



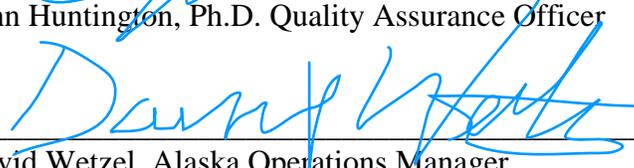
Analytica Group Laboratories

QUALITY ASSURANCE PROGRAM MANUAL

REVISION: 5

Supersedes: Revision 4

Applies to:
Analytica – Juneau
Analytica – Anchorage
Analytica – Fairbanks

	Signature	Date
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ANALYTICA GROUP, INC.

QUALITY ASSURANCE PROGRAM MANUAL

TABLE OF CONTENTS

Signature Pagei
 Table of Contents ii
 Quality Assurance Procedures Matrix iii - v

QAPM Procedure #	Procedure Title	Revision	Number of Pages	Effective Date
QA 1.1	Quality Assurance Policy	1	1	9/27/04
QA 1.2	Scope	1	1	9/27/04
QA 1.3	Objectives	1	4	9/27/04
QA 1.4	Ethics Policy	2	3	9/27/04
QA 1.5	Certifications and Accreditations	2	2	9/27/04
QA 2.1	Management and Organization	3	8	9/27/04
QA 2.2	Quality Program Components	2	6	9/27/04
QA 2.3	Personnel Qualifications and Training	1	4	9/27/04
QA 3.1	Implementation of Work Processes	2	5	9/27/04
QA 3.2	Purchasing	1	2	9/27/04
QA 3.3	Documentation and Records	1	5	9/27/04
QA 4.0	Program Assessment	1	3	9/27/04
QA 5.0	Management Review	2	3	9/27/04

QUALITY ASSURANCE POLICY

Authority:	President and Chief Executive Officer	Revision Number:	2
Document Number:	QA 1.1	Effective Date:	09/29/04
		Next Review Date:	09/29/05

Analytica Group, Inc. (AAI) is committed to a policy of achieving the highest possible quality in our services.

Quality is one of the highest priorities of the company, and is applicable to all AAI personnel. At AAI, achievement of quality is a personal responsibility wherein each individual is independently accountable for the quality of the work and for complying with the procedures governing the work. The application of quality assurance principles within our company is intended to instill a culture of commitment to a rising standard of excellence, with emphasis on preventing problems, and to ensure customer satisfaction. AAI commits to providing the necessary resources to implement this policy.

The provisions of this manual, describing the responsibilities, methods, and processes of our Quality Assurance Program, are binding to all employees. I will expect everyone concerned to use this manual as a guide to the continued maintenance and improvement of the quality of our laboratory services.

SCOPE

Authority:	Quality Assurance Officer	Revision Number:	2
Document Number:	QA 1.2	Effective Date:	9/27/2004
		Next Review Date:	9/27/2005

This Quality Assurance Program Manual (QAPM) documents how Analytica Group, Inc. (AG), structures its Quality Program. It describes policies and procedures, criteria for and areas of application, and roles, responsibilities, and authorities. It also describes policies and procedures for implementing and assessing the effectiveness of the Quality Program and for fostering continual improvement. This QAPM is applicable to all AG facilities.

Revision Log

Revision Date	Authority	Revision Details
March 13, 2002	Gerald Voigt	Revision 0
May 31, 2003	Gerald Voigt	Revision 1 Annual procedure review
Sept. 27, 2004	John Huntington	Revision 2 after lab consolidation

OBJECTIVES

Authority:	Quality Assurance Officer	Revision Number:	2
Document Number:	QA 1.3	Effective Date:	9/27/2004
		Next Review Date:	9/27/2005

In keeping with our policy of achieving the highest possible quality in our services, AG intends to provide accurate, precise, complete, and legally defensible data within a reasonable time period. Managerial, administrative, statistical, investigative, preventive, and corrective techniques are used to maximize the quality of the data. Definitions of the terms used for assessing and ensuring the quality of data are listed below.

- **Accuracy:** the degree to which the analytical measurement reflects the true value. Accuracy is assessed by the analysis of Surrogate compounds, Laboratory Control Samples (LCS) and Matrix Spike (MS) samples. Accuracy is expressed as Percent Recovery (%R).
- **Precision:** the measurement of the reproducibility of the data, defined as the degree of mutual agreement between replicate measurements where the measurements are a result of repeated application of the same process under similar conditions. Precision can be expressed in terms of Standard Deviation or as the Relative Percent Difference (RPD) between Sample and Duplicate, Laboratory Control Sample and Laboratory Control Sample Duplicate (LCS/LCSD), or Matrix Spike and Matrix Spike Duplicate (MS/MSD) analyses.

The overall accuracy of a test result is obtained by evaluating accuracy AND precision.

- **Selectivity:** the extent to which it a method can determine particular analytes(s) in a complex mixture without interference from the other components in the mixture. A method which is selective for an analyte is said to be specific.
- **Limit of Detection:** or method detection limit (MDL) is defined as the minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is greater than zero.
- **Limit of Quantitation:** or method reporting limit (MRL) is the lowest concentration of analyte that can be determined with an acceptable level of uncertainty. It is typically established using an appropriate measurement standard, i.e. it is usually the lowest point on the calibration curve (excluding the blank).
- **Completeness:** the amount of (usable) data collected from a measurement process expressed as a percentage of the data that would be obtained using an ideal process under ideal conditions. Data are considered complete if the analytical procedures are in control as measured by LCS accuracy and

precision. The laboratory may also assess and comment on, although it cannot control, the effects of sample matrix on data quality through MS or MSD analysis.

- **Representativeness:** the degree to which data accurately represents a characteristic of a population, parameter variations at a sampling point, a process condition, or an environmental condition. Representativeness is highly dependent on the sampling plan used by the customer.
- **Comparability:** the extent to which one set of data can be compared to another. Comparability is ensured by using, whenever possible, recognized, published analytical methods, such as EPA-approved methodology (Appendix), and consistent, unambiguous measurements for each chemical, physical, or microbiological parameter.
- **Holding Times:** for most analytical parameters, whether chemical or microbiological, specific holding times have been established in the published procedures. These holding times have been carefully studied and reflect the period during which the analyte of interest is judged to be reasonably stable without significant degradation. A sample must be analyzed within the prescribed holding time for the result to be valid.
- **Documentation:** the process of generating legible, accurate, and appropriate records, traceable to the activity or work performed, and of sufficient detail to allow reconstruction of the test procedure at a later time.

Accuracy, precision, the MDL, and the MRL are established by internal policy and method guidelines. The laboratory criteria for accuracy and precision shall not be less stringent than those suggested or specified in the source method. The sensitivity of a method shall be sufficient to meet the client's need.

Specific AG quality objectives are to:

- Improve the accuracy and precision of the data generated at our laboratories.
- Develop and put into practice robust procedures capable of meeting the customer's needs for accuracy, precision, sensitivity, and selectivity.
- Require all personnel to be familiar with the provisions of the Quality Assurance Program Manual.
- Properly train, motivate, and empower personnel. All employees have the organizational freedom and authority to report conditions adverse to quality.
- Retain copies of laboratory analytical records and reports in a manner and for the period specified by regulatory or certification oversight authorities.
- Use a comprehensive and documented calibration program for all instrumentation used to make determinations.

- Use fresh reagents, chemicals, and solvents of the appropriate purity, certified when necessary, and provide for their traceability.
- Establish and maintain a comprehensive intra-laboratory quality control system to ensure continued precision and accuracy.
- Participate in inter-laboratory performance evaluation testing programs as required by the appropriate certification oversight authorities.
- Periodically assess performance of the quality program to ensure requisite quality of products and services and to foster continual quality improvement.

Revision Log

Revision Date	Authority	Revision Details
March 13, 2002	Gerald Voigt	Revision 0
May 31, 2003	Gerald Voigt	Revision 1 Annual procedure review Added definitions for selectivity, sensitivity (i.e. limit of detection and limit of quantitation), holding time, and documentation.
Sept. 27, 2004	John Huntington	Revision 2 – after lab consolidation Corrected name of lab, reviewed for appropriateness

APPENDIX

Example only

Analytical procedures at AG are typically taken from:

- ⇒ Methods and Guidance for Analysis of Water, U.S. Environmental Protection Agency (EPA)
- ⇒ Methods for the Determination of Organic Compounds in Drinking Water, U.S. EPA
- ⇒ Test Methods for the Evaluation of Solid Wastes, SW 846, U.S. EPA
- ⇒ Microbiological Methods for Monitoring the Environment, U.S. EPA
- ⇒ Other U.S. EPA methods published in the Federal Register and/or available from EPA
- ⇒ Underground Storage Tanks Procedures Manual, Alaska Department of Environmental Conservation, State of Alaska
- ⇒ Standard Method for Examination of Water and Wastewater, American Public Health Association, American Water Works Association, Water Environment Federation
- ⇒ Methods of Soil Analysis, American Society of Agronomy
- ⇒ American Society for Testing and Materials (ASTM)
- ⇒ Other sources as needed

ETHICS POLICY

Authority:	Quality Assurance Officer	Revision Number:	3
Document Number:	QA 1.4	Effective Date:	9/27/2004
		Next Review Date:	9/27/2005

At Analytica Group, Inc. we adhere to the highest standards of personal integrity in our business relationships. Improper manipulation of data is not permitted. Any employee who knowingly falsifies data will be subject to immediate discharge (QA 2.1). Improper, unethical, or illegal practices are defined as follows:

- Improper use of manual integrations to meet calibration or method Quality Control (QC) criteria (for example, peak shaving or peak enhancement solely performed to meet QC requirements)
- Intentional misrepresentation of the date or time of extraction/digestion and analysis (for example, intentionally resetting the date or time of a computer system or instrument to make it appear that time or date requirement was met)
- Falsification of results to meet method requirements
- Reporting results without analysis to support (“dry-labbing”)
- Selective exclusion of data to meet QC criteria (for example, initial calibration points dropped without technical or statistical justification)
- Misrepresentation of laboratory performance by presenting calibration data within data reports that are not linked to the data set reported
- Notation of matrix interference as explanation for exceeding acceptance limits in interference-free matrices (for example, method blanks or laboratory control samples/laboratory fortified blanks)
- Unwarranted manipulation of computer software (for example, improper background subtraction to meet ion abundance criteria for GC/MS tuning)
- Improper alterations of analytical conditions from standard analysis to sample analysis (for example, changing tune parameters in GC/MS, changing GC temperature program to shorten analysis time)
- Misrepresentation of QC samples (for example, adding surrogate after extraction, omitting sample preparation steps for QC samples, over- or under-spiking)
- Reporting of results from the analysis of one sample for the analysis of another

If circumstances arise in the normal course of business that indicate a problem with analytical QC or that would compromise in any way the ability of AG to meet regulatory and internal QC criteria or contractual obligations, it is the responsibility of each employee to report these circumstances to their supervisor and to diligently work to correct the problem.

