooks. Analysts review data as it is generated to determine that the instruments/systems are performing within specifications. If any problems are observed during an analytical run or the testing process, corrective action is taken and documented.

Procedures are in place to ensure that all data is traceable, authentic, and complete. Electronic data records are maintained and tracked through the LIMS, requiring authorized, password protected user access. The following general requirements outline our system for notebook, logbook, and documentation recording:

- Observations, data, and calculations are recorded at the time they are made and are identifiable to the specific task.
- Entries must be legible, signed, and dated. The signature may be a wet or electronic signature.

- Errors are corrected in a manner that does not obliterate the original entry, initialed and dated, and coded with an explanatory identifier. Changes to electronic data are tracked through audit trail functions.
- Blank pages or substantial portions of pages which are left blank are crossed-out to eliminate the possibility of data entry at a later date.
- Notebook pages and instrument printouts are signed/dated to indicate second party data review; this may be a wet or electronic signature.
- At periodic intervals a supervisor or data reviewer checks equipment/instrument logbook entries and temperature recordings for completeness, legibility, and conformance to procedures.
- At a minimum, the following information is recorded as part of data documentation:
  - Date of analysis/operation
  - Signature/date of analyst performing test/operation
  - Identification of client sample(s) and material(s) analyzed
  - Materials, reagents, standards used to perform the testing/operation
  - Method used to perform testing/operation (including version number and/or effective date)
  - Equipment/instrumentation used to perform testing/operation
  - Calculations and how they were derived
  - Departures, planned or unplanned, from the analytical method
  - Signature/date of person reviewing data documentation
- For computer generated data, the following information is recorded:
  - Sample(s) analyzed/operations performed
  - Date of analysis/operation
  - Unique instrument identification
  - Name/date of person operating the instrument
  - Name/date of person reviewing data

- Any manual notations made on instrument printouts are signed, dated, and reviewed

10.3 Data Calculations

Most instruments either include or are connected to a data system programmed to perform calculations to reduce the raw data to a reportable form. All calculations are maintained in the instrument manuals and/or as part of the analytical method.

In many cases, the data from the local instrument system are uploaded directly to the LIMS for review and reporting. This direct upload eliminates the need to retype data and an associated source of transcription errors from the analytical scheme.

Some instruments report data that require application of additional factors before the data is in final form. For example, an extract concentration may be reported by the instrumental data system, but additional dilution and preparation factors may be needed before the result represents the concentration of analyte in the sample. Analysts input these additional factors into the LIMS, where final calculations are performed.

Analysts manually enter collected data, such as titration data, into the LIMS, which is programmed to perform calculations for final reporting. Documentation of the programming for each calculation performed by the LIMS is maintained.

10.4 Reporting Limits

It is important to ascertain the limit of quantitation (LOQ) that can be achieved by a given method, particularly when the method is commonly used to determine trace levels of an analyte. The Environmental Protection Agency has set forth one method for determining method detection limits (MDLs) from which LOQs can be extrapolated. This process is summarized in a laboratory procedure.

MDLs are determined annually using quarterly MDL analyses performed for each method across all instruments used for that method. The MDL is the basis for the LOQ used in the default reporting format. Because MDLs change each time they are re-evaluated, they are not included in this manual, but are maintained in the LIMS and available to clients upon request.

The reporting limit used to determine whether a result is significant and reported as detectable is dependent upon agency and client requirements. A variety of formats are available and include use of the MDL, LOQ, method specified limits, and project specific limits. The MDL and LOQ for each analyte are programmed into the LIMS for reporting purposes.

Under the DoD program, the laboratory must establish a Detection Limit (DL) and Limit of Detection (LOD). As defined by the DoD program, the DL is the smallest analyte concentration that can be demonstrated to be different from zero or a blank concentration with 99% confidence. The laboratory determines the DL using the calculated value from the MDL Study. The DL can be derived from pooled MDL values obtained across instruments. The LOD is the smallest amount of a substance that must be present in a sample in order to be detected at the DL with 99% confidence. It is established by spiking

a quality system matrix at a concentration of 2-4 times the DL and must be less than the LOQ. The LOD must be verified on a quarterly basis or with each batch of samples.

10.5 Data Review

Final review and verification of the data are performed by designated employees using the sample results, quality control information, method criteria and Project Notes entered into the LIMS. Data are initially evaluated by the analyst and then a second designated employee knowledgeable in the test, other than the employee responsible for performing the test, reviews the data. The reviews include checks for correct transcription, calculations, passing calibrations, compliant quality control results, holding time compliance, and project specific requirements. Any issues or errors identified during this stage are addressed, corrected, and reviewed with the responsible person.

After determining that all necessary requirements for valid data and for the project are met, the reviewer electronically approves the data by changing the LIMS status of the data from "complete" to "verified". The LIMS is programmed with a list of approved reviewers for each test, and the system is password protected to ensure that only qualified individuals verify the data.

Designated projects require further review by QA prior to release of the Analysis Report and/or data package to the client. These projects are identified in the LIMS through QA review tracking numbers.

10.6 Data Qualification

Data qualifiers are used to provide additional information about the results reported. The most typical use for data qualifiers is for results that fall below the quantitation limit, in the region where it becomes more difficult to distinguish a positive result from the background instrument signal. The data systems used to generate and report results are programmed to flag values in this range as estimates.

Other qualifiers are applied to advise data users of any validation issues associated with the data. The laboratory makes every effort to meet all of the requirements for generation of data. Occasionally, generation of data that does not meet all the method requirements occurs due to sample matrix or other analytical problems. If the test cannot be repeated or reanalysis would not yield better quality data, qualified data is reported. Qualifiers can be in the form of comments on the analytical report or flags applied to the results.

Qualifications for regulated samples (e.g. drinking water, NPDES) may not be permissible. The process for evaluating regulatory sample qualifications is detailed in *QA-SOP11886 Processing Regulatory Compliance (i.e. SDWA, NPDES) Samples.*

10.7 Data Reporting

When all analyses are completed, reviewed and verified, the Analysis Report is auto-generated and released by the LIMS, or by QA for the designated QA review projects. The client receives a copy of the report containing the results of the analysis and, where necessary, qualifier flags and/or explanatory comments to address non-conformances. A QC Summary or QC Exception report is appended to the

Analysis Report when requested. To avoid ambiguity in interpreting results, a summary page that contains an explanation of all symbols and units used in reporting data is included with the Analysis Report submitted to clients. Some regulatory agencies also require the laboratory accreditation identification on the Analysis Reports. Additionally, some agencies require the certification status by parameter (analyte/method/matrix) on the Analysis Reports. Where required, this information is added. The current list of agencies and certification status by parameter can be accessed in the LIMS. Copies of reports and associated supporting raw data are retained in our archives. The report contains the signature of the assigned client service representative who is the key contact for any questions concerning the results. Personnel authorized to review, sign, and release Analysis Reports are maintained in the LIMS.

The laboratory offers a variety of data reporting levels and formats, from a basic report of sample and QC results only, to a comprehensive data package of QC/calibration information and raw data. The client and any agency involved direct the selection of report type. A summary of report formats and data packages types is provided in the laboratory *Schedule of Services*. Various electronic formats are also available formatted to client-specified file structure and sent via e-mail, direct upload, secure web-site access, or common courier. The secure web-site access is used for clients that require secure transfer of electronic data.

Client confidentiality of web-site data is ensured by the use of a secured firewall internet environment coupled with the use of a user ID and password to gain login access to the system. User accounts are configured to only allow access to specific data associated with the user's business account number.

Amendments to a final report after issue are in the form of an additional document or data transfer and include a reference to the original report. When a completely new final report is required, it is uniquely identified and includes a reference to the original report it replaces.

10.7.1 Reporting the Results

Analytical reports are generated with a cover page that summarizes all samples in that group. This page lists the laboratory assigned sample number and the corresponding client description. The cover page identifies the laboratory contact person's name and phone number if there is a question about the report. Within this package, each page is uniquely identified and paginated. Analytical test results for methods listed on the laboratory's accreditation scope meet all requirements of the relevant regulatory body accreditation, NELAP accreditation and ISO 17025 unless noted otherwise.

10.8 Data Storage, Security, and Archival

The laboratory has documented procedures and instructions for the identification, collection, access, indexing, filing, storage, maintenance, and disposition of data records. Records are in the form of paper records, electronic data files, magnetic tape, and CD-ROMs.

All data records are maintained in a confidential manner in an environment to minimize deterioration or damage and to prevent loss. Some records are stored in off-site facilities, in such a way that they are readily retrievable. Retention time for records is in accordance with specific procedures or instructions. Prior to the destruction of data/records, and if requested by a client or agency, the laboratory will notify the client/agency that their data is scheduled for destruction so arrangements can be made to have the original data sent to the client.

If specified in client contract(s), archived records are transferred according to their instructions in the event of a change in laboratory ownership or if the laboratory goes out of business. If not specified by the client, the sale agreement must require that archived records be maintained as scheduled by the new owners. In the case of bankruptcy, appropriate regulatory and state legal requirements concerning laboratory records must be followed.

The laboratory maintains all documentation which is necessary for historical reconstruction of data:

- Analysis reports
- Data notebooks
- Data logbooks
- Instrument output
- Correspondence and client files
- Instrument and equipment logbooks
- QA records
- Corporate documents
- Electronic records

11 AUDITS AND INSPECTIONS

11.1 Internal Quality Assurance Audits

The QA Department, which is independent of laboratory activities, performs routine and on-going system, traceability, and observation audits to objectively review current systems, operations, and procedures as well as automated data integrity audits of electronic data records. The goal of the audits is to ensure that the quality system activities are effective and in compliance with regulatory programs, including NELAP, ISO 17025, DoD, PALA, and state agencies, as well as internal policies and procedures. Audits are documented and tracked in a QA database.

Audits are scheduled and conducted following a predefined schedule, based on criticality of operation and prior audit results, with the goal of evaluating systems and technologies across the operation. If

warranted, additional audits are performed to follow up on promised corrective action or areas of concern.

Results of an audit are documented in a report format and distributed to applicable management personnel responsible for the area(s) under audit. Management is responsible to address all non-conformances found during an audit with root cause analysis and application of a corrective action plan.

Audit reports and responses are circulated to Management to communicate the outcome of the audit and the proposed plan(s) for corrective action, if warranted. If any of the audit findings cast doubt on the validity of the results, the clients must be notified within one business day from confirmation of the issue. Should an audit issue present a major concern regarding validity of laboratory methods, QA personnel can issue a stop work notice.

All records maintained as part of an audit are kept on file for five years.

On an annual basis, an audit of the QA Department is performed as directed by the laboratory's Executive Management. The auditors assigned to carry out this operation are qualified staff members independent of the QA Department.

The specific content and findings of internal audits are considered company confidential and are not shared with clients.

11.2 Review of the Quality Assurance Program

All levels of management are continually updated on the status of quality and compliance by circulation of pertinent documents. Management review is documented by signatures on the documents, electronic records of each person's review, along with any comments or request for additional follow-up. The types of documents circulated real-time include:

- Internal, client, and agency audit reports and responses
- Proficiency test results
- Investigation and corrective action reports
- Monthly QA status reports

Executive management reviews the elements of the total quality program on an annual basis to ensure its continuing suitability and effectiveness in meeting the stated objectives outlined in Section 2.4 of this manual. The evaluation entails review of reports to management, all audit findings, client complaints, laboratory investigations, staff adequacy and training, and projected growth in workload. Patterns or trends in any of these areas are reviewed as a means to continually improve the quality system. This review also includes an evaluation of any audit findings resulting from the audit of the QA Department. At the conclusion of this quality system review, executive management determines the

need to introduce changes or improvements into the quality systems at the laboratory. The minutes from the meeting and any recommendations for improvement are documented and a copy is forwarded to the QA staff for review and follow-up.

11.3 Good Laboratory Practice Critical Phase Inspections

Any project that is subject to Good Laboratory Practice (GLP) regulations is audited by the QA Department, as required by the regulations, at intervals adequate to ensure the integrity of the study. Inspections of a GLP project include direct observation of analysts as they perform various phases of the study. Data documentation is reviewed as part of the inspection. The purpose of this type of audit is to ensure that there are no deviations from written methods, procedures, or study protocols.

Results of inspections are documented in a report format and distributed to applicable management personnel responsible for the area(s) under audit. Management is responsible to address all non-conformances found during an inspection. Inspection reports and responses are circulated to applicable laboratory management and an off-site study director, as applicable, to communicate the outcome of the inspection and the proposed plan(s) for corrective action, if warranted.

All records maintained as part of an inspection are kept on file.

11.4 Client Audits

Because clients place great importance on compliance with applicable regulations, data quality, and project requirements, they may audit our facility as assurance that their objectives are being met. QA, management staff, CSRs, and the analytical laboratories play a key role in these audits. Visits by clients can range anywhere from a tour (to verify laboratory facilities and instrumentation) to an intensive inspection of technical operations, procedures, regulatory compliance, and/or review of specific project(s).

Audits are scheduled directly with the CSR or QA. The request to audit is communicated to all applicable laboratory departments. An escort (designated laboratory employee) remains with an auditor at all times. In accordance with our policy on client confidentiality, a client is permitted to review only data and results that apply to their work, or which have been approved by laboratory management.

Responsibilities are assigned to the following groups in regard to client audits:

11.4.1 QA Department

- Research previous audit reports and laboratory responses to past deficiencies.
- Follow-up with the applicable analytical laboratory areas to ensure action items were completed from the last audit, as necessary.
- Work with client to set audit agenda.

- Function as an escort during the audit
- Answer questions the auditor has in regard to laboratory and quality systems.
- Take notes of areas where corrective action or suggestions are recommended during the audit.
- Communicate audit issues to management at the completion of the audit.
- Respond to client audit reports.
- Ensure follow-up to cited items are addressed in a timely manner.

11.4.2 CSRs

- Gather and organize relevant information (e.g., client correspondence, analysis/project requests, copies of analytical data from archives).
- Be knowledgeable about client-specific project requirements and issues.
- Function as an escort during the audit.
- Communicate issues/problems to appropriate personnel.

11.4.3 Laboratories

- Gather and organize laboratory data and documentation in preparation for client review.
- Assure corrective action was implemented from past audit findings, if necessary.
- Be prepared to discuss project data/testing results during the audit.
- Be familiar with client-specific project requirements and be prepared to answer client questions.
- Be familiar with the location of routine laboratory information and equipment (e.g., SOPs, data notebooks, calibration data, etc.).
- Be prepared to answer specific technical questions in regard to laboratory procedures and instrumentation within the area.
- Functions as an audit escort within the department during the audit.
- Laboratory managers may function as an escort during the audit.

11.5 Agency Inspections

It is laboratory policy to cooperate to the fullest extent and maintain cordial relations with all government agencies. The QA Department is assigned the responsibility of hosting and working with agency representatives. The QA role includes, escorting the investigator(s); ensuring all questions are answered promptly and accurately; making note of all unresolved issues; informing management of the audit status and outcome; responding to the audit report and ensuring that appropriate corrective action is completed. CSRs and laboratory staff responsibilities are similar to those noted above for client audits.

Inspections can be performed by investigators or auditors from the EPA, states, third-party accreditation bodies (i.e. A2LA, United States Department of Agriculture (USDA)), or other regulatory agencies.

Government agencies have the right to investigate and inspect the laboratory during normal business hours and permission to inspect is granted by Executive Management.

Designated members of the QA Department are primary contacts for announced inspections. The QA Director is the primary contact for all unannounced agency inspections. If the QA Director is unavailable, Executive Management is notified, in addition to a member of the QA Department. The QA Director, or their designee, must obtain evidence of the investigator's authority either in the form of a letter or examination/explanation of credentials.

Inspections include the examination of records or the inspection of facilities. Investigators are usually concerned only with the records relating to their responsibilities. As a general rule, they are given copies of records and documents, if requested. The laboratory must have a record of all items provided to an investigator.

Investigators must be escorted through the laboratory. The laboratory is not obligated to show an investigator the following types of information: sales, financial or pricing information, or any personnel data other than training or qualification documentation. On a case-by-case basis, internal QA audit reports and investigation reports are made available for agency review. Any questions or concerns about a request made by an investigator in regard to recording devices or photographs must be reviewed with legal counsel.

The laboratory personnel are not permitted to sign affidavits. If an affidavit is presented during an inspection, all personnel are directed not to sign it, read it, nor listen to it being read. The only document that is acceptable to sign is an acknowledgement that an inspection report has been received. If there is any doubt as to what should be signed, legal counsel must be consulted.

11.6 Proficiency Testing

Many of the organizations that certify our laboratory to perform various analyses require proof of our competency. Laboratory performance is checked regularly by participation in a variety of proficiency

testing (PT) programs. When available, blind samples are obtained from vendors that are accredited to provide PT samples under the TNI and/or ISO 17025 standards for all test and matrices routinely tested at the laboratory. In addition, some individual certification programs require analysis of specific sets of proficiency samples.

Generally, the PT programs consist of samples or ampulated spiking solutions used to fortify laboratory samples. The laboratories analyze the samples in the same manner as a client sample and the data is sent to the agency or vendor for evaluation. After the study results are returned to the laboratory, any data falling outside the acceptance criteria is investigated, root cause is identified, and corrective action is implemented, if needed. Results are circulated to management. No PT samples or portion of a PT sample are sent to another laboratory for analysis.

Double blind samples are submitted to the laboratories with some client projects so that the laboratory is not aware that the samples are PTs. The acceptance criteria for these double blind samples are developed statistically using data from participating laboratories, providing a source of inter-laboratory comparison. The clients will provide the results to the laboratory. Results are reviewed, investigated as needed with response to the client.

If a trend in PT failures is identified, additional blind samples are ordered for that specific test as corrective action.

12 CORRECTIVE AND PREVENTATIVE ACTION

12.1 Laboratory Investigation and Corrective Actions

Due to the technical nature of laboratory work and the broad scope of our QA program, a wide variety of laboratory issues can require investigation, root cause analysis, documentation, and corrective action. Prompt investigation and implementation of corrective action ensure that only data of known quality are reported and prevent the recurrence of errors. The following list provides "examples" of the type of issues that warrant investigation:

- Noncompliant QC results*
- Failed PT samples
- Reporting incorrect results
- Contamination issues
- Client technical complaints
- Procedural errors
- Missed holding times

- Systematic problems that compromise the accuracy or compliance of the data generated
- Problems with instrumentation and equipment which could compromise the data generated

These investigations must include the following:

- Identification of the problem
- Steps taken to investigate the problem
- Explanation of probable root cause(s) of the problem
- Steps taken to prevent future occurrence
- Determination of samples or systems affected by the problem

*Note: individual QC noncompliance does not require in depth investigation. Actions are taken as defined in the corresponding method and documented in the data. An adverse trend with noncompliance would be investigated.

Management is informed of problem situations. The QA staff track documentation, the status of the investigation activities, evaluates investigations for completeness and appropriateness, and monitors corrective action for follow-up/closure. Technical management and/or QA may issue a stop work notice if issues indicate the potential for problems on a broad scale or present a critical concern regarding the validity of the laboratory methods. The goal is to identify root cause, have the corrective action implemented promptly, and to the degree appropriate for the magnitude and risk of the problem. Tracking and trending of laboratory issues is performed by QA staff and reported to management on a monthly basis or immediately upon detection of a trend with potential for putting the laboratory or our clients at risk.

12.2 Investigation Process

All results from quality control (QC) samples are logged into the LIMS quality control system, which is programmed to alert analysts to unacceptable results. Analysts are required to review the results and determine the source of the problem. The source of the problem and proposed action must be documented. Action for QC outliers may include, but is not limited to, re-analysis, re-extraction or re-digestion, instrument maintenance, or re-calibration. If these actions do not yield compliant data within the required hold time, a Nonconformance Form is initiated to document actions and communication with the client. The original form is archived with the associated raw data. Nonconformance Forms are reviewed by the technical department's management, or designee. A copy of the form is reviewed by QA.

Missed holding times are investigated and documented using a Missed Holding Time form. The form includes documentation of the affected samples, reason the hold was missed and corrective actions

taken, if applicable. Each form also has documented review and approval by the department manager, department director and the QA Director. Clients are informed of any problems involving holding time.

Other types of problems having potential impact on data quality or involve deviations to our processes are investigated and documented using an Investigation and Corrective Action Report (ICAR). This process was developed to ensure that laboratory problems are investigated, evaluated for root cause, corrective action is put into place to prevent recurrence, laboratory management review and QA approval occurs, and all steps are documented. These investigations are initiated and managed through a workflow interface (Jira). Any employee can initiate an ICAR through this system to document a laboratory problem. The investigation must be completed by designated members of management and approved/closed by QA. Each investigation has a unique tracking number assigned by Jira. Closed investigations are routed to the laboratory Vice-President, associated laboratory Director and the QA Director. Follow-up to ensure effective corrective action is managed by QA staff.

If a laboratory error is identified from the outcome of the investigation that impacts validity of client data, the client must be notified in writing of the situation and corrected data provided as soon as possible. If the root cause of the problem has affected any other client sample results, all affected clients are notified of the problem.

12.3 Client Feedback

The laboratory is in the business of providing high quality analytical testing services. The data that we supply to our clients must be technically complete, accurate, and compliant with applicable regulations. Complaints can be received via letter, phone call, e-mail, or face-to-face meeting.

When a complaint is received, it is our responsibility to determine, to the best of our ability, the extent of the issue and what data is in question. The person receiving the complaint documents this information and promptly forwards it to the appropriate management personnel where the work in question was performed. If a data reporting error is discovered, the final report and/or data must be regenerated with the correct value(s).

The CSR is responsible for entering client concerns into the LIMS and an automated summary report is sent to QA on a weekly basis for review. In some cases, an ICAR is initiated to address and document the situation. While an individual issue may not warrant a formal investigation, QA monitors these issues for potential trends and will issue an ICAR if a trend is evident.

On an annual basis, the laboratory sends a client satisfaction survey to all clients. The results of these surveys are compiled, routed to the laboratory executive managment and the QA Director, and used to identify areas of improvement for the laboratory.

12.4 Preventative Actions

All employees are empowered and encouraged to use the concept of Preventive Action to avoid a problematic situation. The company supports, embraces and drives the process for continuous quality improvement by several means, such as: Ethics Hotline, the Suggestion Box (accessible to all

employees on the company's Intranet 'LabLinks'), and training classes that include "Making Quality a Science" and Ethics. If an employee identifies a potential problem or an area of concern or it should be brought to the attention of his/her supervisor, Human Resources, QA Director or the Ethics Hotline.

The laboratory also utilizes a formal program to encourage preventive action through development of Lean processes. The goal of this program is to optimize processes to ensure efficiency and operational improvements while maintaining compliance. The efficiency gains are inherently coupled with minimizing errors and rework. Teams of employees learn the tools and techniques to evaluate a process, identify potential sources of errors, delays or problems in an operation, determine system changes that will minimize these and work to implement the improvements. Each project includes thorough documentation of the evaluation, measurement, and implementation phases. The process is continually monitored to ensure that the anticipated results are sustained.

Employees are also encouraged to communicate to their supervisor any area(s) or operation(s) that they believe could be streamlined, make their job easier, would provide a quality improvement, or could provide a cost savings to the company.

Described below are some of the systems available to employees to assist with building quality and efficiency into their daily jobs. They stress a proactive approach/environment to problem solving and to review quality systems and operational efficiencies.

- "Making Quality a Science" is an introductory total quality management (TQM) course required for all employees to teach why quality is important and to explain the laboratory's quality philosophy and processes, and how to apply quality thinking and techniques on the job. Topics discussed include: communication, teamwork, serving the client, measurement, quality tools, and continuous process improvement. To foster continuous improvements of laboratory systems, process improvement teams are formed, as needed, if an employee needs help in solving a problem or addressing an issue. The goal of these groups is to have representation from various areas of the laboratory work together to look at a problem, evaluate the need for a temporary fix, brainstorm root causes, plan process improvement, implement the process improvement, evaluate and follow-up to the corrective action.

- "Putting our Values to Work" (Ethics) is a seminar required for all employees to teach the laboratory's Statement of Values by examining how it translates to our everyday jobs and ethical decision making. Topics discussed include: Statement of Values, ethical paradigms, and ethical decision making. Mandatory ethics training refresher seminars are offered on an annual basis.

- The laboratory has contracted with an Ethics Hotline to provide an anonymous means of reporting ethics concerns or issues. The issue is forwarded by the service to the QA Director who will communicate internally with those who need to address the issue. All communication and actions are documented in a secure web interface managed by the hotline service company.

- The QA staff prepares monthly program status reports for management. The reports include a variety of metrics and graphs which are used to evaluate trends in laboratory performance across all quality and compliance areas. Management responds to any negative trends by developing a corrective action plan.

- The laboratory uses a Project Cycle process (further described in section 13.2) to proactively review and prepare for client projects in an effort to ensure full understanding by all laboratory staff of the client's needs and resolve any concerns in advance of receiving the work.

13 SERVICE TO CLIENTS

13.1 Service to Clients

We value our client relationships and support these partnerships through the following principles:

- Honesty and Fairness – Our corporate culture is founded on the principles of professionalism and high ethical standards in dealing with our clients. This may mean declining to provide the service requested (if we are convinced that to do so would be meaningless) or it may mean referring clients outside of our laboratory if we believe that another company can better meet their needs.

- Complete Service – We will give our clients full value on every service provided. We will provide detailed information on our methods, procedures, and QA programs if requested, and take a personal interest and initiative in helping solve our client's problems within the area of our professional expertise.

- Trustworthiness – All data and information developed for a client will be held confidential and not disclosed to a third party except on written request of the client. If information is subpoenaed, we must, by law, release it, but the client will be informed of the release.

- Commitment to Quality – We constantly strive to improve our service in quality, flexibility, and dependability, to keep our competitive edge. We will achieve this through: meeting the requirements of those we serve, staying apprised of regulatory and industry expectations, and providing prompt responses to client concerns.

- Basics of Superlative Service – Our focus is on our client's success. Through proactive collaborative communication, our leadership ensures we understand our client's expectations and strives to exceed them. We foster a service culture in our training, reward and recognition, and performance management process so each employee takes ownership to deliver superlative service to our clients. Feedback from clients, whether positive or negative, is an important part of our continuous improvement system. Ways in which feedback is gathered can include, but is not limited to, customer satisfaction surveys, client audits, and the customer complaint system, which is described within section 12.3.

We also view our fellow employees as our clients since they frequently receive the results of our labor. Meeting the requirements of the next employee in the workflow process is just as important as meeting the needs of an external client.

13.2 Review of Work Requests, Tenders, and Contracts

The laboratory places great importance on understanding and meeting client requirements for a project. We ensure, to the best of our ability, that client/project requirements are identified and communicated through the laboratory. Project evaluation can be achieved in various ways, including the review of analytical methods, protocols, business contracts, and quality project plans (QAPPs). The project review encompasses our Project Cycle process and individual topics to be evaluated for a project include, but are not limited to: scope of testing; required accreditations (i.e. individual state agencies, PALA, NELAP, DoD, and ISO 17025) held by the laboratory; appropriate and current testing methods; ability to meet project required reporting limits and QC (if applicable); inconsistencies clarified; and nonstandard work requests.

Project kick-off meetings can be arranged through the CSR or Business Development Group. These meetings allow the client and key technical personnel to discuss project issues and requirements prior to project initiation. Any differences between laboratory processes and the project requirements are discussed and addressed with the client and the laboratory staff before the project is accepted and samples arrive. Project-specific requirements are communicated to the laboratory through use of Project Notes (PNs). Accreditation-specific requirements (i.e. NJ DKQP, MA MCP, CT RCP, PALA, NELAP, DoD, and ISO 17025) have template PNs maintained by QA, and these are used to add to the project's PNs. Testing that cannot be performed at the laboratory may be subcontracted to another laboratory (see 13.4).

A key client contact, the CSR, is assigned to oversee the project. Communication between the client and laboratory staff is available and is coordinated through the CSR.

As a project continues, the CSRs provide continuous communication and status reports (if requested) about the project to the client. The CSR relays any project changes or modifications to the technical groups. If the client submits revised project documents (QAPPs, etc.) then the Project Cycle review process is repeated. The CSR also communicates any issues encountered by the technical laboratories back to the client and vice-versa.

13.3 Timely Delivery

Evaluating laboratory capacity and ability to perform specific projects is a joint responsibility between the Technical Director, Business Development, and the laboratory managers. We recognize that one of the most important aspects of the service we offer is turnaround time.

Many analysts are cross-trained to perform a variety of tests, and there is redundant equipment available in the laboratory area creating operation flexibility for routine work. Larger projects are reviewed against capacity estimates before bids are submitted to ensure that the client’s schedule is met. Turnaround time is continually measured.

Regularly scheduled meetings are held with technical and support management, and project management personnel to review progress with current projects, as well as special requirements of new work scheduled for the laboratory.

Management receives a daily report of the status of all samples in the lab, including those with priority status or those that have exceeded a preset turnaround time. This enables the planning and organizing of the workload through efficient scheduling.

Any changes to the established timeline by the client or the laboratory must be communicated to the client or laboratory as soon as possible. Upon communication of changes, a new timeline is established and agreed upon by both parties. If a client requires a change in the scope of the project (e.g., number of samples submitted, change in analyses, revised protocol) the laboratory must be informed in writing and a new timeline and cost estimate is be provided.

13.4 Subcontracting

The laboratory may subcontract tests to other laboratories if the requested testing is not routinely performed in our laboratory. To a lesser extent, samples may need to be subcontracted to an overflow laboratory to ensure hold times and/or turn-around-times (TAT) are met.

Testing is only subcontracted with the client's knowledge and approval. The CSR must notify the client in writing when any of their requested analyses will be subcontracted to another lab. Client approval must be obtained in writing before samples are shipped.

Subcontract laboratories are selected based on their qualifications and accreditations. The subcontractor is requested to sign a Laboratory Analytical Services Subcontract. See form *Q-EQA-FRM6867* to review details of the contract terms and information requested from the subcontract laboratory. If projects require a specific agency certification (i.e. individual state agencies, NELAP, DoD, PALA, ISO 17025), only an appropriately accredited laboratory is used. The client may also have a list of laboratories to be used for subcontracting. In these cases, the evaluation of the subcontract laboratory is made by the client.

Data obtained from subcontract laboratories is clearly marked as such when reported by the laboratory. The data are submitted to the client in the format obtained from the subcontractor.

13.5 Use of NELAP and A2LA Logo

It is not laboratory policy to use these logos on any company letterhead, including analytical reports.

Q-EQA-FRM6867 Laboratory Analytical Services Subcontract (ELLE)
QA-SOP11886 Processing Regulatory Compliance (i.e. SDWA, NPDES) Samples

Attachment:
Appendix A - Procedure Cross Reference List

End of document

Version history

Version	Approval	Revision information
15.1	19.OCT.2018	Editorial updates only.
16	18.MAR.2019	
17	11.JUL.2019	

NOTE: SOPs and Forms are indicated in the table with the unique D4 document number. The topic of the document is given in parentheses.

