Ada County Sheriff's Office

Forensic Lab

Quality Assurance Manual

Version 1.0

1.0 Scope

1.1 This manual specifies the general requirements for competence to carry out tests using standard methods, non-standard methods, and laboratory developed methods.

1.2 This manual is applicable to all analysts performing tests in any and all disciplines within the Ada County Sheriff's Office Forensic Lab.

1.3 This manual shall be adhered to implicitly. Any requirements stated in discipline specific analytical methods may be more stringent than those described in this manual but may not be less stringent.

2.0 References

2.1 ISO/IEC 17025 General requirements for the competence of testing and calibration laboratories

2.2 ASCLD-LAB-International Supplemental Requirements

2.3 ASCLD/LAB Policy on Measurement Traceability

2.4 ASCLD/LAB Policy on Measurement Uncertainty

3.0 Terms and Definitions

3.1 **Analyst**
An employee who, in addition to performing tests and calibrations, interprets data, and reaches conclusions

3.2 **Case**
The part of a submission that is assigned to an examiner or analyst for testing and the generation of a report.

3.3 **Case Completion Date**
The date the report is released in LIMS.

3.4 **Chain of Custody**
A chronological record of those individuals who have had custody of the physical evidence from its initial receipt until its final disposition by the agency.

3.5 **Container**
A receptacle (e.g. paper bag, cardboard box) that contains item(s) of evidence. Typically, containers are sealed upon transfer between places or people.

3.6 **Custody**
Possession of an item of evidence. This can be either an individual or place.

3.7 **Crime**
An act committed or omitted in violation of law.

3.8 **Criminal Event**
The occurrence of one or more crimes that has been uniquely identified by a submitting law enforcement agency.

3.9 **Disposition of Evidence**
The act of either returning the evidence to the submitting party or other authorized person/entity, or destroying the evidence as authorized or required by law.

3.10 **Documentation**

3.10.1 Administrative Documentation

Includes copies of lab submittal forms, chain of custody documentation, subpoenas, records of discovery, and/or other pertinent information which is related to the case but does not support the conclusions drawn.

3.10.2 Examination Documentation

Includes references to procedures, tests conducted, standards and controls used, diagrams, printouts, photographs, spectra, chromatograms, observations, hand written or typed notes, and/or other material used by the analyst to reach a conclusion.

3.11 **Evidence Container**

The sealed package containing an item of evidence (or items).

3.12 **Evidence Storage**

A secure location used to house items of evidence.

3.13 **Examination**

The act or process of conducting or evaluating analytical procedures and tests that form a conclusion.

3.14 **Examiner**

An employee who performs examinations and/or develops findings/conclusions concerning physical evidence and produces a report.

3.15 **File**

Contains the administrative and examination documentation generated or received by the Forensic Lab.

3.16 **LIMS**

A digital Laboratory Information Management System that holds case files, digital images, and tracks history of the case.

3.17 **Item**

A component of physical evidence within a submission.

3.18 **Mailing Package**
The outer package used to receive or return evidence via carrier service.

3.19 **Physical Evidence**
Material submitted to the laboratory for examination as part of an investigation into a criminal event.

3.20 **Report**

3.20.1 Amended Report
A report that has been issued to make a change to a previous report.

3.20.2 Analytical Report
A report that is issued once analysis is completed. This is the typical report produced as a result of casework.

3.20.3 Supplemental Report
A report that concerns items of evidence that have been addressed in a previous report.

3.21 **Review**

3.21.1 Administrative Review
A proofreading, review of final report for formatting, spelling, or grammar

3.21.2 Technical Review
A review of the examination documentation used as basis of findings/conclusions.

3.22 **Specimen**
A singular unit of physical evidence within an item or one of multiple identical units.

3.23 **Submission**
A request for laboratory service.

3.24 **Submitting Deputy/Officer/Agency**
The party that requests laboratory service.

3.25 **Suspect**
An individual who is suspected of committing a crime.

3.26 **Test**
A physical or chemical measurement or an observation used to identify a unique or discrete property of an item.

3.27 **Turnaround Time**
The time taken to complete a case.

3.28 **Validation**
The confirmation by examination of physical evidence.

3.29 **Victim**
The person or entity who is injured or suffered a loss as the result of a crime.