Each employee, at the beginning of employment with AG, is asked to sign an ethics statement. This statement is placed in the individual's personnel file. The AG ethics statement is presented in the Appendix.

Revision Log

Revision Date	Authority	Revision Details
March 13, 2002	Gerald Voigt	Revision 0
April 15, 2002	Gerald Voigt	Revision 1 Minor corrections
May 31, 2003	Gerald Voigt	Revision 2 Annual procedure review Correction of typographical errors
Sept. 27, 2004	John Huntington	Revision 3 After lab consolidation

APPENDIX

Example only:

AG Ethics Statement

As part of the AG staff, I will adhere to the highest standards of personal integrity in my business relationships. I know that falsification or improper manipulation of data is wrong and if I knowingly falsify data, I will be subject to immediate discharge.

If circumstances arise in the normal course of business that indicate a problem with analytical quality control or in any way would compromise the ability of AG to meet regulatory and internal quality control criteria or contractual obligations, it is my responsibility to report these circumstances to my supervisor and to diligently work to correct the problem.

I have read, understand, and agree to follow this ethics statement and the company policies of Analytica Group, Inc. I understand that Company Policies change from time to time and I will be advised whenever this happens.

CERTIFICATION AND ACCREDITATION

Authority:	Quality Assurance Officer	Revision Number:	3
Document Number:	QA 1.5	Effective Date:	9/27/2004
		Next Review Date:	9/27/2005

AG undergoes several certification processes on a regular basis. Current laboratory certifications and accreditations include:

- **ADEC Drinking Water Analyses Certificate** for the following parameters/methods: Alkalinity by SM 2320-B, Conductivity by SM 2510-B, Color by SM 2120-B, Odor by SM 2150-B, Foaming Agents by SM 5540-C, Total Dissolved Solids by SM 2540-C, pH by SM 4500-H-B and EPA 150.1, Turbidity by EPA 180.1, EDB and DBCP EPA 504.1, VOCs EPA 524.2, Pesticides and PCBs by EPA 508, Nitrate by SM 4500-NO3-E, Nitrite by SM 4500-NO2-B, Metals by EPA 200.9 and 200.7, Mercury by EPA 245.1, Anions by EPA 300.0, Orthophosphate by SM 4500-P-E, Corrosivity by SM 2330-B, Cyanide by SM 4500-CN-C-E, Membrane Filter, Fermentation Tube, Chromogenic / Fluorogenic, and Heterotrophic Plate Count.
Provisionally approved for:
Haloacetic Acids by EPA 552.2 and Total Organic Carbon by SM 5310-B.
- **ADEC Contaminated Sites/Underground Storage Tank Approval** for the following parameters/methods: Gasoline Range Organics in waters and solids by AK 101, Diesel Range Organics in waters and solids by AK 102, Residual Range Organics in solids by AK 103, BTEX in waters and solids by EPA 8021B, PAHs in waters and solids by EPA 8270C, VOCs in waters and solids by EPA 8260B, PCBs in waters and solids by EPA 8082, and Metals in waters and solids by EPA 6010B and 7000-Series methods.

Requirements for attaining Alaska Department of Environmental Conservation (ADEC) **Drinking Water Certification** include:

- ⇒ Satisfactorily analyze annual Performance Evaluation (PE) samples (EPA Water Supply Studies or equivalent) for each analysis for which certification has been granted. The analyst who routinely analyzes drinking water samples will analyze the PE samples.
- ⇒ Use methodologies specified by the drinking water regulation (40CFR 141.21-141.30, 141.41, 141.42).
- ⇒ Notify the ADEC certification officer in writing within 30 days of major changes in personnel, equipment, or laboratory location, which might impair analytical capability.
- ⇒ Undergo ADEC auditing of the Chemistry departments every three years. In case of major changes or failed PE sample results, ADEC may schedule an on-site inspection sooner.

- ⇒ Undergo ADEC auditing of the Microbiology departments every three years. Microbiologists are certified by ADEC after completing a water microbiology training course at the ADEC Laboratory in Palmer, AK.

Requirements for attaining ADEC **Contaminated Sites/Underground Storage Tank Approval** include:

- ⇒ The satisfactory analysis of annual Performance Evaluation samples.
- ⇒ The use of Alaska Department of Environmental Conservation methods AK101, AK102, and AK103 for Gasoline, Diesel, and Residual Range Organics, respectively, of EPA method 8021B for BTEX, EPA method 8270C for Polynuclear Aromatic Hydrocarbons, EPA method 8260B for Volatile Organic Compounds, EPA method 8082 for Polychlorinated Biphenyls, and of EPA 6010 and/or 7000-series methods for metals analysis.
- ⇒ Acceptance by ADEC of the laboratory Quality Assurance Program Manual.
- ⇒ Acceptance by ADEC of the data deliverable reporting format for these tests.

For **Asbestos** analysis, AG participates in AIHA/NIOSH Proficiency Analytical Testing (PAT). In the AIHA/NIOSH program, PAT samples for the identification of asbestos fibers in air are analyzed quarterly.

While not required for any current certifications, AG participates in the annual EPA **Water Pollution Study or DMRQA** program for metals, inorganic parameters, and organic parameters in wastewater.

Revision Log

Revision Date	Authority	Revision Details
March 13, 2002	Gerald Voigt	Revision 0
August 07, 2002	Gerald Voigt	Revision 1 Added CS-Approval provision for AIIPB
May 31, 2003	Gerald Voigt	Revision 2 Removed NIST/EPA NVLAP Bulk Asbestos Accreditation Removed requirement of splitting of samples for AIIPB Contaminated Sites work
Sept. 27, 2004	John Huntington	Revision 3 after lab consolidation

MANAGEMENT AND ORGANIZATION

Authority:	Quality Assurance Officer	Revision Number:	4
Document Number:	QA 2.1	Effective Date:	9/27/2004
		Next Review Date:	9/27/2005

1 Scope and Application

This document describes AG's overall organizational structure to ensure that management controls are established, levels of accountability and authority defined, responsibilities assigned, and lines of communication identified.

2 Definitions

Internal Communication: the process that AG has established to ensure that employees are aware of, and provide feedback on, its Quality Program.

3 Requirements

3.1 General

Personnel assigned responsibility for assuring effective execution of the quality program shall have direct access to levels of management as necessary to perform their functions.

3.2 Organizational Structure

The organizational chart shown on page 4 identifies all of the components of the organization and, in particular, the organizational position and lines of reporting for the Quality Assurance Officer (QAO).

3.3 Key Responsibilities

This section defines the duties and responsibilities of management and staff in the context of the Quality Program. Roles and responsibilities as they pertain to the Environmental Management System are described in EMS 3.1 "Structure and Responsibility."

3.3.1 President and Chief Executive Officer

The ultimate responsibility for quality rests with the President and Chief Executive Officer of AG, who is responsible for:

- Ensuring that company-wide operational policies and procedures, including the Quality Assurance Program Manual, are developed, implemented, and maintained

- Ensuring that all company activities are conducted in accordance with applicable laws and regulations
- Establishing the overall organizational structure
- Allocating adequate resources to establish, implement, and maintain the Quality Program

3.3.2 Vice President and Chief Financial Officer

Within the context of the Quality Program, the Vice President and Chief Financial Officer is responsible for taking the place of the president when the president is unavailable.

3.3.3 Quality Assurance Officer

This section documents the organizational independence of the QAO from groups generating, compiling, and evaluating data. The QAO serves as Management Representative for the Quality Program, reports to the President, and is responsible for:

- Development, implementation, and verification of implementation of the Quality Program and Environmental Management System
- Verification of implementation of the Chemical Hygiene Plan
- Developing and maintaining the Quality Assurance Program Manual and Environmental Management System Manual
- Issuing Quality Program interpretations
- Acting as liaison to clients on matters relating to the Quality Program

3.3.4 Laboratory Manager or Supervisor

The Laboratory Manager or Supervisor reports to the President. He/she is directly accountable for ensuring that the data generated at the laboratory they supervise is of the required quality. Specifically, he/she is responsible for:

- Supervising the activities of all staff in their department
- Maintaining the equipment and facilities in their department
- Ensuring that analytical work is conducted in conformance with regulatory requirements and the provisions of the Quality Program

3.3.5 Quality Control Chemist

The Quality Control (QC) Chemist reports to the Laboratory Manager or Supervisor and is responsible for monitoring QC activities to ensure conformance with regulatory requirements and the provisions of the Quality Program

3.3.6 Chemical Hygiene Officer

The Chemical Hygiene Officer (CHO) reports to the Laboratory Manager or Supervisor and is responsible for coordinating the Health, Safety, and Environment (HSE) Program at the facility level.