EQPM Section #	Title	Procedure(s)
1	Introduction	
1.1.	Mission Statement	Employee Handbook
1.2.	Quality Policy	11197 (Quality Statement) Employee Handbook
1.3.	Statement of Values	Employee Handbook
1.5.	Certifications, Accreditations, and Registrations	Form 6840 (Cert Summary) Company website
2	Organization and Personnel	
2.1	Company Overview and History	
2.1.1	Business Continuity and Contingency Plans	13101 (Incident Response Plan) 14735 (Preparedness, Contingency) 12233 (Archiving SOP) Form 6843 (Deputies form)
2.2.	Organizational Structure	Organization Charts
2.3.	Management Responsibilities	PQDs (job descriptions) PMDs (individual job plans)
2.4.	Overview of the Quality Assurance Program	Dept 4052 SOP Series
2.5.	Quality Assurance Responsibilities	Dept 4052 SOP Series
2.6.	Communication of Quality Issues to Management	11912 (QA Reports)
2.7.	Personnel Qualifications and Responsibilities	16134 (Employee Training) PQDs (job descriptions) PMDs (individual job plans) Task Specific Training
2.8.	Relationship of Functional Groups and the Quality Assurance Program	Quality Orientation TQM Training PMDs (individual job plans) Dept 4052 SOP Series 11895 (Project Cycle)
2.9.	Balancing Laboratory Capacity and Workload	PMDs (individual job plans) LIMS reports for mgt
2.10.	Identification of Approved Signatories	11186 (Date Entry, Verification and Reporting)
2.11.	Personnel Training	16134 (Employee Training) 11178 (DOCs) PQDs (job descriptions) PMDs (individual job plans) Task Specific Training
2.12.	Regulatory Training	11194 (GLP)
2.13.	Employee Safety	Analytical Methods Chemical Hygiene Plan 14735 (Preparedness) Dept 6098 SOP Series PMDs (individual job plans)

EQPM Section #	Title	Procedure(s)
2.14.	Client Services/Project Management Responsibilities	Dept 4039 SOP Series 11895 (Project Cycle)
2.15.	Confidentiality	Employee Handbook 16221 (E-mail System) 6824 (Client and Agency Audits)
2.16.	Business Conduct	Employee Handbook
2.17.	Operational Integrity	11176 (Manual Integration) 11882 (Chromatographic Integration) 11177 (Ethics Policy) 11197 (Quality Statement)
3	Buildings and Facilities	
3.1.	Facility	Floor Plans
3.2.	Security	12733 (Building Security)
3.3.	Disaster Recovery	13101 (Incident Response Plan)
3.4.	Environmental Monitoring	11919 (VOA Storage) 11191 (ETM)
3.5.	Water Systems	11916 (Reagent Water)
3.6.	Housekeeping/Cleaning	15553 (Housekeeping)
3.7.	Insect & Rodent Control	16117 (Insect & Rodent Control)
3.8.	Emergency Power Supply	13101 (Incident Response Plan)
3.9.	Facility Changes	14744 (Facility Change Control) 11195 (Change Control)
4	Document Control	
4.1.	Hierarchy of Internal Operating Procedures	6823 (Writing SOPs)
4.2.	Document Approval, Issue, Control, and Maintenance	16131 (Document Control) 11189 (Method Validation)
4.3.	Client-Supplied Methods and Documentation	11193 Analytical Decision Making) 6825 (QA review of QAPPs) 11895 (Project Cycle) 12039 (Auditing Paperwork)
4.4.	Laboratory Notebooks, Logbooks, and Forms	16131 (Document Control) 11913 (Notebooks)
4.5.	Control of External Documents	16131 (Document Control) Departmental "Controlled Documents" forms
5	Sample Handling	
5.1.	Sample Collection	Dept 4031 SOP Series
5.2.	Sample Receipt and Entry	Dept 6042 SOP Series
5.3.	Sample Identification and Tracking	Dept 6042 SOP Series 11184 (LSAR)
5.4.	Sample Storage	Dept 6055 SOP Series
5.5.	Sample Return/Disposal	12042 (Sample Discard) 15553 (Hazardous Wastes - Lab) 9017756 (Hazardous Wastes − Storage)
5.6.	Legal Chain of Custody	11914 (Legal COC)
5.7.	Representativeness of Samples	Analytical Methods 11190 (Representative Solid Samples)
6	Technical Requirements - Traceability of Measurements	

EQPM Section #	Title	Procedure(s)
6.1.	Reagents and Solvents	11188 (Reagents and Standards) Analytical Methods
6.2.	Calibration Standards	11188 (Reagents and Standards) Analytical Methods
6.3.	Equipment and Instrumentation	11901 (Inst. & Equip M&C) 11880 (Balance, Syringe, Pipette Verification)
6.4.	Computerized Systems and Computer Software	11195 (Change Control) 11186 (Network Accounts) 16221 (E-mail System) 20940 (Computer Backup) Employee Handbook 16227 (Computer Viruses)
6.5.	Change Control	11195 (Change Control)
6.6.	Labware Cleaning	Departmental Procedures
7	Purchasing Equipment and Supplies	
7.1	Procurement	11192 (Procurement) 9018236 (Receipt of Lab Supplies)
7.2	Supplier Evaluation	11192 (Procurement) 11181 (Subcontracting) 11188 (Reagents and Standards) 6826 Preservative Checks)
8	Analytical Methods	
8.1.	Scope of Testing	Schedule of Services Company website
8.2.	Analytical Test Methods	11189 (Method Validation) 6853 (Writing Procedure Guidance)
8.3.	Client Supplied Methods	11189 (Method Validation)
8.4.	Method Validation	11189 (Method Validation)
8.5.	Procedural Deviations	11912 (ICARs)
9	Internal Quality Control Checks	
9.1.	Laboratory Quality Control Samples and Acceptance Criteria	11896 (QC Limits) Analytical Methods
9.2.	Quality Control Sample Frequency and Corrective Action	11912 (Noncompliant Data) Analytical Methods
9.3.	Quality Control Charts	6817 (End of Month QC Reports)
9.4.	Measurement Uncertainty	11896 (QC Limits)
10	Assuring Quality of Test Results	
10.1.	Data Management	11913 (Notebooks)
10.2.	Data Documentation	11913 (Notebooks) 11186 (Date Entry, Verification and Reporting) 11197 (Quality Statement)
10.3.	Data Calculations	11186 (Date Entry, Verification and Reporting) Analytical Methods
10.4.	Reporting Limits	11892 (MDLs & LOQs)

EQPM Section #	Title	Procedure(s)
10.5.	Data Review	11913 (Notebooks) 11186 (Date Entry, Verification and Reporting)
10.6.	Data Qualification	11912 (Noncompliant Data)
10.7.	Data Reporting	11186 (Date Entry, Verification and Reporting) 11886 (MCL Exceedance)
10.8.	Data Storage, Security, and Archival	12233 (Data Archiving) 20940 (Computer Backup)
11	Audits and Inspections	
11.1.	Internal Quality Assurance Audits	7547 (Internal Audits) 11194 (GLP) 6859 (Internal Audit Checklist)
11.2.	Review of the Quality Assurance Program	7547 (Internal Audits) 6822 (QA Reports)
11.3.	Good Laboratory Practice Critical Phase Inspections	11194 (GLP)
11.4.	Client Audits	Employee Handbook 6824 (Client and Agency Audits)
11.5.	Agency Inspections	Employee Handbook 6824 (Client and Agency Audits)
11.6.	Proficiency Testing	11185 (PT Program) 6816 (PT Entry)
12	Corrective and Preventive Action	
12.1.	Laboratory Investigations and Corrective Action	11912 (Noncompliant Data), ICARs, Client Complaints)
12.2.	Investigation Processes	10401 Missed Hold Procedure) 6832 (Missed Hold form) 11912 (ICARs)
12.3.	Client Feedback	11912 (Client Complaints) Annual Client Survey
12.4.	Preventive Actions	Corporate Training Lean Projects 11895 (Project Cycle) 1195 (Change Control) 7547 (Internal Audits)
13	Service to Clients	
13.1.	Service to Clients	Employee Handbook Ethics Statement 11197 (Quality Policy) TQM Training
13.2.	Review of Work Requests, Tenders, and Contracts	12039 (Client Paperwork) 11895 (Project Cycle) 6825 (QAPP Review)
13.3.	Timely Delivery	11166 (Tracking Rush Samples) 11160 (Scheduling Rush Samples) Departmental LIMS reports

EQPM Section #	Title	Procedure(s)
13.4.	Subcontracting	11181 (Subcontractor Checklist) 11181 Subcontracting) 11895 (Project Cycle)

Agency	Parameter	Applicable Matrices	Lab ID No.
Federal Programs:			
American Association for Laboratory Accreditation (A2LA)	Organics, inorganics, dioxin, PFAS, KY UST, WY Storage Tank Program, Food and Feed, and PFAS	Potable water, nonpotable water, solid and hazardous waste, air, tissue	0001.01
USDA Quarantine Soil Permit	All	Solid	P330-13-00350
State Programs:			
State of Alaska, Department of Environmental Conservation Drinking Water Program	Organics, inorganics, PFAS	Potable water	PA00009
State of Alaska, Department of Environmental Conservation Contaminated Sites Program	Organics, inorganics, UST analysis, PFAS	Nonpotable water, solid and hazardous waste	17-027
State of Arizona, Department of Health Services	Dioxin	Potable water, nonpotable water, solid and hazardous waste	AZ0780
State of Arkansas, Department of Environmental Quality	Organics, inorganics, dioxin	Nonpotable water, solid and hazardous waste	88-0660
State of California, Department of Health ELAP	Organics, inorganics, dioxin	Potable water, nonpotable water, solid and hazardous waste	2792
State of Colorado, Department of Public Health and Environment	Organics, inorganics, dioxin	Potable water	PA00009
State of Connecticut, Department of Public Health	Organics, inorganics, dioxin	Potable water, nonpotable water, solid and hazardous waste	PH-0746
State of Delaware, Health and Social Services	Organics, inorganics, dioxin	Potable water	None
[3]State of Florida, Department of Health	Organics, inorganics, dioxin	Air and emissions, potable water, nonpotable water, solid and chemical materials	E87997
State of Hawaii	Organics, inorganics, dioxin, PFAS	Potable water	None
[3]State of Illinois, Environmental Protection Agency	Organics, inorganics, dioxin	Nonpotable water, solid and chemical materials	200027
State of Iowa, Department of Natural Resources	Organics, inorganics, UST analysis	Nonpotable water, solid and hazardous waste	361
[3]State of Kansas, Department of Health and Environment	Organics, inorganics, dioxin	Potable water, nonpotable water, solid and chemical materials	E-10151
Commonwealth of Kentucky, Department of Environmental Protection, Drinking Water Certification Program	Organics, inorganics, dioxin	Potable water	90088
Commonwealth of Kentucky, Department of Environmental Protection, Wastewater Certification Program	Organics, inorganics, dioxin	Nonpotable water	90088
[4]Commonwealth of Kentucky, Department for Environmental Protection – UST Branch	Organics, metals, UST analysis	Nonpotable water, solids	108139
[1, 3, 5] State of Louisiana, Department of Environmental Quality	Organics, inorganics, dioxin	Air emissions, biological tissue (direct accreditation), nonpotable water, solid chemical materials	30729 02055

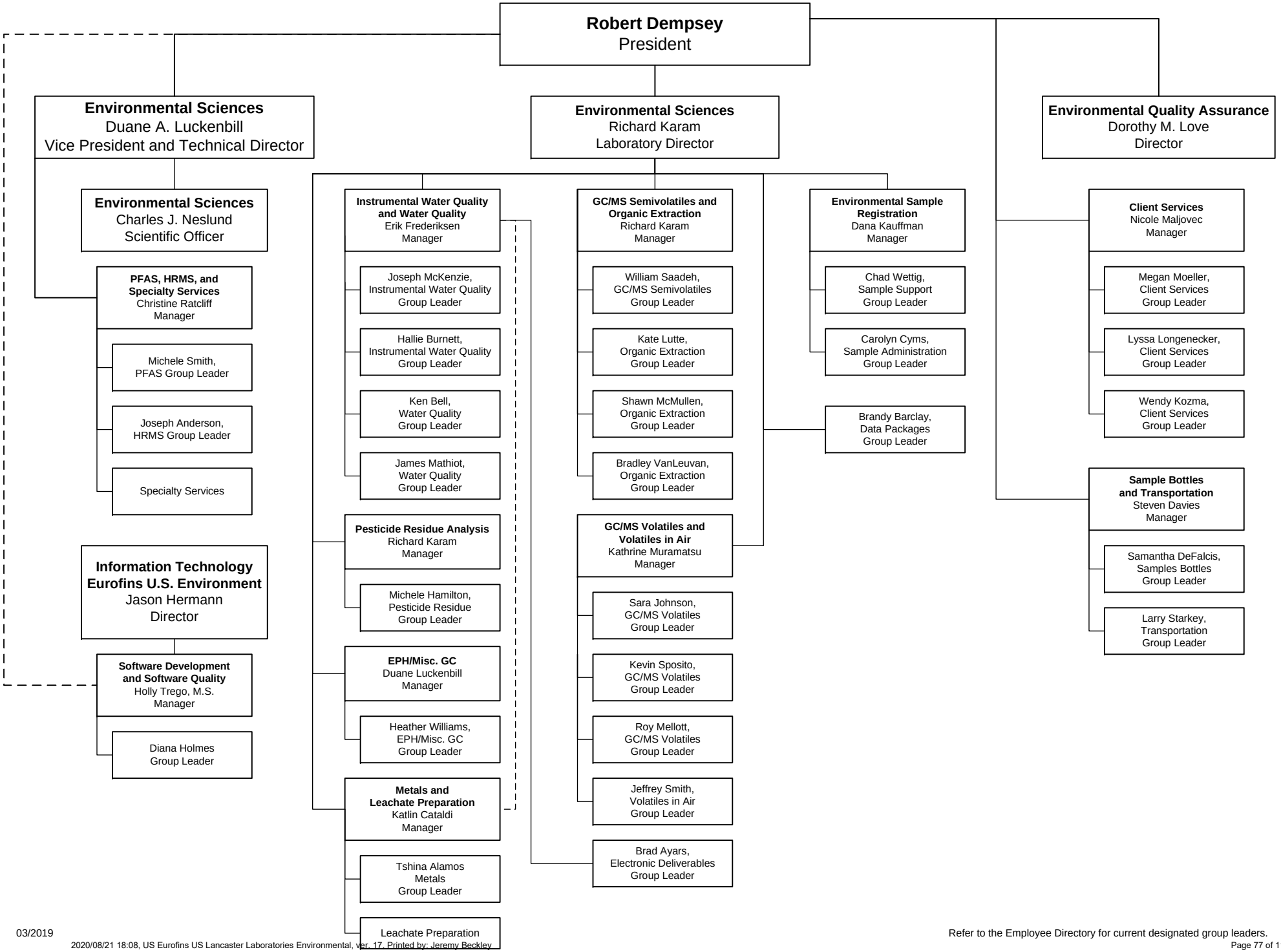
Agency	Parameter	Applicable Matrices	Lab ID No.
State of Maryland, Department of the Environment	Organics, inorganics, dioxin,	Potable water	100
State of Michigan, Department of Environmental Quality	Organics, inorganics, dioxin	Potable water	9930
State of Missouri, Department of Natural Resources	Organics, inorganics, PFAS	Potable water	450
State of Montana, Department of Public Health and Human Services	Organics, inorganics, dioxin, PFAS	Potable water	CERT0098
State of Montana, Department of Environmental Quality	Organics, UST analysis	Nonpotable water, solid and chemical materials	None
State of Nebraska, Department of Health and Human Services	Organics, inorganics, dioxin, , PFAS	Potable Water	NE-OS-32-17
[3]State of Nevada, Department of Conservation and Natural Resources	Organics, inorganics, dioxin	Potable water, nonpotable water, solid and chemical materials	PA00009
[3]State of New Hampshire, Department of Environmental Services	Organics, inorganics, dioxin, , PFAS	Potable water, nonpotable water, solid and chemical materials	2730
[3]State of New Jersey, Department of Environmental Protection (NJDEP)	Organics, inorganics, dioxin, , PFAS	Air and emissions, potable water, nonpotable water, solid and chemical materials, biological tissue	PA011
[3]State of New York, Department of Health	Organics, inorganics, dioxin, , PFAS	Air, nonpotable water, potable water, solid and chemical materials	10670
State of North Carolina, Department of the Environment and Natural Resources	Organics, inorganics	Nonpotable water	521
State of North Carolina, Department of Health and Human Services	Organics,	Potable water	42705
State of North Dakota, Department of Health	Organics, inorganics, dioxin, PFAS	Potable water, nonpotable water, solids and hazardous materials	R-205
[3] State of Oklahoma, Department of Environmental Quality	Organics, inorganics, dioxin	Nonpotable water, solid and hazardous waste	9804
[3]State of Oregon, Public Health Laboratory	Organics, inorganics, dioxin, PFAS	Air, potable water, nonpotable water, solid and chemical materials	PA200001
[2]Commonwealth of Pennsylvania, Department of Environmental Protection (Bureau of Laboratories)	Organics, inorganics, dioxin, , PFAS	Potable water, nonpotable water, solid and chemical materials (direct accreditation)	36-00037
State of Rhode Island, Department of Health	Organics, inorganics, , PFAS	Potable water, nonpotable water	LAO00338
State of South Carolina, Department of Health and Environmental Control	Organics, inorganics, dioxin	Nonpotable water, solid and hazardous waste	89002
State of Tennessee, Department of Environment & Conservation	Organics, inorganics, dioxin	Potable water	TN02838
[3] State of Texas, Commission on Environmental Quality	Organics, inorganics, dioxin,	Air and emissions, potable water, nonpotable water, solid and chemical materials, biological tissue	T104704194
[3]State of Utah, Department of Health	Organics, inorganics, dioxin, PFAS	Potable water, nonpotable water, solid and hazardous material	PA00009

Agency	Parameter	Applicable Matrices	Lab ID No.
State of Vermont, Department of Health	Organics, inorganics, dioxin, , PFAS	Potable water	VT 36037
[3] Commonwealth of Virginia, VELAP	Organics, inorganics, dioxin,	Air, Potable water, nonpotable water, solid and chemical materials	460182
State of Washington, Department of Ecology	Organics, inorganics, dioxin, PFAS	Air, Potable water, Nonpotable water, solid and chemical materials	C457
State of West Virginia, Department of Health and Human Resources	Organics, inorganics	Potable water	9906C
State of West Virginia, Department of Environmental Protection	Organics, inorganics, dioxin, , PFAS	Nonpotable water, solid and chemical materials, hazardous waste	055
State of Wisconsin, Department of Natural Resources	Organics, inorganics, dioxin	Nonpotable water, solid and hazardous waste	998035060
State of Wyoming and all Tribal Public Water Systems in Region 8	Organics, inorganics, dioxin,	Potable water	8TMS-L
[4]State of Wyoming – UST Branch	Organics, metals, UST analysis	Nonpotable water, solids and hazardous waste	None
State of Vermont, Department of Health	Organics, inorganics, dioxin, , PFAS	Potable water	VT 36037
[3] Commonwealth of Virginia, VELAP	Organics, inorganics, dioxin,	Air, Potable water, nonpotable water, solid and chemical materials	460182
State of Washington, Department of Ecology	Organics, inorganics, dioxin, PFAS	Air, Potable water, Nonpotable water, solid and chemical materials	C457
State of West Virginia, Department of Health and Human Resources	Organics, inorganics	Potable water	9906C
State of West Virginia, Department of Environmental Protection	Organics, inorganics, dioxin, , PFAS	Nonpotable water, solid and chemical materials, hazardous waste	055
State of Wisconsin, Department of Natural Resources	Organics, inorganics, dioxin	Nonpotable water, solid and hazardous waste	998035060
State of Wyoming and all Tribal Public Water Systems in Region 8	Organics, inorganics, dioxin,	Potable water	8TMS-L
[4]State of Wyoming – UST Branch	Organics, metals, UST analysis	Nonpotable water, solids and hazardous waste	None

[1] NELAP Primary AB: Air and Emissions
[2] NELAP Primary AB: Potable Water, Nonpotable water, solid and chemical materials
[3] NELAP Secondary AB
[4] Approval for UST work by A2LA
[5] NELAP Primary AB: Biological Tissue

NOTE: This list accurately reflects the certifications, accreditations, registrations, and contracts held at the time of publication and is subject to change. Check with your account manager on the status of any certification needed for a specific project. Our current scopes of accreditation can be viewed at http://www.eurofinsus.com/environment-testing/laboratories/eurofins-lancaster-laboratories-environmental/resources/certifications/ .

Eurofins Lancaster Laboratories Environmental



Job Title:	Vice President, Eurofins Lancaster Laboratories Environmental	
Reports To:	President	
Position Location:	Lancaster, PA	
Day/Shift:	Varies	
FLSA Status:	Exempt	(Exempt/Non-Exempt)

Position Summary:	Leading departments in accordance with vision, values, and strategic goals of company; overseeing and facilitating efficient operations and systems, sound business practices, consistent client service, and motivated staff

Essential Duties and Responsibilities:

- Demonstrates and promotes the company vision
- Regular attendance and punctuality
- Does everything reasonably possible to meet the annual budget
- Ensure that the quality policy/program is understood, implemented, and maintained at all levels of the organization; identify, prevent, or correct any departures from the quality system
- Oversee operations in accordance with policies set forth in the Key Group Documents
- Develop efficient and effective operations and systems that support the strategic goals of the company
- Utilize management operating system to track key performance indicators and drive continuous improvement
- Coach and develop individual and team to maximize performance
- Interact with clients as necessary to maintain and grow the business
- Build strategic relationships within the organization to achieve company goals
- Identify and evaluate issues and explore continuous improvement initiatives
- Perform administrative functions as needed, e.g., attend meetings and share information; prepare reports, job plans, and performance reviews
- Stay technologically current in field; attend seminars and/or training courses; publicize technical expertise through writing an article, presenting a poster session, or speaking at a seminar or technical meeting
- Perform other duties as requested by President
- Perform all functions in support of and in compliance with all state and federal employment regulations
- Conducts all activities in a safe and efficient manner
- Performs other duties as assigned

Basic Minimum Qualifications (BMQ):	To perform this job successfully, the individual must be able to perform each essential duty satisfactorily. The requirements below are representative of the knowledge, skill or ability required. (List three to five key quantifiable skills or position requirements that the candidate must have to be considered for this position.)
Education/Experience (BMQ):	At least fifteen years related experience at ELLE or equivalent experience elsewhere
Additional preferences:	Bachelor's degree in appropriate field or equivalent experience; graduate courses are recommended; experience in a variety of technical areas
Certificates and/or Licenses (BMQ):	N/A
Additional preferences:	
Supervisory Responsibility:	Responsible for the direct management of Directors, Managers, and other leadership employees
Ability and/or Skills (BMQ):	Demonstrated expertise in laboratory operations and leadership skills; communicate effectively and to relate well to people in direct communication, as well as formal presentation; manage the work of other personnel; understand and promote company policy; excellent business sense; motivation to excel, both in technical matters and in management; professional appearance and conduct; consciousness of and a positive attitude toward quality, service, and safety procedures; sound reasoning and decision making; technical expertise; organization and problem-solving skills; good judgement, versatility and flexibility in dealing with people; ability to coordinate multiple priorities; foresight and planning; ability to synthesize and retain information; computer skills; ability to communicate effectively in written and oral forms; leadership skills
Additional preferences:	
Other Factors:	N/A

Disclaimer:

This position description is written as a guideline to inform employees of what is generally expected of them at each job level. The description is not intended to be all encompassing or limiting in any manner; rather, it is hoped it will add understanding and better reflect the work performed at all levels of employment. Duties and responsibilities other than those listed may be included as needed within the work group or the company as a whole.

Job Title:	Operations Director, Eurofins Lancaster Laboratories Environmental	
Reports To:	President	
Position Location:	Lancaster, PA	
Day/Shift:	Varies	
FLSA Status:	Exempt	(Exempt/Non-Exempt)

Position Summary:	Leading departments in accordance with vision, values, and strategic goals of company; overseeing and facilitating efficient operations and systems, sound business practices, consistent client service, and motivated staff

Essential Duties and Responsibilities:

- Applies GMP/GLP in all areas of responsibility, as appropriate
- Demonstrates and promotes the company vision
- Regular attendance and punctuality
- Does everything reasonably possible to meet the annual budget
- Ensure that the quality policy/program is understood, implemented, and maintained at all levels of the organization; identify, prevent, or correct any departures from the quality system
- Develop efficient and effective operations and systems that support the strategic goals of the company
- Utilize management operating system to track key performance indicators and drive continuous improvement
- Coach and develop individual and team to maximize performance
- Interact with clients as necessary to maintain and grow the business
- Build strategic relationships within the organization to achieve company goals
- Identify and evaluate issues and explore continuous improvement initiatives
- Perform administrative functions as needed, e.g., attend meetings and share information; prepare reports, job plans, and performance reviews
- Stay technologically current in field; attend seminars and/or training courses; publicize technical expertise through writing an article, presenting a poster session, or speaking at a seminar or technical meeting
- Perform other duties as requested by President or designee
- Perform all functions in support of and in compliance with all state and federal employment regulations
- Conducts all activities in a safe and efficient manner
- Performs other duties as assigned

Basic Minimum Qualifications (BMQ):	To perform this job successfully, the individual must be able to perform each essential duty satisfactorily. The requirements below are representative of the knowledge, skill or ability required. (List three to five key quantifiable skills or position requirements that the candidate must have to be considered for this position.)
Education/Experience (BMQ):	At least five years related experience at ELLE or equivalent experience elsewhere
Additional preferences:	Bachelor's degree in appropriate field or equivalent experience; graduate courses are recommended; experience in a variety of technical areas
Certificates and/or Licenses (BMQ):	N/A
Additional preferences:	
Supervisory Responsibility:	Responsible for the direct management of Managers and other leadership employees
Ability and/or Skills (BMQ):	Demonstrated expertise in laboratory operations and leadership skills; communicate effectively and to relate well to people in direct communication, as well as formal presentation; manage the work of other personnel; understand and promote company policy; excellent business sense; motivation to excel, both in technical matters and in management; professional appearance and conduct; consciousness of and a positive attitude toward quality, service, and safety procedures; sound reasoning and decision making; technical expertise; organization and problem-solving skills; good judgement, versatility and flexibility in dealing with people; ability to coordinate multiple priorities; foresight and planning; ability to synthesize and retain information; computer skills; ability to communicate effectively in written and oral forms; leadership skills
Additional preferences:	
Other Factors:	N/A

Disclaimer:

This position description is written as a guideline to inform employees of what is generally expected of them at each job level. The description is not intended to be all encompassing or limiting in any manner; rather, it is hoped it will add understanding and better reflect the work performed at all levels of employment. Duties and responsibilities other than those listed may be included as needed within the work group or the company as a whole.

Job Title:	Quality Assurance Director	
Reports To:	President and/or designee	
Position Location:	Lancaster, PA	
Day/Shift:	Varies	
FLSA Status:	Exempt	(Exempt/Non-Exempt)

Position Summary:

Overseeing all managerial and quality operations of the company; providing leadership and mentoring/coaching to QA staff; participating in short-term and long-term planning and goal setting for the company; facilitating adherence to government regulations; sustaining quality improvement and providing quality policy development; providing sound consultation to laboratories and clients on problems or interpretation of quality/compliance issues; keeping abreast of evolving regulatory and industry quality assurance requirements

Essential Duties and Responsibilities:

- Applies GMP/GLP in all areas of responsibility, as appropriate
- Demonstrates and promotes the company vision
- Regular attendance and punctuality
- Ensure that the quality policy program is understood, implemented, and maintained at all levels of the organization; identify, prevent, or correct any departures from the quality system
- Ensure that corrective action is appropriate; ensure that follow-up requirements are completed
- Encourage employee participation in process improvement initiatives
- Interview and make recommendations for new hires; train and develop staff; maintain job plans; handle personnel issues
- Handle agency audits, client audits, visits, and phone calls; prepare letters to clients; attendance at some local and national industry meetings
- Keep abreast of regulatory climate; assist technical operations with interpretation; advise on adjustment of lab policy as appropriate
- Perform all functions in support of and in compliance with all state and federal employment regulations
- Coach/mentor other members of the quality team
- Oversee regulatory training program; assist with, and present departmental and corporate training at a frequency to meet regulatory expectations and ensure compliance
- Work with operations and clients to drive challenging/complex resolutions and/or negotiate appropriate position or compromise; offer compliance options
- Identify and drive system improvements; diagnose complex issues
- Conducts all activities in a safe and efficient manner
- Performs other duties as assigned

Basic Minimum Qualifications (BMQ):	To perform this job successfully, the individual must be able to perform each essential duty satisfactorily. The requirements below are representative of the knowledge, skill or ability required. (List three to five key quantifiable skills or position requirements that the candidate must have to be considered for this position.)
Education/Experience (BMQ):	At least six years' experience with QA
Additional preferences:	Bachelor's degree in chemistry or biology
Certificates and/or Licenses (BMQ):	N/A
Additional preferences:	
Supervisory Responsibility:	Provide leadership and direct management of any Group Leaders (if applicable) and other non-management employees in the department
Ability and/or Skills (BMQ):	Exhibit self-confidence and leadership; expertise in laboratory quality operations and regulatory environment; sound reasoning, decision making and problem-solving skills; good judgment and flexibility in dealing with others; ability to coordinate multiple priorities; communicate effectively in written and oral form; ability to manage the work of others and see projects through to completion; translate government regulations into laboratory policy/processes; utilize planning, organization and work management tools; ability to manage stress in self and others; dedication to quality, ethics, and customer service
Additional preferences:	
Other Factors:	N/A

Disclaimer:

This position description is written as a guideline to inform employees of what is generally expected of them at each job level. The description is not intended to be all encompassing or limiting in any manner; rather, it is hoped it will add understanding and better reflect the work performed at all levels of employment. Duties and responsibilities other than those listed may be included as needed within the work group or the company as a whole.

Job Title:	Technical Department Manager	
Reports To:	Director or designee	
Position Location:	Lancaster, PA	
Day/Shift:	Varies	
FLSA Status:	Exempt	(Exempt/Non-Exempt)

Position Summary:	Performing a variety of technical and administrative tasks to develop, evaluate, and supervise staff; planning and monitoring work flow; designing, implementing, and utilizing departmental operations systems; promoting safety; remaining current on technical developments; communicating with clients; maintaining a strong commitment to quality

Essential Duties and Responsibilities:

- Applies GMP/GLP in all areas of responsibility, as appropriate
- Demonstrates and promotes the company vision
- Regular attendance and punctuality
- Ensure that the quality policy program is understood, implemented, and maintained at all levels of the organization; identify, prevent, or correct any departures from the quality system
- Utilize the MOS to track key performance indicators and drive continuous improvement
- Produce motivated and satisfied employees
- Encourage employee participation in process improvement initiatives
- Oversee inventory, maintenance, and repair of departmental machines, tools, equipment, materials, and/or products
- Manage scheduling of personnel; evaluate personnel performance
- Participate in interview process, make recommendations for new hires; train and develop staff
- Review, prepare, and approve methods, data, and SOPs
- Communicate with clients on technical matters; meet with clients to discuss operations and conduct tours and audits
- Maintain client confidentiality
- Investigate and solve laboratory problems
- Perform all functions in support of and in compliance with all state and federal employment regulations
- Conducts all activities in a safe and efficient manner
- Performs other duties as assigned

Basic Minimum Qualifications (BMQ):	To perform this job successfully, the individual must be able to perform each essential duty satisfactorily. The requirements below are representative of the knowledge, skill or ability required. (List three to five key quantifiable skills or position requirements that the candidate must have to be considered for this position.)
Education/Experience (BMQ):	At least five years related experience
Additional preferences:	Bachelor's degree in chemistry or related science; supervisory experience preferred
Certificates and/or Licenses (BMQ):	N/A
Additional preferences:	
Supervisory Responsibility:	Responsible for the direct management of the departmental Group Leaders
Ability and/or Skills (BMQ):	Knowledge of departmental techniques; manage personnel, resolve conflicts, and correct poor performance; attention to detail; tolerance for stress; integrity; computer skills; communicate effectively (verbally and written); perform multiple tasks simultaneously; logical thought; make decisions for self and others; independently develop solutions to complex problems
Additional preferences:	
Other Factors:	N/A

Disclaimer:

This position description is written as a guideline to inform employees of what is generally expected of them at each job level. The description is not intended to be all encompassing or limiting in any manner; rather, it is hoped it will add understanding and better reflect the work performed at all levels of employment. Duties and responsibilities other than those listed may be included as needed within the work group or the company as a whole.

Job Title:	Support Department Manager	
Reports To:	Director	
Position Location:	Lancaster, PA	
Day/Shift:	Varies	
FLSA Status:	Exempt	(Exempt/Non-Exempt)

Position Summary:	Overseeing all managerial operations of the department, managing the department in an efficient and financially sound manner; providing leadership and coaching to assigned individuals; participating in long- and short-term planning and goal-setting for the group; coordinating functions and responsibilities of assigned department members to provide consistent service; coordinating internal efforts between departments; relaying corporate information appropriately

Essential Duties and Responsibilities:

- Applies GMP/GLP in all areas of responsibility, as appropriate
- Demonstrates and promotes the company vision
- Regular attendance and punctuality
- Ensure that the quality policy program is understood, implemented, and maintained at all levels of the organization; identify, prevent, or correct any departures from the quality system
- Administrative including human resource interviews, job plans, performance reviews, personnel issues, group meetings, and sharing of corporate information
- Training of and delegation to members of the department to provide consistent service to internal and external clients
- Work with other departments to set goals, develop pricing strategies, manage workload, and resolve problems
- Create, implement, and oversee budgets and goals for the department in the context of corporate philosophy
- Evaluate, plan for, and provide adequate staffing, equipment, consumables, etc., for the department to function in an effective manner
- Communicate verbally, in writing, and face-to-face with clients to discuss and resolve problems, build strong relationships, and increase sales
- Perform all functions in support of and in compliance with all state and federal employment regulations
- Administrative activities (photocopying, word processing, paperwork delivery, etc.)
- Assist with financial and purchase order issues as needed
- Help coordinate interdepartmental cross-training and/or assistance as needed to balance workload
- Conducts all activities in a safe and efficient manner
- Performs other duties as assigned

Basic Minimum Qualifications (BMQ):	To perform this job successfully, the individual must be able to perform each essential duty satisfactorily. The requirements below are representative of the knowledge, skill or ability required. (List three to five key quantifiable skills or position requirements that the candidate must have to be considered for this position.)
Education/Experience (BMQ):	Five years of related experience at LL or demonstrated equivalent experience elsewhere; computer skills in a variety of software; supervisory experience
Additional preferences:	Bachelor's degree in science (chemistry preferred)
Certificates and/or Licenses (BMQ):	N/A
Additional preferences:	
Supervisory Responsibility:	Responsible for the direct management of the Group Leaders of the department
Ability and/or Skills (BMQ):	Self confidence and leadership, ability to reason, make sound decisions, and delegate; empathy and sensitivity towards others; motivation to excel and inspire excellence in others; ability to develop strong relationships with clients resulting in client satisfaction and additional sales; ability to manage the work of others and see projects through to completion; strong communication including verbal, writing, and presentation skills; ability to communicate effectively and relate well to people; mental and emotional stability and maturity, ability to handle personal stress and diffuse stress in others; strong organizational and financial skills, ability to handle multiple priorities; good judgement and tact recognizing and solving problems; recognized as understanding, interpreting, and following company policy; sets example for others; dedication to quality, ethics, and customer service; pride in appearance, conduct, and company; sound persuasion and negotiation abilities; ability to view situations from a variety of perspectives; foresight and planning ability
Additional preferences:	
Other Factors:	N/A

Disclaimer:

This position description is written as a guideline to inform employees of what is generally expected of them at each job level. The description is not intended to be all encompassing or limiting in any manner; rather, it is hoped it will add understanding and better reflect the work performed at all levels of employment. Duties and responsibilities other than those listed may be included as needed within the work group or the company as a whole.