4.0 Management Requirements

4.1 Organization

4.1.1 The Forensic Lab is part of the Ada County Sheriff's Office and can be held legally responsible for its actions

4.1.2 It is the responsibility of all staff members of the Forensic Lab to carry out testing in such a way as to meet the requirements of the customer, ISO 17025 Standards, ASCLD/LAB Supplemental Requirements, and Ada County Sheriff's Office Policies and Procedures.

4.1.3 The Quality Assurance system shall cover work carried out in the laboratory's permanent facilities, at sites away from its permanent facilities, or in associated temporary or mobile facilities.

4.1.4 The Forensic Lab Manager is responsible to set direction for the laboratory. The Forensic Lab Manager is given both authority and responsibility to make and enforce laboratory testing and quality assurance decisions. The Forensic Lab Manager is responsible to ensure that all policies, rules, procedures, directives, goals, and/or guidelines are clear and consistent with Ada County Sheriff's Office policy and State and Federal Law.

4.1.5 The Forensic Lab Manager shall:

4.1.5.1 Ensure that irrespective of other responsibilities, personnel have the authority and resources needed to carry out their duties, including the implementation, maintenance, and improvement of the management system in order to identify the occurrence of departures from the management system or the analytical methods for performing tests. Personnel also have the authority to initiate actions to prevent or minimize such departures from the management system or the analytical methods.

4.1.5.2 Ensure that Forensic Lab staff does not have undue influence on any forensic tests performed.

4.1.5.3 Ensure all records will be held secure and in confidence, will be legible, identified and accessible to lab staff, and stored accordingly to prevent loss or damage. Every employee has the responsibility to safeguard all confidential information and communications from unauthorized distribution. In addition, employees will not access or disclose any confidential information regarding cases except where legally authorized. All requests, evidence, and case-related information (e.g., names) are considered confidential.

4.1.5.4

4.1.5.4.1 **Procedure**

The records stored electronically will be protected and secured to prevent unauthorized access or amendment of these records. Independent of discovery and/or public records requests, reports should only be released to the submitting agency, prosecuting attorney with jurisdiction, and/or defense attorney, when the work is being performed for them. Conflicts in confidentiality or changes regarding to whom reports or copies of reports are released should be addressed and approved by the Forensic Lab manager.

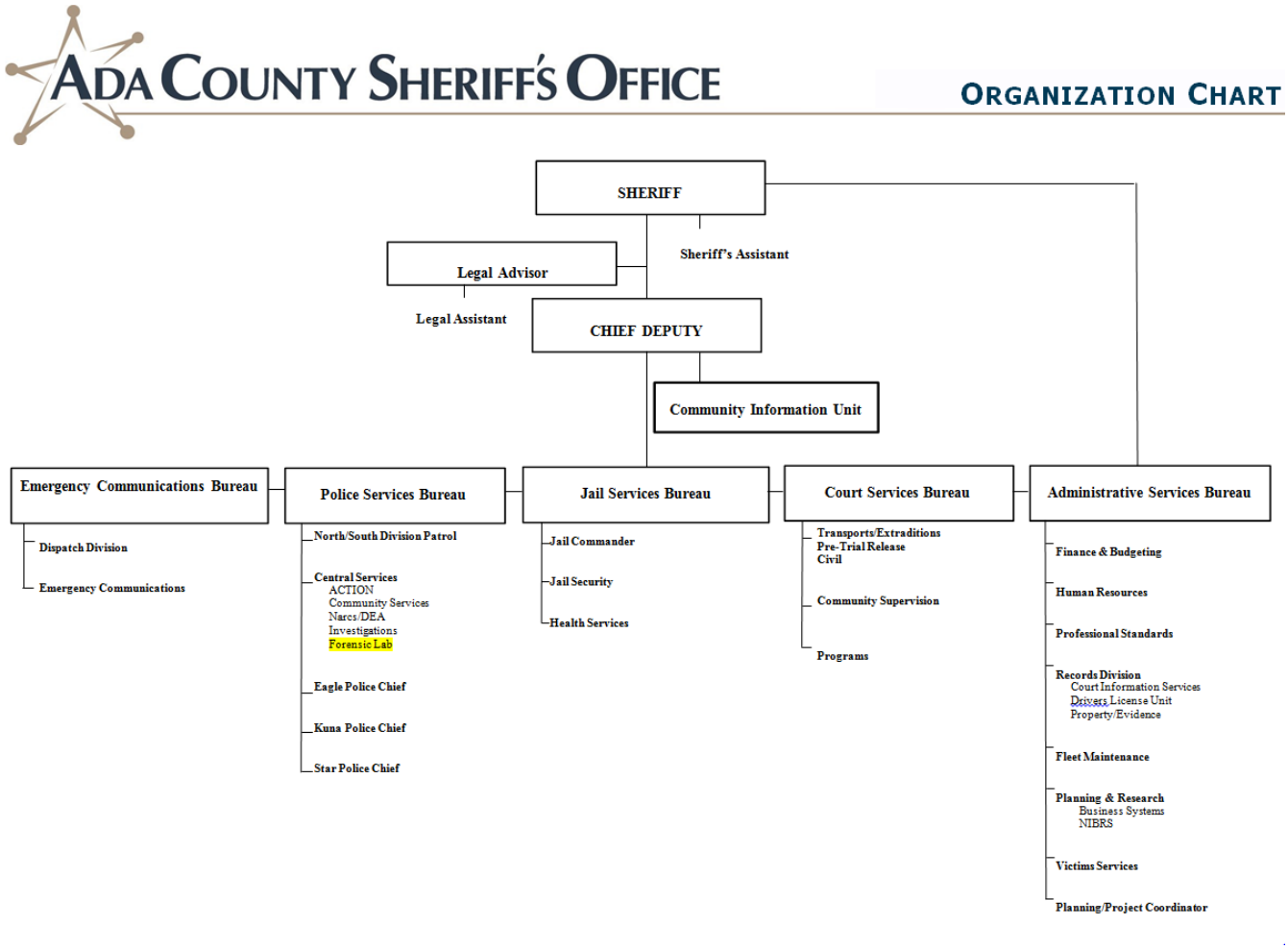
4.1.5.4.1.1 Electronic Confidentiality Agreement shall be available on the web site.