3.3.7 Analytical / Field Staff

Professional and technical personnel involved with analytical work and/or field sampling activities are responsible for:

- Contributing to the effective implementation of the Quality Assurance Program
- Understanding and complying with customer and regulatory requirements and the provisions of the Quality Program

3.3.8 Administrative Staff

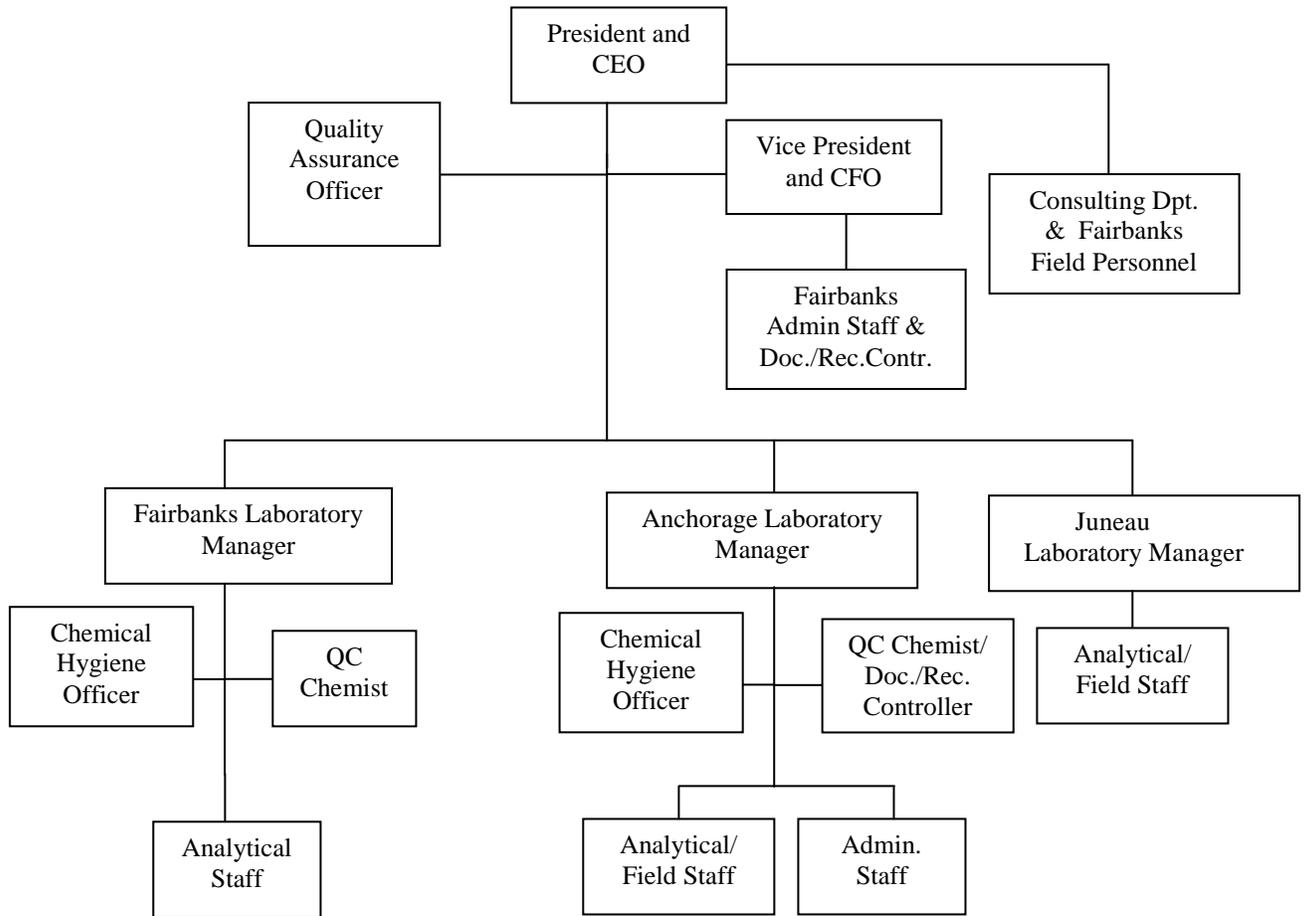
Administrative personnel are responsible for:

- Contributing to the effective implementation of the Quality Assurance Program
- Understanding and complying with customer and regulatory requirements and the provisions of the Quality Program

3.3.9 Document and Record Controller

Within the administrative department of each laboratory, the office assistant, or designee, performs the task of document and record control. He/she is responsible for:

- Control of documents at their facility
- Maintaining quality records, including documentation of employee training and certifications at their facility

Organizational Chart for Northern Testing Laboratories, Inc.**3.4 Communication and Enforcement**

The organization of AG management and staff with respect to the Quality Program is established and maintained through clear internal communication and enforcement of quality requirements.

3.4.1 Internal Communication

Roles and responsibilities, as described in this document, are defined, documented, and clearly communicated to personnel. Communication is accomplished by using any or all of the following methods:

- Formal or informal training (QAP 2.3)
- Staff meetings

- E-mails
- Other written or oral communications

Staff input and feedback, as well as inquiries, are strongly encouraged.

3.4.2 Enforcement

Potential consequences for employee departure from the procedures described in AG's Quality Assurance Program Manual and Environmental Management System Manual are addressed through a system of progressive discipline. However, all employees must be aware that violation of legal requirements may have other consequences, such as fines, jail time etc.

It is the policy of AG to practice a progressive approach to discipline.

Guidelines:

Employees who exhibit unacceptable conduct, performance, or violate company policy will, in most cases, be given the opportunity to improve. There are some instances, however, where immediate reprimand, suspension, or termination of employment is appropriate.

The following considerations will be weighed carefully in each disciplinary matter:

- Seriousness of the violation
- Interval since prior warning
- Company practice in similar situations with other employees
- Employee's length of service
- Employee's overall record
- Compelling need for individual consideration

Nothing in this policy is intended to limit the employer's right to terminate the employment of an employee at any time, with or without cause and with or without notice, as an Employment-at-Will employer, or to reserve the exclusive right to determine if progressive discipline will be used and what level of discipline to impose.

Progressive discipline steps used in responses to unacceptable behavior not resulting in immediate dismissal are as follows:

- **Verbal Warning:**

The manager or supervisor will meet with the employee and formally discuss the nature of the problem and the corrective action necessary. The meeting will be documented. A verbal warning alerts the employee that the behavior in question is unacceptable and gives the employee an opportunity to show improvement.
- **Written Warning or Reprimand:**

A written warning may occur when management considers the infraction too severe for a verbal warning. Or a written warning may occur when the employee has already been warned verbally for the offense, but has failed to show acceptable improvement. Written warnings include the reasons for the supervisor's dissatisfaction and supporting evidence. The employee will have an opportunity to defend their actions and refute the supervisor's evidence at the time the warning is issued.

The supervisor will counsel the employee and commit to assisting in making a positive change. This may mean meetings, training, one-on-one coaching, or other actions that will help improve performance. A performance improvement plan may be developed outlining expected behavior and acceptable timelines. The employee will sign the written warning.
- **Suspension Without Pay:**

If an employee's behavior is so serious that management believes the employee should leave the workplace immediately, a suspension from work without pay will likely result. During this time the employee will be asked to decide whether he or she can continue to work for AG and abide by the company's conduct and performance standards. When an employee is suspended, he or she will also be placed on probationary status for 30 days. Management will make the final decision regarding the length of time of suspension or a possible termination after investigation of the facts. If the investigation reveals that the employee is not guilty of misconduct or poor performance, the employee will receive his or her pay for the time of suspension.
- **Termination:**

If unacceptable behavior continues in spite of all

progressive discipline steps, the employee will be terminated. Reasons for termination must be documented in writing in the personnel file.

Any employee who knowingly falsifies data will be subject to immediate discharge.

4 References

(NOTE: references are subject to revision change)

EPA QA/R-2, EPA Requirements for Quality Management Plans

EPA 910/9-92-032 Guidance on Preparation of Laboratory Quality Assurance Plans

The Laboratory Quality Assurance System, Thomas A. Ratcliff, Jr., Van Nostrand Reinhold 1990

Test Methods for Evaluating Solid Waste, Third Edition, SW-846, US EPA, Revision 1

EPA 815-B-97-001, March 1997, Manual for the Certification of Laboratories Analyzing Drinking Water

NELAC Chapter 5, 5.4, Organization and Management

ISO 9001:2000, 5.5, Responsibility, Authority, and Communication

ISO/IEC 17025, 4.1, Organization

ISO 14001:1996, 4.4.1, Structure and Responsibility

EMS 3.1, Rev 1, Structure and Responsibility

Revision Log

Revision Date	Authority	Revision Details
March 13, 2002	Gerald Voigt	Revision 0
April 15, 2002	Gerald Voigt	Revision 1 Revised organizational chart
August 7, 2002	Gerald Voigt	Revision 2 Revised organizational chart Edited Section 3.3.3 to correct title of QAO.
May 31, 2003	Gerald Voigt	Revision 3 Annual procedure review Revised organizational chart Added NELAC Chapter 5, ISO 9001. and ISO 17025 to section 4, References

QUALITY PROGRAM COMPONENTS

Authority:	Quality Assurance Officer	Revision Number:	3
Document Number:	QA 2.2	Effective Date:	9/27/2004
		Next Review Date:	9/27/2005

1 Scope and Application

The purpose of this document is to describe the requirements for AG's Quality Program and to define the primary responsibilities for managing and implementing each component of the Quality Program.

2 Definitions

Quality: the condition achieved when a process, item, or service satisfies requirements and expectations.

Quality Program: a structured program that describes the policies and procedures for ensuring that work processes, products, and services satisfy requirements and expectations. AG's Quality Program integrates Quality Assurance with Environmental Management.

Quality Assurance Program (QAP): the part of AG's Quality Program that relates to Quality Assurance activities.

Quality Assurance (QA): an integrated system of management activities involving planning, implementation, documentation, assessment, reporting, and improvement to ensure that a process, item, or service is of the type and quality needed and expected by the client.

Quality Control (QC): a process of measuring work results, comparing the performance to stated requirements, and taking action to correct any deficiencies. QC methods generally define the type and frequency of checks and reviews used to identify problems and initiate corrective action if necessary, thus maintaining product quality.

Quality Improvement: a management program for improving the quality of operations.

Quality Assurance Program Manual (QAPM): a controlled document that describes the structure of AG's Quality Program, its policies and procedures, areas of application, and roles and responsibilities. It also includes policies and procedures for assessing the effectiveness of the Quality Program and for promoting quality improvements.

Quality Assurance Standard Operating Procedure (QA SOP): a controlled document that describes in detail a work process and its relevant controls. The purpose of a QA SOP is to ensure that the results of technical or analytical work comply with applicable requirements.

Environmental Management System (EMS): A structured process to manage environmental requirements.

Environmental Management System Manual (EMSM): a controlled document that describes the structure of AG's Environmental Management System, its policies and procedures, areas of application, and roles and responsibilities. It also includes policies and procedures for assessing the effectiveness of the Environmental Management System and for promoting continual improvement. The EMSM is integrated with the QAPM and QA SOPs.