Document Number	Document Name	Document Responsible[1]
1.01 Document Control		
Standard Operating Procedure		
G-DC-SOP12233	Data and Record Storage, Security, Retention, Archival, and Disposal	5_EUUSLA_Env Quality Assurance_Director
G-DC-SOP16131	Document Control	5_EUUSLA_Env Quality Assurance_Director
G-DC-SOP16196	Position Qualification Descriptions (PQDs) and Essential Job Functions (EJFs)	5_EUUSLA_Env Quality Assurance_Director
G-DC-SOP16244	Writing and Reviewing ELLE Policies and Operating Procedures	5_EUUSLA_Env Quality Assurance_Director
1.02 EHS		
Policies		
G-EHS-QP12356	Chemical Hygiene Plan	5_EUUSLA_Env Quality Assurance_Director
G-EHS-QP14735	Preparedness, Prevention, and Contingency Plan	5_EUUSLA_Env Quality Assurance_Director
	Standard Operating Procedure	
G-EHS-SOP14741	Emergency Evacuation Plan	5_EUUSLA_Env Quality Assurance_Director
G-EHS-SOP13101	Incidence Response Plan	5_EUUSLA_Env Quality Assurance_Director
G-EHS-SOP14740	Lockout/Tagout	5_EUUSLA_Env Quality Assurance_Director
G-EHS-SOP22000	Management of Hazardous Wastes in the Laboratory	5_EUUSLA_Env Quality Assurance_Director
G-EHS-SOP14739	Reporting Work Related Incidents	5_EUUSLA_Env Quality Assurance_Director
G-EHS-SOP14738	Safety Glasses	5_EUUSLA_Env Quality Assurance_Director
1.03 Facilities		
Standard Operating Procedure		
G-FAC-SOP12733	Building Security	5_EUUSLA_Env Quality Assurance_Director
G-FAC-SOP14744	Facility Change Control Procedure	5_EUUSLA_Env Quality Assurance_Director
G-FAC-SOP15553	Facility Operation Manual	5_EUUSLA_Env Quality Assurance_Director
G-FAC-SOP16117	Insect and Rodent Control	5_EUUSLA_Env Quality Assurance_Director
G-FAC-SOP16118	Maintenance Connection Service Requestor Guidelines	5_EUUSLA_Env Quality Assurance_Director
1.04 Lists		
List		
G-LI9946	Document List - Sorted by Chapter	5_EUUSLA_Env Quality Assurance_All
G-LI9949	List of documents by Expiration Date	5_EUUSLA_Env Quality Assurance_All
G-LI9947	List of Documents Under Revision by Chapter	5_EUUSLA_Env Quality Assurance_All
G-LI9950	Training Lists	5_EUUSLA_Env Quality Assurance_All
G-LI9948	Version List - Sorted by Chapter	5_EUUSLA_Env Quality Assurance_All
1.05 Templates		
Work Instruction		
G-TEMP-WI24324	Change Plan Template	5_EUUSLA_Env Quality Assurance_Director
G-TEMP-WI12535	Level 2 Standard Operating Procedure Template	5_EUUSLA_Env Quality Assurance_All
G-TEMP-WI12532	Level 3 Template for Work Instruction for Analysis	5_EUUSLA_Env Quality Assurance_All

G-TEMP-WI12548	Template for Revision Log for Existing SOPs	5_EUUSLA_Env Quality Assurance_All
1.06 External Documents		
2.01 Forms		
2.02 Training Forms		
3 Quality		
Policies		
QA-QP11177	Laboratory Ethics and Data Integrity Policy	5_EUUSLA_Env Quality Assurance_All
QA-QP11176	Manual Integration for ELLE	5_EUUSLA_Env Quality Assurance_All
	Quality Manual	
QA-QM11872	Environmental Quality Policy Manual	5_EUUSLA_Env Quality Assurance_All
Standard Operating Procedure		
QA-SOP11880	Balance, Syringe, Pipette, and Labware Verification	5_EUUSLA_Env Quality Assurance_All
QA-SOP11195	Change Control Procedures for ELLE	5_EUUSLA_Env Quality Assurance_All
QA-SOP11882	Chromatography Integration and Documentation	5_EUUSLA_Env Quality Assurance_All
QA-SOP11194	Compliance with Environmental GLP Regulations	5_EUUSLA_Env Quality Assurance_All
QA-SOP11197	Conflict of Interest Plan	5_EUUSLA_Env Quality Assurance_All
QA-SOP11186	Data Entry, Verification and Reporting	5_EUUSLA_Env Quality Assurance_All
QA-SOP11178	Demonstrations of Capability	5_EUUSLA_Env Quality Assurance_All
QA-SOP11892	Determining Method Detection Limits and Limits of Quantitation	5_EUUSLA_Env Quality Assurance_All
QA-SOP16134	Employee Training Program	5_EUUSLA_Env Quality Assurance_Director
QA-SOP11893	Environmental Hazardous Sample Communication Procedure	5_EUUSLA_Env Quality Assurance_All
QA-SOP11895	Environmental Project Cycle	5_EUUSLA_Env Quality Assurance_All
QA-SOP11896	Establishing Control Limits	5_EUUSLA_Env Quality Assurance_All
QA-SOP11193	Guidelines for Analytical Decision Making in Environmental Testing	5_EUUSLA_Env Quality Assurance_All
QA-SOP11180	Guidelines for Writing Technical Reports	5_EUUSLA_Env Quality Assurance_All
QA-SOP11900	HP-UX Target 3.5 Data System Accounts and Electronic Signature Security	5_EUUSLA_Env Quality Assurance_All
QA-SOP11901	Instrument Maintenance and Calibration	5_EUUSLA_Env Quality Assurance_All
QA-SOP11912	Investigation and Corrective Action for Client Complaints, Noncompliant Data, and Laboratory Problems	5_EUUSLA_Env Quality Assurance_All
QA-SOP11913	Laboratory Notebooks, Logbooks, and Documentation	5_EUUSLA_Env Quality Assurance_All
QA-SOP11184	Laboratory Sample Analysis Record (LSAR) Documentation	5_EUUSLA_Env Quality Assurance_All
QA-SOP11196	Laboratory/Quality Systems Procedures Summary	5_EUUSLA_Env Quality Assurance_All
QA-SOP11914	Legal Chain-of-Custody Documentation	5_EUUSLA_Env Quality Assurance_All
QA-SOP10401	Missed Holding Time Reports	5_EUUSLA_Env Quality Assurance_All
QA-SOP11919	Monitoring of the Volatile Organics Analysis (VOA) Storage Areas for Contamination	5_EUUSLA_Env Quality Assurance_All

QA-SOP11191	Monitoring Temperatures in Refrigerators, Freezers, Incubators, and Ovens Using the ETM	5_EUUSLA_Env Quality Assurance_All
QA-SOP11190	Obtaining a Representative Environmental Solid Sample Aliquot	5_EUUSLA_Env Quality Assurance_All
QA-SOP11886	Processing Regulatory Compliance (i.e. SDWA, NPDES) Samples	5_EUUSLA_Env Quality Assurance_All
QA-SOP11192	Procurement of Environmental Laboratory Supplies	5_EUUSLA_Env Quality Assurance_All
QA-SOP11185	Proficiency Test Samples	5_EUUSLA_Env Quality Assurance_All
QA-SOP11915	Quarantine Soils Procedures	5_EUUSLA_Env Quality Assurance_All
QA-SOP11188	Reagents and Standards	
QA-SOP11182	Sample Requisition	5_EUUSLA_Env Quality Assurance_All
QA-SOP11181	Subcontracting Analytical Testing	5_EUUSLA_Env Quality Assurance_All
QA-SOP11183	Thermometer Use and Calibration	5_EUUSLA_Env Quality Assurance_All
QA-SOP11916	Use and Maintenance of Reagent Water Supply	5_EUUSLA_Env Quality Assurance_All
QA-SOP11189	Validation and Authorization of Analytical Methods	5_EUUSLA_Env Quality Assurance_All
3.01 Environmental Quality Assurance		
Work Instruction		
Q-EQA-WI12060	Director	5_EUUSLA_Env Quality Assurance_Director
Q-EQA-WI6822	ELLE QA Reports to Management	5_EUUSLA_Env Quality Assurance_All
Q-EQA-WI6818	Environmental Quality Assurance Functions for GLP Compliance	5_EUUSLA_Env Quality Assurance_All
Q-EQA-WI6825	Environmental Quality Assurance Review of Client Project and Bid Documents	5_EUUSLA_Env Quality Assurance_All
Q-EQA-WI6815	ETM System Probe Calibration	5_EUUSLA_Env Quality Assurance_All
Q-EQA-WI6824	Hosting of Environmental Client and Agency Audits	5_EUUSLA_Env Quality Assurance_All
Q-EQA-WI6820	Maintenance of Environmental Certifications and Accreditations	5_EUUSLA_Env Quality Assurance_All
Q-EQA-WI6819	Performing Electronic Data Audits using Mint Miner Software	5_EUUSLA_Env Quality Assurance_All
Q-EQA-WI7547	Performing Environmental Quality Assurance Audits	5_EUUSLA_Env Quality Assurance_All
Q-EQA-WI7671	Principal Specialist	5_EUUSLA_Env Quality Assurance_Director
Q-EQA-WI6816	Proficiency Test and Double Blind Samples	5_EUUSLA_Env Quality Assurance_All
Q-EQA-WI6823	QA Approval of Environmental Analytical Procedures and Standard Operating Procedures	5_EUUSLA_Env Quality Assurance_All
Q-EQA-WI6826	QA Processing for Bottle Lot and Preservative Checks	5_EUUSLA_Env Quality Assurance_All
Q-EQA-WI6817	Quality Assurance Review of End-of-Month QC Reports	5_EUUSLA_Env Quality Assurance_All
Q-EQA-WI7670	Senior Specialist	5_EUUSLA_Env Quality Assurance_Director
Q-EQA-WI14178	Specialist (Support)	5_EUUSLA_Env Quality Assurance_Director
4.06 IT/Software Development		
Standard Operating Procedure		
R-SD-SOP20940	Computer Backup, Recovery, and Archive	5_EUUSLA_Env Quality Assurance_Director

R-SD-SOP16221	E-Mail System	5_EUUSLA_Env Quality Assurance_Director
R-SD-SOP16227	Utilizing the Services and Support of the NSC Service Desk	5_EUUSLA_Env Quality Assurance_Director
4.07 Transportation		
Work Instruction		
R-TR-WI11282	Administrator	5_EUUSLA_Transportation_Manager
R-TR-WI11284	Director, Environmental Support Services	5_EUUSLA_Transportation_Manager
R-TR-WI11285	Manager	5_EUUSLA_Transportation_Manager
R-TR-WI11289	Sample Administrator	5_EUUSLA_Transportation_Manager
R-TR-WI11288	Sample Pick-Up, Transportation, and Delivery	5_EUUSLA_Transportation_Manager
R-TR-WI11290	Specialist	5_EUUSLA_Transportation_Manager
R-TR-WI11294	Transportation Summary SOP	5_EUUSLA_Transportation_Manager
R-TR-WI11297	What to Do in Case of Vehicular Accident or Breakdown	5_EUUSLA_Transportation_Manager
5.01 Sample Bottles		
Work Instruction		
S-BOT-WI10641	Bottle Preparation	5_EUUSLA_Sample Bottles_Manager
S-BOT-WI10655	Director, Environmental Support Services	5_EUUSLA_Sample Bottles_Manager
S-BOT-WI10657	Manager	5_EUUSLA_Sample Bottles_Manager
S-BOT-WI10642	Packing Bottle Orders	5_EUUSLA_Sample Bottles_Manager
S-BOT-WI10643	Preparation of Acid Dilutions	5_EUUSLA_Sample Bottles_Manager
S-BOT-WI10644	Preparation of Trip Blanks	5_EUUSLA_Sample Bottles_Manager
S-BOT-WI10645	Processing Bottle Orders	5_EUUSLA_Sample Bottles_Manager
S-BOT-WI10660	Senior Administrator	5_EUUSLA_Sample Bottles_Manager
S-BOT-WI10661	Specialist	5_EUUSLA_Sample Bottles_Manager
5.02 Client Services		
Work Instruction		
S-CS-WI12039	Auditing Client Paperwork	5_EUUSLA_Client Services_Manager
S-CS-WI10251	Client Concern and ISPD Code Entry	5_EUUSLA_Client Services_Manager
S-CS-WI11140	Client/Prospects Visits	5_EUUSLA_Client Services_Manager
S-CS-WI11141	Creating Bottle Orders	5_EUUSLA_Client Services_Manager
S-CS-WI11142	Creating Project Information Lists	5_EUUSLA_Client Services_Manager
S-CS-WI11143	Daily or Weekly DEP Reporting	5_EUUSLA_Client Services_Manager
S-CS-WI11144	Director, Environmental Services	5_EUUSLA_Client Services_Manager
S-CS-WI11149	Group Leader	5_EUUSLA_Client Services_Manager
S-CS-WI11151	Manager	5_EUUSLA_Client Services_Manager

S-CS-WI11152	Monthly DEP Reporting	5_EUUSLA_Client Services_Manager
S-CS-WI11155	Phone Log and Email Documentation	5_EUUSLA_Client Services_Manager
S-CS-WI11157	Principal Specialist (Client Services)	5_EUUSLA_Client Services_Manager
S-CS-WI11159	Sample Set-Up Form Creation Guide	5_EUUSLA_Client Services_Manager
S-CS-WI11160	Scheduling and Pricing of Rush Samples	5_EUUSLA_Client Services_Manager
S-CS-WI11161	Senior Administrator (Client Services)	5_EUUSLA_Client Services_Manager
S-CS-WI11162	Senior Specialist (Client Services)	5_EUUSLA_Client Services_Manager
S-CS-WI11163	Specialist (Client Services)	5_EUUSLA_Client Services_Manager
S-CS-WI11166	Tracking and Communicating Rush Results	5_EUUSLA_Client Services_Manager
5.03 Sample Administration		
Work Instruction		
S-SA-WI10713	Administrator (Unpacking)	5_EUUSLA_Sample
S-SA-WI10714	Assigning Sample Delivery Group Numbers and Five-Digit Sample Codes to Sample Groups	5_EUUSLA_Sample Administration_Manager
S-SA-WI10716	Director, Environmental Support Services	5_EUUSLA_Sample
S-SA-WI10717	Entry of Environmental Samples Requiring Subcontracting	5_EUUSLA_Sample
S-SA-WI10723	Environmental Sample Entry	5_EUUSLA_Sample Administration_Manager
S-SA-WI10725	Environmental Sample Receipt and Unpacking	5_EUUSLA_Sample Administration_Manager
S-SA-WI10726	Filing of Sample Information	5_EUUSLA_Sample Administration_Manager
S-SA-WI10727	Group Leader	5_EUUSLA_Sample Administration_Manager
S-SA-WI10730	Manager	5_EUUSLA_Sample Administration_Manager
S-SA-WI12043	Sample Receipt at the Sample Receipt Desk	5_EUUSLA_Sample Administration_Manager
S-SA-WI10736	Senior Administrator (Sample Administration)	5_EUUSLA_Sample Administration_Manager
S-SA-WI10737	Senior Administrator (Unpacking)	5_EUUSLA_Sample Administration_Manager
S-SA-WI10738	Senior Specialist (Sample Administration)	5_EUUSLA_Sample Administration_Manager
S-SA-WI10741	Specialist (Sample Administration)	5_EUUSLA_Sample Administration_Manager
S-SA-WI10742	Specialist (Unpacking)	5_EUUSLA_Sample Administration_Manager
S-SA-WI10743	Taking the Temperature of Environmental Samples Upon Arrival at the Lab	5_EUUSLA_Sample Administration_Manager
5.04 Sample Support		
Work Instruction		
S-SS-WI10697	% Moisture Calculation (Gravimetric) by SM 2540 G-1997	5_EUUSLA_Sample Support_Manager
S-SS-WI10662	Accounts to be held after Client Hold Discard	5_EUUSLA_Sample Support_Manager
S-SS-WI10666	ASRS Emergency Failure Procedure	5_EUUSLA_Sample Support_Manager
S-SS-WI10668	Automated Storage and Retrieval System (ASRS) Lockout/Tagout Procedure	5_EUUSLA_Sample Support_Manager
S-SS-WI12042	Automated Storage, Retrieval, and Discarding of Samples	5_EUUSLA_Sample Support_Manager

S-SS-WI10673	Chemist	5_EUUSLA_Sample Support_Manager
S-SS-WI10678	Director, Environmental Support Services	5_EUUSLA_Sample Support_Manager
S-SS-WI10682	GC/MS - Bulk Solids Matrix Sample Preparation	5_EUUSLA_Sample Support_Manager
S-SS-WI10683	Glassware Cleaning	5_EUUSLA_Sample Support_Manager
S-SS-WI10684	Group Leader	5_EUUSLA_Sample Support_Manager
S-SS-WI10685	Hardware Procedures for ASRS	5_EUUSLA_Sample Support_Manager
S-SS-WI10686	Homogenization, Sample Splitting, and Subsampling of Solid Waste Samples from Environmental Sources	5_EUUSLA_Sample Support_Manager
S-SS-WI10690	Instructions for Collecting Data on the LLENS System	5_EUUSLA_Sample Support_Manager
S-SS-WI10692	Laboratory Assistant	5_EUUSLA_Sample Support_Manager
S-SS-WI10693	Laboratory Technician	5_EUUSLA_Sample Support_Manager
S-SS-WI10695	Liquid Sample Preservation, Sample Splitting, and Turbidity for metals by EPA Methods 200.7 and 200.8	5_EUUSLA_Sample Support_Manager
S-SS-WI10696	Maintenance of Dessicators	5_EUUSLA_Sample Support_Manager
S-SS-WI10699	Non-Automated Storage, Retrieval, and Discarding of Samples	5_EUUSLA_Sample Support_Manager
S-SS-WI10702	Outlier Quality Control Data	5_EUUSLA_Sample Support_Manager
S-SS-WI10705	Percent Solids by SM 2540G - 1997	5_EUUSLA_Sample Support_Manager
S-SS-WI11168	Pipette Dispenser Calibration Procedure	5_EUUSLA_Sample Support_Manager
S-SS-WI11169	Preparation of Soil and Solid Samples for GC Volatile Analyses	5_EUUSLA_Sample Support_Manager
S-SS-WI11170	Preparation of Soils for Volatile Analysis by EPA SW-846 Method 5035 and Method 5035A	5_EUUSLA_Sample Support_Manager
S-SS-WI11242	Preparation of Vials for Field Preservation of Soils for Volatile Analysis	5_EUUSLA_Sample Support_Manager
S-SS-WI11259	Prescreening Water and Soil Samples for Volatile Organic Compounds	5_EUUSLA_Sample Support_Manager
S-SS-WI11260	Preservation and Bottles Room Preservative Traceability	5_EUUSLA_Sample Support_Manager
S-SS-WI11268	Sample Preparation of Solid Samples Including Sieving and Milling for Extraction and Analysis by SW-846 8330B	5_EUUSLA_Sample Support_Manager
S-SS-WI11220	Sample Support Ovens	5_EUUSLA_Sample Support_Manager
S-SS-WI11270	Senior Technician	5_EUUSLA_Sample Support_Manager
S-SS-WI11225	Subsampling for Subcontracted Analyses	5_EUUSLA_Sample Support_Manager
S-SS-WI11272	Water Content (Moisture) by ASTM D 2216	5_EUUSLA_Sample Support_Manager
5.05 Data Deliverables		
Work Instruction		
S-DD-WI10752	Administrator (Data Package Archivist)	5_EUUSLA_Data Deliverables_Manager
S-DD-WI10753	Administrator (Data Package Assembly)	5_EUUSLA_Data Deliverables_Manager
S-DD-WI10754	Administrator (Data Package Review)	5_EUUSLA_Data Deliverables_Manager
S-DD-WI10755	Archiving Department 4025 Raw Sample Data and Other Miscellaneous Data	5_EUUSLA_Data Deliverables_Manager

S-DD-WI12037	Assembly and Review of Environmental Data Packages	5_EUUSLA_Data Deliverables_Manager
S-DD-WI10804	Director, Environmental Support Services	5_EUUSLA_Data Deliverables_Manager
S-DD-WI10806	Generation and Content Review of GLP Compliant Data Packages	5_EUUSLA_Data Deliverables_Manager
S-DD-WI11121	Group Leader	5_EUUSLA_Data Deliverables_Manager
S-DD-WI11122	Manager	5_EUUSLA_Data Deliverables_Manager
S-DD-WI11123	Overchecking the Electronic Data Deliverable	5_EUUSLA_Data Deliverables_Manager
S-DD-WI11124	Preparation of Data Packages on CD ROM	5_EUUSLA_Data Deliverables_Manager
S-DD-WI11125	Processing and Sending Data Packages	5_EUUSLA_Data Deliverables_Manager
S-DD-WI12068	Senior Administrator (Data Package Assembly)	5_EUUSLA_Data Deliverables_Manager
S-DD-WI11126	Senior Administrator (Data Package Review)	5_EUUSLA_Data Deliverables_Manager
S-DD-WI11127	Senior Specialist (Data Package Assembly)	5_EUUSLA_Data Deliverables_Manager
S-DD-WI11128	Senior Specialist (Data Packages)	5_EUUSLA_Data Deliverables_Manager
S-DD-WI11129	Senior Specialist (Electronic Data Deliverables)	5_EUUSLA_Data Deliverables_Manager
S-DD-WI11130	Specialist (Data Package Assembly)	5_EUUSLA_Data Deliverables_Manager
S-DD-WI11131	Specialist (Data Package Review)	5_EUUSLA_Data Deliverables_Manager
S-DD-WI11132	Specialist (Electronic Data Deliverables)	5_EUUSLA_Data Deliverables_Manager
5.06 Service Centers		
Work Instruction		
S-SC-WI13221	Preparation of Trip Blanks at BASC and STSC	5_EUUSLA_Sample Bottles_Manager
5.06.01 Bay Area Service Center		
Work Instruction		
S-SC-BA-WI11313	Administrator	5_EUUSLA_Sample Bottles_Manager
S-SC-BA-WI11314	BASC Sample Pick-Up, Transportation, and Delivery	5_EUUSLA_Sample Bottles_Manager
S-SC-BA-WI11323	Group Leader	5_EUUSLA_Sample Bottles_Manager
S-SC-BA-WI12044	Handling Non-Routine Analytical Services for Chevron Texaco	5_EUUSLA_Client Services_Manager
S-SC-BA-WI11324	Laboratory Technician	5_EUUSLA_Sample Bottles_Manager
S-SC-BA-WI11326	Packing Bottle Orders at Bay Area Service Center	5_EUUSLA_Sample Bottles_Manager
S-SC-BA-WI12309	Preparation of Acid Dilutions	5_EUUSLA_Sample Bottles_Manager
S-SC-BA-WI12045	Processing Bay Area Service Center (BASC) Bottle Orders	5_EUUSLA_Sample Bottles_Manager
S-SC-BA-WI11329	Project Manager	5_EUUSLA_Sample Bottles_Manager
S-SC-BA-WI11332	Sample Receipt for the Bay Area Service Center	5_EUUSLA_Sample Bottles_Manager
S-SC-BA-WI11333	Senior Specialist	5_EUUSLA_Sample Bottles_Manager
S-SC-BA-WI11334	Specialist	5_EUUSLA_Sample Bottles_Manager

	External Documents	
S-SC-BA-EX11330	Reagent Log Book for Eurofins Service Centers	5_EUUSLA_Client Services_Manager
5.07 Business Development		
Work Instruction		
S-BD-WI10778	Director	5_EUUSLA_Env Sciences_Manager
S-BD-WI10788	Legal Review Process of Client Supplied Documents	5_EUUSLA_Env Sciences_Manager
S-BD-WI10783	Manager	5_EUUSLA_Env Sciences_Manager
S-BD-WI11156	Preparing Quotations	5_EUUSLA_Env Sciences_Manager
S-BD-WI10785	Principal Specialist (Business Development)	5_EUUSLA_Env Sciences_Manager
S-BD-WI10786	Principal Specialist Account Manager	5_EUUSLA_Env Sciences_Manager
S-BD-WI10787	Proposal Preparation	5_EUUSLA_Env Sciences_Manager
S-BD-WI10791	Senior Specialist (Business Development)	5_EUUSLA_Env Sciences_Manager
S-BD-WI10792	Senior Specialist Account Manager	5_EUUSLA_Env Sciences_Manager
S-BD-WI10793	Specialist (Business Development)	5_EUUSLA_Env Sciences_Manager
S-BD-WI10794	Specialist II (Support)	5_EUUSLA_Env Sciences_Manager
S-BD-WI10795	Vice President, Eurofins Lancaster Laboratories Environmental	5_EUUSLA_Env Sciences_Manager
8.02 Volatiles		
Work Instruction		
T-VOA-WI7865	Associate Chemist	5_EUUSLA_GC/MS Volatiles_Manager
T-VOA-WI7613	Calibrating the 1-µL Standard Delivery Groove on the Archon Model 5100A and O.I 4660 Autosampler Systems	5_EUUSLA_GC/MS Volatiles_Manager
T-VOA-WI7620	Chemist	5_EUUSLA_GC/MS Volatiles_Manager
T-VOA-WI7627	Client Specific - Determination of Client Specific Target Compounds by Gas Chromatography/Mass Spectrometry (GC/MS) in Soils	5_EUUSLA_GC/MS Volatiles_Manager
T-VOA-WI8221	Client Specific - Method AK101 for the Determination of Gasoline Range Organics in Soil Analysis for the State of Alaska	5_EUUSLA_GC/MS Volatiles_Manager
T-VOA-WI7711	Client-specific Determination of Client Specific Target Compounds by Gas Chromatography/Mass Spectrometry (GC/MS) in Waters	5_EUUSLA_GC/MS Volatiles_Manager
T-VOA-WI7706	Determination of GRO by GC in Waters and Wastewaters by Method AK101	5_EUUSLA_GC/MS Volatiles_Manager
T-VOA-WI8614	Determination of Target Compounds by GC/MS using Selective Ion Monitoring (SIM) by Method 8260C	5_EUUSLA_GC/MS Volatiles_Manager
T-VOA-WI8194	Determination of Volatile Target Compounds and Gasoline Range Organics (GRO) by Capillary Column Gas Chromatography/Mass Spectrometry (GC/MS) in Waters and Wastewaters by Method 8260C	5_EUUSLA_GC/MS Volatiles_Manager
T-VOA-WI8225	Determination of Volatile Target Compounds and Gasoline Range Organics (GRO) by GC/MS in Soils and Solids by Method 8260B	5_EUUSLA_GC/MS Volatiles_Manager
T-VOA-WI8236	Determination of Volatile Target compounds and Gasoline Range Organics (GRO) by GC/MS in Soils and Solids by Method 8260C	5_EUUSLA_GC/MS Volatiles_Manager
T-VOA-WI8197	Determination of Volatile Target Compounds and Gasoline Range Organics (GRO) by GCMS in Waters and Wastewaters by Method 8260B	5_EUUSLA_GC/MS Volatiles_Manager
T-VOA-WI8584	Determination of Volatile Target Compounds by Capillary Column Gas Chromatography/Mass Spectrometry (GC/MS) in Waters and Wastewaters by Method 6200B	5_EUUSLA_GC/MS Volatiles_Manager
T-VOA-WI8224	Determination of Volatiles Gasoline Range Organics in Soil and Water - Northwest GX Method	5_EUUSLA_GC/MS Volatiles_Manager
T-VOA-WI7615	Director	5_EUUSLA_GC/MS Volatiles_Manager
T-VOA-WI7619	GC and GC/MS Instrumentation Maintenance	5_EUUSLA_GC/MS Volatiles_Manager
T-VOA-WI8220	GC/MS Determination of 1,2,3-Trichloropropane Using Isotope Dilution and Selective Ion Monitoring (SIM) by EPA Method 524.2, Modified	5_EUUSLA_GC/MS Volatiles_Manager
T-VOA-WI8480	GC/MS Determination of Purgeable Organic Compounds in Water by EPA Method 524.2	5_EUUSLA_GC/MS Volatiles_Manager
T-VOA-WI7629	GC/MS Volatile Standards Traceability	5_EUUSLA_GC/MS Volatiles_Manager
T-VOA-WI8373	GC/MS Volatiles Audit Process	5_EUUSLA_GC/MS Volatiles_Manager

T-VOA-WI7691	Glassware Washing	5_EUUSLA_GC/MS Volatiles_Manager
T-VOA-WI7675	GRO in Soils by GC by SW-846, Methods 8015B, 8015C, 8015D	5_EUUSLA_GC/MS Volatiles_Manager
T-VOA-WI8213	GRO in Soils for South Carolina	5_EUUSLA_GC/MS Volatiles_Manager
T-VOA-WI7727	GRO in Water for South Carolina	5_EUUSLA_GC/MS Volatiles_Manager
T-VOA-WI7690	GRO in Waters and Wastewaters by GC by SW-846, Methods 8015B, 8015C, 8015D	5_EUUSLA_GC/MS Volatiles_Manager
T-VOA-WI7624	Group Leader	5_EUUSLA_GC/MS Volatiles_Manager
T-VOA-WI7614	Laboratory Technician	5_EUUSLA_GC/MS Volatiles_Manager
T-VOA-WI8400	Level II Review of GC/MS Volatiles	5_EUUSLA_GC/MS Volatiles_Manager
T-VOA-WI8338	Low Concentration Waters for Volatile Organic Analysis by EPA SOW 10/92	5_EUUSLA_GC/MS Volatiles_Manager
T-VOA-WI7861	Manager	5_EUUSLA_GC/MS Volatiles_Manager
T-VOA-WI7692	Preparation and Analysis of Cleaning Blanks for GC and GC/MS Volatiles	5_EUUSLA_GC/MS Volatiles_Manager
T-VOA-WI7870	Preparation and Testing of Storage Blanks for GC/MS Volatile Analysis	5_EUUSLA_GC/MS Volatiles_Manager
T-VOA-WI7605	Preparation and Testing of Trip Blanks for GC/MS Volatile Analyses	5_EUUSLA_GC/MS Volatiles_Manager
T-VOA-WI8196	Preparation of Oil Samples	5_EUUSLA_GC/MS Volatiles_Manager
T-VOA-WI7869	Preservation and Residual Chlorine Checks of Samples for GC/MS Volatile Water Analysis	5_EUUSLA_GC/MS Volatiles_Manager
T-VOA-WI7626	Principal Chemist	5_EUUSLA_GC/MS Volatiles_Manager
T-VOA-WI7625	Principal Specialist	5_EUUSLA_GC/MS Volatiles_Manager
T-VOA-WI8183	Purgeable Aromatics by GC in High-Level Soils by Method 8021B	5_EUUSLA_GC/MS Volatiles_Manager
T-VOA-WI8119	Purgeable Aromatics in Water Samples by Method 602	5_EUUSLA_GC/MS Volatiles_Manager
T-VOA-WI8139	Purgeable Aromatics in Water Samples by Method 8021B	5_EUUSLA_GC/MS Volatiles_Manager
T-VOA-WI7621	Senior Chemist	5_EUUSLA_GC/MS Volatiles_Manager
T-VOA-WI7622	Senior Specialist	5_EUUSLA_GC/MS Volatiles_Manager
T-VOA-WI7623	Senior Technician	5_EUUSLA_GC/MS Volatiles_Manager
T-VOA-WI7866	Specialist	5_EUUSLA_GC/MS Volatiles_Manager
T-VOA-WI7607	Statistical Calculations Used in the Analysis of Samples by EPA Methodology	5_EUUSLA_GC/MS Volatiles_Manager
T-VOA-WI7717	Targeted Library Search by GC/MS	5_EUUSLA_GC/MS Volatiles_Manager
T-VOA-WI8515	The Determination of 1,4-Dioxane by GC/MS using Isotope Dilution and Selective Ion Monitoring (SIM) by Method 8260B and 8260C	5_EUUSLA_GC/MS Volatiles_Manager
T-VOA-WI7720	The Determination of Ethylene Oxide and Crotonaldehyde by Gas Chromatography/Mass Spectrometry (GC/MS) in Water and Soil by SW-846 Method 8260B	5_EUUSLA_GC/MS Volatiles_Manager
T-VOA-WI8544	Toxicity Characteristic Leachate Procedure (TCLP); Determination of Volatile Target Compounds by GCMS in Zero Headspace Extraction (ZHE) by 8260B	5_EUUSLA_GC/MS Volatiles_Manager
T-VOA-WI7606	Use of 40-mL Vials for Volatile Organic Analyses	5_EUUSLA_GC/MS Volatiles_Manager