4.1.5.5 Ensure that conflict of interest concerns and situations that could cause undue pressure that adversely affect the quality of the work should be brought to the attention of management. This includes but is not limited to the following:

- Off-duty employment
- A personal connection with a subject (e.g. a victim or suspect) in a case that is being worked in the laboratory
- Financial involvement with a vendor

The potential conflict will be evaluated and appropriate steps will be put in place to ensure that any activities would not diminish confidence in the competence, impartiality, judgment or operational integrity of the analyst or the laboratory.

4.1.5.6 Follow Organization Charts that define the management structure of the laboratory and the Lab's place within the Ada County Sheriff's Office.



4.1.5.7 Reports to the Central Services Lieutenant. The Forensic Scientists report to the Forensic Lab Manager.

4.1.5.8 Be familiar with the methods and procedures, purpose of each test and/or calibration that is performed by forensic scientists and trainees of the lab.

4.1.5.9 Appoint a technical leader for each discipline. Technical Leaders provide the quality assurance program's technical oversight in daily operations and are subject matter experts for their discipline. Technical Leaders have appropriate technical training and experience in their discipline. As such, Technical Leaders are the primary point of contact in the discipline regarding technical issues.

4.1.5.10 Appoint a Quality Assurance Manager. The Quality Assurance Manager has responsibility and authority to ensure that the management system related to quality is implemented and followed at all times.

4.1.5.11 Appoint deputies for key managerial personnel when appropriate.

- If the Forensic Lab Manager, Quality Assurance Manager, or Technical Leaders are unavailable by phone for greater than 10 working days, a deputy should be appointed.

4.1.5.12 The forensic staff is informed of the relevance and importance of their work and how they contribute to the achievement of the objectives of the management system. Examples of the manner in which the information is disseminated include but is not limited to the following:

- Staff meeting discussion
- Annual Evaluations
- Mission Statement
- Goals and Objectives of the Forensic Lab
- Quality Assurance Objectives

4.1.6 Management will ensure that within each laboratory all employees are well-informed and employees at each level have input regarding the effectiveness of the management system. The chain of command will be used for communication of all administrative, technical and personnel matters. Communication flows both upward and downward through the chain of command.

4.1.7 The Forensic Lab Manager shall appoint a health and safety manager who, along with the Forensic Lab Manager must provide continuing support and monitoring of the health and safety system.