3 Requirements

This section establishes responsibilities, defines principal components and minimum requirements of AG's Quality Program.

3.1 Key Responsibilities

Listed below are responsibilities for the development, implementation, and maintenance of the Quality Program.

3.1.1 President / Vice President

The President and Vice President of AG are responsible for:

- Approving the QAPM and EMSM
- Annually reviewing and evaluating the suitability, adequacy, and effectiveness of the Quality Program to promote program improvement

3.1.2 Quality Assurance Officer

The Quality Assurance Officer is responsible for:

- Developing and maintaining the QAPM and EMSM
- Developing and maintaining QA SOPs to describe tasks and responsibilities for ensuring compliance with the QAPM
- Developing and providing QAPM and EMSM training material to the organization
- Periodically reviewing and updating the QAPM, QA SOPs, and EMSM to:
 - ⇒ Reflect regulatory changes
 - ⇒ Reflect significant organizational and operational changes
 - ⇒ Incorporate changes in industry practice and technology

- ⇒ Incorporate improvements to the Quality Program resulting from audit reports, nonconformance documentation, and departmental input
- Conducting annual assessments of the Quality Program and reporting the results to the President and Vice President as part of Management Review

3.1.3 Laboratory Manager or Supervisor

The Laboratory Manager or Supervisor is responsible for:

- Effective implementation of the Quality Program
- Ensuring that personnel under their supervision receive documented QAPM, QA SOP, EMSM, and technical SOP training as appropriate to their work assignment
- Ensuring that analytical work is conducted in conformance with regulatory requirements and the provisions of the Quality Program
- Ensuring that latest approved revisions of appropriate documents are available at the point of use.

3.1.4 Quality Control Chemist

The Quality Control Chemist is responsible for:

- Tracking corrective action, ensuring that corrective action was taken in a timely manner, and that it was effective
- Ensuring that technical SOPs are developed, reviewed, and periodically updated
- Ensuring that in-house statistical quality control limits are developed and periodically updated
- Ensuring that method detection limits are developed and periodically updated
- Conducting peer (second level) review of analytical data
- Acting as the primary contact point in QC matters for the facility

3.1.5 Analytical / Field Staff

Professional and technical personnel involved with analytical work and/or field sampling activities are responsible for:

- Scheduling, coordinating and performing analytical work to meet sample hold times and required turn around times

- Conducting first level review of analytical data to ensure compliance with regulatory requirements and the provisions of AG's Quality Program
- Conducting peer review of analytical data as necessitated by customer requirements
- Maintaining records as appropriate to their area of responsibility
- Following approved QA and technical SOPs
- Attending training

3.1.6 Administrative Staff

Administrative personnel are responsible for:

- Maintaining records as appropriate to their area of responsibility
- Following approved procedures
- Attending training

3.1.7 Document/Record Controller

The Document Controller is responsible for the control of documents and the management of records.

3.2 Quality Assurance Program Manual

AG shall prepare and maintain a QAPM, supplemented by QA SOPs, to document management practices, including QA and QC activities, to support compliance with regulatory requirements and customer expectations. The QAPM shall contain the following elements:

- Quality Assurance Policy
- Scope
- Objectives
- Ethics Policy
- Certifications and Accreditations
- Management and Organization
- Quality Program Components
- Personnel Qualifications and Training
- Implementation of Work Processes
- Purchasing
- Documentation and Records

- Program Assessment
- Management Review

Modifications or additions to the QAPM may be required to address changes to regulatory or customer requirements, assessment findings, corrective and preventive actions, and management review. The QAPM is reviewed at least annually.

3.3 Quality Assurance Standard Operating Procedures

AG shall prepare and maintain QA SOPs to elaborate on the requirements established in the QAPM. The SOPs shall contain the following information:

- Detailed description and expected results of the work process
- Applicable controls
- Criteria for acceptance or rejection when appropriate to the nature of the procedure
- Roles and responsibilities

Modifications or additions to QA SOPs may be required to address changes to regulatory or customer requirements, assessment findings, corrective and preventive actions, and management review. SOPs are reviewed at least annually.

3.4 Environmental Management System Manual

An Environmental Management System Manual (EMSM) and associated procedures shall be prepared and maintained to describe AG's environmental protection program. The EMSM shall comply with the Quality Assurance Program Manual and with Federal, State, and local environmental laws and regulations. Modifications or additions to the EMSM may be required to address changes to regulatory or customer requirements, assessment findings, corrective and preventive actions, and management review. The EMSM is reviewed at least annually.

3.5 Chemical Hygiene Plan

A Chemical Hygiene Plan (CHP) shall be prepared and maintained to describe AG's laboratory health and safety program. The CHP shall comply with the Quality Assurance Program Manual and with Federal, State, and local laws and regulations that apply to workers' health and safety.

4 References

(NOTE: references are subject to revision change)

ISO 9001:2000 Quality Management Systems – Requirements

ISO/IEC 17025 General Requirements for the Competence of Testing and Calibration Laboratories

National Environmental Laboratory Accreditation Conference (NELAC), Chapter Five – Quality Systems

EPA QA/R-2, EPA Requirements for Quality Management Plans

EPA 910/9-92-032 Guidance on Preparation of Laboratory Quality Assurance Plans

Test Methods for Evaluating Solid Waste, Third Edition, SW-846, US EPA, Revision 1

EPA 815-B-97-001 Manual for the Certification of Laboratories analyzing Drinking Water

Department of Defense Quality Systems Manual–Version 1 Final, Based On NELAP Voted Revision 12–1 July 1999

The Alyeska Pipeline Service Company, Quality Program Manual QA-36, Edition 1, Revision 09, Section 2, Quality Program

BPXA Oil Industry Contractor Toolbox, EMS Workshop, May 9-10, 2001

Revision Log

Revision Date	Authority	Revision Details
March 13, 2002	Gerald Voigt	Revision 0 Expanded definitions to include EMS
April 15, 2002	Gerald Voigt	Revision 1 Expanded responsibilities to include training Removed paragraph 3.6, Training
May 31, 2003	Gerald Voigt	Revision 2 Annual procedure review Corrected title of quality assurance officer Redefined responsibilities of quality assurance officer, laboratory manager / supervisor, and administrative staff Expanded list of references
Sept. 27, 2004	John Huntington	Revision 3 after lab consolidation

PERSONNEL QUALIFICATIONS AND TRAINING

Authority:	Quality Assurance Officer	Revision Number:	2
Document Number:	QA 2.3	Effective Date:	9/27/2004
		Next Review Date:	9/27/2005

1 Scope and Application

It is the policy of AG to select qualified personnel with verifiable education and demonstrated proficiency in a given job field. This document describes the requirements for assuring that all personnel have the necessary skills to do their work effectively.

2 Definitions

Responsible Manager/Supervisor: a generic term identifying any manager or supervisor responsible for specified actions described in AG's Quality Assurance Program Manual, Environmental Management System Manual, and Quality Assurance Standard Operating Procedures.

Training Matrix: a multi-column table used to identify training requirements by job title and training course.

3 Requirements

All personnel shall be responsible for complying with all quality assurance/quality control requirements as relevant to their organizational/technical function.

Each technical staff member shall have a combination of experience and education to adequately demonstrate specific knowledge of their particular function and a general knowledge of laboratory operations, test methods, quality assurance/quality control procedures and records management.

All personnel involved with any function affecting data quality and/or environmental compliance shall receive appropriate training. Specific training requirements shall be identified in a training matrix. All training shall be documented

3.1 Key Responsibilities

This section defines the key responsibilities of management in ensuring that adequate training and personnel development programs are provided.

3.1.1 President / Vice President

The President and Vice President of AG are responsible for:

- Establishing minimum qualifications for each job description

- Allocating sufficient resources for the development, implementation, and maintenance of the training program.

3.1.2 Quality Assurance Officer

The Quality Assurance Officer (EMS Management Representative) is responsible for overseeing the overall technical and regulatory training program.

3.1.3 Laboratory Manager or Supervisor

The Laboratory Manager or Supervisor is responsible for:

- Ensuring that personnel with sufficient education and/or experience to perform their assigned duties are hired
- Ensuring the personnel under their supervision receive the proper training

3.2 Minimum Qualifications

A minimum level of academic training or experience is required for certain positions. Education and appropriate experience may be exchanged to meet these criteria. Education and experience of AG professional staff is listed in the Appendix.

- **Laboratory Manager or Supervisor:** The Laboratory Manager or Supervisor should possess a baccalaureate or higher degree in chemistry or related field. They should have a minimum of six years of experience using EPA Methods in the analysis of water, wastewater, solid waste, or other environmental samples. The Laboratory Manager or Supervisor also should have at least one year of supervisory experience and one year of experience as a Chemist or Analyst.
- **Quality Assurance Officer:** The QA Officer should possess a baccalaureate or higher degree in chemistry or related field. They should have a minimum of six years of experience using EPA Methods in the analysis of water, wastewater, solid waste, or other environmental samples. The QA Officer also should have at least one year of supervisory experience and one year of experience as a Chemist or Analyst.
- **Quality Control Chemist:** The Quality Control (QC) Chemist should possess a baccalaureate or higher degree in chemistry or related field. They should have a minimum of three years of experience using EPA Methods in the analysis of water, wastewater, solid waste, or other environmental samples. The QC Chemist also should have at least one year of supervisory experience and one year of experience as a Chemist or Analyst.

- Chemists or Analysts: Chemists or Analysts should possess a baccalaureate or higher degree in chemistry or related field. They also should have a minimum of six months of experience in an environmental analytical laboratory.
- Technicians: Technicians should possess an associate degree in science or have taken at least four science courses at the college level with at least one course being chemistry. One year of laboratory experience may be substituted for the educational requirements.
- Laboratory Aides: Laboratory Aides should have graduated from high school and have taken at least one chemistry or biology course.

3.3 Training

The overall goal of the training program is to ensure that each staff member is aware of the relevance and importance of their activities and how they contribute to the achievement of data quality and/or environmental compliance objectives.

New hires shall receive documented training to include Laboratory Safety, QAPM, EMSM, and Ethics Policy.

Upon assignment of new duties, technical staff members shall receive documented training and demonstrate proficiency in the specific technique. The training effort expended on each employee shall be commensurate with the nature and complexity of their assigned roles and responsibilities. Personnel who are undergoing training shall be appropriately supervised.