T-VOA-WI7630	Vinyl Chloride and Carbon Disulfide by GC/MS using Selective Ion Monitoring (SIM) in Waters by Method 8260B	5_EUUSLA_GC/MS Volatiles_Manager
T-VOA-WI8265	Volatile Organic Compounds in Wastewater by Isotope Dilution and GC/MS by EPA Method 1666	5_EUUSLA_GC/MS Volatiles_Manager
T-VOA-WI8330	Volatile Organics Tentatively identified Compound Method	5_EUUSLA_GC/MS Volatiles_Manager
T-VOA-WI8633	Volatile Organics Tentatively Identified Compound Method (Interpretive)	5_EUUSLA_GC/MS Volatiles_Manager
T-VOA-WI8423	Waters for Volatile Organic Compounds by Purge and Trap Gas Chromatography/Mass Spectrometry using EPA Method 624	5_EUUSLA_GC/MS Volatiles_Manager
T-VOA-WI18576	Waters for Volatile Organic Compounds by Purge and Trap Gas Chromatography/Mass Spectrometry using EPA Method 624.1	5_EUUSLA_GC/MS Volatiles_Manager
8.03 Metals		
Work Instruction		
T-MET-WI7882	Associate Chemist	5_EUUSLA_Metals_Manager
T-MET-WI7886	Bottletop Dispensers	5_EUUSLA_Metals_Manager
T-MET-WI7887	Chemist	5_EUUSLA_Metals_Manager
T-MET-WI11925	Client Specific - 3030 C. Treatment for Acid-Extractable Metals for North Carolina Groundwater Samples	5_EUUSLA_Metals_Manager
T-MET-WI11939	Digestion by EPA 200.8 for the Analysis of Total Recoverable Metals in Water by ICPMS	5_EUUSLA_Metals_Manager
T-MET-WI11938	Digestion of Waters by EPA 200.7 for Analysis of Total Recoverable Metals by ICP	5_EUUSLA_Metals_Manager
T-MET-WI11924	Digestion of Aqueous Samples by SW-846 Method 7470A, EPA 245.1	5_EUUSLA_Metals_Manager
T-MET-WI11926	Digestion of Oils by EPA 3050B mod. for ICP Analysis	5_EUUSLA_Metals_Manager
T-MET-WI7920	Dilute/Run and AVS/SEM Sample Handling for Metals	5_EUUSLA_Metals_Manager
T-MET-WI8732	Direct Analysis Preparation of Potable Water for ICP (EPA 200.7) or ICP-MS (EPA 200.8)	5_EUUSLA_Metals_Manager
T-MET-WI7921	Director	5_EUUSLA_Metals_Manager
T-MET-WI11927	Fixed-Volume Hand-Held Pipettes	5_EUUSLA_Metals_Manager
T-MET-WI7922	Glassware Cleaning	5_EUUSLA_Metals_Manager
T-MET-WI7923	Group Leader	5_EUUSLA_Metals_Manager
T-MET-WI18028	Instrument Maintenance for Agilent 7500	5_EUUSLA_Metals_Manager
T-MET-WI18026	Instrument Operations for Agilent 7500	5_EUUSLA_Metals_Manager
T-MET-WI18027	Instrument Operations for Agilent 7700	5_EUUSLA_Metals_Manager
T-MET-WI7941	Laboratory Technician	5_EUUSLA_Metals_Manager
T-MET-WI7943	Langelier Index in Water	5_EUUSLA_Metals_Manager
T-MET-WI7963	Maintenance and Calibration of HACH Model 2100Q Laboratory Turbidimeter	5_EUUSLA_Metals_Manager
T-MET-WI7964	Manager	5_EUUSLA_Metals_Manager
T-MET-WI7965	Mercury in Aqueous, Solid and Tissue Samples by Cold Vapor AA	5_EUUSLA_Metals_Manager
T-MET-WI11931	Metals by ICP for Methods SW-846 6010B/C/D (aqueous, solid, tissue) and EPA 200.7 (aqueous)	5_EUUSLA_Metals_Manager
T-MET-WI11933	Metals by Inductively Coupled Plasma Mass Spectrometry for SW-846 Methods 6020/6020A/6020B(aqueous, solid, tissue) and EPA 200.8 (aqueous)	5_EUUSLA_Metals_Manager
T-MET-WI7971	Metals Use of the LLENS System	5_EUUSLA_Metals_Manager
T-MET-WI11948	Preparation of Solids by EPA 7471A or B for Mercury Analysis	5_EUUSLA_Metals_Manager
T-MET-WI7972	Principal Chemist	5_EUUSLA_Metals_Manager
T-MET-WI8636	Sample Prep of Sediments, Sludges, Soils, and Tissues by SW846 3050B for ICP and ICP-MS	5_EUUSLA_Metals_Manager
T-MET-WI11937	Sample Preparation of Leachates and Other Wastewater for Analysis of Total Metals by Inductively Coupled Plasma-Mass Spectrometer (ICP-MS)	5_EUUSLA_Metals_Manager
T-MET-WI11941	Sample Preparation of Wastewater and Leachates for Analysis of Total Metals by Inductively Coupled Plasma Atomic Emission Spectrometry	5_EUUSLA_Metals_Manager
T-MET-WI8639	Sample Preparation of Waters for Analysis of Total Recoverable Metals by Inductively Coupled Plasma Optical Emission Spectrometry	5_EUUSLA_Metals_Manager
T-MET-WI8640	Senior Chemist	5_EUUSLA_Metals_Manager
T-MET-WI8641	Senior Specialist	5_EUUSLA_Metals_Manager
T-MET-WI8721	Senior Technician (Instrument Room)	5_EUUSLA_Metals_Manager
T-MET-WI8723	Senior Technician (Prep Room)	5_EUUSLA_Metals_Manager
T-MET-WI8729	Specialist	5_EUUSLA_Metals_Manager
T-MET-WI9082	Working Instructions for Prep Solutions and Standards	5_EUUSLA_Metals_Manager
T-MET-WI12063	Working Instructions for Preparation of ICP Solutions and Standards	5_EUUSLA_Metals_Manager
T-MET-WI12065	Working Instructions for Preparation of ICP-MS Solutions and Standards	5_EUUSLA_Metals_Manager

T-MET-WI9084	Working Instructions for Preparation of Mercury Solutions and Standards	5_EUUSLA_Metals_Manager
8.04 Pesticides		
Work Instruction		
T-PEST-WI9202	Analysis of Chlorinated Herbicides by 8151A in Water	5_EUUSLA_Pesticide Residue Analysis_Manager
T-PEST-WI9232	Analysis of Pesticides by 8081B in Solid Samples using GC-ECD	5_EUUSLA_Pesticide Residue Analysis_Manager
T-PEST-WI9238	Analysis of Polychlorinated Biphenyls (PCBs) by 8082A in Aqueous Samples using GC-ECD	5_EUUSLA_Pesticide Residue Analysis_Manager
T-PEST-WI9842	Associate Chemist	5_EUUSLA_Pesticide Residue Analysis_Manager
T-PEST-WI9843	Captan and Captafol by Method 8081A in Waters and Solids using GC-ECD	5_EUUSLA_Pesticide Residue Analysis_Manager
T-PEST-WI9844	Chemist	5_EUUSLA_Pesticide Residue Analysis_Manager
T-PEST-WI9845	Chlorinated Herbicides by 8151A in Solids by GC-ECD	5_EUUSLA_Pesticide Residue Analysis_Manager
T-PEST-WI9846	Client Specific - HPLC Analysis for Cyclopamine in Biomass	5_EUUSLA_Pesticide Residue Analysis_Manager
T-PEST-WI9847	Common Equations Used During Chromatographic Analyses	5_EUUSLA_Pesticide Residue Analysis_Manager
T-PEST-WI9851	Creating Calibration Timed Events in Chrom Perfect	5_EUUSLA_Pesticide Residue Analysis_Manager
T-PEST-WI9854	Data Audit Procedure for Department 4024	5_EUUSLA_Pesticide Residue Analysis_Manager
T-PEST-WI9859	Director	5_EUUSLA_Pesticide Residue Analysis_Manager
T-PEST-WI9860	EDB, DBCP and TCP by Method 8011 in Solids using Microextraction and GC-ECD	5_EUUSLA_Pesticide Residue Analysis_Manager
T-PEST-WI9952	EDB/DBCP/and TCP by Method 504.1 or 8011 in Waters Using Microextraction and GC-ECD	5_EUUSLA_Pesticide Residue Analysis_Manager
T-PEST-WI11965	Formaldehyde and Other Aldehydes by Method 8315A in Aqueous and Solid Samples using HPLC	5_EUUSLA_Pesticide Residue Analysis_Manager
T-PEST-WI9953	Group Leader	5_EUUSLA_Pesticide Residue Analysis_Manager
T-PEST-WI9954	Interpretation of Chromatographic Data	5_EUUSLA_Pesticide Residue Analysis_Manager
T-PEST-WI9961	Low Level PCBs in Water by Method 8082/8082A using GC-ECD	5_EUUSLA_Pesticide Residue Analysis_Manager
T-PEST-WI9962	Manager	5_EUUSLA_Pesticide Residue Analysis_Manager
T-PEST-WI9980	Monitoring QC Data Acceptance Limits	5_EUUSLA_Pesticide Residue Analysis_Manager
T-PEST-WI9981	Nitroaromatics and Nitroamines by Method 8330B in Water and Solids using HPLC with UV Detection	5_EUUSLA_Pesticide Residue Analysis_Manager
T-PEST-WI9982	Nitroaromatics and Nitroamines in Water and Solids by HPLC with UV Detection by Method 8330/A	5_EUUSLA_Pesticide Residue Analysis_Manager
T-PEST-WI9983	N-Methylcarbamate Pesticides by Method 8318/8318A in Solids	5_EUUSLA_Pesticide Residue Analysis_Manager
T-PEST-WI9984	N-Methylcarbamates by Method 531.1 in Groundwater and Drinking Water using High Performance Liquid Chromatography (HPLC)	5_EUUSLA_Pesticide Residue Analysis_Manager
T-PEST-WI11966	OP Pesticides (Acephate and Methamidophos) by 8141A in Aqueous and Solid Samples using GC-NPD	5_EUUSLA_Pesticide Residue Analysis_Manager
T-PEST-WI11967	Organic Acids in Water by Methods 8015B/D or 8321B using HPLC/UV	5_EUUSLA_Pesticide Residue Analysis_Manager
T-PEST-WI11968	Organophosphorous Pesticides by Method 8141A/8141B in Solid Samples using GC-NPD	5_EUUSLA_Pesticide Residue Analysis_Manager
T-PEST-WI11970	Organophosphorous Pesticides by Methods 8141A/8141B/622 in Aqueous Samples using GC-NPD	5_EUUSLA_Pesticide Residue Analysis_Manager
T-PEST-WI9987	PCBs in Oil by SW-846 Method 8082/8082A	5_EUUSLA_Pesticide Residue Analysis_Manager

T-PEST-WI9989	Perchlorate by Method 6850 in Waters and Solids by LC/MS/MS	5_EUUSLA_Pesticide Residue Analysis_Manager
T-PEST-WI9992	Pesticides by Method 8081A in Solid Samples using GC-ECD	5_EUUSLA_Pesticide Residue Analysis_Manager
T-PEST-WI9997	Pesticides in Aqueous Samples by Method 608	5_EUUSLA_Pesticide Residue Analysis_Manager
T-PEST-WI17994	Pesticides in Aqueous Samples by Method 608.3	5_EUUSLA_Pesticide Residue Analysis_Manager
T-PEST-WI9998	Pesticides in Water by Method 8081A using GC-ECD	5_EUUSLA_Pesticide Residue Analysis_Manager
T-PEST-WI9999	Pesticides in Water by Method 8081B using GC-ECD	5_EUUSLA_Pesticide Residue Analysis_Manager
T-PEST-WI9858	Picric Acid in Solid Matrix By HPLC with UV by Method 8015B	5_EUUSLA_Pesticide Residue Analysis_Manager
T-PEST-WI10000	Picric Acid in Water by Method 8015B Using HPLC with UV Detection	5_EUUSLA_Pesticide Residue Analysis_Manager
T-PEST-WI11971	Polychlorinated Biphenyls (PCBs) by Method 608 or 8082 in Waters	5_EUUSLA_Pesticide Residue Analysis_Manager
T-PEST-WI18000	Polychlorinated Biphenyls (PCBs) by Method 608.3	5_EUUSLA_Pesticide Residue Analysis_Manager
T-PEST-WI11972	Polychlorinated Biphenyls (PCBs) by Method 8082 in Solids and Wipes	5_EUUSLA_Pesticide Residue Analysis_Manager
T-PEST-WI10004	Polychlorinated Biphenyls (PCBs) in Solid Samples by 8082A Using GC-ECD	5_EUUSLA_Pesticide Residue Analysis_Manager
T-PEST-WI10006	Prescreening Water and Soil Samples for Pesticides and PCBs	5_EUUSLA_Pesticide Residue Analysis_Manager
T-PEST-WI10007	Preventative and Corrective GC Maintenance	5_EUUSLA_Pesticide Residue Analysis_Manager
T-PEST-WI10008	Preventative and Corrective HPLC Maintenance for the Pesticide Residue Analysis Department	5_EUUSLA_Pesticide Residue Analysis_Manager
T-PEST-WI10009	Principal Chemist	5_EUUSLA_Pesticide Residue Analysis_Manager
T-PEST-WI10010	Principal Specialist	5_EUUSLA_Pesticide Residue Analysis_Manager
T-PEST-WI10011	QC Data Acceptability and Corrective Action	5_EUUSLA_Pesticide Residue Analysis_Manager
T-PEST-WI10012	Senior Chemist	5_EUUSLA_Pesticide Residue Analysis_Manager
T-PEST-WI10013	Senior Specialist	5_EUUSLA_Pesticide Residue Analysis_Manager
T-PEST-WI10014	Setting Retention Time Windows	5_EUUSLA_Pesticide Residue Analysis_Manager
T-PEST-WI10015	Setting Up Analysis Numbers in the Departmental Database	5_EUUSLA_Pesticide Residue Analysis_Manager
T-PEST-WI10016	Setting Up Single Component Initial Calibrations	5_EUUSLA_Pesticide Residue Analysis_Manager
T-PEST-WI10017	Specialist	5_EUUSLA_Pesticide Residue Analysis_Manager
T-PEST-WI10018	Standards Preparation, Coding, and Storage	5_EUUSLA_Pesticide Residue Analysis_Manager
T-PEST-WI10019	Standards Traceability and Monitoring	5_EUUSLA_Pesticide Residue Analysis_Manager
T-PEST-WI10020	Uploading Data to the LIMS	5_EUUSLA_Pesticide Residue Analysis_Manager
T-PEST-WI10022	Using "Datalog" Software for Data Acquisition of Multicomponent Pesticides/PCBs	5_EUUSLA_Pesticide Residue Analysis_Manager
T-PEST-WI10023	Using "Datalog" Software for Single-component Data Acquisition	5_EUUSLA_Pesticide Residue Analysis_Manager
8.05 GCMS Semivolatiles		
Work Instruction		
T-SVOA-WI11981	Analysis of Chlorinated Herbicides in Water by Selective Ion Monitoring Gas Chromatography/Mass Spectroscopy (SIM/GC/MS)	5_EUUSLA_GC/MS Semivolatiles_Manager

T-SVOA-WI11979	Associate Chemist	5_EUUSLA_GC/MS Semivolatiles_Manager
T-SVOA-WI9592	Chemist	5_EUUSLA_GC/MS Semivolatiles_Manager
T-SVOA-WI9514	Client Specific - Methyl Stearate in Plastic, Method 8270D, by GC/MS	5_EUUSLA_GC/MS Semivolatiles_Manager
T-SVOA-WI9535	Determination of Benz(a)pyrene in Smokeless Tobacco by Selective Ion Monitoring Gas Chromatography/Mass Spectrometry (SIM/GC/MS)	5_EUUSLA_GC/MS Semivolatiles_Manager
T-SVOA-WI9252	Determination of Parent and Alkyl Substituted Polynuclear Aromatic Hydrocarbons (PAHs), Alkanes and Geochemical Biomarkers by Gas Chromatography/Mass Spectrometry (GC/MS-SIM)	5_EUUSLA_GC/MS Semivolatiles_Manager
T-SVOA-WI9577	Determination of Priority Pollutants by Method 625	5_EUUSLA_GC/MS Semivolatiles_Manager
T-SVOA-WI9590	Dioxin Screening (2,3,7,8-TCDD) of Aqueous and Solid Matrices using GC-MS SIM	5_EUUSLA_GC/MS Semivolatiles_Manager
T-SVOA-WI9593	Director	5_EUUSLA_GC/MS Semivolatiles_Manager
T-SVOA-WI9594	GC/MS Audit Process	5_EUUSLA_GC/MS Semivolatiles_Manager
T-SVOA-WI9596	GC/MS Electronic Data Management and Handling	5_EUUSLA_GC/MS Semivolatiles_Manager
T-SVOA-WI9598	GC/MS Preventative and Corrective Maintenance	5_EUUSLA_GC/MS Semivolatiles_Manager
T-SVOA-WI9603	Group Leader	5_EUUSLA_GC/MS Semivolatiles_Manager
T-SVOA-WI9604	Monitoring QC Data Acceptance Limits	5_EUUSLA_GC/MS Semivolatiles_Manager
T-SVOA-WI9610	Principal Chemist	5_EUUSLA_GC/MS Semivolatiles_Manager
T-SVOA-WI11980	Principal Specialist	5_EUUSLA_GC/MS Semivolatiles_Manager
T-SVOA-WI18565	Priority Pollutants by Method 625.1 in Water Using GC/MS	5_EUUSLA_GC/MS Semivolatiles_Manager
T-SVOA-WI9611	Quality Control Spike Mix Verification	5_EUUSLA_GC/MS Semivolatiles_Manager
T-SVOA-WI9613	Semivolatile Compounds by Method 525.2 in Drinking Water using GC/MS	5_EUUSLA_GC/MS Semivolatiles_Manager
T-SVOA-WI9617	Semivolatile Organic Compounds by Method 8270D/E in Aqueous and Non-Aqueous Matrices using GC-MS	5_EUUSLA_GC/MS Semivolatiles_Manager
T-SVOA-WI9623	Semivolatile Organic Compounds, Including DRO/ORO, by Method 8270C in Aqueous and Non-Aqueous Matrices Using GC-MS	5_EUUSLA_GC/MS Semivolatiles_Manager
T-SVOA-WI11997	Semivolatile Organics Tentatively Identified Compound Method	5_EUUSLA_GC/MS Semivolatiles_Manager
T-SVOA-WI9624	Semivolatile Run/Injection Log Generation	5_EUUSLA_GC/MS Semivolatiles_Manager
T-SVOA-WI11998	Semivolatile Spiking and Calibration Standards	5_EUUSLA_GC/MS Semivolatiles_Manager
T-SVOA-WI9995	Semivolatiles by Methods 8270C/D SIM	5_EUUSLA_GC/MS Semivolatiles_Manager
T-SVOA-WI9634	Senior Chemist	5_EUUSLA_GC/MS Semivolatiles_Manager
T-SVOA-WI9635	Senior Specialist	5_EUUSLA_GC/MS Semivolatiles_Manager
T-SVOA-WI9587	Tetraethyl lead (TEL) and Tetramethyl lead (TML) in Water and Solids by 8270C GC/MS	5_EUUSLA_GC/MS Semivolatiles_Manager
T-SVOA-WI13634	The Determination of 1,4-Dioxane by GC/MS using Isotope Dilution and Selective Ion Monitoring (SIM) by Method 8270C/D	5_EUUSLA_GC/MS Semivolatiles_Manager
T-SVOA-WI9625	The Determination of d-Limonene in Plastic by Gas Chromatography/Mass Spectrometry (GC/MS)	5_EUUSLA_GC/MS Semivolatiles_Manager
T-SVOA-WI9626	THPA, PHPI and PA by 8270C Mod. or CEPH 440 in Waters and Solids Using GC/MS	5_EUUSLA_GC/MS Semivolatiles_Manager
8.06 Instrumental Water Quality		

Work Instruction		
T-WC-WI9861	Accusterilizer - Steam Sterilizer	5_EUUSLA_Instrumental Water Quality_Manager
T-WC-WI10024	Ammonia Nitrogen by EPA 350.1 in Waters and Solids Using Segmented Flow Analysis and Gas Diffusion	5_EUUSLA_Instrumental Water Quality_Manager
T-WC-WI11619	Automated Determination of Phenols in Water, Wastewater, and Soils By Automated Flow Analyzer EPA 420.4, SW-846, 9066	5_EUUSLA_Instrumental Water Quality_Manager
T-WC-WI10287	Chemist	5_EUUSLA_Instrumental Water Quality_Manager
T-WC-WI11621	Client Specific - Determination of Total Cyanide in Water, Wastewater, and Soils (Department of Defense) SW-846 9012B, SW-846 9012A	5_EUUSLA_Instrumental Water Quality_Manager
T-WC-WI11622	Client Specific - Total Cyanide Distillation (Department of Defense)	5_EUUSLA_Instrumental Water Quality_Manager
T-WC-WI11624	Department 4027 Chemical Inventory and Review Procedures	5_EUUSLA_Instrumental Water Quality_Manager
T-WC-WI11625	Determination of Hexavalent Chromium by Ion Chromatography in Solids and Waters SW-846 7199 and EPA 218.6	5_EUUSLA_Instrumental Water Quality_Manager
T-WC-WI11626	Determination of Inorganic Anions by Ion Chromatography in Waters and Soil by EPA 300.0, SW 846 9056, and SW 846 9056A	5_EUUSLA_Instrumental Water Quality_Manager
T-WC-WI11627	Determination of TOC and TC in Solids and Sludges by Combustion by SM 5310B, EPA 415.1, SW-846 9060/9060A	5_EUUSLA_Instrumental Water Quality_Manager
T-WC-WI11635	Determination of Total and Available Cyanide in Water using Amperometric Detection by ASTM D 7511-09e2, -12 and Method OIA-1677-09	5_EUUSLA_Instrumental Water Quality_Manager
T-WC-WI11636	Determination of Total and Soluble Phosphorus in Water, Wastewater, and Soils (Colorimetric, Ascorbic Acid, Automated) by EPA 365.1 or SM 4500-P F-2011	5_EUUSLA_Instrumental Water Quality_Manager
T-WC-WI10037	Determination of Total Carbon in Water and Wastewater by SM-5310 C and EPA 415.1	5_EUUSLA_Instrumental Water Quality_Manager
T-WC-WI10038	Determination of Total Organic Carbon in Water and Wastewater (Quadruplicate Studies)	5_EUUSLA_Instrumental Water Quality_Manager
T-WC-WI10039	Digestion of Total and Soluable Phosphorus in Water, Wastewater, and Soils EPA 361.1, SM20 4500 P B, and SM20 4500 P E	5_EUUSLA_Instrumental Water Quality_Manager
T-WC-WI10289	Director	5_EUUSLA_Instrumental Water Quality_Manager
T-WC-WI10290	Group Leader	5_EUUSLA_Instrumental Water Quality_Manager
T-WC-WI12054	Hexavalent Chromium by EPA 218.7 in Drinking Water	5_EUUSLA_Instrumental Water Quality_Manager
T-WC-WI11640	ICS-1000, ICS 1100, ICS-2000 and ICS-3000 Ion Chromatography Systems	5_EUUSLA_Instrumental Water Quality_Manager
T-WC-WI10291	Laboratory Technician	5_EUUSLA_Instrumental Water Quality_Manager
T-WC-WI11641	Low Level Hexavalent Chromium by Ion Chromatography in Waters by EPA 218.6	5_EUUSLA_Instrumental Water Quality_Manager
T-WC-WI9889	Maintenance and Calibration of A.I. Scientific AIM600 Digestor	5_EUUSLA_Instrumental Water Quality_Manager
T-WC-WI11643	Maintenance of Continuous Flow Analyzers	5_EUUSLA_Instrumental Water Quality_Manager
T-WC-WI9890	Maintenance of the OI Analytical Model 1030 Total Organic Carbon Analyzer	5_EUUSLA_Instrumental Water Quality_Manager
T-WC-WI10292	Manager	5_EUUSLA_Instrumental Water Quality_Manager
T-WC-WI10070	Moisture by Moisture Analyzer in Solids by SM 2540 G-2011	5_EUUSLA_Instrumental Water Quality_Manager
T-WC-WI11649	Nitrate Nitrogen in Water and Wastewater (Colorimetric, Automated Cadmium Reduction)	5_EUUSLA_Instrumental Water Quality_Manager
T-WC-WI11650	Nitrite Nitrogen in Water and Wastewater (Colorimetric, Automated)	5_EUUSLA_Instrumental Water Quality_Manager
T-WC-WI9891	pH Electrodes and Meters	5_EUUSLA_Instrumental Water Quality_Manager
T-WC-WI11651	Phenol Distillation in Solids by EPA SW-846 9065	5_EUUSLA_Instrumental Water Quality_Manager

T-WC-WI11652	Quality Control for Analyses Performed in Instrumental Water Quality	5_EUUSLA_Instrumental Water Quality_Manager
T-WC-WI10083	Reagent Water Extraction of Ions in soil, for analysis by method EPA 300.0 or SW 846 9056	5_EUUSLA_Instrumental Water Quality_Manager
T-WC-WI10293	Senior Chemist	5_EUUSLA_Instrumental Water Quality_Manager
T-WC-WI10294	Senior Technician	5_EUUSLA_Instrumental Water Quality_Manager
T-WC-WI22922	Sulfate (turbidimetric) by EPA 375.4 in Waters by Spectrophotometry	5_EUUSLA_Instrumental Water Quality_Manager
T-WC-WI10085	Total and Amenable Cyanide Distillation in Waters and Solids by SW-846 9012A/B, EPA 335.1/3/4, and SM 4500-CN G-1999/2011	5_EUUSLA_Instrumental Water Quality_Manager
T-WC-WI10105	Total Cyanide Analysis of Waters and Solids by Massachusetts Contingency Plan (MCP)/NJ DKQP	5_EUUSLA_Instrumental Water Quality_Manager
T-WC-WI10106	Total Kjedahl Nitrogen Digestion of Solids and Soils by EPA 351.2	5_EUUSLA_Instrumental Water Quality_Manager
T-WC-WI10107	Total Kjedahl Nitrogen Digestion of Water and Wastewater by EPA 351.2	5_EUUSLA_Instrumental Water Quality_Manager
T-WC-WI12055	Total Kjeldahl Nitrogen (TKN) by EPA 351.2, EPA 351.2 mod, SM4500-Norg or SM4500-N in Waters and Solids using Automated Flow Analysis or Discrete Analysis	5_EUUSLA_Instrumental Water Quality_Manager
T-WC-WI11637	Total Organic Carbon (TOC), Dissolved Organic Carbon (DOC), and Total Inorganic Carbon (TIC) by SM 5310C or EPA 415.1 in Waters	5_EUUSLA_Instrumental Water Quality_Manager
T-WC-WI11629	Total, Amenable and Weak Acid Dissociable Cyanide in Waters and Soils, Free Cyanide in Water, Reactive Cyanide of Solids, by SW-846 Method 9012A/B, EPA 335.4/3, and SM 4500-CN G/E-1999/2011	5_EUUSLA_Instrumental Water Quality_Manager
T-WC-WI10285	Weak Acid Dissociable Cyanide Distillation (as preparation for Analysis on the Flow Analyzer)	5_EUUSLA_Instrumental Water Quality_Manager
8.07 Leachate Preparation		
Work Instruction		
T-TL-WI14428	Associate Chemist	5_EUUSLA_Leachate Preparation_Manager
T-TL-WI7142	Calibration of the Leachate Tumblers	5_EUUSLA_Leachate Preparation_Manager
T-TL-WI7562	Cation Exchange Capacity of Soils (Sodium Acetate) by Method 9081	5_EUUSLA_Leachate Preparation_Manager
T-TL-WI7139	Director	5_EUUSLA_Leachate Preparation_Manager
T-TL-WI7143	Glassware Cleaning for Leachate Extractions	5_EUUSLA_Leachate Preparation_Manager
T-TL-WI7144	Leachate Blank Evaluations	5_EUUSLA_Leachate Preparation_Manager
T-TL-WI7140	Manager	5_EUUSLA_Leachate Preparation_Manager
T-TL-WI7146	Manually Pressurized Zero Headspace Extractor (ZHE)	5_EUUSLA_Leachate Preparation_Manager
T-TL-WI7141	pH Meters and Probes	5_EUUSLA_Leachate Preparation_Manager
T-TL-WI7257	Procedure for Calculating and Reporting Weighted Average Results for TCLP Extracts	5_EUUSLA_Leachate Preparation_Manager
T-TL-WI7148	Shake Extraction of Solid Waste with Water ASTM Method #D3987-85	5_EUUSLA_Leachate Preparation_Manager
T-TL-WI7145	Subsampling and Preservation of Leachates	5_EUUSLA_Leachate Preparation_Manager
T-TL-WI7558	Synthetic Precipitation Leaching Procedure (SPLP) for Nonvolatile Leachates	5_EUUSLA_Leachate Preparation_Manager
T-TL-WI7561	Synthetic Precipitation Leaching Procedure (SPLP) Zero headspace Leachates	5_EUUSLA_Leachate Preparation_Manager
T-TL-WI7151	Toxicity Characteristic Leaching Procedure (TCLP) Nonvolatile Leachates	5_EUUSLA_Leachate Preparation_Manager
T-TL-WI7258	Toxicity Characteristic Leaching Procedure TCLP Zero Headspace Leachates, Method 1311	5_EUUSLA_Leachate Preparation_Manager

T-TL-WI7563	Waste Extraction Test Leaching Procedure for Volatile and Non-Volatile Analytes	5_EUUSLA_Leachate Preparation_Manager
8.08 Water Quality		
Work Instruction		
T-WC-WI10421	#1443 Specific Gravity by SM 2710F-1997, #6569 Bulk Density by ASTM E868-82 Sec 9.9	5_EUUSLA_Water Quality_Manager
T-WC-WI9862	Accumet Model AB30 pH/Ion/Conductivity Meter	5_EUUSLA_Water Quality_Manager
T-WC-WI10422	Acid Volatile Sulfide in Solids	5_EUUSLA_Water Quality_Manager
T-WC-WI9897	Adjustable Volume Handheld Pipettes	5_EUUSLA_Water Quality_Manager
T-WC-WI10423	Ammonia Nitrogen by Ion-Selective Electrode Method (ISE) in Solids by EPA 350.3 and SM 4500-NH3B-1997, 2011	5_EUUSLA_Water Quality_Manager
T-WC-WI10424	Ammonia-Nitrogen for Soils (Tritrimetric Distillation Procedure) by 4500-NH3 B/C - 2011, or EPA 350.2	5_EUUSLA_Water Quality_Manager
T-WC-WI11474	Ammonia-Nitrogen for Waters (Titrimetric Distillation Procedure) by 4500-NH3 B/C -2011, or EPA 350.2	5_EUUSLA_Water Quality_Manager
T-WC-WI10425	Bellack Distillation for Fluoride in Waters and Solids by SM 4500 F B-2011, EPA 340.1 Procedure 6.1 or SM 4500 F B-1997	5_EUUSLA_Water Quality_Manager
T-WC-WI10426	BOD and CBOD in Waters by SM 5210 B-2011, Hach 10360, EPA 405.1, SM 5210 B-2001	5_EUUSLA_Water Quality_Manager
T-WC-WI9898	Calibration of Hach 2100AN Turbidimeter	5_EUUSLA_Water Quality_Manager
T-WC-WI12050	Chemical Oxygen Demand (COD) in Water by EPA 410.4	5_EUUSLA_Water Quality_Manager
T-WC-WI11478	Chemical Oxygen Demand (Low-Level) by 410.4	5_EUUSLA_Water Quality_Manager
T-WC-WI10358	Chemical Review	5_EUUSLA_Water Quality_Manager
T-WC-WI11479	Chemist	5_EUUSLA_Water Quality_Manager
T-WC-WI10431	Chloride (Titrimetric Determination) in Water by SM 4500-CL C-2011	5_EUUSLA_Water Quality_Manager
T-WC-WI11480	Chlorine Residual for waters by 4500 Cl F-2011, or EPA 330.4	5_EUUSLA_Water Quality_Manager
T-WC-WI10436	Client Specific - Hexavalent Chromium in Waters (Colorimetric) (Department of Defense)	5_EUUSLA_Water Quality_Manager
T-WC-WI11482	Color by 2120 B-2011, or EPA 110.2	5_EUUSLA_Water Quality_Manager
T-WC-WI11483	Colorimetric Sulfide in Waters (#0230), Sulfide as H2S (#10293 Calculation), Dissolved Sulfide in Waters (#10499) by 4500-S2 D-2011, 4500-S2 H-2011, or EPA 376.2	5_EUUSLA_Water Quality_Manager
T-WC-WI11493	Director	5_EUUSLA_Water Quality_Manager
T-WC-WI10609	Dissolved Oxygen by 4500 O G-2011, EPA 360.1 or Hach Method 10360	5_EUUSLA_Water Quality_Manager
T-WC-WI11616	Dissolved Oxygen Meter Calibration	5_EUUSLA_Water Quality_Manager
T-WC-WI11494	Dissolved Silica (Colormetric) in Water by SM4500SIO2 C-2011, SM4500SIO2 C-1997 or EPA 370.1	5_EUUSLA_Water Quality_Manager
T-WC-WI9900	Equipment Incubators and Refrigerators	5_EUUSLA_Water Quality_Manager
T-WC-WI9901	Equipment Muffle Furnaces and Ovens	5_EUUSLA_Water Quality_Manager
T-WC-WI11495	Ferrous Iron (colorimetric) in Waters and Solids by Method 3500-Fe B-2011	5_EUUSLA_Water Quality_Manager
T-WC-WI11496	Fixed Dissolved Solids (Calculation) by 2540 E - 2011 or EPA 160.4	5_EUUSLA_Water Quality_Manager
T-WC-WI10610	Fixed Suspended Solids (Gravimetric) (#207) Volatile Suspended Solids (Gravimetric) (#208) by SM 2540 E - 2011 or EPA 160.4 in Water	5_EUUSLA_Water Quality_Manager
T-WC-WI10348	Fixed Volume Hand-Held Pipettes	5_EUUSLA_Water Quality_Manager
T-WC-WI10437	Flash Point for Liquids and Solids by ASTM D93 or EPA 1010 A	5_EUUSLA_Water Quality_Manager
T-WC-WI10612	Flash Point for Liquids and Solids by ASTM Method D93-07, ASTM D93-90 or SW-846 1010A	5_EUUSLA_Water Quality_Manager
T-WC-WI11499	Group Leader	5_EUUSLA_Water Quality_Manager
T-WC-WI11500	Hexane Extractable Material (HEM) and Silica Gel Treated Hexane Extractable materials (SGT-HEM) in Waters by EPA Method 1664A, 1664B, and 1664.	5_EUUSLA_Water Quality_Manager
T-WC-WI10614	Hexavalent Chromium (Colorimetric) in Waters by CTRCP	5_EUUSLA_Water Quality_Manager
T-WC-WI10615	Hexavalent Chromium (Colorimetric) in Waters by MCP	5_EUUSLA_Water Quality_Manager
T-WC-WI10616	Hexavalent Chromium (Colorimetric) in Waters by SM846 7196A NJ DKQP	5_EUUSLA_Water Quality_Manager
T-WC-WI10618	Hexavalent Chromium in Solids (Alkaline Digestion and Analysis Methods) by SW-846 3060A and SW-846 7196A	5_EUUSLA_Water Quality_Manager
T-WC-WI10617	Hexavalent Chromium in Solids (Alkaline Digestion and Analysis Methods) by SW846 3060A, SW846 7196A NJ DKQP	5_EUUSLA_Water Quality_Manager
T-WC-WI10432	Hexavalent Chromium in Solids Alkaline Digestion and Analysis Methods (Department of Defense) by SW-846 3060A and SW-846 7196A	5_EUUSLA_Water Quality_Manager
T-WC-WI10619	Hexavalent Chromium in Solids by CTRCP (Alkaline Digestion and Analysis Methods)	5_EUUSLA_Water Quality_Manager
T-WC-WI10622	Hexavalent Chromium in Solids by MCP (Alkaline Digestion and Analysis Method)	5_EUUSLA_Water Quality_Manager