4.1.8 Top Management includes the Forensic Lab Manager and the Quality Assurance Manager. Key Management includes top management and the Technical Leaders.

4.2 **Management System**

4.2.1 The Forensic Lab will establish, implement and maintain a quality system appropriate to the scope of its activities. The Forensic Lab will document its policies, systems, programs, procedures and instructions to the extent necessary to assure the quality of the test and/or calibration results. The documentation will be communicated to, understood by, available to, and implemented by the appropriate personnel. The Quality Management System policies, procedures and objectives are defined in this Quality Assurance Manual.

4.2.2 The Forensic Lab is committed to professional excellence. All employees will work to continually maintain the highest degree of quality and integrity of laboratory services and to ensure that forensic conclusions are scientifically sound and valid. To this end, all laboratory analyses and related services performed by the laboratory shall meet generally recognized standards of the forensic community and its accrediting organizations. Specifically, all forensic employees shall carry out testing activities in accordance with stated methods, and the ISO 17025:2005 standard and any supplemental standards required by the accrediting organization, American Society of Crime Laboratory Directors/Laboratory Accreditation Board-*International* (ASCLD/LAB-*International*), and in accordance with the ASCLD/LAB *Guiding Principles of Professional Responsibility for Crime Laboratories and Forensic Scientists.* The Quality Management System (QMS) is designed to continually improve the level of services provided and to assure the credibility of the Forensic Lab. The Quality Assurance Manual is binding on all personnel of the laboratory and shall be adhered to implicitly. All employees are required to familiarize themselves with the Quality Assurance Manual and implement the quality assurance policies and procedures in their work. In doing so, the Forensic Lab will maintain the highest level of staff expertise and analytical abilities, will promote staff confidence, and will conform to the ISO 17025:2005 accreditation standard and ASCLD/LAB-*International* supplemental standard.

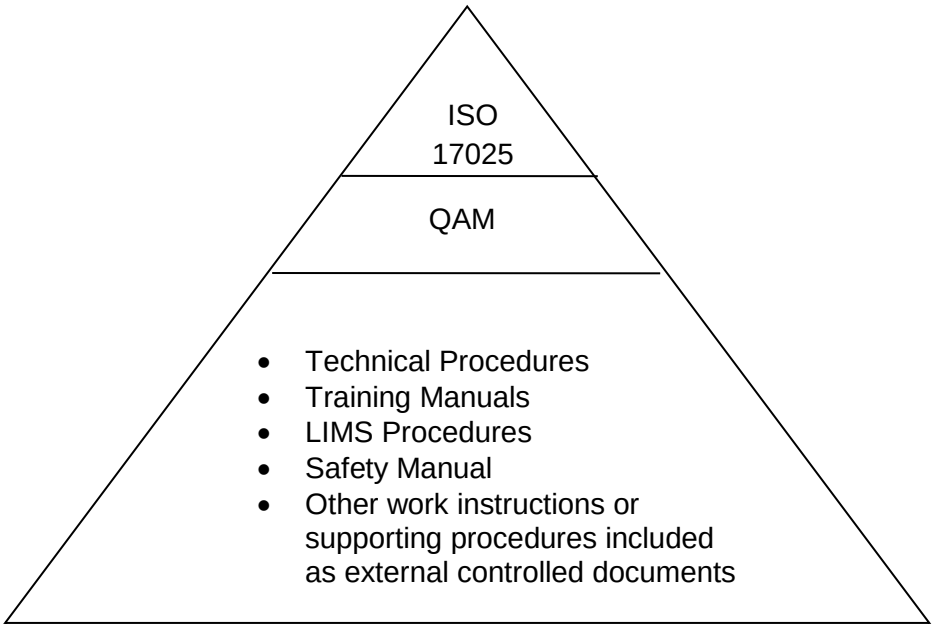
4.2.2.1 The Forensic Lab Manager shall ensure that the ASCLD/LAB *Guiding Principles of Professional Responsibility for Crime Laboratories and Forensic Scientists* is reviewed annually with all forensic staff.

4.2.3 The Forensic Lab Top Management is committed to complying with the ISO 17025:2005 and ASCLD/LAB-*International* supplemental standards and the policies and procedures described herein. The Top Management will proactively strive to continually improve the effectiveness of the Quality

Management System. Establishing and implementing such quality practices and proactively improving the Quality Management System will be conducted as a positive learning experience. Hence, all employees are encouraged to share their experiences with each other to contribute to the success of this program.