A QA SOP shall describe specific training requirements.

3.3.1 Verification and Improvement of Effectiveness

The person providing the training should evaluate the effectiveness of the training effort in terms of (1) level of knowledge and skill acquired, and (2) the overall effectiveness including the need for improvement.

4 References

(NOTE: references are subject to revision change)

EPA QA/R-2, EPA Requirements for Quality Management Plans

EPA 910/9-92-032 Guidance on Preparation of Laboratory Quality Assurance Plans

Test Methods for Evaluating Solid Waste, Third Edition, SW-846, US EPA, Revision 1

EPA 815-B-97-001, March 1997, Manual for the Certification of Laboratories Analyzing Drinking Water

Department of Defense Quality Systems Manual–Version 1 Final, Based On NELAP Voted Revision 12–1 July 1999

The Alyeska Pipeline Service Company, Quality Program Manual QA-36, Edition 1, Revision 09, Section 19, Training

NELAC Chapter Five, 5.6 Personnel

ISO 9001:2000 – 6.2 Human Resources

ISO/IEC 17025 – 5.2 Personnel

ISO 14001:1996 - 4.4.2, Training, Awareness and Competence

SOP No. QA 2.3.1, Training

AG Environmental Management System Manual

Revision Log

Revision Date	Authority	Revision Details
March 13, 2002	Gerald Voigt	Revision 0
May 31, 2003	Gerald Voigt	Revision 1 Annual procedure review Corrected title of quality assurance officer Expanded list of references Updated list in appendix
Sept. 27, 2004	John Huntington	Revision 2 after lab consolidation

APPENDIX

*Example only:***Northern Testing Laboratories, Inc. Professional Personnel**

Discipline	Analyst	Education	Experience (Years)
Administration	Michael R. Pollen	B.S. in Biology	30
	Peggy Pollen	MBA Student	16
	Wendy Mitchell	B.S. in Physics	7
	Jerry Pollen	H.S. Diploma	11
	Gerald Voigt	B.S. in Chemistry	16
	Ellen Williams	B.S. equiv. in Medical Laboratory Technology	16
	Jenny Roberts	3 rd Year Student	3
	Debra Halsel	H.S. Diploma	3
Inorganics	Shane Billings	M.S. in Analytical Chemistry	3
	Jonathan Pollen	A.A. in Art	7
	Angela DiBerardino	B.S. in Chemistry	2
	Kari Hagen	B.S. in Chemistry	1
	Ellen Williams	B.S. equiv. in Medical Laboratory Technology	16
Organics	Lance Morris	B.S. in Biochemistry	6
	Xeudong Man	B.S. in Chemical. Eng. M.S. in Min. Proc. Eng.	8
	Jerry Pollen	H.S. Diploma	11
	Ralph Allphin	B.S. in Chemistry	25
	Jennifer Poppe	B.S. in Biology	4
	Vivianne Sawasaki	B.S. in Biology	2
	Andrew Johnson	B.S. in Biology	2
Consulting	Michael R. Pollen	B.S. in Biology	30
	Sonja Benson	M.S. in Geology	7
Microbiology	Bonnie Buteyn	B.S. in Biology, M.A. in Teaching	24
	Lara Weisensel	B.S. in Wildlife Biology	5
	Kerry Lynch	B.S. in Microbiology	1
	David Toomey	H.S. Diploma	7
	Patryce McKinney	Student	3
Asbestos	Patryce McKinney	Student	3

Analytica Group, Inc.
Standard Operating Procedure
SOP No. QA 2.3.1
Training and Communication
Revision: 3
Supersedes: Revision 2
Effective Date: 9/27/2004

	Signature and Title	Date
Prepared by:	John Huntington, Quality Assurance Officer	9/27/2004

Periodic Review:

Signature	Title	Date
_____	_____	_____

Comments: _____

Comments: _____

Comments: _____

TABLE OF CONTENTS

1	SCOPE AND APPLICATION	3
2	DEFINITIONS	3
3	PROCEDURE.....	3
4	RECORDS	9
5	REFERENCES.....	9
	APPENDIX A: AG TRAINING MATRIX.....	11
	APPENDIX B: HISTORICAL TRAINING DOCUMENTATION FORM	12
	APPENDIX C: TECHNICAL PROFICIENCY TRAINING DOCUMENTATION FORM	13
	APPENDIX D: GENERAL TRAINING DOCUMENTATION FORM.....	14

1 SCOPE AND APPLICATION

Employee competence is evaluated on the basis of education, experience, knowledge, and training. The purpose of this procedure is to define the tasks and responsibilities relating to the design, development and delivery of AG's training program. It also addresses internal and external communication.

Training is intended to educate employees on:

- the importance of compliance with legal requirements
- the importance of conforming with AG's Quality Assurance Program, Environmental Management System, and Chemical Hygiene Plan
- their roles and responsibilities in achieving conformance
- the potential consequences of departure from specific operating procedures

2 DEFINITIONS

Training Matrix: a multi-column table used to identify AG training requirements by job title and training course (Appendix A).

3 PROCEDURE

3.1 Key Responsibilities

This section defines the responsibilities of management and professional, technical, and administrative support staff with regards to AG's training program.

3.1.1 Quality Assurance Officer

The Quality Assurance Officer is responsible for:

- Developing and maintaining a training matrix for the company
- Providing coordination and expertise in training and the development of training material.

3.1.2 Laboratory Manager or Supervisor

The Laboratory Manager or Supervisor is responsible for:

- Determining what education, qualifications, and certifications are needed by personnel under their supervision to perform their assigned tasks, meet business needs, and satisfy regulatory requirements
- Ensuring that new hires receive initial training as per paragraph 3.5

- Ensuring that personnel under their supervision receive training as prescribed in the current revision of AG's training matrix
- Ensuring that appropriate training material is developed and maintained
- Allocating adequate time for employee training

3.1.3 Quality Control Chemist

The Quality Control Chemist reports to the Laboratory Manager or Supervisor and is responsible for ensuring the implementation, adequacy, and completion of employee technical proficiency training at their facility.

3.1.4 Chemical Hygiene Officer

The Chemical Hygiene Officer (CHO) reports to the Laboratory Manager or Supervisor and is responsible for ensuring the implementation, adequacy, and completion of employee health, safety, and environment training at their facility.

3.1.5 Document/Record Controller

The Document/Record Controller reports to the Laboratory Manager or Supervisor and is responsible for maintaining records of technical and regulatory proficiency training and health, safety, and environment training at their facility.

3.1.6 All Personnel

Any AG employee is responsible for:

- Providing guidance training (3.6.1), as needed, to colleagues
- Attending training
- Maintaining the qualifications and certifications required by their job functions

3.2 Training Matrix

AG's training matrix (matrix) specifies minimum training requirements. The matrix is included in this procedure in Appendix A. It is reviewed at least once per year as part of annual procedure review. The matrix published in this procedure is always the current revision of the matrix.

The review process of the matrix focuses on the ongoing appropriateness of training requirements and on any changes to the organization and to the scope of work performed.

3.3 Quality Assurance Program Training

Quality Assurance Program training requirements are specified in the current revision of the training matrix.

3.3.1 Technical Proficiency Training

Technical proficiency training (Appendix C) is a subset of quality assurance training and a prerequisite for analyzing field samples. It has special importance to the operation of the laboratory. Technical proficiency training that must be fulfilled before client samples analysis is started requires that the analyst has:

- Read and understood the source method
- Read and understood the relevant SOP(s)
- Successfully completed an “Initial Demonstration of Capability” (3.7.2.1)

3.3.2 Historical Training

In cases where past technical proficiency training may be insufficiently documented but where other evidence exists that the person is competent either through experience or education, the Historical Training Documentation Form (Appendix B) will be used to “grandfather” that person. This can be done in lieu of repeating the technical proficiency training as outlined in the paragraph above.

This option cannot be used to meet QAPM, QA SOP, and EMSM training requirements.

3.4 Environmental Management System (EMS) Training

Environmental Management System training requirements are specified in the current revision of the training matrix.

3.5 New Hires

Minimum training requirements for each new employee shall consist of:

- A New Employee Safety Orientation (i.e. safety walk-trough, hazard communication, chemical hygiene plan etc.)
- An orientation of the Quality Assurance Program Manual
- An orientation of the Environmental Management System Manual
- An orientation of the Personnel Policies including the Ethics Policy

3.6 Training Techniques

Different approaches to training include guidance training, self-directed training, in-house training, external training, and regulatory training. Definitions of the available training methods and techniques are presented below:

3.6.1 Guidance Training

Guidance training is on-the-job-training (OJT) with outside help from supervisors or co-workers. The advice may be solicited, provided informally, or on a planned, structured basis. Guidance training is conducted as follows:

- A. Observe an experienced operator perform the different tasks in the measurement process
- B. Perform the operation under direct supervision of an experienced operator
- C. Perform the operations independently but with a high degree of quality control checks

3.6.2 Self-Directed Training

Self-directed training takes place at a location and a time convenient to the person receiving the training. "Microsoft Powerpoint" slide presentations are one example of self-directed training. Another would be study of an analytical method or SOP. When appropriate, a quiz and a training critique may be part of self-directed training.

3.6.3 In-House Training

In-house training is classroom study, held during business hours, presented at the laboratory in a formal structure. Classes may be given by qualified laboratory personnel or outside instructors. Classes should conclude with a performance assessment (quiz) and an evaluation of the presentation and presenter (training critique) by the students.

3.6.4 External Training

External training is also classroom study, but held outside the laboratory. It involves classes, workshops, conferences, or other training offered by governmental or other agencies or professional organizations.

3.6.5 Regulatory Training

Regulatory training is obligatory training to satisfy State or Federal regulatory competency requirements. It is frequently offered by governmental organizations.

3.7 Verification

Several techniques are available to evaluate the effectiveness of the training program. At least one of these techniques should be used during evaluation.

3.7.1 Testing

Where appropriate, a written test or quiz will be given after training to assess the effectiveness of the training effort. The test or quiz will be graded. An 80 percent pass rate is required for test performance to be considered acceptable.

3.7.2 Proficiency Checks

Where appropriate, trainees will be assigned work tasks related to the training subject matter. These are designed to measure skill improvement and verify ability to perform the job. Work tasks that may be assigned are outlined below.