T-WC-WI11501	Hexavalent Chromium in waters (Colorimetric) by SW-846 7196A	5_EUUSLA_Water Quality_Manager
T-WC-WI10627	Ignitability of Solids by 40 CFR, Part 261.21	5_EUUSLA_Water Quality_Manager
T-WC-WI10359	Instructions for Collecting Data on the LLENS System	5_EUUSLA_Water Quality_Manager
T-WC-WI11504	Laboratory Assistant	5_EUUSLA_Water Quality_Manager
T-WC-WI11505	Laboratory Technician	5_EUUSLA_Water Quality_Manager
T-WC-WI11506	Low-Level Hexavalent Chromium in waters (Colorimetric) by 3500-Cr B-2011	5_EUUSLA_Water Quality_Manager
T-WC-WI10350	Maintenance of Desiccators	5_EUUSLA_Water Quality_Manager
T-WC-WI10351	Maintenance of Hot Plates	5_EUUSLA_Water Quality_Manager
T-WC-WI11507	Manager	5_EUUSLA_Water Quality_Manager
T-WC-WI10629	Methylene-Blue-Active Substances (MBAS) by 5540 C-2011 or EPA 425.1	5_EUUSLA_Water Quality_Manager
T-WC-WI11509	Moisture (Gravimetric), Total Residue (#0521), Volatile Residue (#0522), Total Fixed Residue/Ash (#1029) by SM 2540 G-2011 or SM 2540 E-2011 in Solids	5_EUUSLA_Water Quality_Manager
T-WC-WI11475	Multi-Parameters in Solids and Waters by ManTech Multi-Parameter System	5_EUUSLA_Water Quality_Manager
T-WC-WI11510	n-Hexane Extractable Material (HEM) and Silica Gel Treated HEM (SGT-HEM) in Solids by EPA 9071B	5_EUUSLA_Water Quality_Manager
T-WC-WI11511	Orthophosphate (Colorimetric) by EPA 365.3 in Waters	5_EUUSLA_Water Quality_Manager
T-WC-WI15537	Orthophosphate in waters by Colorimetry SM 4500 P E-2011	5_EUUSLA_Water Quality_Manager
T-WC-WI11512	Oxidation-Reduction Potential for Wastewaters and Soils by ASTM D1498, SM 2580 B-2011	5_EUUSLA_Water Quality_Manager
T-WC-WI11513	Paint Filter Liquids Test (Free Liquids Test)	5_EUUSLA_Water Quality_Manager
T-WC-WI11514	Particle Size Distribution of Soils and Solids/Grain Size Classification by ASTM D422-63 (reapproved 2007)	5_EUUSLA_Water Quality_Manager
T-WC-WI11515	Percent Solids for GC/MS by EPA 1666, Revision A - 1998	5_EUUSLA_Water Quality_Manager
T-WC-WI11518	pH by EPA 9045C, 9045D and Corrosivity by SW-846 Chap 7 of Solids, Soils, and Solvents using Electrometic Methods	5_EUUSLA_Water Quality_Manager
T-WC-WI11519	pH Probes and Meters	5_EUUSLA_Water Quality_Manager
T-WC-WI11521	Principal Chemist	5_EUUSLA_Water Quality_Manager
T-WC-WI10360	Quality Control Data for Wet Chemistry	5_EUUSLA_Water Quality_Manager
T-WC-WI11572	Reactive Sulfide	5_EUUSLA_Water Quality_Manager
T-WC-WI11574	Reactivity of Waste	5_EUUSLA_Water Quality_Manager
T-WC-WI11575	Senior Chemist	5_EUUSLA_Water Quality_Manager
T-WC-WI11577	Senior Specialist	5_EUUSLA_Water Quality_Manager
T-WC-WI11576	Senior Technician	5_EUUSLA_Water Quality_Manager
T-WC-WI11578	Settleable Solids in waters by 2540 F-2011, or EPA 160.5	5_EUUSLA_Water Quality_Manager
T-WC-WI10349	SKALAR COD Robot Analyzer and COD Spectrophotometers	5_EUUSLA_Water Quality_Manager
T-WC-WI11584	Specific Conductance in Solids by 2510B-2011, SW-846 9050, or EPA 120.1	5_EUUSLA_Water Quality_Manager
T-WC-WI10352	Spectronic Genesys 2 and Genesys 10 Vis Spectrophotometers	5_EUUSLA_Water Quality_Manager
T-WC-WI10362	Standardization of 0.02 and 0.1 Normal Sulfuric Acid	5_EUUSLA_Water Quality_Manager
T-WC-WI11585	Standardization of 0.02 Normal Sodium Hydroxide	5_EUUSLA_Water Quality_Manager
T-WC-WI11586	Sulfate (turbidimetric) by EPA 375.4 in Waters	5_EUUSLA_Water Quality_Manager
T-WC-WI11587	Sulfide Titration for Waters by 4500 S2 F-2011, EPA 376.1, SW-846 Method 9034 or 4500 S2 F-2000	5_EUUSLA_Water Quality_Manager
T-WC-WI11589	Sulfite in waters by 4500-SO3 B-2011, or EPA 377.1	5_EUUSLA_Water Quality_Manager
T-WC-WI11597	Total Dissolved Solids (Calculation)	5_EUUSLA_Water Quality_Manager
T-WC-WI11598	Total Dissolved Solids (TDS)(Gravimetric) by SM 2540 C-2011, SM 2540 C-1997 or EPA 160.1 in Waters and Wastewaters	5_EUUSLA_Water Quality_Manager
T-WC-WI11599	Total Dissolved Solids by 2540 C	5_EUUSLA_Water Quality_Manager
T-WC-WI11600	Total Fixed Solids (TFS), Total Volatile Solids (TVS) Gravimetric by SM 2540 E-2011, SM 2540 G-2011 or EPA 160.4 in Waters	5_EUUSLA_Water Quality_Manager
T-WC-WI11603	Total Solids (Gravimetric) by SM 2540 B-2011, SM 2540 G-2011, EPA 160.3, SM 2540 G-1991, SM 2540 B-1997, or SM 2540 G-1997 in Waters and Wastewaters	5_EUUSLA_Water Quality_Manager
T-WC-WI11604	Total Suspended Solids (TSS)-Gravimetric by SM 2540 D-2011 or SM 2540 D-1997 and Total Filtered: Total Volume Test by NJDEP in Waters	5_EUUSLA_Water Quality_Manager
T-WC-WI15618	Turbidity by EPA 180.1 Rev. 2 or SM 2130 B-2011	5_EUUSLA_Env Quality Assurance_All
T-WC-WI11605	Volatile Dissolved Solids (Calculation) by SM 2540 E - 2011 or EPA 160.4	5_EUUSLA_Water Quality_Manager
T-WC-WI10364	Water Quality Washroom Procedures	5_EUUSLA_Water Quality_Manager
8.09 Air Quality		
Work Instruction		
T-AQ-WI7174	Analysis of Air for Selected Volatile Organic Compounds by Gas Chromatography with Flame Ionization Detector and Photo Using EPA Method 18 and 25	5_EUUSLA_Volatiles in Air_Manager

T-AQ-WI7162	Calibration of Pressure Gauges	5_EUUSLA_Volatiles in Air_Manager
T-AQ-WI7157	Chemist	5_EUUSLA_Volatiles in Air_Manager
T-AQ-WI7165	Cleaning and Handling of Flow Controllers	5_EUUSLA_Volatiles in Air_Manager
T-AQ-WI7164	Cleaning and Handling of Summa Canisters	5_EUUSLA_Volatiles in Air_Manager
T-AQ-WI7270	Director	5_EUUSLA_Volatiles in Air_Manager
T-AQ-WI7159	Group Leader	5_EUUSLA_Volatiles in Air_Manager
T-AQ-WI7172	Helium as a Tracer Gas	5_EUUSLA_Volatiles in Air_Manager
T-AQ-WI7275	Low-Level Volatile Organic Compounds in Air by EPA Method TO-15 Using GC/MSD in SIM Mode	5_EUUSLA_Volatiles in Air_Manager
T-AQ-WI7161	Manager	5_EUUSLA_Volatiles in Air_Manager
T-AQ-WI7170	Oxygen and Carbon Dioxide in Air	5_EUUSLA_Volatiles in Air_Manager
T-AQ-WI7168	Preparing Summa Can Order	5_EUUSLA_Volatiles in Air_Manager
T-AQ-WI7160	Principal Specialist	5_EUUSLA_Volatiles in Air_Manager
T-AQ-WI7167	Procedure for Compositing Samples from a Tedlar Bag	5_EUUSLA_Volatiles in Air_Manager
T-AQ-WI7163	Routine Instrument Maintenance for Volatiles in Air by GC and GC/MS	5_EUUSLA_Volatiles in Air_Manager
T-AQ-WI7158	Senior Chemist	5_EUUSLA_Volatiles in Air_Manager
T-AQ-WI7169	Standards Preparation, Validation, and Documentation Using EPA Method TO-14 and TO-15	5_EUUSLA_Volatiles in Air_Manager
T-AQ-WI7436	The Determination of Volatile Organic Compounds in Air by GC/MS Using EPA MEthod TO-14 or TO-15	5_EUUSLA_Volatiles in Air_Manager
T-AQ-WI7271	Volatiles in Air Audit Process	5_EUUSLA_Volatiles in Air_Manager
T-AQ-WI7173	Volatiles in Air Tentatively Identified Compound Method	5_EUUSLA_Volatiles in Air_Manager
T-AQ-WI7171	Volatiles in Air Tentatively Identified Compound Method (Interpretive)	5_EUUSLA_Volatiles in Air_Manager
8.10 EPH/Miscellaneous GC		
Work Instruction		
T-GC-WI9253	Analysis of DRO/RRO by Alaska 102/103 in Waters and Soils	5_EUUSLA_EPH/Misc. GC_Manager
T-GC-WI9643	Associate Chemist	5_EUUSLA_EPH/Misc. GC_Manager
T-GC-WI15025	Associate Specialist	5_EUUSLA_Pesticide Residue Analysis_Manager
T-GC-WI9644	Carbon Dioxide in Water Using Headspace Sampling Techniques and GC-TCD, Method RSK-175 or 8015	5_EUUSLA_EPH/Misc. GC_Manager
T-GC-WI9649	CCWE Water Miscible Solvents by Method 8015B	5_EUUSLA_EPH/Misc. GC_Manager
T-GC-WI9650	Chemist	5_EUUSLA_EPH/Misc. GC_Manager
T-GC-WI9656	Client Specific - Total Extractable Hydrocarbons (TEH) by Method 8015B Modified Using GC-FID	5_EUUSLA_EPH/Misc. GC_Manager
T-GC-WI9657	Common Equations Used During Chromatographic Analyses	5_EUUSLA_EPH/Misc. GC_Manager
T-GC-WI9663	Determination of Diesel and Residual Range Organics using Alaska 102/103 Small Volume (SV) Protocols in Aqueous Samples	5_EUUSLA_EPH/Misc. GC_Manager
T-GC-WI9665	Determination of Petroleum Range Organics in Waters and Solids using FL-PRO	5_EUUSLA_EPH/Misc. GC_Manager
T-GC-WI9668	Director	5_EUUSLA_EPH/Misc. GC_Manager
T-GC-WI12071	DRO(C12-C23) and ORO(>C23-C32) by Method 8015B/CA LUFT in Water using GC-FID	5_EUUSLA_EPH/Misc. GC_Manager
T-GC-WI9669	DRO/ORO by 8015B/C/D and TPH by NWTPH-Dx (Modified) in Water using Mini-Extraction and GC-FID	5_EUUSLA_EPH/Misc. GC_Manager

T-GC-WI9671	DRO/TPH by Method 8015 (B, C, of D) in Waters using Microextraction and GC-FID	5_EUUSLA_EPH/Misc. GC_Manager
T-GC-WI9672	EPH by Massachusetts Protocol (MAEPH) in Waters and Solids Using GC	5_EUUSLA_EPH/Misc. GC_Manager
T-GC-WI9673	EPH in Waters and Solids Using GC-FID by Method ECY97-602 WA EPH	5_EUUSLA_EPH/Misc. GC_Manager
T-GC-WI9675	Extractable Petroleum Products by Method OA-2 (Iowa Protocol) in Waters and Solids Using GC/FID	5_EUUSLA_EPH/Misc. GC_Manager
T-GC-WI9676	Extraction of Soils/Solids for Glycol Analysis	5_EUUSLA_EPH/Misc. GC_Manager
T-GC-WI9677	Extraction of Solids/Soils for Analysis of Alcohols by Method 8015B	5_EUUSLA_EPH/Misc. GC_Manager
T-GC-WI9678	Fractionated EPH using LA RECAP Ranges in Waters and Solids by GC-FID	5_EUUSLA_EPH/Misc. GC_Manager
T-GC-WI9679	GC Routine and Nonroutine Maintenance for Instrumentation Used for VPH Analysis	5_EUUSLA_EPH/Misc. GC_Manager
T-GC-WI9680	Glycols by Method 8015B/8015C in Water and Solid Matrices Using GC-FID	5_EUUSLA_EPH/Misc. GC_Manager
T-GC-WI9681	Group Leader	5_EUUSLA_EPH/Misc. GC_Manager
T-GC-WI9683	Interpretation and Integration of Chromatographic Data	5_EUUSLA_EPH/Misc. GC_Manager
T-GC-WI9684	Laboratory Technician	5_EUUSLA_EPH/Misc. GC_Manager
T-GC-WI9685	MA DEP VPH in Waters and Solids Using GC	5_EUUSLA_EPH/Misc. GC_Manager
T-GC-WI9689	Maintenance and Troubleshooting Procedures for GC-FID Instrumentation	5_EUUSLA_EPH/Misc. GC_Manager
T-GC-WI9690	Manager	5_EUUSLA_EPH/Misc. GC_Manager
T-GC-WI9698	Monitoring QC Data Acceptance Limits	5_EUUSLA_EPH/Misc. GC_Manager
T-GC-WI9736	New Jersey Extractable Petroleum Hydrocarbons (NJEPH) in Waters and Solids using GC-FID	5_EUUSLA_EPH/Misc. GC_Manager
T-GC-WI9740	PMI VOCs (Direct Injection) by Method 1671A in Waters Using GC/FID	5_EUUSLA_EPH/Misc. GC_Manager
T-GC-WI9748	Principal Chemist	5_EUUSLA_EPH/Misc. GC_Manager
T-GC-WI9749	QC Data Acceptability and Corrective Action	5_EUUSLA_EPH/Misc. GC_Manager
T-GC-WI9756	Qualitative/Quantitative GC Fingerprint in Petroleum Distillates, Fuels, and Oils by 8015B Mod/8015C Mod/ or 8015D Mod	5_EUUSLA_EPH/Misc. GC_Manager
T-GC-WI9757	Senior Chemist	5_EUUSLA_EPH/Misc. GC_Manager
T-GC-WI9758	Senior Specialist	5_EUUSLA_EPH/Misc. GC_Manager
T-GC-WI9759	Senior Technician	5_EUUSLA_EPH/Misc. GC_Manager
T-GC-WI9769	Terphenyls by Method 8015B in Water and Solids Using GC-FID	5_EUUSLA_EPH/Misc. GC_Manager
T-GC-WI9770	TNRCC TX Method 1005 - Total Petroleum Hydrocarbons (Gasoline Range, Diesel Range, and Extended Range Organics) in Waters and Solids	5_EUUSLA_EPH/Misc. GC_Manager
T-GC-WI9771	Total Petroleum Hydrocarbons with Ranges by Methods 8015B/8015C/8015D in Waters and Solids by GC-FID	5_EUUSLA_EPH/Misc. GC_Manager
T-GC-WI9772	Total Saturated Hydrocarbons by Method 8015C in Waters and Solids using GC/FID	5_EUUSLA_EPH/Misc. GC_Manager
T-GC-WI9773	TPH by CT ETPH	5_EUUSLA_EPH/Misc. GC_Manager
T-GC-WI9778	TPH by Methods 8015B/C/D mod. in Waters and Solids Using GC-FID	5_EUUSLA_EPH/Misc. GC_Manager
T-GC-WI9781	TPH by NWTPH-Dx (modified) in Soils using GC-FID	5_EUUSLA_EPH/Misc. GC_Manager
T-GC-WI9783	TPH by NWTPH-Dx (modified) in Waters using GC-FID	5_EUUSLA_EPH/Misc. GC_Manager
T-GC-WI9784	TPH by TN EPH in Water and Soil using GC-FID	5_EUUSLA_EPH/Misc. GC_Manager
T-GC-WI9788	TPH DRO and TPH ORO by 8015B/8015C/8015D in Solids using GC-FID	5_EUUSLA_EPH/Misc. GC_Manager
T-GC-WI9786	TPH DRO and TPH ORO by 8015B/C/D in Water using GC-FID	5_EUUSLA_EPH/Misc. GC_Manager
T-GC-WI9790	TPH-DRO by 8015C South Carolina Methodology Using GC-FID	5_EUUSLA_EPH/Misc. GC_Manager
T-GC-WI9791	TPH-DX with Fuel Identification in Waters and Solids by NWTPH-DX	5_EUUSLA_EPH/Misc. GC_Manager
T-GC-WI9792	TX 1006 Characterization of C6-C35 Petroleum Hydrocarbons in Waters and Solids	5_EUUSLA_EPH/Misc. GC_Manager
T-GC-WI9794	Using "Range Compound Analysis" Software for Range Data Acquisition	5_EUUSLA_EPH/Misc. GC_Manager
T-GC-WI24004	Volatile Hydrocarbons in Water by ASTM Standard Test Method D8028-17 Using Headspace Sampling Techniques and GC-FID	5_EUUSLA_EPH/Misc. GC_Manager
T-GC-WI9796	Volatile Hydrocarbons in Water by Method RSK-175 and SW-846 8015 Using Headspace Sampling Techniques and GC-FID	5_EUUSLA_EPH/Misc. GC_Manager
T-GC-WI9798	Volatile Organic Concentration of Waste Samples by Method 25D Using FID and ELCD	5_EUUSLA_EPH/Misc. GC_Manager
T-GC-WI9822	VPH in Waters and Solids Using GC-FID by Method ECY 97-602 WA VPH	5_EUUSLA_EPH/Misc. GC_Manager
T-GC-WI9824	Water Miscible Solvents by Method 8015B/8015C/8015D Using GC-FID	5_EUUSLA_EPH/Misc. GC_Manager
8.11.01 Prep for Pesticides		
Work Instruction		
T-OE-PEST-WI10281	Cleanup Procedures for the Extraction of Pesticides and Polychlorinated Biphenyls (PCBs)	5_EUUSLA_Organic Extraction_Manager
T-OE-PEST-WI10959	Client Specific - Drying and Grinding for Cyclopamine	5_EUUSLA_Organic Extraction_Manager

T-OE-PEST-WI10958	Client Specific - Microwave Extraction of Cyclopamine for a Biomass	5_EUUSLA_Organic Extraction_Manager
T-OE-PEST-WI10886	Client Specific - Soxhlet Extraction of Cyclopamine	5_EUUSLA_Organic Extraction_Manager
T-OE-PEST-WI10907	Extraction By Method 8318/8318A for Carbamate and Urea Pesticides in Solids	5_EUUSLA_Organic Extraction_Manager
T-OE-PEST-WI10940	Extraction for Perchlorate by Method 6850 in Solids	5_EUUSLA_Organic Extraction_Manager
T-OE-PEST-WI10919	Extraction of Chlorinated Herbicides in Water by SW-846 8151A	5_EUUSLA_Organic Extraction_Manager
T-OE-PEST-WI11372	Extraction of Formaldehyde and Other Aldehydes in a Water by Method 8315A	5_EUUSLA_Organic Extraction_Manager
T-OE-PEST-WI10942	Extraction of Nitroaromatics and Nitroamines by Method 8330/A/B in Water	5_EUUSLA_Organic Extraction_Manager
T-OE-PEST-WI11373	Extraction of Solid Samples for Formaldehyde and Aldehydes by Method 8315A	5_EUUSLA_Organic Extraction_Manager
T-OE-PEST-WI10881	Liquid/Liquid Extraction Procedure for the Determination of Organophosphorous Pesticides in a Wastewater Matrix	5_EUUSLA_Organic Extraction_Manager
T-OE-PEST-WI11381	Microextraction by Method 504.1 or 8011 for EDB, DBCP, and TCP in Water	5_EUUSLA_Organic Extraction_Manager
T-OE-PEST-WI10956	Microextraction of EDB, DBCP, and TCP in Solids by Method 8011	5_EUUSLA_Organic Extraction_Manager
T-OE-PEST-WI10927	Microwave Extraction Method 3546 for PCBs in a Solid Matrix	5_EUUSLA_Organic Extraction_Manager
T-OE-PEST-WI10926	Microwave Extraction Method 3546 for Pesticides in a Solid Matrix	5_EUUSLA_Organic Extraction_Manager
T-OE-PEST-WI11410	Pesticide Extract Cleanup Using GPC by Method 3640A	5_EUUSLA_Organic Extraction_Manager
T-OE-PEST-WI10920	Separatory Funnel Extraction by Method 3510C, 608 or 622 for Pesticides and PCBs in a Wastewater	5_EUUSLA_Organic Extraction_Manager
T-OE-PEST-WI10941	Soxhlet Extraction (Method 3540C) for Triazine Herbicides and Organophosphorous Pesticides in a Solid Matrix	5_EUUSLA_Organic Extraction_Manager
T-OE-PEST-WI10922	Ultrasonic Extraction for PCBs in a Solid Matrix by Method 3550C	5_EUUSLA_Organic Extraction_Manager
T-OE-PEST-WI10939	Ultrasonic Extraction for Pesticides in a Solid Matrix by Method 3550	5_EUUSLA_Organic Extraction_Manager
T-OE-PEST-WI10912	Ultrasonic Extraction of Chlorinated Herbicides by Method 3550B/C in a Solid Matrix	5_EUUSLA_Organic Extraction_Manager
T-OE-PEST-WI10943	Ultrasonic Extraction of Nitroaromatics and Nitroamines by Method 8330/A/B in Solids	5_EUUSLA_Organic Extraction_Manager
T-OE-PEST-WI10918	Waste Dilution by EPA 3580A for PCBs in Oil	5_EUUSLA_Organic Extraction_Manager
T-OE-PEST-WI10921	Waste Dilution by EPA 3580A for Pesticides in a Non-Water Soluble Leachate Matrix	5_EUUSLA_Organic Extraction_Manager
8.11.02 Prep for SVOA		
Work Instruction		
T-OE-SVOA-WI10280	Alumina Column Cleanup for DRO	5_EUUSLA_Organic Extraction_Manager
T-OE-SVOA-WI10938	Extraction of Semi-Volatile Organic Compounds by Method 525.2 in Drinking Waters	5_EUUSLA_Organic Extraction_Manager
T-OE-SVOA-WI11374	Extraction Procedure for the Determination of PAHs in an XAD Air Tube Sample by TO-15A	5_EUUSLA_Organic Extraction_Manager
T-OE-SVOA-WI10882	Extraction Procedure the the Determination of 2-Chlorobenzalmalonotrile (CS) and 3-Quinuclidinyl Benzilate (BZ) in Water and Wastewater	5_EUUSLA_Organic Extraction_Manager
T-OE-SVOA-WI10933	Liquid -Liquid Extraction Procedure for the Determination of Target Compound list Analytes in a Water Matrix	5_EUUSLA_Organic Extraction_Manager
T-OE-SVOA-WI10923	Liquid/Liquid Extraction Procedure for the Determination of Base-Neutrals and Acid Extractables in a Wastewater Matrix by Method 8270	5_EUUSLA_Organic Extraction_Manager
T-OE-SVOA-WI10904	Liquid/Liquid Extraction Procedure for the Determination of Neutral Extractables in a Wastewater Matrix	5_EUUSLA_Organic Extraction_Manager
T-OE-SVOA-WI10916	Low-Level Sonic Probe Extraction Procedure by Method 3550C for the Determination of Semivolatiles in a Solid Matrix	5_EUUSLA_Organic Extraction_Manager

T-OE-SVOA-WI10915	Low-Level Ultrasonic Extraction by Method 3550C for PAHs in a Solid Matrix by GC/MS	5_EUUSLA_Organic Extraction_Manager
T-OE-SVOA-WI10928	Microwave Extraction by Method 3546 for Semivolatiles	5_EUUSLA_Organic Extraction_Manager
T-OE-SVOA-WI10880	Microwave Extraction for the Determination of Semivolatiles in a Solid Matrix	5_EUUSLA_Organic Extraction_Manager
T-OE-SVOA-WI10554	Semivolatile Extract Cleanup Using Gel Permeation Chromatography	5_EUUSLA_Organic Extraction_Manager
T-OE-SVOA-WI10935	Separatory Funnel Extraction (Method 3510C) or Waste Dilution (Method 3580A) of Base Neutrals and Acid Extractables in Leachates	5_EUUSLA_Organic Extraction_Manager
T-OE-SVOA-WI10931	Separatory Funnel Extraction by Method 3510C for BNAs by 8270 SIM in Wastewater	5_EUUSLA_Organic Extraction_Manager
T-OE-SVOA-WI11432	Separatory Funnel Extraction by Method 3510C for BNAs in Wastewater	5_EUUSLA_Organic Extraction_Manager
T-OE-SVOA-WI10924	Separatory Funnel Extraction by Method 3510C for Tetraethyl Lead in Waters	5_EUUSLA_Organic Extraction_Manager
T-OE-SVOA-WI10947	Separatory Funnel Extraction for BNAs in Wastewater by Method 625	5_EUUSLA_Organic Extraction_Manager
T-OE-SVOA-WI10946	Separatory Funnel Extraction for PAHs in Water by GC/MS Using Method 3510C	5_EUUSLA_Organic Extraction_Manager
T-OE-SVOA-WI18058	Separatory Funnel Extraction of Chlorinated Herbicides in Water by SW-846 Method 8151A	5_EUUSLA_Organic Extraction_Manager
T-OE-SVOA-WI10884	Solid Phase Extraction Procedure for the Determination of THPA, THPI, and PA in a Water Matrix	5_EUUSLA_Organic Extraction_Manager
T-OE-SVOA-WI10925	Sonic Probe Extraction Procedure for the Determination of Semivolatiles in a Solid Matrix by SIM	5_EUUSLA_Organic Extraction_Manager
T-OE-SVOA-WI10936	Waste Dilution Procedure for the Determination of Acid Extractables and Base-Neutrals in a Non-Water Soluble Leachate Matrix by Method 3580A	5_EUUSLA_Organic Extraction_Manager
T-OE-SVOA-WI10917	Waste Dilution, EPA 3580A for Acid Extractables and Base-Neutrals in a Non-Water Soluble Matrix	5_EUUSLA_Organic Extraction_Manager
8.11.03 Prep for GC		
Work Instruction		
T-OE-GC-WI10278	10g Silica Gel Cleanup by Method 3630C for Hydrocarbons by GC in Water and Solid Matrices	5_EUUSLA_Organic Extraction_Manager
T-OE-GC-WI10949	3 g Silica Gel Column Cleanup for DRO	5_EUUSLA_Organic Extraction_Manager
T-OE-GC-WI10944	Client Specific - Separatory Funnel Extraction Method 3510C for DRO in Water or Wastewater	5_EUUSLA_Organic Extraction_Manager
T-OE-GC-WI11367	Client Specific - Separatory Funnel Extraction Procedure for the Determination of Extractable Petroleum Hydrocarbons in a Water Matrix by Washington Methodology	5_EUUSLA_Organic Extraction_Manager
T-OE-GC-WI10932	Extraction by EPA 3546 or 3550 for DRO and/or RRO in Solids for Alaska Methodology	5_EUUSLA_Organic Extraction_Manager
T-OE-GC-WI11364	Extraction of Total Petroleum Hydrocarbon Organics in Waters by Texas Methodology	5_EUUSLA_Organic Extraction_Manager
T-OE-GC-WI11365	Extraction of Total Petroleum Hydrocarbons in a Solid Matrix by Texas Methodology	5_EUUSLA_Organic Extraction_Manager
T-OE-GC-WI10906	Microextraction by Method 3511 for DRO in Water and Wastewater	5_EUUSLA_Organic Extraction_Manager
T-OE-GC-WI10899	Microwave Extraction for EPH in a Solid Matrix by Montana Protocol	5_EUUSLA_Organic Extraction_Manager
T-OE-GC-WI10900	Microwave Extraction for EPH in a Solid Matrix by Washington Protocol	5_EUUSLA_Organic Extraction_Manager
T-OE-GC-WI10930	Microwave Extraction Method 3546 for DRO and Saturated Hydrocarbons in a Solid Matrix	5_EUUSLA_Organic Extraction_Manager
T-OE-GC-WI10883	Microwave Extraction Method 3546 for NJ EPH in a Solid Matrix	5_EUUSLA_Organic Extraction_Manager
T-OE-GC-WI10909	Microwave Extraction, Method 3546, for MA EPH in a Solid Matrix	5_EUUSLA_Organic Extraction_Manager
T-OE-GC-WI10910	Quick Silica Gel Cleanup for Hydrocarbons by GC in Solid and Water Matrices	5_EUUSLA_Organic Extraction_Manager

T-OE-GC-WI10911	Separatory Funnel Extraction by Method 3510C for DRO in Water by California Methodology	5_EUUSLA_Organic Extraction_Manager
T-OE-GC-WI10894	Separatory Funnel Extraction for DRO and RRO by AK 102/103 in a Water Matrix	5_EUUSLA_Organic Extraction_Manager
T-OE-GC-WI10890	Separatory Funnel Extraction for EPH in Water or Wastewater by Montana Protocol	5_EUUSLA_Organic Extraction_Manager
T-OE-GC-WI10893	Separatory Funnel Extraction for EPH in Water or Wastewater by Tennessee Methodology	5_EUUSLA_Organic Extraction_Manager
T-OE-GC-WI10914	Separatory Funnel Extraction for EPH in Waters by Massachusetts, New Jersey, and Louisiana Protocol	5_EUUSLA_Organic Extraction_Manager
T-OE-GC-WI10892	Separatory Funnel Extraction for ETPH in Water or Wastewater Matrix by Connecticut Methodology	5_EUUSLA_Organic Extraction_Manager
T-OE-GC-WI10889	Separatory Funnel Extraction for TPH in Water or Wastewater by FL-PRO	5_EUUSLA_Organic Extraction_Manager
T-OE-GC-WI10908	Separatory Funnel Extraction Method ECY 97-602 NWTPH-DX for TPH in a Water or Wastewater Matrix	5_EUUSLA_Organic Extraction_Manager
T-OE-GC-WI10879	Silica Gel Fractionation by Method 3630C for Hydrocarbons by GC in Water and Solid Matrices	5_EUUSLA_Organic Extraction_Manager
T-OE-GC-WI10898	Sonic Probe Extraction by FL-PRO for Petroleum Range Organics in Solids	5_EUUSLA_Organic Extraction_Manager
T-OE-GC-WI10913	Sonic Probe Extraction for TPH in Solids by Washington DX	5_EUUSLA_Organic Extraction_Manager
T-OE-GC-WI10957	Sonic Probe Extraction of Glycols by Method 3550C from a Solid Matrix	5_EUUSLA_Organic Extraction_Manager
T-OE-GC-WI10897	Sonication Extraction Method 3550B and C for DRO (CA) in Solids	5_EUUSLA_Organic Extraction_Manager
T-OE-GC-WI10945	Sonication Extraction Method 3550C for DRO in Soils or Solids	5_EUUSLA_Organic Extraction_Manager
T-OE-GC-WI10937	Ultrasonic Extraction by Method 3550C for Fingerprint on Petroleum Products in Solid Matrices	5_EUUSLA_Organic Extraction_Manager
T-OE-GC-WI10902	Ultrasonic Extraction for EPH in a Solid Matrix by Tennessee Methodology	5_EUUSLA_Organic Extraction_Manager
T-OE-GC-WI10901	Ultrasonic Extraction for ETPH in Solid Matrix by Connecticut Methodology	5_EUUSLA_Organic Extraction_Manager
T-OE-GC-WI10905	Waste Dilution for the Determination of Saturated Hydrocarbons in an Oil Matrix	5_EUUSLA_Organic Extraction_Manager
8.11.04 General		
Work Instruction		
T-OE-GEN-WI14427	Associate Chemist	5_EUUSLA_Organic Extraction_Manager
T-OE-GEN-WI11363	Chemist	5_EUUSLA_Organic Extraction_Manager
T-OE-GEN-WI10808	Concentration Using a TurboVap LV Concentration Workstation	5_EUUSLA_Organic Extraction_Manager
T-OE-GEN-WI11369	Determining QC Sample Volume for Organic Extractions	5_EUUSLA_Organic Extraction_Manager
T-OE-GEN-WI11370	Director	5_EUUSLA_Organic Extraction_Manager
T-OE-GEN-WI10862	Electrothermal Heating Mantles	5_EUUSLA_Organic Extraction_Manager
T-OE-GEN-WI7154	Food and Tissue Preparation	5_EUUSLA_Leachate Preparation_Manager
T-OE-GEN-WI10864	Glassware Cleaning for Organic Extractions	5_EUUSLA_Organic Extraction_Manager
T-OE-GEN-WI10873	Glassware Cleaning Using Automatic Washers for non-Organic Extraction Glassware	5_EUUSLA_Organic Extraction_Manager
T-OE-GEN-WI11376	Group Leader	5_EUUSLA_Organic Extraction_Manager
T-OE-GEN-WI11377	Laboratory Assistant	5_EUUSLA_Organic Extraction_Manager
T-OE-GEN-WI11378	Laboratory Technician	5_EUUSLA_Organic Extraction_Manager