4.2.4 The Forensic Lab Top Management shall communicate to the Forensic Lab and the Sheriff's Office the importance of meeting customer requirements as well as statutory and regulatory requirements. Refer to section 1.0 of this Quality Assurance Manual.

4.2.5 The management system documentation includes all technical and supporting procedures and records, including quality records. Laboratory Management, the Quality Assurance Manager, and the Technical Leaders use the technical and supporting procedures and records to oversee and review the effectiveness of the quality assurance program to ensure that the Forensic Lab is adhering to the Quality Assurance Manual policies and procedures and conforming to the ISO 17025:2005 standard and any ASCLD/LAB supplemental requirements. The technical and supporting policies and procedures utilized in the Quality Management System are structured as outlined below:



4.2.6 The Forensic Lab Manager, Quality Assurance Manager, and Technical Leaders are responsible for ensuring compliance with the policies and procedures of each technical and support discipline, the ISO 17025:2005

standard, and ASCLD/LAB supplemental requirements. Their roles and responsibilities are listed below.

4.2.6.1 The Forensic Lab Manager is responsible for ensuring that the policies and procedures adopted by the Forensic Lab are implemented and integrated into the daily operations of the laboratory. The Forensic Lab Manager is also responsible for overseeing, monitoring and ensuring compliance to the Quality Management System.

4.2.6.2 The Quality Assurance Manager is responsible for the implementation and operation of the Quality Assurance Program. The Quality Assurance Manager is responsible for ensuring compliance of the Quality Management System with ISO 17025:2005, ASCLD/LAB- *International* supplemental standard, and other applicable standards. Specifically, the main duties of the Quality Assurance Manager include, but are not limited to:

- Maintaining and updating the Quality Assurance Manual (including annual review)
- Monitoring laboratory practices to verify continuing compliance with policies and procedures related to quality
- Periodically assessing the adequacy of report review activities
- Ensuring validation of new or modified methodology, technologies, and technical procedures
- Investigating technical problems, including oversight and review of root cause analysis and corrective and preventive actions for nonconformities
- Administration of the proficiency and competency testing program
- Selecting and evaluating internal auditors and ensuring that the assigned individuals are adequately trained for their assigned duties
- Scheduling and coordinating internal audit and management system reviews
- Maintaining training records of laboratory personnel
- Recommend training to improve the quality of laboratory personnel

- Proposing corrections and improvement in the management system
- Maintaining Quality Assurance Program documents and records
- Oversight of Technical Leaders.

4.2.6.3 Technical Leaders are an essential part of the Forensic Lab's quality assurance program. Technical Leaders report directly to the Quality Assurance Manager in the performance of their assigned quality assurance duties. The Technical Leaders provide the quality assurance program's technical oversight in daily operations and act as subject matter experts for their disciplines. In conjunction with the Quality Assurance Manager, they are responsible for monitoring the quality of analysis including monitoring of compliance with the ISO 17025:2005 standard, the ASCLD/LAB-*International* supplemental standard, and other applicable standards for their respective disciplines.

Specifically, the Technical Leader duties include:

- Acts as the primary point of contact for the analysts and the Quality Assurance Manager for resolving daily technical issues and for problem solving within the discipline
- Coordinates the review and editing of discipline procedures, training manuals, and other documents as outlined in the controlled document policy
- Participates in the annual review of the Quality Assurance Manuals to assist in ensuring compliance with the Forensic Lab management system, applicable standards, and accreditation requirements
- Provides feedback to discipline members regarding technical procedures, training program requirements, novel technologies, national forensic science discipline trends and issues, and QA/QC standards
- Performs review of casework within the discipline to evaluate consistent use of technical procedures and compliance to quality assurance standards
- Reviews analyst training documentation to confirm compliance with discipline training program requirements and make

recommendations for supplemental training or retraining as needed

- Researches, reviews, and monitors quality control practices, best practice or peer consensus within the discipline and makes recommendations to the Quality Assurance Manager for corrective or preventive actions
- Determines best practice for analytical processes/procedures not explicitly outlined in the discipline analytical method.
- In conjunction with the Quality Assurance Manager, coordinates development, administration and/or review of internal and external proficiency and competency test samples for the discipline
- Researches and evaluates new analytical procedures, equipment, or technologies and makes recommendations to the Quality Assurance Manager for implementation within the discipline.
- Participates in the development of discipline-specific research and validation projects. Reviews research and validation data and provides recommendations to the Quality Assurance Manager
- Assists with resolving technical differences of opinion
- Assists the Quality Assurance Manager with evaluation of technical nonconformities. Assistance may include evaluation of the nonconformity, determination of corrections to be made, performance of root cause analysis, recommendations for corrective action or preventive action, and implementation of actions identified.