3.7.2.1 Initial Demonstration of Capability (IDC)

A trainee will prepare, analyze, and report four replicate Laboratory Control Samples (LCS) before analyzing any client samples. An LCS is an interference-free matrix that is spiked with known concentrations of analyte(s) and carried through the entire analytical procedure. The IDC is a *mandatory* part of technical proficiency training (3.3.1) and is documented. Proficiency is judged in terms of accuracy; that is, the results must fall within specified acceptance limits. For some methods, a method detection limit study (MDL) as described in QA 3.1.6.2 may be substituted for the IDC, as long as method specific recovery requirements are met.

3.7.2.2 Performance Evaluation Samples (PE)

As an additional option, a trainee may be provided with an unknown sample to which a prescribed method is to be applied. This can be done in two ways:

1. By the use of blind samples, where the composition of the sample is known to the supervisor or instructor but unknown to the trainee. Blind samples may be prepared in-house or obtained from a vendor.
2. By the use of annual performance evaluation samples, successful analysis of which is required by certain certification oversight authorities. In this case, the composition is unknown to both the trainer and trainee. This is part of performance evaluation audits as described in QA 4.1.

Proficiency is judged in terms of accuracy; that is, the results must fall within specified acceptance limits.

3.8 Improvement

Continuous improvement of the training program is accomplished by providing trainees with the opportunity to critique the training material and presenter, and evaluating the critique. When deficiencies are identified, the person providing the training will revise the presentation as appropriate.

3.9 Internal Communication

Training requirements and other necessary information are clearly communicated to employees, and include:

- New or changed regulatory requirements that affect their roles and responsibilities
- New or changed customer requirements that affect their roles and responsibilities
- Changes to the QAPM, QA SOPs, technical SOPs, the EMSM and related documents that affect their individual roles and responsibilities
- Lessons learned from nonconformance incidents (either quality or environment related)
- The findings and action plans resulting from independent internal as well as external audits

These updates may be communicated through any or all of the following methods:

- Formalized training sessions
- Staff meetings
- E-mails
- Other written or oral communications

Staff input and feedback, as well as inquiries, are strongly encouraged.

3.10 External Communication

3.10.1 Telephone Inquiry

This section relates mostly to inquiries by a regulatory agency. Depending on the circumstances, it may also be applied to inquiries from other interested parties.

Upon receiving a telephone inquiry, the employee should be cordial and assure the caller they will receive a response. The employee should obtain the caller's

name, a telephone number where they can be reached, and the reason for the call. The date and time the call was received should be noted and the information forwarded to the Laboratory Manager or Supervisor, or to the Quality Assurance Officer/EMS Management Representative.

3.10.2 Agency Visit

Any agency visitor should be greeted cordially, but not allowed to tour any areas of the facility unescorted. Any employee should detain the agency visitor in the reception area until a management representative arrives.

4 RECORDS

Training records relating to quality must be filed separate from those relating to HSEMS due to different records retention requirements. Since training documentation is collected in individual personnel training files, this necessitates two separate files for each employee. Training records are maintained in accordance with QA 3.3.3.

Records of external communications relating to AG's Quality Assurance Program and Environmental Management System will be maintained by the Quality Assurance Officer / EMS Management Representative for an interim period of two years prior to archive.

5 REFERENCES

(NOTE: references are subject to revision change)

Test Methods for Evaluating Solid Waste, Third Edition, SW-846, US EPA, Revision 1
EPA 815-B-97-001, March 1997, Manual for the Certification of Laboratories Analyzing
Drinking Water

Department of Defense Quality Systems Manual—Version 1 Final, Based On NELAP Voted
Revision 12—1 July 1999

NELAC Chapter Five, 5.6 Personnel

ISO 9001:2000 – 6.2 Human Resources

ISO/IEC 17025 – 5.2 Personnel

ISO 14001:1996 - 4.4.2 Training, Awareness and Competence

QA 2.3 Personnel Qualifications and Training

Analytica Group, Inc., Environmental Management System Manual

EMS 4.3.1 Environmental Records Matrix

QA 3.3.3.1 Quality Records Matrix

Revision Log

Revision Date	Authority	Revision Details
March 13, 2002	Gerald Voigt	Revision 0
April 15, 2002	Gerald Voigt	Revision 1 Revised training matrix Expanded list of appendices Added documentation of historical training, Two years interim storage of communication records
May 31, 2003	Gerald Voigt	Revision 2 Annual procedure review Corrected title of quality assurance officer Restructured text to make consistent with other QA SOPs and to clarify procedure Expanded list of references Updated training matrix (Appendix A) to remove "EMS-light"
Sept. 2, 2004	John Huntington	Revision 3 after lab consolidation

APPENDIX A

TRAINING MATRIX

Job Title	Required Training																									
	New Employee Orientation	QAPM	Training & Communication	Sample Receiving & Storage	Internal COC	Traceability of Msrmts & Calibrations	Calibration of Thermometers	Control & Traceability of Standards	Quality Control Procedures	Nonconformance & Corrective Action	MDL Studies	Cntrl Limits & Cntrl Charts	Preventive Maintenance	Data R. R., & Validation	Procurement of Items & Services	SOP Generation	Control of Documents	Records	Audits	EMSM	Safety Training	Technical Proficiency	Method/SOP Study (in lieu of techn. prof.)	Hazwoper	Respirator Fit Testing	
Chemist (Anc/Fbx)	X	X	X	X	X	X	X	X	X	X	X	X	X	X						X	X	X				
Laboratory Technician (Anc/Fbx)	X	X	X	X	X	X	X	X	X	X	X	X	X	X							X	X	X			
Microbiologist (Anc/Fbx)	X	X	X	X	X	X	X	X	X	X	X	X	X	X							X	X	X			
Chemist/Lab Tech/ Microbiologist	X	X	X	X	X	X	X	X	X	X	X	X	X	X							X	X	X		X	X *
Quality Control Chemist	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X			X	X		X		
Chemical Hygiene Officer	X	X																			X	X			X	X *
Sample Receiving Technician	X	X		X	X																X	X				
Administrative Personnel	X	X													X						X	X				
Document Controller	X	X													X	X	X				X	X				
Environmental Scientist	X	X																			X	X			X	
Manager & Supervisor	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X				

* If appropriate to the job function

APPENDIX B

Example only:

HISTORICAL TRAINING DOCUMENTATION FORM

Name: _____ Date: _____

This document refers to past training and experience only. It does apply to AG's QAPM/QA SOPs, and EMSM. From this date forward all AG training requirements shall be met.

A review of past experience, test results, and educational considerations indicates technical proficiency and satisfactory compliance with method requirements for the following analytical methods:

Method #: _____ Rev. #: _____ Rev. Date: _____
Title: _____

Method #: _____ Rev. #: _____ Rev. Date: _____
Title: _____

Method #: _____ Rev. #: _____ Rev. Date: _____
Title: _____

Method #: _____ Rev. #: _____ Rev. Date: _____
Title: _____

Method #: _____ Rev. #: _____ Rev. Date: _____
Title: _____

Additional Remarks: _____

Supervisor Approval: _____ Date: _____

APPENDIX C

Example only:

TECHNICAL PROFICIENCY TRAINING DOCUMENTATION FORM

Trainee: _____

Method: _____ Rev. #: _____ Rev. Date: _____

SOP _____ Rev. #: _____ Rev. Date: _____

Name of person providing the training: _____

	Trainee Initials	Date:
I have read and understood the source method		
I have read and understood the SOP		
Passed initial demonstration of capability (IDC)		

Remarks: _____

Supervisor Approval: _____ Date: _____

IMPLEMENTATION OF WORK PROCESSES

Authority:	Quality Assurance Officer	Revision Number:	3
Document Number:	QA 3.1	Effective Date:	9/27/2004
		Next Review Date:	9/27/2005

1 Scope and Application

The purpose of this procedure is to establish requirements for conducting analytical work under controlled conditions, so that data generated at the laboratories is of the needed and expected quality for their intended use.

2 Definitions

None

3 Requirements

Controlled conditions in the laboratory are accomplished by maintaining suitable facilities and equipment, by using approved published methods whenever possible, by evaluating each laboratory activity for the need to develop a formal standard operating procedure (SOP), by developing such SOPs based on customer and regulatory requirements, and by controlling their release, change, and use.

3.1 Key Responsibilities

This section defines the key responsibilities of management in ensuring that laboratory activities affecting data quality and environmental compliance are conducted under controlled conditions.

3.1.1 Quality Assurance Officer

The Quality Assurance Officer is responsible for:

- Establishing the framework of the Quality Program by developing and maintaining requisite procedures
- Monitoring regulatory developments and distributing relevant information
- Issuing Quality Assurance Program interpretations

3.1.2 Laboratory Manager or Supervisor

The Laboratory Manager or Supervisor is responsible for:

- Reviewing client contracts
- Determining customer requirements and communicating them to staff

- Determining regulatory requirements and communicating them to staff as needed
- Identifying laboratory activities requiring technical SOPs
- Ensuring that current technical SOPs are developed, maintained, and available at the point of use
- Ensuring that facilities are properly maintained
- Ensuring that suitable analytical instrumentation and laboratory support equipment is available, properly calibrated, and maintained
- Ensuring that analytical work is performed in accordance with approved published methods and technical documents

3.2 Contract Review

Contracts shall be reviewed. The Laboratory Manager/Supervisor or designee shall review contracts with clients before committing to perform the work. The contract reviewer shall ensure that:

- Contract requirements are adequately defined and documented
- Any requirements differing from those in the tender are resolved
- AG has the capability to meet contractual requirements
- Contract reviews are documented and retained.

3.3 Determination of Customer Requirements

Customer requirements, including delivery and post-delivery activities, shall be determined and effectively communicated. The Laboratory Manager or Supervisor determines special customer requirements, for example chain of custody requirements, quality-control requirements, delivery and post-delivery client requests, etc. This person is in day-to-day contact with the client, prepares quotations for and receives contract awards from the client, and advises the client in choosing appropriate techniques and methods to comply with regulatory requirements.

The Laboratory Manager or Supervisor communicates customer requirements to the appropriate personnel. An example of a client delivery requirement would be the desired type or level of Data Deliverable Package. Post-delivery requirements might include special data-storage stipulations.