T-OE-GEN-WI10877	Maintenance and Calibration of the Microwave Accelerated Reaction System	5_EUUSLA_Organic Extraction_Manager
T-OE-GEN-WI10872	Maintenance of Accelerated Solvent Extractor (ASE) and the Pressurized Solvent Extractor (PSE)	5_EUUSLA_Organic Extraction_Manager
T-OE-GEN-WI11379	Manager	5_EUUSLA_Organic Extraction_Manager
T-OE-GEN-WI11400	Multipette Stream Operation and Calibration	5_EUUSLA_Organic Extraction_Manager
T-OE-GEN-WI10863	N-Evap	5_EUUSLA_Organic Extraction_Manager
T-OE-GEN-WI10876	Organic Extraction Standards Storage and Handling	5_EUUSLA_Organic Extraction_Manager
T-OE-GEN-WI11408	Percentage Lipids Using Soxhlet Extraction by Method 3540C	5_EUUSLA_Organic Extraction_Manager
T-OE-GEN-WI10871	Pesticide Extract Concentration Using a Zymark TurboVap II Concentration Workstation	5_EUUSLA_Organic Extraction_Manager
T-OE-GEN-WI10866	pH Meters and Electrodes	5_EUUSLA_Organic Extraction_Manager
T-OE-GEN-WI13363	Pore Water Generation Procedure	5_EUUSLA_Organic Extraction_Manager
T-OE-GEN-WI11415	Principle Chemist	5_EUUSLA_Organic Extraction_Manager
T-OE-GEN-WI10867	Procedure for Containment and Clean Up of Hazardous materials Spills in Organic Prep Lab	5_EUUSLA_Organic Extraction_Manager
T-OE-GEN-WI11418	Refrigerated Recirculators	5_EUUSLA_Organic Extraction_Manager
T-OE-GEN-WI11420	Routine Maintenance of Miele Glass Washers	5_EUUSLA_Organic Extraction_Manager
T-OE-GEN-WI11424	Sampling Equiment Cleaning and Validation for Metals Analysis	5_EUUSLA_Organic Extraction_Manager
T-OE-GEN-WI10868	Scheduling Extraction Batches	5_EUUSLA_Organic Extraction_Manager
T-OE-GEN-WI11427	Semivolatile Extract Concentration Using a Zymark TurboVap II Concentration Workstation	5_EUUSLA_Organic Extraction_Manager
T-OE-GEN-WI11428	Senior Administrator	5_EUUSLA_Organic Extraction_Manager
T-OE-GEN-WI11429	Senior Chemist	5_EUUSLA_Organic Extraction_Manager
T-OE-GEN-WI11430	Senior Specialist	5_EUUSLA_Organic Extraction_Manager
T-OE-GEN-WI11431	Senior Technician	5_EUUSLA_Organic Extraction_Manager
T-OE-GEN-WI10865	Solvent, Reagent, and Amber GC Vial Lot Testing for Organic Extractions	5_EUUSLA_Organic Extraction_Manager
T-OE-GEN-WI11440	Soxhlet Extraction Procedure for Extractable Matter in Textiles	5_EUUSLA_Organic Extraction_Manager
T-OE-GEN-WI10869	Spike Solution Testing and Approval	5_EUUSLA_Organic Extraction_Manager
T-OE-GEN-WI10861	Steam Bath and N-Evap Usage, Calibration and Maintenance	5_EUUSLA_Organic Extraction_Manager
T-OE-GEN-WI10870	Ultrasonic Probe Horn Cleaning	5_EUUSLA_Organic Extraction_Manager
T-OE-GEN-WI10860	Ultrasonic Processor Maintenance and Tuning	5_EUUSLA_Organic Extraction_Manager
8.12 PFAS by LC/MS/MS		
Work Instruction		
T-PFAS-WI7732	Associate Chemist	5_EUUSLA_PFAS_Manager
T-PFAS-WI20032	Associate Specialist	5_EUUSLA_PFAS_Manager
T-PFAS-WI7733	Chemist	5_EUUSLA_PFAS_Manager
T-PFAS-WI21864	Client Specific Table 3 PFAS in Water and Soil Using LC/MS/MS	5_EUUSLA_PFAS_Manager
T-PFAS-WI20127	Client Specific: Table 3 Compounds by Direct Injection Using LC/MS/MS	5_EUUSLA_PFAS_Manager

T-PFAS-WI7745	Director	5_EUUSLA_Specialty Services_Manager
T-PFAS-WI18142	Extraction and Analysis of Perfluoroethercarboxylic Acids (PFECA) in Solid Samples by Method 537, Ver. 1.1, Modified	5_EUUSLA_PFAS_Manager
T-PFAS-WI7746	Group Leader	5_EUUSLA_PFAS_Manager
T-PFAS-WI7737	Laboratory Technician	5_EUUSLA_PFAS_Manager
T-PFAS-WI20005	Manager	5_EUUSLA_PFAS_Manager
T-PFAS-WI21568	Manifold Cleaning for PFAS Extractions	5_EUUSLA_PFAS_Manager
T-PFAS-WI21398	New Jersey - Polyfluorinated Alkyl Substances (PFAS) in Aqueous Samples by Method 537 Version 1.1 Modified Using LC/MS/MS	5_EUUSLA_PFAS_Manager
T-PFAS-WI12017	Perfluorinated Alkyl Substances (PFASs) in Drinking Water by Method 537 Version 1.1	5_EUUSLA_PFAS_Manager
T-PFAS-WI18003	Perfluoroethercarboxylic Acids (PFECA) in Aqueous Samples	5_EUUSLA_PFAS_Manager
T-PFAS-WI21252	PFAS Data Review Procedure	5_EUUSLA_PFAS_Manager
T-PFAS-WI22030	Polyfluorinated Alkyl Substances (PFAS) in Aqueous Samples by Method 537 Version 1.1 Modified QSM5.1 Table B-15 Using LC/MS/MS	5_EUUSLA_PFAS_Manager
T-PFAS-WI14355	Polyfluorinated Alkyl Substances (PFAS) in Aqueous Samples by Method 537 Version 1.1 Modified Using LC/MS/MS	5_EUUSLA_PFAS_Manager
T-PFAS-WI22283	Polyfluorinated Alkyl Substances (PFAS) in Solids by Method 537 Version 1.1 Modified QSM 5.1 Table B-15 Using LC/MS/MS	5_EUUSLA_PFAS_Manager
T-PFAS-WI12031	Polyfluorinated Alkyl Substances (PFAS) in Solids by Method 537 Version 1.1 Modified Using LC/MS/MS	5_EUUSLA_PFAS_Manager
T-PFAS-WI23588	Preventative and Corrective Maintenance for the API 4000 and AB Sciex 4500 Liquid Chromatograph Mass Spectrometers (LC/MS/MS)	5_EUUSLA_PFAS_Manager
T-PFAS-WI7742	Principal Chemist	5_EUUSLA_PFAS_Manager
T-PFAS-WI7743	Principal Specialist	5_EUUSLA_PFAS_Manager
T-PFAS-WI7744	Senior Chemist	5_EUUSLA_PFAS_Manager
T-PFAS-WI20052	Senior Specialist	5_EUUSLA_PFAS_Manager
T-PFAS-WI20034	Specialist	5_EUUSLA_PFAS_Manager
T-PFAS-WI13881	Standards Management in the PFAS Laboratory	5_EUUSLA_PFAS_Manager
T-PFAS-WI18548	Total Oxidizable Precursors in Aqueous Samples by LC/MS/MS with Isotope Dilution	5_EUUSLA_PFAS_Manager
8.13 Specialty Services		
Work Instruction		
T-SSG-WI7750	Analysis of Fluorotelemer Alcohols in Water and Wastewater	5_EUUSLA_Specialty Services_Manager
T-SSG-WI14557	Associate Chemist	5_EUUSLA_Specialty Services_Manager
T-SSG-WI14572	Chemist	5_EUUSLA_Specialty Services_Manager
T-SSG-WI7753	Client Specific - 1,4-Dioxane by Head Space (HS) GC/MS in Cosmetics	5_EUUSLA_Specialty Services_Manager
T-SSG-WI9093	Client Specific - Analysis of Glycerol Monolaurate and Propylene Glycol Monolaurate in BioPolySan by Gas Chromatography Mass Spectroscopy (GC/MS)	5_EUUSLA_Specialty Services_Manager
T-SSG-WI12014	Client Specific - Analysis of Iodoacetamide in Aqueous Samples by LC/MS/MS	5_EUUSLA_Specialty Services_Manager
T-SSG-WI12002	Client Specific - Analysis of Piperonyl Butoxide (PBO) in Wastewater by GC/MS/MS	5_EUUSLA_Specialty Services_Manager
T-SSG-WI9160	Client Specific - Analysis of p-tert-Octylphenol (PTOP) in Water by LC/MS/MS	5_EUUSLA_Specialty Services_Manager
T-SSG-WI9419	Client Specific - Method for the Analysis of Dioxathion in Water and Solid Samples	5_EUUSLA_Specialty Services_Manager
T-SSG-WI9420	Client Specific - Trace Analysis of 16 Phthalates in Cosmetic Products by Gas Chromatography Selective Ion Monitoring Mass Spectroscopy (GC/SIM/MS) or Selective Reaction Monitoring (GC/SRM/MS) (Client Specific Method)	5_EUUSLA_Specialty Services_Manager
T-SSG-WI13642	Determination of Endothall in Aqueous Samples Using LC-MS by Method 8321B	5_EUUSLA_Specialty Services_Director
T-SSG-WI12005	Determination of Endothall in Solid Matrix Using LC-MS by Method 8231B	5_EUUSLA_Specialty Services_Manager
T-SSG-WI12008	Determination of Glycols in Waters by Direct Injection LC/MS/MS following SW-846 8321A Modified Method	5_EUUSLA_Specialty Services_Manager

T-SSG-WI9448	Determination of Hydrazine Monomethylhydrazine and 1,1-Dimethylhydrazine in Aqueous Samples by LC/MS/MS Using SW-846 8315A Modified	5_EUUSLA_Specialty Services_Manager
T-SSG-WI9431	Determination of Hydrazine, Monomethylhydrazine and 1,1-Dimethylhydrazine in Soil samples by LC/MS/MS	5_EUUSLA_Specialty Services_Manager
T-SSG-WI9553	Determination of N-Nitrosodimethylamine (NDMA) in Water and Soil by EPA 1625C	5_EUUSLA_Specialty Services_Manager
T-SSG-WI9451	Determination of Perchlorate in Milk and Milk Powder by LCMSMS	5_EUUSLA_Specialty Services_Manager
T-SSG-WI14624	Director	5_EUUSLA_Specialty Services_Director
T-SSG-WI9483	Extraction of Waters for Fluorotelomer Alcohols by Method 3510C	5_EUUSLA_Specialty Services_Manager
T-SSG-WI14626	Group Leader	5_EUUSLA_Specialty Services_Manager
T-SSG-WI14575	Laboratory Technician	5_EUUSLA_Specialty Services_Manager
T-SSG-WI12019	Maintenance and Tuning for Thermo Scientific TSQ Quantum Access Tandem Mass Spectrometer with a Thermo Electron Accela HPLC System (LC/MS/MS)	5_EUUSLA_Specialty Services_Manager
T-SSG-WI20054	Manager	5_EUUSLA_Specialty Services_Director
T-SSG-WI9963	Micromass Quattro Micro Tandem Mass Spectrometer with a Waters 2795 HPLC System (LC/MS/MS)	5_EUUSLA_Specialty Services_Manager
T-SSG-WI14578	Principal Chemist	5_EUUSLA_Specialty Services_Manager
T-SSG-WI14614	Principal Specialist	5_EUUSLA_Specialty Services_Manager
T-SSG-WI14620	Senior Chemist	5_EUUSLA_Specialty Services_Manager
T-SSG-WI7748	Thermo Scientific Trace 1310 Gas Chromatograph Tandem Mass Spectrometer (GC/MS/MS) Preventative and Corrective Maintenance	5_EUUSLA_Specialty Services_Manager
8.14 HRMS Group		
Work Instruction		
T-HRMS-WI14558	Associate Chemist	5_EUUSLA_HRMS_Manager
T-HRMS-WI14574	Chemist	5_EUUSLA_HRMS_Manager
T-HRMS-WI20818	Determination of % Moisture by Freeze Drying using ASTM D3974	5_EUUSLA_HRMS_Manager
T-HRMS-WI12003	Determination of Dioxin-like Polychlorinated Biphenyls by HRGC/HRMS in Aqueous and Solid Matrices by Methods 1613B and 1668C	5_EUUSLA_Specialty Services_Manager
T-HRMS-WI9452	Determination of PCB Homologs in Waters and Solids by Method 680	5_EUUSLA_HRMS_Manager
T-HRMS-WI12013	Determination of Percentage Lipids in Animal and Marine Tissue using EPA Method 1613B	5_EUUSLA_Specialty Services_Manager
T-HRMS-WI21311	Determination of Tetra- Through Octa- Chlorinated Dioxins and Furans in water and solid samples using HRGC/HRMS	5_EUUSLA_HRMS_Manager
T-HRMS-WI9476	Determination of Tetra- Through Octa- Chlorinated Dioxins and Furans in water/solid/food/feed samples using HRGC/HRMS by EPA 1613B or SW-846 Method 8290A	5_EUUSLA_HRMS_Manager
T-HRMS-WI19229	DFS HRGC/HRMS Preventative and Corrective Maintenance	5_EUUSLA_Specialty Services_Manager
T-HRMS-WI14625	Director	5_EUUSLA_HRMS_Director
T-HRMS-WI9480	Extraction of Water and Soil Samples by Method 680	5_EUUSLA_Specialty Services_Manager
T-HRMS-WI9485	Glassware Cleaning for HRMS Extractions	5_EUUSLA_HRMS_Manager
T-HRMS-WI14627	Group Leader	5_EUUSLA_HRMS_Manager
T-HRMS-WI14577	Laboratory Technician	5_EUUSLA_HRMS_Manager
T-HRMS-WI20068	Manager	5_EUUSLA_HRMS_Director
T-HRMS-WI21285	PCB Congeners by HRGC/HRMS in Aqueous and Solid Matrices	5_EUUSLA_HRMS_Manager
T-HRMS-WI9432	PCB Congeners by Method 1668 HRGC/HRMS in Aqueous and Solid Matrices	5_EUUSLA_HRMS_Manager
T-HRMS-WI9487	Preparation of Aqueous and Solid Samples for Food and Feed Analysis by HRMS	5_EUUSLA_Specialty Services_Manager
T-HRMS-WI9489	Preparation of Oils and Oleoresins for Food and Feed Analysis by HRMS	5_EUUSLA_Specialty Services_Manager
T-HRMS-WI14579	Principal Chemist	5_EUUSLA_HRMS_Manager
T-HRMS-WI14616	Principal Specialist	5_EUUSLA_HRMS_Manager

T-HRMS-WI9433	Processing High Resolution Mass Spectrometry Data Using TargetQuan	5_EUUSLA_Specialty Services_Manager
T-HRMS-WI14623	Senior Chemist	5_EUUSLA_HRMS_Manager
T-HRMS-WI21528	Separatory Funnel Extraction Procedure for HRMS Analysis in an Aqueous Matrix	5_EUUSLA_HRMS_Manager
T-HRMS-WI12032	Separatory Funnel Extraction Procedure for HRMS Analysis in an Aqueous Matrix Using Method 1613B, 8290A, 1668A, and 1668C	5_EUUSLA_Specialty Services_Manager
T-HRMS-WI21536	Soxhlet Extraction Procedure for HRMS Analysis in a Solid matrix	5_EUUSLA_HRMS_Manager
T-HRMS-WI9488	Soxhlet Extraction Procedure for HRMS Analysis in a Solid Matrix by Methods: 1613B, 8290A, 1668C, and 1668A	5_EUUSLA_HRMS_Manager
T-HRMS-WI9446	Standards Management in the High Resolution Mass Spectrometry Laboratory	5_EUUSLA_HRMS_Manager

Instrument	# of Units	Detector Type/Manufacturer
Liquid Chromatography/Gas Chromatography/Mass Spectrometry (LC/GC/MS)		
LC/MS/MS	6	AB Sciex 4000 with Exion LC
LC/MS/MS	1	Agilent
LC/MS/MS	2	Agilent LC with Micromass Quattro micro MS/MS and Waters 2996 Photodiode Array UV-Vis Detector
LC/MS/MS	1	Thermo Scientific TSQ Quantum Access with Acella LC
GC/MS	30	Agilent
GC/MS	1	Shimadzu
GC/MS	1	DSQ II MS
GC/MS/MS	1	Thermo TSQ 8000 MSMS
HRGC/HRMS	5	Thermo Scientific DFS
Gas Chromatograph	3	Flame Ionization / Photoionization
Gas Chromatograph	2	Thermal Conductivity
Gas Chromatograph	17	Electron Capture
Gas Chromatograph	2	Nitrogen/Phosphorus
Gas Chromatograph	14	Flame Ionization
Auxiliary Equipment for Gas Chromatographs		
Most of the GC/MS and GC systems include autosamplers and approximately half are fitted with purge and trap concentrators for analysis of volatiles.		

High Performance Liquid Chromatography		
High Performance Liquid Chromatograph	2	Agilent 1100 LC
High Performance Liquid Chromatograph	2	Agilent 1200 HPLC
High Performance Liquid Chromatograph	1	Waters alliance 2695
High Performance Liquid Chromatograph	1	Waters alliance 2795

Gel Permeation Chromatography		
Gel Permeation Chromatograph	3	J2Scientific AccuPrep

Ion Chromatography		
Ion Chromatograph	1	Metrohm 881 IC Pro
Ion Chromatograph	1	Dionex ICS1000
Ion Chromatograph	1	Dionex ICS3000
Ion Chromatograph	1	Dionex ICS2000
Ion Chromatograph	4	Dionex ICS1100
Ion Chromatograph (Specialty Services)	1	Dionex ICS5000 with UltimMate 3000 Aux Pump

Atomic Absorption/Emission Spectrophotometry		
ICP	1	Thermo ICAP™ 7400 Duo ICP Analyzer
ICP	5	Thermo ICAP™ 6500 Duo ICP Analyzer
ICP/MS	1	Agilent 7500ce
ICP/MS	1	Agilent 7700cx
ICP/MS	1	Agilent 7700x
ICP/MS	1	Agilent 7900
Mercury Analyzer	3	Leeman Labs Hydra II
Prep Station	3	Thomas Cain DEENA 60

UV Vis/IR Spectrophotometry:		
UV-Vis Spectrophotometer	3	Thermo Genesys 30
UV-Vis Spectrophotomenter	1	Hach DR2800

Miscellaneous Chemistry Instrumentation		
Auto-titrator System	2	Mantech
Automated COD Analyzer	1	Skalar
Turbidimeter	1	Hach 2100AN
Block Digestion Systems	8	Environmental Express SC150
Block Digestion Systems	6	Environmental Express SC154
Centrifuge	5	Various
Chilled water recirculators		Various
Closed Cup Flashpoint Apparatus, Pensky-Martin	1	Fisher Scientific TA6
Automated SPE HEM Extractor	2	Horizon SPE-DEX 3100
Automated SPE HEM Extractor	2	Environmental Exprerss SPE-Express
Cyanide Midi Distillation Kits	3	Various
Automated BOD Analyzer	3	Mantech
Dissolved Oxygen Meter	6	YSI
Flow Solution Autoanalyzer	1	Astoria Pacific 302
Flow Solution Autoanalyzer	2	OI FS3700
Flow Solution Autoanalyzer	1	OI FS3100
Flow Solution Autoanalyzer	1	Skalar San++
Discrete Autoanalyzer	1	Thermo Gallery Plus
Glassware washer - automated	6	Miele – (2) PG8257 (1) G7827 (1) G7704 (2) G7883
Kjehldal Distillation Apparatus	2	Fisher
Microwave Extractors	3	CEM MarsXpress
pH meters	13	Various
Phenol Midi Distillation	2	Andrews Glass
Pressurized Solvent Extractor	2	Dionex ASE200
Puck Mill	1	ESSA/2000
Sonicators	12	Various
Total Organic Carbon Analyzer	4	O.I. Corp. 1030
Total Organic Carbon Automated Combustion Analyzer	1	Skalar Primacs ATC-100
Turbidimeter	1	Hach 2100AN
Zero Headspace Extractor	74	Various Models

Microbiology Equipment		
Autoclave	2	Steris – Amsco,
Balance	5	Mettler, PB 3002
Balance	1	Mettler-Toledo, AT200
Balance	2	Mettler-Toledo, PR2002
Balance	1	Sartorius BP4100
Biological Safety Cabinet	4	NuAire NU-425-600 Type A/B 3
Biological Safety Cabinet	1	NuAire NU-435-600 Type B2 Fume Hood
Colony Counter	1	Quebec Dark Field
Incubator	1	PGC 9311-1127
Incubator	1	PS WFY20SAWI
Microscope	1	Stereoscope with Zoom, AO Model 570
Microscope	1	Zeiss
pH Meter	2	Orion Model 410A
Quanti-Tray Sealer	1	IDEXX Model 2X
Water Bath	1	Boekel Grant with Removal Heater Circulator
Water Bath	1	Thermo Electron Corp.
Water Bath	1	Precision Coliform Incubator Bath
Water Bath	1	VWR 1275PC
Water Bath	2	Thermo Scientific Model 2862
UV Light	1	Spectronics

Computer Equipment

Our laboratories make extensive use of computers for business applications, technical operations (e.g., our sample management system), and QA Program (see section on Quality Assurance). Numerous physical and virtual servers are used to support the systems. Internet access is provided with an ASA firewall to control incoming and outgoing traffic. The laboratory uses 3 phase power supply and backup generators for life safety and sample integrity preservation.

`

APPENDIX B

TASK HAZARD ANALYSIS

Geosyntec consultants

TASK HAZARD ANALYSIS (Ver. 2, June 2015)

Geosyntec HS Procedures referenced herein are available on Geosyntec's H&S SharePoint site and should be consulted, as appropriate, per project-specific needs. This THA prepared per HS-106-Accident Prevention Program, HS-204-Task Hazard Analysis, and meets the requirements for a "Site-Specific Health and Safety Plan" per Geosyntec HS Procedures and regulations referenced herein (see Section B.14.).

PART A – SITE SAFETY PLAN

A.1. PROJECT/TASK INFORMATION

TASK:	Stormwater Sampling		
Project Name:	West Lake Landfill OU-2 RD	**Project Number/Org:**	CHE8424
Project Address:	13570 St Charles Rock Rd, Bridgeton, MO 63044		
Description of Task & Worksite:	The work to be conducted will consist of measuring stormwater discharge and collecting grab samples at the Inactive Sanitary Landfill (ISL)		

Geosyntec Personnel	Name	Desktop Office Phone	Cell Phone
Site Lead/HS Officer	Tom Ward	636-812-0803	636-459-9835
Project Manager	Jesse Varsho	630-203-3349	630-803-2659
Project Director	Jim Stout	281-810-5054	281-467-7400
HS Coordinator	James Bannantine	262-834-0227	262-339-5630
Regional HS Mngr.	Jason Ford	519-515-0861	226-220-3401
Corp. HS Director	Bob Poll	813-379-4420	813-240-9231
Client Contact(s):	Dana Sincox	314-656-2116	314-313-0838
Subcontractor(s):	☐ Not Applicable ☒ Applicable, provide contact information below:		
	TBD		

A.2. EMERGENCY RESPONSE

Based on analysis of worksite factors, client/regulatory requirements, availability of emergency services.

Consider all Relevant Risk Factors & Response Procedures *(fire/explosion, medical, chemicals/spills, security, site factors, weather, communications).*
EXPLANATORY NOTES, CLARIFICATIONS:

Available Means of Jobsite Emergency Communication/Alerting	☒ Verbal ☒ Cell Phone ☐ Land Line ☒ 2-Way Radio ☒ On-site alarm/signal system ☐ Other:
To Summon Emergency Services Police, Fire, Ambulance	☒ **DIAL 911**, for external responders ☐ **Other**:
Other Emergency Contacts, as needed *(such as security, spill responder, utility):*	
Nearest Emergency Medical Services	Hospital Name: SSM Health DePaul Hospital – St. Louis Address: 12303 De Paul Dr, Bridgeton, MO 63044 Phone #: (314) 344-6000 ☒ See Attached Directions
For **Non-Emergency Urgent Care**	☒ Contact WorkCare, 24/7 at: 888-449-7787 ☐ Other:
Job-site **Evacuation** Procedure, Rally Point, Place of refuge:	Leave location and head towards the site entrance.
Special Emergency Equipment/Procedures	N/A

IMPORTANT: After initial emergency response actions and incident stabilization, contact appropriate project personnel listed in Part A.1.

A.3. SUMMARY OF WORK STEPS, HAZARDS, CONTROLS Based on **PART B, "HAZARD ANALYSIS,"** and worksite/client/project factors.

Summary/outline of work steps/hazards/controls, with references to applicable Sections in Parts B and C, as applicable: Mobilize to existing gas probes and measure/record concentrations of methane, carbon dioxide, oxygen and vacuum/pressure using a field landfill gas meter.

WORK STEPS	HAZARDS	CONTROLS
Task 1: Mobilization Daily travel to and from the site.	• Vehicle Safety • Parking • Traffic • Construction/Road Hazards • Animals • Weather • COVID-19	1. Plan/map travel to site. Inspect vehicle using 360 degree walkaround before starting to drive. 2. Allow sufficient time for transit. Plan for adverse weather conditions while driving. Obey speed limit and traffic. Pay close attention to the road and drive appropriately for the conditions. 3. Pull through (drive-through) parking is preferred means for stopping / parking a vehicle of equipment. Back-in parking is secondary means for parking a vehicle or equipment so that next movement of vehicle or equipment will be in forward direction. 4. Review and follow the "Fieldwork COVID-19 General Prevention Measures" document, which is attached to this THA.
Task 2: Conduct Stormwater Sampling	• Slips, Trips, and Falls. • Hand and Foot Injuries • Heat and Cold Stress • Stinging Insects • Chemical splashing in eyes	1. Pay close attention to foot placement; slow deliberate movement. 2. Wear appropriate PPE, including steel toed boots and long pants. 3. Use insect killer as needed. 4. Plan ahead and bring appropriate clothing, fluids, etc required for weather. 5. If monitoring is concurrent with remedial construction activites, wear a reflective vest, safety glasses, and hard hat. Pay attention to heavy equipment and make sure the operator sees you before moving near the equipment. Use lookouts as needed.

A.4. H&S EQUIPMENT LIST List worksite equipment for worker protection; provide details in Explanatory Notes, Clarifications.

EXPLANATORY NOTES, CLARIFICATIONS:

☒	**ROUTINE PPE**	☒ Standard work clothes appropriate for task ☒ Hard-toed boots/shoes ☒ Hardhat ☒ Safety glasses	☒ Work gloves appropriate for task ☐ Noise/hearing protection ☒ High-visibility/reflective vest ☐ Ice creepers (boot attachments)	
		☒ Basic PPE for protection from low-hazard chemical contact & dust (nitrile gloves, Tyvek suit, dust mask, boot covers).		
☒	**ROUTINE H&S EQUIPMENT/GEAR**	☒ First Aid Kit ☐ Fire extinguisher ☐ Emergency eyewash bottle(s) ☒ Insect control (repellant, wasp spray, other) ☐ Caution tape	☒ Sun protection (sunscreen, shade canopy, other) ☒ Project-supplied drinking water and/or hygiene facilities ☒ Poison ivy skin wash (Technu or similar) ☒ Vehicle emergency kit (flares, lights, reflective device) ☐ Traffic control warning devices (cones, or similar)	
		☐ Other:		
☐	**NON-ROUTINE PERSONAL PROTECTIVE EQUIPMENT (PPE)** (Indicate specific types of PPE in Explanatory Notes, Clarifications)	☐ Goggles and/or face shield ☐ Chemical protective gloves ☐ Coveralls (Tyvek, or other) ☐ Outer boots, boot covers	☐ Disposable n-95 dust mask ☐ Half-face respirator (APR), cartridges ☐ Full-face respirator (APR), cartridges ☐ Personal flotation device	☐ Fire retardant clothing ☐ Arc Flash Protection ☐ Electrical-Hazard-rated boots, gloves ☐ Personal fall apparatus
		☐ Other:		
☐	**SPECIAL HAZARD CONTROLS**	☐ Portable GFCI ☐ Eyewash - 15 min. flow	☐ Lockout/tagout equipment ☐ Emergency deluge shower	☐ Ventilation equipment (fan, blower) ☐ Air horn, alarm
		☐ Other:		
☐	**DECON, PPE DISPOSAL**	☐ Receptacle for disposable PPE	☐ Hand washing provisions	☐ Decon solution, related supplies
		☐ Other:		
☐	**AIR MONITORING EQUIPMENT, OTHER EQUIPMENT FOR WORKER EXPOSURE TESTING**			

PART B – HAZARD ANALYSIS and CONTROLS *Complete Section B.1., then subsequent sections as applicable to the task(s).*

B.1. ROUTINE HAZARD PREPAREDNESS **This section required for all tasks.**

Explanatory Notes, Clarifications:

General Safety, Wellness, Preparedness – Delineate site-specific HS aspects, as appropriate, in "Explanatory Notes, Clarifications," above.

☒ **General premises** hazards - housekeeping, rough terrain, trip hazards, steep slope, remote location.
☒ **Weather/climate-related hazards** – heat stress/cold stress measures, sun screen, severe weather shelter/refuge, "30/30 rule" for lightning
☒ **Plant/Insect/Animal Hazards** - Precautions: poison ivy wash; insect repellant; check for ticks; hornet nest spray; animal precautions.
☒ **Worksite traffic hazards** – Implement measures to protect personnel (high visibility/reflective clothing, on-person lighting, traffic control measures).
☐ **Illumination hazards/night work** - Illuminate work areas and/or access routes, use reflective/hi-visibility clothing or on-person lighting, as appropriate.
☐ **Lifting, manual material handling** – use proper lifting procedures, seek help for >50 lbs.

Geosyntec Procedures: *HS-124-Heat Stress, HS-125-Cold Stress, HS-127-Ticks, HS-208-Housekeeping, HS-210-Walking and Working Surfaces, HS-401-Back Injury Prevention, HS 517 Traffic Safety*

Routine Personal Protection – Delineate site-specific HS aspects, as appropriate, in "Explanatory Notes, Clarifications," above.

☒ **Head protection from overhead hazards** - Wear hardhat or "bump cap" as appropriate for hazard.
☒ **Hand protection** - Wear protective work gloves appropriate for the hazard and work tasks.
☒ **Eye protection** - Wear safety glasses (with side shield or wrap around, either clear or shaded for sun protection), or other appropriate eye protection.
☒ **Foot protection, rough terrain** - Wear work boots/shoes with hard toes, ankle support, puncture resistance, traction, as appropriate for conditions.
☐ **Hearing protection** – use earplugs, earmuffs (or both) as appropriate for conditions; at a minimum where noise levels exceed 85dBA.
☒ **Dust, unsanitary conditions** – For general protection against minimal non-specific hazards, use protective clothing and/or disposable dust mask, as needed.

Geosyntec Procedures: *HS-109-Hearing Conservation, HS 112-Respiratory Protection, HS-113-Personal Protective Equipment, HS-207-Working Alone, HS-105-Driver and Vehicle Safety*

Tools, Equipment, Machinery – Delineate site-specific HS aspects, as appropriate, in "Explanatory Notes, Clarifications," above.

☐ **Manual hand tools** - proper tool for the job, maintain in good condition, use vise/clamp to hold work piece, proper follow through, stay clear of "line of fire."
☐ **Knives, cutting tools** - Utility/folding/collapsible knives and fixed open-bladed knives/cutting tools are *not* permitted, unless specifically authorized. Cutting tools with automatically-retracting blades, or with enclosed/guarded blades are permitted. See HS-502-*Manual Hand Tools* for additional Information.
☐ ***Working near*** **powered tools/equipment/machinery** – safe distance, heed warning signs, stay out of "line of fire," use PPE (for eye/hearing/dust protection).
☐ ***Operation/use of*** **powered tools/equipment/machinery – See Section B.5.**

HS-502-Manual Hand Tools

Security – Delineate site-specific HS aspects, as appropriate, in "Explanatory Notes, Clarifications," above.

☐ **High crime, urban** – Use appropriate measures for personal security (such as buddy system, security service, work scheduling, other measures)
☒ **Working alone** - Establish "check in" procedure with supervisor/project manager.

Geosyntec Procedures: *HS-207-Working Alone*

Routine Driving Hazards – Delineate site-specific HS aspects, as appropriate, in "Explanatory Notes, Clarifications," above.

☒ **Routine work travel** - Use routine safe/defensive driving practices (seat belts, safe speeds, eyes ahead, no tailgating, limit distractions, safe cell phone use, no texting, clear windows, account for weather/road conditions, adequate sleep, other measures as appropriate).
☒ **Unfamiliar location** - Plan travel route before driving (assemble maps, enter destination in GPS).
☐ **Long Distance or During Sleep Hours** – Minimize fatigue: rest breaks, light snacks (avoid heavy meals), stay hydrated, fresh air, no loud music, clean windshield.
☒ **Unfamiliar vehicle** – Become familiar with vehicle operational controls and handling characteristics before operating vehicle.

Geosyntec Procedures: *HS-105-Driver and Vehicle Safety*

B.2. SPECIAL DRIVING/TRAFFIC/TRANSPORTATION HAZARDS ☒Applicable ☐ Not Applicable, Not Anticipated

EXPLANATORY NOTES, CLARIFICATIONS:

☒	**SPECIAL DRIVING HAZARDS** Off-Road Driving or use of non-typical vehicle, heavy vehicle, van, golf/utility cart, ATV Hazards: Worker injury due to vehicle collision, rollover	☒ For off road driving, do not exceed capability of vehicle, beware of wet conditions, speed low, avoid unsafe orientation on slopes. ☐ Follow ATV specific procedures for training, safety equipment, operation, manufacturer's instructions. ☐ Special Skills Required for Vehicle type - For vehicles requiring special skills (such as windowless van, heavy work vehicle, utility vehicle, similar) ensure operator is provided training and/or has appropriate operator skills through experience. ***Geosyntec Procedure(s):*** *HS-510-All Terrain Vehicles*
☐	**TRANSPORTING MATERIALS, TOWING/HAULING LOADS** Hazards: Vehicle accident, occupant injury from shifting load, unsafe equipment.	☐ Ensure load is firmly secured (rope, straps, load configuration) to prevent shifting during travel. ☐ Slings, chains, strap, rope and related equipment used for towing, hauling, load-securing shall be appropriate for use, and used in a manner as to prevent an unsafe condition. ☐ For trailer use, verify signal/braking lights operational, rear-view mirrors effective, hitch/safety chains secure.