3.4 Regulatory Requirements

Regulatory requirements shall be complied with. Regulatory developments or changes shall be monitored and communicated to the appropriate personnel.

3.5 Standard Operating Procedures (SOPs)

Specific laboratory activities requiring SOPs shall be identified.

Appropriate SOPs to describe such operations shall be prepared, published (QA 3.3.1), and controlled (QA 3.3 and QA 3.3.2).

Work processes that are of a general nature and applicable to more than one facility shall be described in Quality Assurance SOPs.

Work processes that are specific in nature (they describe an individual analytical method) and are usually applicable to a particular laboratory facility shall be described in technical SOPs.

SOPs shall be followed.

3.6 Facilities

Suitable facilities shall be available. AG maintains laboratories in Fairbanks, Anchorage, and Juneau, established in 1980, 1985, and 1998, respectively. AG is broadly organized around three functional areas: Organic and Inorganic Chemistry, Microbiology, and Consulting.

- The Fairbanks laboratory, with an area of 10,000 square feet, is equipped for the analysis of inorganic chemicals, metals, physical parameters, microbiological parameters, and asbestos. Most consulting work is conducted at the Fairbanks facility. It also serves as archived records repository for all of AG.
- The Anchorage laboratory, with an area of 6,000 square feet, is equipped for the analysis of organic compounds, inorganic chemicals, physical parameters, and microbiological parameters.
- The Juneau laboratory, with an area of 1,800 square feet, is equipped for the analysis of inorganic compounds and microbiological parameters.

All AG laboratories are secure facilities. Entrances not used for client access should remain locked at all times. A sign-in log is kept at the front entrance for visitors who are admitted into the laboratory.

3.7 Analytical Equipment and Instrumentation

Suitable analytical equipment and instrumentation shall be available, properly calibrated, and maintained (QA 3.1.4 and QA 3.1.7).

3.8 Monitoring and Measurement Equipment

Monitoring and measurement equipment (i.e. laboratory support equipment such as balances, thermometers, volumetric dispensing devices etc.) shall be available, properly calibrated, and maintained (QA 3.1.4).

4 References

(NOTE: references are subject to revision change)

EPA QA/R-2, EPA Requirements for Quality Management Plans

EPA 910/9-92-032 Guidance on Preparation of Laboratory Quality Assurance Plans

EPA 815-B-97-001, March 1997, Manual for the Certification of Laboratories Analyzing Drinking Water

Test Methods for Evaluating Solid Waste, Third Edition, SW-846, US EPA, Revision 1

Department of Defense Quality Systems Manual–Version 1 Final, Based On NELAP Voted Revision 12–1 July 1999

ISO 9001:2000 Quality Management Systems – Requirements

ISO/IEC 17025 General Requirements for the Competence of Testing and Calibration Laboratories

National Environmental Laboratory Accreditation Conference (NELAC), Chapter Five – Quality Systems

QA 3.1.2, Sample Receiving and Storage

QA 3.1.3, Internal Chain of Custody

QA 3.1.4, Instruments and Equipment

QA 3.1.4.1, Thermometer Calibration

QA 3.1.5, Control and Traceability of Standards

QA 3.1.6, Quality Control Procedures

QA 3.1.6.1, Nonconformance and Corrective Action

QA 3.1.6.2, Method Detection Limit Studies

QA 3.1.6.3, Control Limits and Control Charts

QA 3.1.6.4, Manual Integrations

QA 3.1.7, Preventive Maintenance

QA 3.1.8, Data Reduction, Review, Reporting, and Validation

QA 3.3.1, SOP Generation

QA 3.3.2, Control of Documents

Revision Log

Revision Date	Authority	Revision Details
March 13, 2002	Gerald Voigt	Revision 0 Expanded definitions to include EMS
April 15, 2002	Gerald Voigt	Revision 1 Expanded paragraph 3.2 to reference implementing procedures.
May 31, 2003	Gerald Voigt	Revision 2 Annual procedure review Corrected title of quality assurance officer Deleted paragraph 3.2 “general” and incorporated the material into new sections 3.2 to 3.8.
Sept. 27, 2004	John Huntington	Revision 3 after lab consolidation

PURCHASING

Authority:	Quality Assurance Officer	Revision Number:	2
Document Number:	QA 3.2	Effective Date:	9/27/2004
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1 Scope and Application

The purpose of this procedure is to describe the requirements for the control of purchasing activities.

2 Definitions

List of Approved Suppliers: a list developed and kept current to reflect those suppliers whose capability to provide items and services of requisite quality and/or to comply with environmental requirements has been verified by AG.

Supplier: any individual or organization furnishing items or services or performing work. This is an all-inclusive term used in place of the following: vendor, seller, contractor, or subcontractor.

3 Requirements

A list of approved suppliers shall be developed and maintained. Before a supplier is included on the list, the supplier's ability to comply with AG's quality and/or environmental requirements shall be evaluated. Contractors and subcontractors shall be evaluated for AG's quality and/or environmental requirements. Evaluation criteria shall be developed. Inclusion on the list shall be a prerequisite for use of the supplier with the exception of special circumstances. A QA SOP shall prescribe methods for including a supplier on the approved supplier list.

Procurement documents shall clearly identify the item being purchased, including technical and quality requirements. Items received at the laboratories shall be checked/inspected against the procurement document(s) before being released for use.

3.1 Key Responsibilities

This section defines the key responsibilities of AG management to ensure that procurement is carried out in a manner that controls and monitors the quality of the items and services being acquired and/or satisfies AG environmental requirements.

3.1.1 Quality Assurance Officer

The Quality Assurance Officer is responsible for ensuring that a list of approved suppliers is developed, maintained, and updated.

3.1.2 Laboratory Manager or Supervisor

The Laboratory Manager or Supervisor is responsible for ensuring that items and services are purchased in accordance with this procedure and the list of approved suppliers

4 References

(NOTE: references are subject to revision change)

The Laboratory Quality Assurance System, Thomas A. Ratcliff, Jr., Van Nostrand Reinhold 1990

Department of Defense Quality Systems Manual–Version 1 Final, Based On NELAP Voted Revision 12–1 July 1999

The Alyeska Pipeline Service Company, Quality Program Manual QA-36, Edition 1, Revision 09, Section 7, Control of Purchased Items and Services

ISO 9001:2000 - 7.4 Purchasing

ISO/IEC 17025 - 4.5 Subcontracting of tests and calibrations, - 4.6 Purchasing services and supplies

National Environmental Laboratory Accreditation Conference (NELAC), Chapter Five, - 5.14 Subcontracting analytical samples, - 5.15 Outside support services and supplies

QA 3.2.1, Procurement of Items and Services

Analytica Group, Inc. Environmental Management System Manual

Revision Log

Revision Date	Authority	Revision Details
March 13, 2002	Gerald Voigt	Revision 0
May 31, 2003	Gerald Voigt	Revision 1 Annual procedure review Corrected title of quality assurance officer Modified list of references
Sept. 27, 2004	John Huntington	Revision 2 after lab consolidation

DOCUMENTATION AND RECORDS

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1 Scope and Application

The purpose of this procedure is to establish requirements for control of documents and records.

Documents are used to describe activities or provide information. Document control is implemented to:

- Ensure that relevant revisions of applicable documents are available at the point of use
- Ensure that information used to make decisions is current and accurate

Records are controlled to provide evidence of conformity to requirements and of the effective operation of the Quality Program.

2 Definitions

Controlled Document: a document to which a systematic procedure for generation, review, approval, identification, distribution, and revisions is applied. Controlled documents include the Quality Assurance Program Manual (QAPM), Quality Assurance Standard Operating Procedures (QA SOPs), Environmental Management System Manual (EMSM), technical SOPs, and other procedures and manuals.

Quality Record: a completed record of an item, service, or process that provides objective evidence of the extent to which that item, service, or process satisfied requirements, or provides objective evidence of the effectiveness of the Quality Assurance Program.

Environmental Record: records the outcome of a task or activity associated with the implementation and maintenance of the EMS.

3 Requirements

AG shall develop and implement systems for controlling documents and records.

3.1 Key Responsibilities

3.1.1 Quality Assurance Officer

The Quality Assurance Officer is responsible for ensuring the QAPM, QA SOPs, and EMSM are managed as controlled documents.

3.1.2 Laboratory Manager or Supervisor

The Laboratory Manager or Supervisor is responsible for:

- Identifying Quality Records
- Identifying EMS Records
- Ensuring that technical standard operating procedures and other documents and records are controlled within their area of responsibility

3.1.3 Professional/Technical/Administrative Personnel

All AG personnel are responsible for complying with this procedure

3.2 Document Control

The document control system shall be described in a Quality Assurance SOP and shall provide processes for:

- Identifying documents requiring control
- Preparing, reviewing, approving, uniquely identifying, issuing, revising, and withdrawing (when superseded or obsolete) documents requiring control
- Identifying roles and responsibilities
- Change control
- Maintaining documents, i.e. distribution, retention, access, preservation, traceability, retrieval, removal if obsolete, and disposition
- Ensuring that changes to documents are reviewed and approved by the same organization that performed the original review and approval.

3.3 Records Control

Records must be legible, accurate, appropriate and traceable to the activity or work performed, and of sufficient detail to allow reconstruction of the process at a later time. If performance of a procedure generates Quality or EMS records, then the procedure must identify the quality records to be generated. Records may be maintained as paper copies and/or on electronic media. Examples of typical records to be retained are listed in the appendix.