☒	**WORKSITE TRAFFIC HAZARDS** Where the project worksite is located in/near vehicle thoroughfare. Hazards: Worker injury from being struck by vehicle traveling in thoroughfare.	☒ Wear reflective vests where exposed to traffic hazards. ☒ Where possible, park vehicles as protective shield from oncoming traffic. ☒ Configure work area and support vehicles to minimize worker exposure to traffic hazards. ☐ Use DOT signal devices to re-route vehicles around work area, site entrances/exits. ☐ Use DOT-trained flaggers or police detail where appropriate or required. ***Geosyntec Procedure(s):*** *HS-517-Traffic Safety*
☐	**RAILROAD HAZARD** Hazard: Worker injury from being struck by train in R.R. right-of-way	☐ Coordinate with rail company and implement required safety and security measures. ☐ Site workers to receive safety training for railroad work. **Geosyntec Procedure(s):** HS-305-Rail Operations
☐	**WATER TRANSPORTATION**	☐ Follow HS 312 "Water Transportation Safety," and Section B.3., "Water/Boating Hazards." **Geosyntec Procedure(s):** HS-312-Water Transportation Safety
☐	**AIRPORT, AIRCRAFT** Worker injury when working on/near airport runway, or use of helicopter, light aircraft	☐ Coordinate safety requirements with Airport personnel and implement required safety measures. ☐ Site workers to receive safety training for railroad/airport work. ☐ Follow provisions of applicable Geosyntec HS Procedures, below: ***Geosyntec Procedure(s):*** *HS-310-Helicopter Safety, HS 311-General Aviation (Small Aircraft) Safety*
☐	**TRAFFIC/VEHICLE HAZARDS REALATED TO HEAVY EQUIPMENT, CONSTRUCTION SITE ACTIVITIES**	☐ See Section B.7., "Construction, Heavy Equipment, Lift Equipment"

B.3. WATER/BOATING HAZARDS ☐ Applicable ☒ Not Applicable or Not Anticipated

B.4. FALL HAZARDS ☐ Applicable ☒ Not Applicable, Not Anticipated

B.5. POWERED TOOLS, EQUIPMENT, MACHINERY ☐ Applicable ☒ Not Applicable, Not Anticipated

B.6. DRILLING ☐ Applicable ☒ Not Applicable, Not Anticipated

B.7. CONSTRUCTION, HEAVY EQUIPMENT, LIFT EQUIPMENT ☒ Applicable ☐ Not Applicable, Not Anticipated

EXPLANATORY NOTES, CLARIFICATIONS:

☒	**HEAVY EQUIPMENT** Hazards: Struck-by, run-over, caught between (pinch points), roll over, fluid leaks, overhead hazards	☐ Follow general safe work practices for heavy equipment: • Trained/qualified persons operate all heavy equipment. • Do not get into a potential crush situation below or between equipment, or in an excavation. • No passengers on moving/operating equipment except where passenger seat/restraint is present. • Equipment inspected daily upon mobilization; maintained in good repair, backup alarms. • Leaks or defective safety equipment should be repaired before use. • Operators required to use seatbelts. • Maintain eye contact with operator and use hand signals prior to approaching near equipment. • High visibility vests for all personnel in construction vehicle work area, on-site roadways and travel lanes. • Maximum safe slope for each vehicle will be followed. • Personnel to stay clear of, or restrict access to, swing radius and travel path of equipment. • Spill equipment available for fuel and hydraulic fluid leaks. • Equipment locked, secured, brakes set, buckets/forks lowered, when not in use. • Park personal/support vehicles in a location as to not obstruct travel lanes or other site operations. • Mark temporary roadways clearly, provide berms/stop logs where needed. ***Geosyntec Procedure(s):*** *HS-504-Heavy Equipment, HS-132-Competent Persons*
☐	**CRANES** Hazards: – electrocution by overhead utility – injury in swing radius – injury from falling load – crane tipping over due to overbalancing, high winds, unstable ground, unsafe slope, bad placement of outriggers – injury from mechanical hazards	☐ In addition to general safety practices for heavy equipment (above), as applicable: • Only qualified persons operate cranes (certificate required). • Critical Lift Plan & Checklist prepared/executed (HS 506) prior to mobilization. • Equipment to be inspected prior to mobilization and daily by crane operator. • Crane operator will remain at the controls at all times during operation. • Crane operation must be performed under the direction of an appointed signal person at all times. • Communication between crane operator and signal person will be maintained through standard hand signals or voice communication equipment. • Keep area beneath suspended loads clear of personnel. • Rigging procedures – see Mechanical Lifting, Rigging, below. ***Geosyntec Procedure(s):*** *HS-506-Cranes, HS-132-Competent Persons*
☐	**MECHANICAL LIFTING, RIGGING** Applies to lifting by crane, truck-mounted boom rig (e.g. drill rig), mechanical/electrical hoist, similar equipment. Hazards: falling loads, personnel under suspended loads.	☐ In addition to general safety practices for heavy equipment and cranes (above), as applicable: • Coordinate lifting operations with competent person. • Do not exceed loading limits of lifting equipment; perform work in accordance with equipment load chart. • Slings, chains, rope, wire rope and related equipment used for lifting shall be maintained in good condition, and used in a manner as to protect from damage. • Rigging, wire rope and hoisting equipment will be inspected and maintained on a weekly basis. • Hooks will be equipped with safety latches.

		• Ensure anchor points for winch or other lift device (such as davit arm) are engineered for intended use. ***Geosyntec Procedure(s):*** *HS-506-Cranes*
☐	**FORKLIFT** Hazards: Struck-by, run-over, overhead hazards, caught between (pinch points), roll over, fluid leaks.	☐ In addition to general safety practices for heavy equipment (above), as applicable: • Qualified operator, per established forklift training (certificate is required). • Equipment inspected daily and documented on Forklift Preoperational Inspection Checklist. • Do not exceed lifting load limits. • Forklift shall not be moved/driven with empty forks in raised position. • When not in use, forks lowered, brake set, controls in neutral, key removed. ***Geosyntec Procedure(s):*** *HS-505-Safe Operation of Forklifts, HS-132-Competent Persons*
☐	**AERIAL LIFTS**	☐ See Section B.4., "Fall Hazards" *Geosyntec Procedure(s): HS-509-Aerial Lifts*
☐	**TRENCHING/EXCAVATION** Hazards: Cave-in, hazardous atmosphere, structures & foundations, falls into excavations	☐ Safe work practices when personnel will enter trenches/excavations: • Activities under supervision/oversight of competent person, daily inspection. • Excavated materials placed at least 4' from trench sidewall. • Heavy mobile equipment will maintain a distance of at least 10' from the edge of the excavation. • Prevent water accumulation in trench. • Sloping & shoring for excavations ≥20' must be approved by a professional engineer. • Sloping/shoring/trench box for excavations ≥5' when persons enter trench/excavation. • Sloping/shoring/trench box for shallow (<5') excavations with cave-in hazard . • Workers in trenches to be within 25 feet of ladder or sloped entryway. • Excavations to be protected by perimeter fencing (not barricade tape), if potential for personnel to fall into. • If potential for atmospheric hazard, see Section B.10, "Confined Space Entry, Hazardous Enclosed Spaces" ***Geosyntec Procedure(s):*** *HS-402-Excavation and Trenching, HS-132-Competent Persons*
☐	**IMPORTANT!** This work may/will include close proximity to overhead and/or underground utility lines.	☐ Follow safe work practices per Section B.9., "Utility Related Hazards"
☐	**DEMOLITION**	☐ Develop/implement demolition safety plan. ***Geosyntec Procedure(s):*** *HS-132-Competent Persons*
☐	**BLASTING**	☐ Develop/implement blasting safety plan. ***Geosyntec Procedure(s):*** *HS-307-Blasting and Use of Explosives, HS-132-Competent Persons*
☐	**PUBLIC AT RISK, SITE SECURITY**	☐ During site operations protect public (overhead protection, barriers, warning signs). ☐ During off hours, protect public with barriers, warning signs/lights, other measures as appropriate. ☐ Lock/secure hazardous materials and/or equipment.
B.8. ELECTRICAL HAZARDS	☐ **Applicable**	☒ **Not Applicable, Not Anticipated**
B.9. UTILITY RELATED HAZARDS	☐ **Applicable**	☒ **Not Applicable, Not Anticipated**
B.10. CONFINED SPACE ENTRY, HAZARDOUS ENCLOSED SPACES	☐ **Applicable**	☒ **Not Applicable, Not Anticipated**
B.11. STORAGE OF BULK MATERIALS	☐ **Applicable**	☒ **Not Applicable, Not Anticipated**
B.12. INFECTIOUS / ALLERGENIC BIOHAZARDS	☒ **Applicable**	☒ **Not Applicable, Not Anticipated**
EXPLANATORY NOTES, CLARIFICATIONS: Municipal solid waste and landfill gas.		
☒	☐ Wastewater, sewer ☐ Bird Guano ☐ Mold, fungi, Valley Fever ☐ Bloodborne pathogens ☐ Other (describe above)	☒ Low hazard - use basic hygiene practices, protective gloves, provide for hand washing. ☐ More severe hazard - add protective clothing, respirator/dust mask, decon, as appropriate. ☐ For human pathogens use "Universal Precautions" per Bloodborne Pathogen Program. ***Geosyntec Procedure(s):*** *HS-133-Bloodborne Pathogens*
B.13. COMMERCIAL CHEMICAL PRODUCTS	☒ **Applicable**	☐ **Not Applicable, Not Anticipated**
EXPLANATORY NOTES, CLARIFICATIONS:		
☐	**PRODUCTS REGULATED BY HAZARD COMMUNICATION STANDARD**	☒ Safety Data Sheets available, either on site or readily available within same work shift, containers labelled properly, workers trained/oriented on hazards ☐ For subcontractor use of chemical products, coordinate/discuss during safety meetings. ☐ Conduct air monitoring, as appropriate (see Part C, "Air Monitoring, Worker Exposure Monitoring").
☐	**COMPRESSED GAS (flammable or nonflammable)**	☒ Secure cylinders upright, caps on when not in use, handle with care, prevent damage. ☐ Propane cylinders not in use must be stored outdoors in cage or similar secure enclosure. ☐ Ensure acetylene cylinders NOT secured to steel arc welding bench. ☐ Store/use in a manner to prevent asphyxiation hazard. ☐ Segregate oxygen and fuel gases by distance (20') or barrier. ☐ Control ignition sources. ☐ "No smoking" signage at cylinder storage area for flammable gases.

		☐ Use/store in a manner to control inhalation exposure hazards, PPE, air monitoring.
☐	**FLAMMABLE/COMBUSTIBLE LIQUIDS**	☐ Proper storage (flam. storage cabinets, other storage precautions). ☐ Use proper fuel safety can (metal fuel can preferred). ☐ Control ignition sources. ☐ Grounding and bonding where appropriate.
☒	**ACIDS, CAUSTICS, OTHER CORROSIVES**	☒ Handle with care, use appropriate eye/face/skin protection. ☐ Eyewash, deluge shower, drench hose, hand washing (with water), as appropriate.
☐	**TOXIC**	☐ For toxic substances, use/store in a manner to control exposure hazards (inhalation, ingestion, skin contact, skin absorption); use PPE as appropriate, conduct air monitoring as appropriate.
☐	**EMISSIONS FROM FUEL COMBUSTION, INDUSTRIAL PROCESSES** ☐ Gasoline ☐ Diesel ☐ Propane/Natural Gas ☐ Welding/cutting/hot work ☐ Vehicle/equipment exhaust ☐ Other	☐ Position outdoor personnel upwind of exhaust source. ☐ Use blowers, fans to provide fresh air to work area and dissipate atmospheric hazards. ☐ Use respiratory protection for high levels of smoke, exhaust particulates, soot. ☐ Conduct air monitoring as appropriate (see Part C, "Air Monitoring").
☐	**OTHER HAZARDS**	☐ Describe other hazardous substances and safety measures under "Explanatory Notes, Clarifications," above.
☐	**CHEMICAL/HAZMAT STORAGE** Check this when jobsite requirements include special provisions for chemical storage.	☐ Chemical storage cabinet, cage, storage room, or similar. ☐ Ensure incompatible chemicals are segregated. ☐ Provide secondary containment. ☐ Locate special safety equipment near chemical storage

Geosyntec Procedures: *HS-115-Hazard Communication, HS-111-Air Monitoring, HS-112-Respiratory Protection, HS-113-Personal Protective Equipment, HS-114-Safety Training Programs, Others as applicable*

B.14. SITE CONTAMINANTS, CHEMICAL WASTES ☒ Applicable ☐ Not Applicable, Not Anticipated

EXPLANATORY NOTES, CLARIFICATIONS: Potential for landfill gas exposure. Wear 4-gas meter to detect for unsafe working conditions.

CHECK ALL THAT APPLY. Provide explanatory notes above.

☐ Soil/groundwater contaminants (historical release)	☒ Oxygen deficiency	☐ Corrosive, acids/caustics, strong irritants
☐ Recent release, known high concentrations	☐ Chlorinated volatile organic compounds (VOCs)	☐ Sulfides, hydrogen sulfide (H_2S)
☐ Former chemical disposal site, landfill	☐ BTEX, petroleum derived VOCs	☐ Cyanides, hydrogen cyanide (HCN)
☐ Urban fill, residual contaminants	☐ Fuel oils, petroleum, waste oil, lubricants	☐ Asbestos
☐ Containerized waste (drums, process equipment)	☐ Metals, metal compounds, metal dusts	☐ Lead paint
☐ Buried drums (known or potential)	☐ Elemental mercury	☐ Pesticides, herbicides, fungicides
☐ Large containers, potential for spills	☐ Polyaromatic hydrocarbons (PAHs)	☐ Sensitizers
☐ Contaminated building surfaces	☐ Polychlorinated biphenyls (PCBs)	☐ Radioactive contaminants
☐ Unexploded ordnance	☒ Potential for flammable vapors	☐ Other (see Explanatory Notes, above)
☐ Explosive dust	☒ Potential for flammable gas (methane)	

☐ **FOR WORK CONSISTING OF CLEANUP OPERATIONS, CORRECTIVE ACTIONS, PRELIMINARY INVESTIGATIONS at an "UNCONTROLLED HAZ. WASTE SITE" (per HAZWOPER, 29 CFR 1910.120), implement the following as applicable to the work:**

- Implement site control plan via Exclusion Zone(s), Contaminant Reduction Zone(s) and Support Zone (aka EZ, CRZ, SZ)
- Workers to be aware of and trained on hazards per OSHA Hazard Communication Standard.
- Include site map/figure depicting work locations and other relevant site-specific information.
- Site workers in EZ or CRZ to have OSHA 40-hour training, current 8-hour refresher, 3 days supervised field experience.
- Site supervisor(s) required to have 8-hr. Supervisor training.
- Site workers in EZ or CRZ to participate in Medical Monitoring program, as applicable.
- Implement site-specific procedures for worker protection via engineering controls, work practices, personal protective equipment (PPE), air monitoring, decontamination procedures, spill containment, emergency preparedness and response.
- Conduct air monitoring, as appropriate (see Part C, "Air Monitoring, Worker Exposure Monitoring").

IMPORTANT: Provide supplemental information to sufficiently detail site-specific procedures for the above elements, as appropriate for the work.

Geosyntec Procedures: *HS-301-HAZWOPER, HS-108-Medical Monitoring Surveillance, HS-111-Air Monitoring, HS-112-Respiratory Protection, HS-113-Personal Protective Equipment, HS-114-Safety Training Programs, HS-115-Hazard Communication, HS-405-Drum Sampling, Others as applicable*

☒ **FOR SITE WITH CHEMICAL CONTAMINANTS OR WASTE BUT NOT REGULATED BY HAZWOPER**

- Workers to be knowledgeable/aware of chemical hazards thru safety training/orientation and availability of hazard information
- Implement controls to minimize worker exposure through engineering controls, work practices, PPE, as appropriate.
- Conduct air monitoring/sampling to monitor/evaluate worker exposure, as applicable.

Geosyntec Procedures: *HS-111-Air Monitoring, HS-112-Respiratory Protection, HS-113-Personal Protective Equipment, HS-114-Safety Training Programs, HS-115-Hazard Communication, Others as applicable*

☐	**OFF-SITE MIGRATION OF CONTAMINANTS**	☐ Implement controls to minimize hazard migration (dust suppression, covers, foam, etc.) ☐ Community/perimeter air monitoring to be conducted per perimeter air monitoring plan.
☐	**SPILL CONTAINMENT, CONTAINERS**	☐ Describe above any site-specific procedures for spill containment, container handling, as applicable. ***Geosyntec Procedures**: HS-406-Unknown Hazardous Waste Drum Handling*

B.15. RADIATION HAZARDS (Other than Sunlight) ☐ **Applicable** ☒ **Not Applicable, Not Anticipated**

B.16. HAZMAT/DANGEROUS GOODS SHIPPING/TRANSPORTATION ☐ **Applicable** ☒ **Not Applicable, Not Anticipated**

PART C – AIR MONITORING, WORKER EXPOSURE MONITORING

C.1. AIR MONITORING (Direct-Reading Instruments) ☐ **Applicable** ☒ **Not Applicable, Not Anticipated**

C.2. OTHER WORKER EXPOSURE MONITORING ☐ **Applicable** ☒ **Not Applicable, Not Anticipated**

PART D – APPROVALS, ACKNOWLEDGEMENTS

D.1. THA PREPARATION, REVIEW/APPROVAL SIGNATURES - THA typically prepared by project staff, reviewed/approved by Project Manager, Supervisor, qualified/knowledgeable designee, with support of HS personnel as deemed appropriate by the Project Manager.

	Printed Name	***Signature***	***Date***
THA PREPARED BY: (minimum one person)	David Kein		26 October 2020
	Jesse Varsho		27 October 2020
THA REVIEWED/ APPROVED BY: (minimum one person)	***Printed Name***	***Signature***	***Date***
	James Bannantine		27 October 2020

D.2. FIELD CREW ACKNOWLEDGEMENTS

GEOSYNTEC FIELD CREW

Please sign below to acknowledge you reviewed and understand this THA, participated in project safety briefing and had an opportunity to ask questions about the information herein.

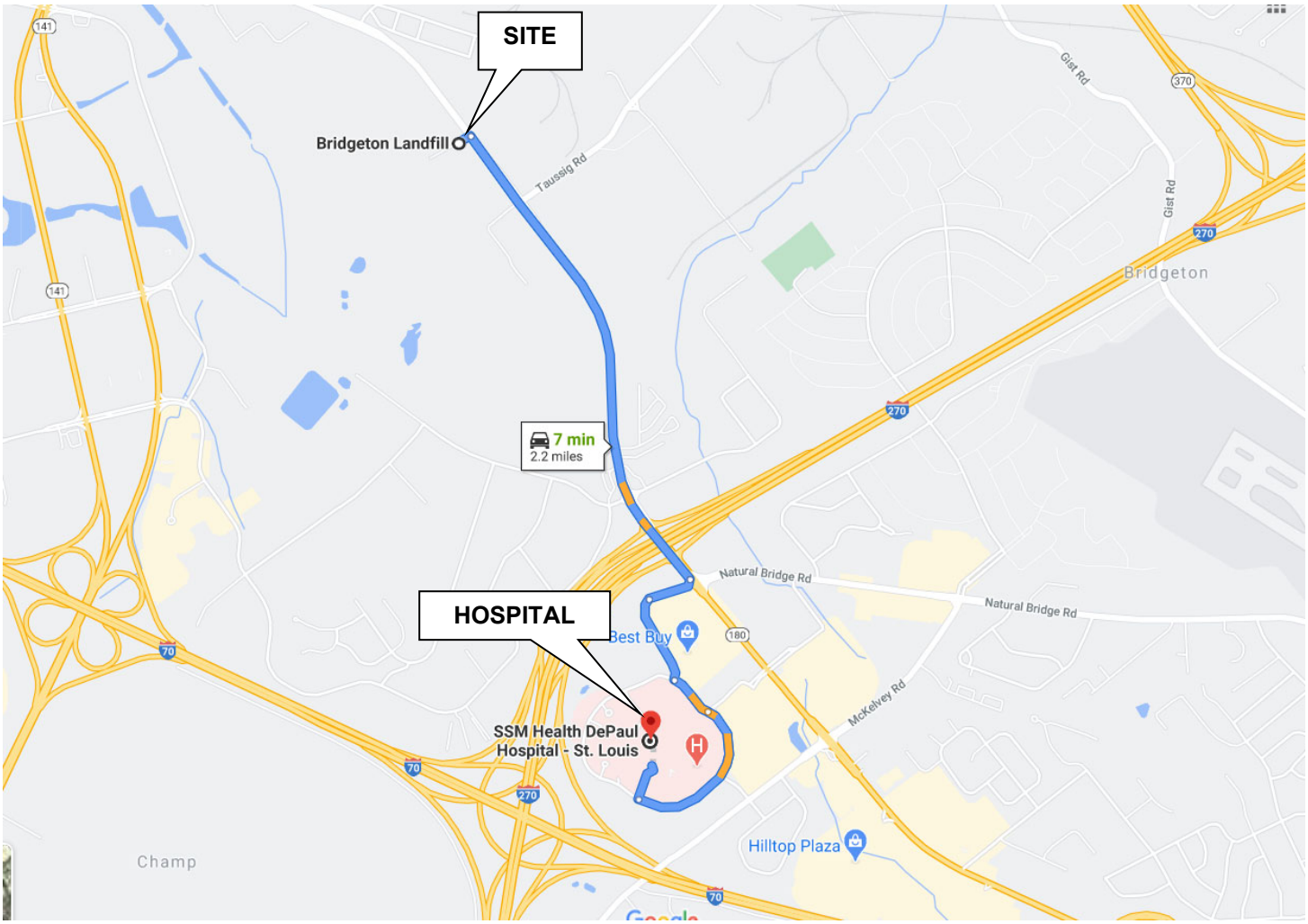
Printed Name	Signature	Employee No.	Date

SUBCONTRACTOR'S FIELD CREW

Please sign below to acknowledge that this THA was made available to you, and you had an opportunity to ask questions about the information herein.

Printed Name	Signature	Company Name	Date

SITE LOCATION MAP and ROUTE TO HOSPITAL



HOSPITAL NAME
SSM Health DePaul Hospital – St. Louis
12303 De Paul Dr, Bridgeton, MO 63044
Tel: (314) 344-6000

Written Directions to Hospital from Site:

From site, head south on St Charles Rock Rd
Travel 1.2 miles then turn right on Mareschal Ln
Travel 0.1 miles then turn slightly left on De Paul Ln
Drive for 0.7 miles
Hospital is on the right

Total Distance = 2.2 miles

Time = 7 minutes

Geosyntec consultants | family of companies

Date: June 16, 2020
Revision: 4.1

Health and Safety

Fieldwork COVID-19 General Prevention Measures

Note: Major updates to the previous version (Rev. 3, April 3, 2020) are presented herein in green text.

Scope of this Document

To facilitate the safety and well-being of our employees while executing field operations as various government agencies begin to lift COVID-19 workplace restrictions in many sectors, the Corporate H&S Department has prepared this guideline to help employees minimize the risk of spreading or contracting COVID-19 during ***fieldwork operations***. This information complements Geosyntec's "COVID-19 Considerations & Mitigations for Ongoing Business Operations," and other guidelines and communications distributed via Geosyntec's COVID-19 SharePoint Portal.

We invite all staff to share their questions and ideas with Managers and Supervisors, Health and Safety Coordinators and Corporate Health and Safety Department. All Corporate Health and Safety staff are available to assist you with COVID-19 safety solutions on your projects, and we will continue to update and improve these guidelines as we learn more and receive your feedback.

Risk Analysis

The COVID-19 pathogen can be transmitted from infected individuals who *may* or *may not* be experiencing symptoms. So, all project/worksite locations and surrounding communities, and all coworkers and community members, represent a potential source of exposure for Geosyntec personnel. The virus is spread primarily by airborne respiratory droplets and aerosols containing the virus, which are emitted by infectious persons and can settle in the moth or nose of nearby people or be inhaled directly into the lungs. A secondary mode of infection is through *direct contact* between hands and contaminated surfaces (where droplets can also settle), and subsequent transfer to the mouth, nose, or eyes through touching. Our risk-reduction guidelines focus on avoidance or mitigation of elevated-risk situations through the core safety practices of ***physical distancing, use of face covers, personal hygiene, workspace sanitation***, and in certain situations, use of ***engineering controls*** and/or ***personal protective equipment***.

Situation-Based Protection Strategies

For each fieldwork deployment by Geosyntec staff, a site-/project-specific "COVID-19 prevention strategy" shall be developed through evaluation of work tasks and associated COVID-19 exposure risks, and engagement with field team members, client representatives, and other onsite stakeholders (owners, clients, subcontractors, suppliers, contractors), as appropriate for the work. The core focus of such a strategy will always be on three fundamental objectives:

- **Minimize the Magnitude of Possible Virus Contact/Exposure** - Minimize the *intensity* and the *duration* of potential exposure to the virus.
- **Minimize the Number of Interpersonal Contacts** – Limit the number of *direct person-to-person contacts*, as well as *indirect contacts* via shared *work surfaces* and *air spaces.*[1]
- **Maximize Mitigation Measures** - Utilize COVID-19 protections applicable to work tasks, utilizing *redundant* protections to the extent feasible.

Geosyntec employees engaged in the management and execution of fieldwork must apply the prevention/mitigation strategies delineated herein as appropriate and feasible for their work, and as

[1] Limit both the number of contacts, and more important, limit the number of persons with whom contact is made.

needed to adhere to applicable government mandates and client requirements, to minimize the risks of transmitting or contracting COVID-19.

1. Project Planning, Communication, Health and Safety Coordination[2]

- Information updates – Employees engaged in the management and execution of fieldwork projects are encouraged to stay up to date with the latest information and updates to Company operating procedures and due diligence/best practice norms regarding COVID-19; include this information at all safety meetings and incorporate related safe work practices into written safety plans (HASPs/THAs).

- Client requirements - For job sites under the control of another organization, obtain a copy of any relevant COVID-19 exposure control requirements and ensure we can fully comply; H&S can assist in evaluating such plans as needed. Understand contract requirements for Geosyntec to staff projects, anticipate disruptions of our ability to serve the project that are out of our control, and develop contingency plans for such situations.

- Government rules/restrictions – All project teams shall adhere to government mandates and restrictions relevant in the jurisdiction of your fieldwork. Information on such requirements may be obtained from Corp. H&S, Geosyntec personnel familiar with your work location, client contacts, or on-line resources made available on municipal, state and federal COVID-19 websites.

- Project management, planning, budgets – We anticipate that the COVID-19 pandemic, and associated protections needed during execution of fieldwork, will result in changes in how we plan for and budget fieldwork projects. Many aspects of fieldwork may be impacted, including pre-mobilization planning, field equipment and supplies, travel costs, accommodations, coordination with clients and subcontractors. Review of the Project Manager Checklist for H&S Compliance with COVID-19 planning in mind, particularly *Sections A and B--"Proposal and Pre-Contract Activity*" and *"Project Planning"*-- may be helpful in this regard.

- Prework coordination, HSCs, HASP/THA – Prior to the start of fieldwork on each project, conduct a pre-work safety orientation or "kickoff meeting" that includes each member of the project/field team (as well as with clients, subcontractors, other contractors, as applicable) to determine the scope of prevention measures for COVID-19 and other site hazards. Delineate key COVID-19 safety elements in the Written Safety Plan (HASP/THA) and monitor/implement these measures daily throughout the performance of field activities. Health and Safety Coordinators (HSCs) and Regional Safety Managers can assist.

- Designate an on-site "COVID Lead" – Designate an individual to oversee (observe and enforce) the COVID 19 preventative measures to be implemented by personnel on site. On short-duration projects, this role is most typically assigned to the individual designated as the on-site safety lead or field supervisor; for long-duration large projects, the role may preferably be rotated among onsite personnel to fully engage the entire field team, as well as share the responsibility.

- Work task innovations – All employees are encouraged to consider innovative ways of conducting their work to reduce the risks of contracting or transmitting COVID-19. Learn new communication capabilities through available technologies (WebEx, Skype, MS Teams, Office 365) and develop safety innovations for on-site field work. Modify your work tasks and use non-typical field practices to maintain physical distancing, personal hygiene, and work area sanitation.

[2] *This section repositioned from Section 10 in the previous edition of this document to the current Section1*

2. Assess Risks, Avoid/Mitigate Elevated-Risk Work Situations, 'Stop Work' Authority[3]

- Risk assessment – Per criteria established by OSHA's COVID 19 risk classifications (https://www.osha.gov/SLTC/covid-19/hazardrecognition.html#risk_classification), Geosyntec fieldwork is generally classified as ranging from "Lower Exposure Risk" to "Medium Exposure Risk." Geosyntec fieldwork does not include "High Exposure Risk" or "Very High Exposure Risk" in this classification as our work does not require close proximity of employees to confirmed or presumed COVID-19 patients – potential exceptions to this must be coordinated directly with the Regional H&S Manager on a case-by-case basis.

- Medium exposure risks - Where Geosyntec fieldwork involves entry into "Medium Exposure Risk" workplace environments, such as occupied residences, active/occupied health care facilities, extended-care/rehab/elder-care facilities, schools, correctional facilities, crowded public transportation areas, high-volume retail settings and similar high population density work environments, such work shall either be 1) eliminated or significantly curtailed (preferred), or 2) a strategy of "maximum mitigation" through focused and redundant protections (to the extent feasible) shall be implemented to minimize the potential intensity of exposure to the virus, and minimize the number of interpersonal contacts, both direct and indirect.

- Low exposure risks - In all low-risk situations, vigilance shall be maintained with regard to physical distancing, sanitation/hygiene, use of face covers, and other applicable controls in order to minimize the risk of COVID-19 disease transmission among workers.

- Personnel convergence points[4], movement of personnel and materials – For each project site, consider process flows of both materials and personnel, and make specific arrangements to minimize interpersonal contact and maximize physical distancing. Eliminate convergence points by such measures as: separate entrances and exits; "circular" routing of personnel footpaths; designate pick up/drop of points for materials and equipment; stagger personnel approaches.

- Hierarchy of controls – Geosyntec employees shall consider the typical "hierarchy of controls" for eliminating/mitigating COVID-19 hazards, as summarized below, with examples:
    - *Hazard Elimination* – Modify the scope of work to eliminate an elevated risk element, such as entry into a hospital with known COVID-19 patients.
    - *Hazard Substitution* – Deploy an on-site portable toilet as a substitute for using a rest room in a high-population-density facility (site facility or nearby travel stop).
    - *Engineering controls* – Use of Plexiglas barriers, or fans for ventilation, at points of personnel convergence.
    - *Administrative controls, safe work practices* – Maintain physical distancing; assign specific tasks to each on-site staff member (minimize multi-tasking) to limit interpersonal encounters; frequent disinfection of high-touch surfaces.
    - *Face Covers, PPE* – Use of face covers as barriers to minimize airborne release of respiratory droplets; use of disposable gloves; use of N95 respirator for "high-" and "very high-" exposure risks (per OSHA classification).

---

[3] *This section repositioned from Section 7 in the previous edition of this document to the current Section 2*

[4] Wherever persons come together and engage in *direct* person-to-person interactions, or when individuals contact each other *indirectly* via shared work surfaces and air spaces. Such points of convergence represent opportunities for transmission of the COVID-19 virus, should an infected person be encountered.

- Vigilance, redundant controls – Because the presence or absence of the COVID-19 virus in any workplace situation cannot be confirmed "real time" during fieldwork, vigilance in the application of controls, and a "default strategy" of using of redundant controls[5] where feasible, will afford the greatest levels of risk reduction and worker protection.

- Stop-work authority - Inform staff and coworkers that they have the authority to stop work if they suspect an unacceptable risk to the health or safety of participants. All employees are encouraged and expected to report elevated hazards to their supervisor/project manager, and seek assistance from the H&S Department in evaluating the risk and recommending safe work practices.

3. Be On-the-Lookout for Symptoms

- Symptoms – COVID-19 symptoms include:
    - Fever of 100.4 deg. F (38 deg. C) or higher
    - Fatigue (extreme, non-typical)
    - Persistent cough
    - Sore throat
    - Shortness of breath
    - Headache
    - Chills
    - Shaking/shivering with chills
    - Muscle aches/pains
    - Gastrointestinal distress (diarrhea, nausea, vomiting)
    - Loss of taste or smell (new, recent)
    - In severe cases, *emergency warning signs requiring immediate medical attention* may include trouble breathing, persistent pain or pressure in the chest, confusion, inability to arouse, and bluish lips or face.

- Self-monitor for symptoms – Geosyntec has implemented a Health Status Self-Check Process for our employees, detailed in Section 5.2.2 Geosyntec's "COVID-19 Considerations & Mitigations for Ongoing Business Operations." Using this process as our main tool, we will practice self-notification and self-quarantine as our primary method for excluding ill or potentially-ill workers who may be infectious from being present on our jobsites. Where local regulatory requirements or client requirements require more stringent on-site health check measures we will comply.
  Based on self-check/on-site check results, personnel with possible COVID-19 symptoms will respond as follows:
    - On site - If you are on site and begin to experience symptoms, wear a face covering, immediately isolate yourself from all other site personnel and notify your supervisor and the project manager (who will inform HR and the Branch Manager). Leave the site as soon as possible and follow Geosyntec guidance for self-quarantine. The company also recommends you seek medical care from your personal doctor or health care provider.
    - Off Site/Work – If you begin experiencing symptoms while away from work DO NOT GO TO THE JOB SITE. Contact your supervisor and the project manager and follow Geosyntec company guidance for self-quarantine. The company also recommends you seek medical care from your own personal doctor or health care provider.

[5] Use of two or more control measures simultaneously, such as wearing face covers, maintaining physical distancing, and using fans for fresh air ventilation, all at the same time in a given workplace setting.

For either of the above cases the Geosyntec HR & H&S Departments, in coordination with the project manager, will recommend appropriate follow-up measures (contact tracing, quarantine) regarding other project personnel. Project managers will need to arrange for replacement personnel if anyone is required to leave the site for an extended period of time.

- Coworker with symptoms – If a Geosyntec coworker, subcontractor, client or client contractor exhibits symptoms, or has presumptive or confirmed COVID-19, avoid close contact and implement safe work practices (delineated herein) as applicable. Contact the project manager, who will inform HR, H&S and the Branch Manager; the HR/H&S team, together with the project team, will evaluate risks and recommend appropriate response.

- Daily tailgate safety meetings – On a daily basis: communicate with on-site coworkers to reinforce COVID-19 prevention measures in general and those specific to the work, re-discuss symptoms to be on the lookout for, and confirm with each individual on the project team that they are not experiencing any possible COVID-19 symptoms.

- Field screening/documentation of worker symptoms – Formal procedures for onsite screening of symptoms may be required for certain projects (due to client requirements and/or government regulation), or as viable best practice (large workforce, multiple subcontractors, transient labor). Screening questions may focus on a range of specific symptoms, include questions about personal contacts and recent travel, and may include individual temperature checks. For additional information, or if Geosyntec is required to implement such a program, contact the Corp. H&S Department for assistance/guidance. As appropriate for the work, a requirement for formal COVID-19 screening of subcontractor personnel, or of other on-site stakeholder personnel, may be included in contractual subcontract agreements or site access agreements. Onsite project-specific forms can be readily developed as stand-alone forms, or as a component of related procedures/documents, such as worker/visitor entry/exit logs, safety dash cards, visitor orientation forms, etc. Contact Corp. H&S for assistance.

4. Integrate Physical Distancing Strategies into all Fieldwork Activities and Meetings

- Interpersonal physical distancing – Physical distancing is a fundamental strategy (in conjunction with use of face covers and other control measures) for controlling person-to-person transmission of the COVID-19 virus. For all work activities, maintain a *minimum* distance of 2 meters/6 feet from all other field staff, visitors and general public when possible. Where physical distancing objectives are not workable, face covers shall be worn, and other protective strategies delineated herein, as applicable to the situation, should be deployed (such as Plexiglas barriers, fans/ventilation, more frequent hand washing, more frequent work area sanitization,).

- Meetings - Eliminate in-person meetings where possible. Video meetings and conference calls are preferable. Practice physical distancing when conducting onsite daily tailgate safety meetings, pre-work assessments, progress meetings and oversight observations of the work. Where in-person meetings are necessary, limit the meeting to key individuals who absolutely need to attend--all attendees shall practice physical distancing with a minimum of 2 m/6 ft between individuals.

- Indoor/enclosed spaces - Minimize or eliminate time spent in a field trailer, and in similar indoor/enclosed work areas, particularly areas frequented by other individuals (coworkers, on-site personnel, general public). Where possible, conduct work tasks and in-person meetings out-of-doors to reduce transmission of airborne disease agents.

- Social greetings - Avoid hand shaking, fist bumps, and other social greetings with direct contact or proximity to individuals within the physical distancing limits. Greet coworkers at a distance and don't exchange business cards.

- Onsite paperwork, office supplies - Develop procedures to minimize person-to-person contact through exchange of logs, forms, field documentation, and other paperwork. Don't share miscellaneous office supplies (pens, pencils, etc.) and periodically wipe/disinfect commonly used items (staplers, printers, etc.).

- Schedules, staff assignments - Adjust staff schedules and work assignments to facilitate physical distancing and minimize contact with high-touch surfaces. Such measures may include (but are not limited to):
    - Stagger schedules/shifts;
    - Perform only critical tasks;
    - Cross-train individuals for greater flexibility in staff assignments;
    - Limiting field teams to only essential personnel can help minimize personal interactions;
    - Increasing the size of field teams may:
        - Enable assigning a specific onsite role to each team member, thereby minimizing close encounters with coworkers;
        - Shorten the workday and limit overnight hotel stays.

- Site visitors – For ***transient visitors*** (such as site deliveries) make arrangements to minimize interpersonal contact by maintaining physical distancing and completing visits outside of site trailers and site facilities. Prevent package handling by multiple individuals, wear disposable gloves when receiving packages, dispose of packaging/wrapping promptly, disinfect exterior of items, and wash hands thoroughly after receipt. For more extended visits by ***service providers*** or ***business visitors***, use appropriate controls as appropriate for the visit, including physical distancing, face covers, limit meetings to minimum essential personnel, limit the duration of the meetings, include visitor in a health status self-check process or document symptom screening.

5. Maintain Personal Hygiene

- Regular hand-washing – Conduct regular and thorough handwashing (at least 20 seconds) with soap and water throughout the day. Where a water supply for hand washing is not readily available, set up a 'field handwashing station' were feasible/appropriate, and label water container "for handwashing only."

- Hand sanitizer - Where water for handwashing is not available, utilize hand sanitizer (with at least 60% alcohol) frequently, then wash hands with soap and water as soon as possible. After applying alcohol-based hand sanitizer, allow it to dry completely before bringing hands into close proximity to potential ignition sources, such as arcing electrical equipment, surfaces that could cause static discharge, and most importantly – SMOKING!

- Skin moisturizers – Frequent handwashing, and use of alcohol-based hand cleaners, or contact with chemical irritants in disinfectant cleaners, can result in dry/cracked skin. Periodic use of moisturizing creams can counteract that effect.

- Facial tissues - Carry a supply of facial tissues and use as much as possible for coughs/sneezes and dispose of used tissue in regular trash. "Covering your cough" is acceptable; use and disposal of tissues is more sanitary and therefore preferred.

- "Cover your cough" – When facial tissue is not ready at hand, cover your cough or sneeze by coughing/sneezing into the crook of your elbow--not into your hands. If you need to cough/sneeze into your hands, wash hands immediately.
- Personal hygiene supplies – In Geosyntec-controlled site trailers and other regularly-visited worksites, personal hygiene supplies including hand sanitizer, wipes, soap, and paper goods shall be maintained in adequate supply, as available for purchase.
- Minimize hand-contact with work surfaces and your face – Develop changes in your typical work practices and personal habits to eliminate or minimize the frequency of hand contact with surfaces in your work environment (e.g., avoid unnecessary contact with work surfaces, open doors with minimal hand/finger contact, grip handrails with fingers or at intermittent junctures rather than sliding your hand the full length; etc.). Limit habitual hand contact with your face. Contact your face only after thorough hand washing. If it's necessary to contact your face, use the back of your hand or knuckles rather than your palm or fingertips.

6. Work Area Cleaning, Sanitation, Protection, Modifications

- On-site trailers and similar indoor workspaces – On-site trailers/facilities at Geosyntec-controlled sites should be cleaned by custodial services at least once per day. Disinfect "high-touch" surfaces regularly during each workday. Cleaning and sanitation supplies shall be maintained in adequate supply and used regularly to clean/sanitize work surfaces.
- Clean "high-touch" work surfaces – Wipe high-touch work surfaces with sanitizing cleaners (preferred), detergents or soap & water at the start and end of each work shift and periodically throughout the day. High-touch items include cell phones, personal water bottles, desktops, computer keyboards, touch screens, tools, field equipment, coolers, doorknobs, railings, refrigerators, microwaves, light switches, thermostats, faucet/toilet handles, latches on portable bathrooms, and similar items. Items being used/shared by more than 1 person should be cleaned before transferring.
- Cleaners/sanitizers - Cleaning/disinfecting supplies may include commercial cleaners containing common EPA-registered household disinfectants, alcohol solutions containing at least 60% alcohol, or diluted household bleach solution[6] applied with commercial wipes or paper towels. See COVID cleaning and disinfection guidelines for more detail and full disinfection steps. Discard all used wipes/paper towels in regular trash.
- Chemical hazards of cleaners/disinfectants – Commercial disinfectant products shall be used in accordance with product labels, safety data sheets and manufacturer specifications, and appropriate PPE--typically nitrile or vinyl gloves--used as recommended. Safety Data Sheets (SDSs) for commonly used cleaners and disinfectants are provided for use by workers on our COVID-19 SharePoint site HERE. Note that many alcohol-containing products are flammable and should be used well away from ignition sources. Many disinfectants contain chemical irritants that can cause skin dryness/cracking/irritation. Wearing chemical protective gloves when sanitizing surfaces and/or periodic use of skin moisturizers can counteract these effects.
- Housekeeping – Proper housekeeping shall be maintained in all work areas. Minimize/eliminate clutter and accumulations of trash and debris, particularly trash items that have received human

[6] Per the CDC, a solution can be prepared by mixing: 5 tablespoons (1/3rd cup) bleach per gallon of water, or for smaller amounts 4 teaspoons bleach per quart of water.

contact (food wrappers, disposable cups, paper towels/tissues, etc.). Minimizing clutter will facilitate regular cleaning of high-touch surfaces. Empty trash receptacles daily.

- Protect frequently-used workspaces – In workspaces frequently accessed by on-site personnel, such as supply storage areas, treatment system control stations, toilet facilities, and hand washing stations, require that all personnel who enter these workspaces wear face covers to minimize the presence of respiratory droplets in the air or settled on surfaces.
- Work area modifications – Physical modifications of the work area should be considered as a means of limiting the intensity and/or frequency of possible exposure to the virus (should infected personnel be present), such as:
    - Use of physical barriers or caution tape to delineate travel pathways as a means of limiting interpersonal contacts and maintaining physical distancing;
    - Opening doors and windows to enhance fresh air ventilation;
    - Erecting canopies for outdoor tailgate meetings during inclement weather;
    - Erecting Plexiglas barriers at specific points of personnel convergence

7. Minimize Travel-Related Risks

Geosyntec has developed specific business travel protocols in Section 6.0 of our "COVID-19 Considerations & Mitigations for Ongoing Business Operations" procedure (referred to as "the Procedure," below). In addition, personnel performing fieldwork-related travel should also consider the following:

- Vehicle travel – See Section 6.1 of the Procedure; in addition: Regularly clean/disinfect high-touch surfaces (steering wheel, shift lever, door handles, tailgate, etc.) in personal vehicles, company field vehicles and rental vehicles. Try to travel one person per vehicle, but no more than two. If traveling with others in the same vehicle, exercise physical distancing as possible within the vehicle and wear face masks/covers.
- Fatigue management – Limit total travel and work time to no more than 14 hours per day. Additional provisions are provided in *HS 211 Fatigue Management Plan*.
- Minimize stops - Make as few stops as possible during travels to limit exposure to public spaces. Adhere to Journey Management Plan requirements (where applicable).
- Fuel/food/supply stops - When traveling by vehicle, and when stopping for fuel or other supplies is necessary, either clean/sanitize your hands upon completion of food/fuel stop, or wear gloves during the stop, then discard gloves and wash hands. Utilize physical distancing (6 ft/2 m) and wear a face mask/cover during the stop.
- Public restrooms/washrooms – Minimize or eliminate the use of public restrooms/washrooms, particularly in high-population-density locations (such as travel stops, occupied site facilities), as elevated-risk factors may include: recent use by many individuals; poor ventilation; small enclosed air-space; repeated use of high-air-velocity hand driers (which increase levels of airborne particulates). On-site portable toilets, with doors propped open between use for ventilation, represent lower exposure risk, particularly if used by limited number of on-site personnel.
- Minimize/eliminate cash transactions – To minimize interpersonal contact, and to maintain appropriate physical distancing, use credit-card transactions where possible. Avoid passing credit cards to vendors is possible (prefer swipe/chip reader situations). If you must pass the credit card to someone, wipe it with sanitizer upon receiving it back.
- Air travel - See Section 6.2 of the Procedure; in addition: To the extent possible, minimize/curtail air travel. Branch Manager approval is required for air travel. Adhere to existing restrictions on

domestic and international travel. Maintain physical distancing and use a face cover while at any airport. Have disinfectant wipes with you and wipe high-touch surfaces (head rest, tray, arm rest, lavatory latch). Wear protective gloves and a face mask or cover at all times while on airplane.

- Public transportation – See Section 6.4 of the Procedure; in addition: Avoid travel on trains, subways, buses, and other public transportation (i.e., ride share) where possible, especially in metropolitan areas with elevated levels of community transmission. If such travel is necessary, practice physical distancing, disinfect high-touch surfaces (seat, headrest, arm rest, hand-hold, etc.). Wear protective gloves and a face mask or cloth face cover during travel, and wash hands thoroughly upon completion of travel.

- Safe accommodations - See Section 6.3 of the Procedure; in addition: Book accommodations only at reputable hotel chains and verify with the hotel that appropriate protocols are in place to limit the potential exposure and spread of the virus by thorough cleaning and disinfection. Motels/hotels with direct access to each room, or house/apartment rentals (such as through Airbnb) may be preferable to minimize the number of contacts, direct or indirect, with other people. Added safety measures include:
    - Sanitize high-touch surfaces in your room with your own sanitizing cleaner (doorknobs, light switches, TV controller, desktops, etc.);
    - Avoid public areas/common spaces to the greatest degree possible;
    - Use hotel entrances closest to your room; avoid lobby, elevators, and other public spaces as much as possible;
    - Eliminate daily housekeeping room service;
    - Select hotels/motels with direct outside access to your room.

- Critically assess the need for travel – Coordinate with clients and colleagues about the need for travel and the potential for alternatives to face-to-face meetings and travel away from home, such as schedule changes and virtual meetings.

8. Utilize Safe Practices for Food & Beverage Provisions

- "BYOFB" – Each individual should bring his/her own food and beverages to all work sites to avoid stopping at a store or restaurant. When shopping for food, obtain food for several days in advance to minimize the number of trips to the grocery store.

- Suspend providing food in common areas – Refrain from delivering commonly shared foods—bagels, muffins, buffet lunch, coffee service areas etc. If any food is to be provided for a group, it must be individually packed and served (e.g. box lunches), and physical distancing must be practiced by all while food is consumed.

- Personal cooler – Use your own personal lunch pack or cooler with ice packs refrozen daily for safe food storage during each workday and avoid use of "community" refrigerators.

- Physical distancing during meals - Food should be eaten alone or at a minimum physical distance of 2 m/6 ft between persons. Dine in your vehicle or outside alone and avoid using the project trailer or common spaces in site facilities.

- Drinking water/beverage dispensers – Restrict drinking water sources onsite to individual bottled water only. Refrain from using shared water dispensers and coffee service. Have workers take measures, such as labeling bottles, to avoid drinking out of someone else's bottle.

9. Face Covers, Personal Protective Equipment (PPE)

- Face masks/covers used as emission barriers – Use of a nose/mouth face covering—dust masks, surgical masks, cloth face covers—is considered a fundamental protective measure for COVID-19. Face masks and covers capture potentially infectious respiratory droplets/aerosols produced by the wearer (i.e., from coughs, sneezes, speaking, etc.), thereby limiting exposure risks to coworkers by limiting airborne levels of droplets and settling of droplets onto surfaces. Therefore, use of acceptable nose/mouth face coverings[7] is authorized for unrestricted use by Geosyntec personnel for cases where the coverings are strictly used *as an emission barrier only* for COVID-19 exposure risk reduction, particularly where preferred physical distancing measures and other controls are impractical. See COVID-19 Considerations & Mitigations for Ongoing Business Operations, Attachment 2, "Facial Coverings," for information on proper usage, video instructions, and additional resources.

- A few additional pointers about face covers – Light-weight loose fitting paper masks may tend to blow around a bit on a windy day—a heavier weight and/or form-fitting cloth cover may be preferable. Masks that do not fit tightly over the nose are more likely to cause fogging of eyewear, particularly in cool weather. Wash cloth masks frequently, and when not in use, place in a zip-loc bag or similar container to keep it clean. When wearing a face cover, individuals may be inclined drink less fluids due to apprehension to lift the mask—remember, it is still essential that you drink sufficient fluids to prevent heat related illness.

- Use of NIOSH-approved N95 respirators for wearer inhalation protection - In situations where workers require inhalation protection from a confirmed source of airborne COVID-19 hazard (e.g., entry into a high-exposure-risk locations such as a COVID-19 patient room in a hospital – see Section 2), respirator use MUST be coordinated directly with your H&S manager to ensure that a proper risk assessment and device selection is conducted and that all elements of a respiratory protection program are implemented.

- Disposable gloves – Where contact with potentially contaminated surfaces may occur the prevention of "hand-to-face" transfer of material is important to mitigate exposure risk, and requires frequent hand washing and disinfection. Surgical-type gloves made of nitrile or vinyl[8] provide a means of simplifying this decontamination and is especially preferable in elevated-risk circumstances where proper washing/disinfection could become excessive or where access to cleaning stations is not readily available. Gloves must be removed and disposed of after a specific task, and upon removal wearers must wash hands (for a minimum of 20 seconds) or apply hand sanitizer (>60% alcohol) immediately.

[7] Acceptable nose/mouth face coverings for use as emission barriers (only) include: Loose-fitting masks (commonly termed "surgical masks"), tight-fitting masks where the device body is the filtering material and the design does NOT incorporate an exhalation valve of any kind (irrespective of protection rating, such as N95, P99, KN95, etc.), or even home-made or make-shift face covers (e.g., home-made masks, bandanas, balaclavas, etc.). In accordance with the CDC, an acceptable cloth face cover should: fit snugly but comfortably against the side of the face; be secured with ties or ear loops; include multiple layers of fabric; allow for breathing without restriction; and be able to be laundered and machine-dried without damage or change to shape. Note: Any negative pressure elastomeric respirator devices utilizing filter cartridges (e.g., ½-face or full-face respirators) are strictly prohibited for use as emission barriers - use of such devices is for wearer inhalation protection only and requires prior concurrence from the H&S manager.

[8] Latex gloves are also effective and acceptable for protection against COVID-19 but come with a risk of severe allergic reaction to latex from sensitized individuals.

- Other PPE – Face shields used in conjunction with cloth masks, of use of Tyvek-suits, may have useful applicability in some situations to minimize exposure risk, or may be required by regulation or the client.

10. Ventilation, Fresh Air, Air Circulation

In some fieldwork environments both indoors (such as site trailers, treatment system facilities, host facilities) as well as outdoors (staff congregation points), a possible viable infection-risk-reduction measure—used in conjunction with physical distancing and face covers--may be to optimize the amount of air movement and/or fresh air ventilation in both the breathing zone and general work areas. The ultimate purpose is to mitigate localized areas of elevated inhalation risk, particularly at points of personnel convergence where site restrictions or the specific nature of the work may compromise physical distancing or use of face covers. Suggestions/examples are listed below:

- Facilitate passive cross ventilation – Where multiple personnel may temporarily congregate (sampling hand-off points, outdoor tailgate meetings, under canopies set up outdoors for rain/sun protection) consider strategies that facilitate "comfortable cross ventilation:"
  - Place canopies in an open location (not shielded by buildings, vegetation) to maximize passive air currents;
  - Set up indoor and outdoor workstations in locations with natural ventilation—avoid areas with limited air movement, "stagnant air."
  - Keep doors of portable toilets open at all times between use.
- Maximize fresh air – In site trailers, and inside on-site/client facilities, keep doors and windows open at all times (as practical), limit the use of air conditioners--eliminate "cocooned air-conditioned environments" with limited fresh air. Where work is conducted in an indoor environment, locate congregation points near open windows, open doors, or "high-bay" areas with open vents and natural air movement.
- Active cross ventilation – Under ambient conditions of little or no existing air movement, use fans or blowers to increase air movement across the breathing zone at elevated-risk congregation points, such as:
  - In site trailers with doors/windows open;
  - During outdoor tailgate meetings near site trailer under canopy during rain;
  - Working in "close quarters" on boats/barges;
  - Louvered exhaust fan in an enclosed/indoor treatment system facility;
  - For some work tasks, such as indoor drilling with fuel-powered equipment, use of blowers/fans is standard procedure for mitigating airborne combustion emissions, and will have the added benefit of reducing the airborne levels (local accumulations) of COVID 19.

IMPORTANT NOTE: Where Geosyntec personnel may see increased use of electrical fans and blowers, increased reliance on fresh air and the outdoors for hygienic purposes, and decrease reliance on "cocooned air-conditioned environments," we must be more cognizant of measures to mitigate electrical hazards (take precautions in wet locations, use GFCI-protected power sources), and heat stress hazards (drink fluids, more frequent breaks, shaded break locations, cooling personnel by air-movement, personal wellness).

11. Maintain Healthy Lifestyle, Facilitate "Wellness"

- Personal wellness – Spend extra effort to stay well (e.g., eat healthy, get enough rest) to maintain a strong immune system; develop strategies to maintain emotional wellness.

- Exercise, stretching – Make time for solitary physical exercise, stretching, yoga or similar activities; avoid group activities where possible; maintain physical distancing; use only your own personal exercise equipment and accessories.
- Ergonomics – As employees are adjusting to new work strategies, which may entail working from home in a non-office environment, all employees are encouraged to consider strategies for maintaining appropriate work-station ergonomics.

Here are some additional resources to provide to employees and post in field office locations

- COVID-19 Factsheet
- Geosyntec COVID Procedure: "COVID-19 Considerations & Mitigation for On-Going Business Operations"
- Keep Calm and Wash Your Hands
- Wash Your Hands!
- Make a Field Hand Washing Station
- Making Hand Washing Solution from Liquid Bleach
- Know the facts about Coronavirus Disease 2019 and help stop the spread of rumors

APPENDIX C

FIELD SAMPLING FORMS

Name of Facility:	**West Lake Landfill Inactive Sanitary Landfill**
Sampler(s):	
Weather Condition:	
Rainfall Amount during previous 24 hours (inch)	
Sample Location:	**ISL SW-A**
Date/Time:	
Sample ID:	
Visual Observations	
Color	☐ None ☐ Other (describe such as red hue)
Odor	☐ None ☐ Musty ☐ Sewage ☐ Sulfur ☐ Sour ☐ Oil/Gas ☐ Solvents ☐ Other _____
Clarity	☐ Clear ☐ Slightly Cloudy ☐ Cloudy ☐ Opaque ☐ Other _____
Oil Sheen	☐ Yes ☐ No
Foam (gently shake sample)	☐ Yes ☐ No
Field Parameters	
pH	
Flow Method	☐ Volumetric ☐ Area-Velocity
Flow Rate	
Notes:	
Sample Location:	**ISL SW-B**
Date/Time:	
Sample ID:	
Visual Observations	
Color	☐ None ☐ Other (describe such as red hue)
Odor	☐ None ☐ Musty ☐ Sewage ☐ Sulfur ☐ Sour ☐ Oil/Gas ☐ Solvents ☐ Other _____
Clarity	☐ Clear ☐ Slightly Cloudy ☐ Cloudy ☐ Opaque ☐ Other _____
Oil Sheen	☐ Yes ☐ No
Foam (gently shake sample)	☐ Yes ☐ No
Field Parameters	
pH	
Flow Method	☐ Volumetric ☐ Area-Velocity
Flow Rate	
Notes:	

Field Instrument Calibration Information		
pH Meter Model:		
Cal Time		
Calibration Results: (4.01)		
Calibration Results: (7.00)		
Calibration Results: (10.01)		
pH Standard Solution Information (4.01)		
Manufacturer: _____	Lot # _____	Exp Date: _____
pH Standard Solution Information (7.00)		
Manufacturer:	Lot #	Exp Date:
pH Standard Solution Information (10.01)		
Manufacturer:	Lot #	Exp Date:

Print PDF

CHAIN OF CUSTODY

Pg 1 of 1 Workorder # ____________

TEKLAB INC, 5445 Horseshoe Lake Road, Collinsville, IL 62234 Phone (618) 344-1004 Fax (618) 344-1005

Client: Bridgeton Landfill, LLC
Address: 13570 Saint Charles Roack Road
City/State/Zip: Bridgeton, MO, 63044
Contact: Erin Fanning   Phone: 209-227-9531
Email: efanning@republicservices.com   Fax:

Samples on: ☐ ICE ☐ BLUE ICE ☐ NO ICE ______ °C
Preserved in: ☐ LAB ☐ FIELD   FOR LAB USE ONLY
LAB NOTES:

Client Comments:

Are these samples known to be involved in litigation? If yes, a surcharge will apply: ☐ Yes ☑ No
Are these samples known to be hazardous? ☐ Yes ☑ No
Are there any required reporting limits to be met on the requested analysis?. If yes, please provide limits in the comment section: ☑ Yes ☐ No

PROJECT NAME/NUMBER
West Lake OU-2/CHE8424

SAMPLE COLLECTOR'S NAME

RESULTS REQUESTED
☑ Standard ☐ 1-2 Day (100% Surcharge)
☐ Other ______ ☐ 3 Day (50% Surcharge)

BILLING INSTRUCTIONS

and Type of Containers: UNP, HNO3, NaOH, H2SO4, HCL, MeOH, NaHSO4, TSP, Other

INDICATE ANALYSIS REQUESTED: SM 5210B, SM 2540D, SM 4500-NH3, EPA 625, SM 5220D, EPA 1664A, EPA 200.7, EPA 200.8, SM 2540F, SM 4500-Cl E, EPA 375.2 Rev 2.0, EPA 624, EPA 245.1, EPA 218.1 or 218.6

Lab Use Only	Sample ID	Date/Time Sampled	Matrix	UNP	HNO3	NaOH	H2SO4	HCL	MeOH	NaHSO4	TSP	Other	SM 5210B	SM 2540D	SM 4500-NH3	EPA 625	SM 5220D	EPA 1664A	EPA 200.7	EPA 200.8	SM 2540F	SM 4500-Cl E, EPA 375.2 Rev 2.0	EPA 624	EPA 245.1	EPA 218.1 or 218.6
	ISL SW-A		Aqueous										✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
	ISL SW-B		Aqueous										✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
			Aqueous																						
			Aqueous																						
			Aqueous																						
			Aqueous																						
			Aqueous																						
			Aqueous																						
			Aqueous																						
			Aqueous																						
			Aqueous																						

Relinquished By	Date/Time	Received By	Date/Time

*The individual signing this agreement on behalf of the client, acknowledges that he/she has read and understands the terms and conditions of this agreement, and that he/she has the authority to sign on behalf of the client. See www.teklabinc.com for terms and conditions

Terms and Conditions: When Client requests analytical or other services from Teklab, Inc. (hereafter referred to as Teklab) the terms and conditions set forth in this agreement shall prevail. Requests for services may be in the form of a purchase order, electronic order, telephonic order or verbal order. Client's act of sample delivery or shipment to Teklab accompanied by a properly signed Chain of Custody shall constitute acceptance by Client to do business with Teklab under the terms and conditions of this agreement. Any conflicting and/or preprinted terms and conditions of any Client request/purchase order are null and void. Any third party agreements between Client and another party are in no way to be incorporated into this agreement unless agreed to in writing by Teklab and Client. This agreement may be amended only by written agreement between Teklab and Client.

Pricing: Fees for analysis or other services requested by Client shall be the current Teklab listed pricing schedule unless otherwise agreed to by Teklab and Client. Other pricing agreements may be in the form of a Teklab pricing quote. Teklab reserves the right to charge additional fees for expedited analytical results when Client requests expedited results, as determined by Teklab. No discounted pricing shall be accepted for analytical results which take longer than the initially agreed upon time frame, unless specifically agreed to by Teklab and Client. Teklab reserves the right to change its listed pricing without notification.

Quality Assurance/Quality Control: Teklab shall perform its services in a manner consistent with the Teklab Quality Assurance/Quality Control (QA/QC) manual and Teklab's Standard Operating Procedures (SOP's) in effect at the time of the agreement. It is the responsibility of Client to ensure that Teklab's QA/QC manual and SOP's conform to Client's specific requirements. Teklab reserves the right to deviate from its QA/QC manual and/or SOP's provided that the deviations are consistent with generally accepted industry practices and are deemed necessary, by Teklab personnel. In the event that Client desires deviations from the Teklab QA/QC manual or SOP's Client must submit the request in writing prior to submission of samples to Teklab. It is the responsibility of Client to submit any project or permit specific required methodologies, reporting limits or other information prior to the submission of samples to Teklab.

Sample Acceptance: Teklab reserves the right to refuse acceptance of samples or return previously accepted samples to Client when such action is deemed warranted by the Teklab laboratory director or his/her representative. It is the responsibility of Client to inform Teklab, prior to sample submission, when samples are known to be involved with litigation or known to be hazardous. Client shall submit all samples either through personal delivery, via a courier (such as the U.S. Mail, UPS, Federal Express, etc.) or through submission to a Teklab employee at a location other than the facility located at 5445 Horseshoe Lake Road. A properly completed Chain of Custody must accompany all samples.

It is the responsibility of Client to ensure that all samples are collected in accordance with generally accepted sampling protocols or site specific sampling requirements. It is the responsibility of Client to ensure that all samples are shipped or transported in a manner consistent with all federal, state or local laws. The risk of loss or damage to any sample shall remain with Client until Teklab sample acceptance is complete. Sample acceptance shall be completed once Teklab personnel have signed the properly completed Chain of Custody that accompanied the samples. It is the responsibility of Client to ensure that all samples are received with an adequate amount of time for Teklab to perform analysis within the applicable holding times, as specified in the Teklab QA/QC manual. Samples with holding times of seven days or greater must be received with, at least, four days of holding time remaining. Samples with holding times less than seven days must be received with, at least, one half of the holding time still remaining. Teklab reserves the right to charge and Client agrees to pay additional fees for samples received with less than the above stated holding times remaining. Go here for a full description of our sample acceptance policy.

Resampling: In the event that resampling is required, for whatever reason, Teklab in no way accepts responsibility for fees associated with the resampling. Teklab may assume all or a portion of the resampling costs if agreed to in writing by Teklab and Client, such fees will be determined and agreement made prior to the initiation of the resampling event. The fees, which Teklab may agree to pay, shall be the lesser of the actual sampling fees or the total amount paid by Client for work covered under this agreement.

Re-analysis: In the event that re-analysis is requested by Client, Client agrees to pay Teklab fees equivalent to those already agreed upon or the Teklab list price, plus any applicable surcharge for expedited analytical results.

Sample Retention: Samples are routinely retained for 30 days after sample acceptance is complete. Samples may be returned to Client, at no cost to Teklab, if so requested or if deemed appropriate by the Teklab laboratory director or his/her representative. Longer sample retention times may be possible, if requested by Client and agreed to by Teklab. Client agrees to pay Teklab an additional fee of $40.00 per month per sample when samples are to be retained for a period longer than the time period indicated above. Sample retention times shall be calculated from the date of sample acceptance by Teklab and shall be rounded into whole months with sample storage during any one day of the month constituting a charge for storage during the entire month.

Subcontracting: Teklab reserves the right to subcontract any or all portions of the services it provides. Subcontracting will occur in a manner consistent with the Teklab QA/QC manual and/or SOP's.

Reports and Data: Teklab maintains copies of reports and data for the time period and in the manner specified in its QA/QC manual and/or applicable SOP's in effect at the time of sample acceptance. Additional copies of analytical reports and/or analytical data, including QA/QC data, pertaining to Client's samples may be obtained, prior to data destruction, for additional fees, as deemed appropriate by Teklab.

Indemnification: Client shall indemnify and hold harmless Teklab and its respective owners, officers, directors and employees individually and jointly from and against any and all causes of action, claims, injuries, lawsuits, demands, judgments, damages, losses, liabilities, fines, penalties, expenses and other charges directly or indirectly arising from or related to:
(a) the negligent actions, omissions or willful misconduct of Client;
(b) Client's breach of its warranties or obligations under this agreement;
(c) Teklab's performance of services, provided, however that the foregoing indemnification shall not apply to the extent any damages are caused solely by the gross negligence or willful misconduct of Teklab. In any event Teklab's liability will be limited to the lesser of (a) actual damages or (b) the amount of compensation paid to Teklab for services under this agreement.

Payment: Client agrees to remit payment to Teklab within 30 days of receipt of invoice. If Client defaults in punctual payment, all past due amounts will bear interest at the rate of eighteen percent (18%) per annum or the highest rate permitted by law, whichever is lesser, and customer shall reimburse Teklab for all costs of collection incurred, including (without limitation) reasonable attorney fees. Acceptance of payment by Teklab in no way constitutes a waiver of Teklab's rights or claims that Teklab may have against Client.

Termination: Either Client or Teklab may terminate this agreement by sending written Notice of Termination. Upon termination, Client shall be invoiced for services performed and charges incurred prior to termination.

Miscellaneous:
(a) Except for the obligation to make payments hereunder, neither party shall be in default for its failure to perform or delay in performance caused by events beyond its reasonable control, including, but not limited to, strikes, riots, imposition of laws or governmental orders, fires, acts of God, and inability to obtain acceptable Quality Control results, and the affected party shall be excused from performance during the occurrence of such events;
(b) This Agreement shall be binding on and shall inure to the benefit of the parties hereto and their respective successors and assigns;
(c) This Agreement represents the entire agreement between the parties and supersedes any and all other agreements, whether written or oral, that may exist between the parties;
(d) This Agreement shall be construed in accordance with the law of the state of Illinois; and
(e) All written notification required by this Agreement shall be by Certified Mail, Return Receipt Requested. If any provision of this Agreement is declared invalid or unenforceable, then such provision shall be severed from and shall not affect the remainder of this Agreement; however, the parties shall amend this Agreement to give effect, to the maximum extent allowed, to the intent and meaning of the severed provision. In the event Teklab successfully enforces its rights against Client hereunder, Client shall be required to pay Teklab's attorneys' fees and court costs.