The records control system shall be described in a Quality Assurance SOP and shall provide processes for:

- Identifying, collecting, indexing, access (including preventing unauthorized access), filing, storage, retention, and disposal of quality and environmental records

- Ensuring the traceability of the record to the item or activity involved
- Ensuring that records are held secure and in confidence
- Identifying roles and responsibilities
- Retrieval of quality and environmental records

4 References

(NOTE: references are subject to revision change)

EPA QA/R-2, EPA Requirements for Quality Management Plans

EPA 910/9-92-032 Guidance on Preparation of Laboratory Quality Assurance Plans

EPA 815-B-97-001, March 1997, Manual for the Certification of Laboratories Analyzing Drinking Water

Test Methods for Evaluating Solid Waste, Third Edition, SW-846, US EPA, Revision 1

Department of Defense Quality Systems Manual–Version 1 Final, Based On NELAP Voted Revision 12–1 July 1999

The Alyeska Pipeline Service Company, Quality Program Manual QA-36, Edition 1, Revision 09, Section 6, Control of Documents, and Section 17, Quality Records

ISO 14001:1996 - 4.4.4, Environmental Management System Documentation, 4.4.5, Document Control

ISO 9001:2000 – 4.2 Documentation Requirements

ISO/IEC 17025 – 4.2 Quality System, 4.3 Document control, 4.12 Control of Records

National Environmental Laboratory Accreditation Conference (NELAC), Chapter Five – 5.10 Test Methods and Standard Operating Procedures, 5.12 Records

QA 3.3.1, SOP Generation

QA 3.3.2, Control of Documents

QA 3.3.3, Records

Analytica Group, Inc. Environmental Management System Manual

Revision Log

Revision Date	Authority	Revision Details
March 13, 2002	Gerald Voigt	Revision 0
May 31, 2003	Gerald Voigt	Revision 1 Annual procedure review Corrected title of quality assurance officer Streamlined text to clarify intent and remove repetition
September 27, 2004	John Huntington	Expanded list of references Revision 2 after lab consolidation

APPENDIX

Example only:

Typical records to be retained are:

- ⇒ Historical revisions of the Quality Assurance Program Manual, Quality Assurance Standard Operating Procedures, Environmental Management System Manual, Chemical Hygiene Plan, and Technical Standard Operating Procedures
- ⇒ Document Control Log
- ⇒ Technical Document Change Notice
- ⇒ Procurement Documents such as Purchase Order Forms
- ⇒ Certificates of Analysis
- ⇒ Corrective Action Reports
- ⇒ Corrective Action Report Log
- ⇒ Sample Storage Records (for example, Temperature Logs)
- ⇒ Client Files (for example, Final Report, Chain of Custody/Work Order, Sample Check-in Form, etc.)
- ⇒ Data Transmittal Log
- ⇒ Measuring and Test Equipment (M&TE) Calibration Certificates (for example, Balances, Weights, Thermometers)
- ⇒ M&TE Logs (for example, Balance Logs)
- ⇒ Laboratory Notebooks
- ⇒ Laboratory Notebook Control Log
- ⇒ Archive Records Access Log
- ⇒ Training Records
- ⇒ Hazardous Waste Generation, Accumulation, and Removal from Site Documentation
- ⇒ EMS Corrective Action Reports
- ⇒ Incident Investigation and Analysis Report
- ⇒ Audit Reports
- ⇒ Management Reviews

PROGRAM ASSESSMENT

Authority:	Quality Assurance Officer	Revision Number:	2
Document Number:	QA 4.0	Effective Date:	9/27/2004
		Next Review Date:	9/27/2005

1 Scope and Application

The purpose of this document is to establish requirements for assessing the suitability and effectiveness of programs, procedures, and activities, with the goal of providing independent and objective feedback to management. This assessment can serve as a basis for continual improvement.

2 Definitions

Assessment: a detailed process used to determine the conformance to quantitative and qualitative specifications of an operational function or activity; the monitoring of process controls to specified requirements. Assessments include audits and surveillance.

3 Requirements

A comprehensive system of planned, periodic assessments shall be used to assess the effectiveness of the quality program.

3.1 Key Responsibilities

3.1.1 Quality Assurance Officer

The Quality Assurance Officer is responsible for periodically assessing the implementation and effectiveness of the quality program and reporting the results to the President and Vice President of AG.

3.1.2 Laboratory Manager or Supervisor

The Laboratory Manager or Supervisor is responsible for:

- Responding to assessment findings in writing and in a timely manner
- Ensuring that that timely measures are taken to correct any identified deficiencies

3.2 Audits

Audits shall be performed at least once per year on the following AG programs:

- Quality Assurance Program
- Environmental Management System

The objectives of the audit process are to:

- Establish that all elements of a program have been developed and documented in accordance with applicable regulatory requirements and commitments
- Verify that that a program has been implemented, is effective and adequate for its intended purpose
- Identify nonconformities and program deficiencies and report them in writing to responsible management
- Verify that corrective actions have been taken for identified deficiencies

The audit process shall be described in a Quality Assurance SOP and shall provide instructions on:

- Scheduling of audits
- Notification of the audited organization
- Personnel (auditors)
- Planning
- Methods/techniques
- Reporting
- Actions by the audited organization
- Verification/follow-up
- Records

Specific checklists shall be developed and used in conducting audits. Audit performance and responses shall be documented and tracked until closure. The auditee shall respond in writing to audit findings. This response shall be reviewed by the auditor for acceptance. Follow up on audit findings will verify that corrective and preventive actions were taken.

3.3 Surveillance

Surveillance refers to the routine (i.e. daily, weekly, monthly) assessment of data quality and/or environmental performance. Examples of surveillance activities include, but are not limited to, day-to-day data quality review (QA 3.1.8) and tracking of hazardous waste generation and accumulation (EMS 3.2.1). To the extent practical, checklists shall be used in surveillance activities. The objectives of surveillance are to:

- Monitor in-process activities
- Assess in-process controls and document conformance and non-conformance with requirements and procedures

- Identify deficient conditions and report them to management as appropriate
- Verify that corrective and preventive actions have been taken for identified deficiencies

3.4 Qualification and Independence of Audit and Surveillance Personnel

Personnel assigned to perform audits and quality surveillance activities shall be qualified and trained in accordance with the applicable QA SOP and shall be independent of any direct responsibility for the activity being reviewed.

4 References

(NOTE: references are subject to revision change)

Test Methods for Evaluating Solid Waste, Third Edition, SW-846, US EPA, Revision 1, Chapter One, Quality Control

Department of Defense Quality Systems Manual–Version 1 Final, Based On NELAP Voted Revision 12–1 July 1999

EPA 815-B-97-001 Manual for the Certification of Laboratories analyzing Drinking Water

The Alyeska Pipeline Service Company, Quality Program Manual QA-36, Edition 1, Revision 09, Section 18, Audits and Quality Surveillance

ISO 14001:1996, - 4.5.4 Environmental Management System Audit

ISO 9001:2000 - 8 Measurement, Analysis and Improvement

ISO/IEC 17025 - 4.10.5 Additional Audits, - 4.13 Internal Audits

National Environmental Laboratory Accreditation Conference (NELAC), Chapter Five – 5.5.3.1 Internal Audits, - 5.5.3.4 Performance Audits

QA 3.1.8 Data Reduction, Review, Reporting, and Validation

QA 4.1 Audits

Analytica Group, Inc., Environmental Management System Manual

EMS 3.2.1 Hazardous Waste Management

Revision Log

Revision Date	Authority	Revision Details
March 13, 2002	Gerald Voigt	Revision 0
May 31, 2003	Gerald Voigt	Revision 1 Annual procedure review Corrected title of quality assurance officer Rewrote text in section 3 to clarify requirements Expanded list of references
Sept. 27, 2004	John Huntington	Revision 2 after lab consolidation

MANAGEMENT REVIEW

Authority:	Quality Assurance Officer	Revision Number:	3
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		Next Review Date:	9/27/2005

1 Scope and Application

The purpose of this document is to establish requirements for management to periodically review the status of programs and to promote continual improvement.

2 Definitions

None

3 Requirements

The management review process is intended to provide an annual forum for discussion and appraisal of the Quality Assurance Program and the Environmental Management System, and to provide management with a tool to upgrade the each program as part of continual improvement.

At a minimum, management review shall consider the following:

- Overall suitability, adequacy, and effectiveness of the program
- For the EMS, suitability, adequacy, and effectiveness of the environmental policy, and current environmental objectives and targets (as well as progress made in achieving them)
- Status of compliance with regulatory requirements
- Results of assessments conducted since the last management review
- Results of any action items from the previous management review
- Suitability, adequacy, and effectiveness of training efforts
- Employee feedback on issues of regulatory compliance
- Resource allocation appropriate to action items arising from the current management review

The preferred way to conduct annual management review is through a managers' meeting. However, other means of communication, such as telephone conference calls or email exchanges, are acceptable.

If a meeting or conference call is held, minutes shall be kept. The minutes shall include the list of the attendees, a summary of key issues discussed, and any actions items arising from the meeting. A copy of the minutes shall be distributed to all attendees and any individual assigned with action items.

If email is used as a means of communication, the email exchange shall be printed at the conclusion of the discussion.

A copy of the minutes or of the email exchange shall be retained on file for a period of two years before archival (SOP No. QA 3.3.3, “Records”).

3.1 Key Responsibilities

This section defines the key responsibilities of management in ensuring that AG’s Quality Program (i.e. Quality Assurance Program and Environmental Management System) is periodically reviewed and to provide for continual improvement.

3.1.1 President / Vice President

The President and Vice President of AG are responsible for:

- Reviewing the Quality Program at least once per year
- Allocating appropriate resources to address action items arising from the review

3.1.2 Quality Assurance Officer/EMS Management Representative

The Quality Assurance Officer is responsible for:

- Ensuring that the necessary information is collected in support of management review
- Assisting the President and Vice President in the review of the Quality Program
- Implementing changes based on decisions made in the management review process.
- Retaining a record of the review

4 References

(NOTE: references are subject to revision change)

EPA QA/R-2, EPA Requirements for Quality Management Plans

Department of Defense Quality Systems Manual–Version 1 Final, Based On NELAP Voted Revision 12–1 July 1999, section 5.3.2 “Managerial Review”

ISO 14001:1996 – 4.6, Management Review

ISO 9001:2000 – 8.5 Improvement

ISO/IEC 17025 - 4.14 Management Reviews

National Environmental Laboratory Accreditation Conference (NELAC), Chapter Five – 5.5.3.2 Managerial Review, - 5.5.3.3 Audit Review

QA 3.3.3, Records

Analytica Group, Inc. Environmental Management System Manual

Revision Log

Revision Date	Authority	Revision Details
March 13, 2002	Gerald Voigt	Revision 0
April 15, 2002	Gerald Voigt	Revision 1 Changed interim retention period for minutes from five to two years
May 31, 2003	Gerald Voigt	Revision 2 Annual procedure review Corrected title of quality assurance officer Rewrote text in section 3 to allow for telephone conference calls and email to be used in lieu of a meeting Expanded list of references
Sept. 27, 2004	John Huntington	Rev 3 after lab consolidation