4.2.7 The integrity of the management system shall be maintained when changes to the management system are planned and implemented.

4.3 Document Control

4.3.1 Documents that are part of the Forensic Lab management system shall be controlled to ensure that they are adequate, approved for use, and that only current versions of the documents are in use. These documents contain administrative, technical, and quality policies and may be internally generated or from external sources. Examples include, but are not limited to, the following:

- Discipline Training Manuals and Analytical Methods
- Accreditation standards
- Controlled Memoranda
- Quality Assurance Manual
- External equipment manuals

4.3.2 Document Approval and Issue

4.3.2.1 All Documents issued to personnel in the lab as part of the management system shall be reviewed and approved for use by authorized personnel prior to issue. Documents shall be distributed to designated lab staff prior to approval with adequate time for review and comments. A list of approved management system documents is maintained and readily available to all lab staff.

4.3.2.2 Document procedures:

- Authorized versions of management system documents are available to all staff electronically. Current versions are maintained on the county secure computer network that has limited accessibility. All lab staff have the capability to access the controlled documents both in the lab and in the field.
- Documents are annually reviewed and, where necessary, revised to ensure continuing suitability and compliance with applicable requirements. This includes annually reviewing the list of management system documents to ensure that documents are current and relevant.
- Obsolete documents are archived and electronically watermarked as obsolete. It is the responsibility of the lab staff to ensure that any printed versions of manuals are current.

4.3.2.3 Management system documents generated by the lab shall be uniquely identified. Identification shall include:

- the date of issue,
- revision number,

- page numbering,
- total number of pages,
- and the approving authority.

4.3.3 Document changes

4.3.3.1 Changes to internally generated documents shall be reviewed and approved by the same function that performed the original review. Designated lab staff shall have access to pertinent background information upon which to base their review.

4.3.3.2 During the draft stage of document revision, changes or new text shall be identified in the document through highlighted text, track changes, or some other equivalent and communicated method. After revision, a history section in the appendix of the document will identify changes or new text. The history section will briefly describe the changes and specific section changed. Comparison of archived to current documents will serve as thorough documentation of changes.

4.3.3.3 Amendment of documents by hand shall not be permitted. If it is necessary to immediately update a portion of a controlled document the review and comment portion may be a short time period with limited personnel. However, a review must be performed and all affected personnel must be notified of the changes.

4.3.3.4 Changes in documents must be published in a draft. After a review period, the Quality Manager will notify lab staff of the revised manual, update the version number of the manual, archive the old version on the county secure computer network, and replace the older version with the revision on the county secure computer network.

4.4 Review of Requests, Tenders, and Contracts

4.4.1 The following procedure defines the review of request, tenders, and contracts prior to lab testing:

4.4.1.1 A request for service is initiated by submission of an evidence processing request with the items of evidence. A request for service can also include an oral request. By signing the form or verbally agreeing, the customer acknowledges that they agree with the terms and conditions of the Forensic Lab. The conditions are available on the Forensic Lab website, and are as follows:

- The staff of the Forensic Lab determines
  - the examination to be performed,
  - the scope of analysis,
  - the items of evidence to analyze
  - the sampling plan to follow
  - the content of the examination report

4.4.1.2 If it is determined that the Forensic Lab will not be able to fulfill the request for service, the customer will be notified. If the Forensic Lab is able to offer an alternative service, the difference(s) between the requested service(s) and the service(s) that the Lab can provide will be resolved before any work commences. Each contract shall be acceptable both to the lab and the customer.

4.4.1.3 The review of a request shall ensure that the needs of the customer regarding the evidence including the examination(s) desired are adequately defined, documented, and understood.

4.4.1.4 The review of the request shall ensure that the lab has the capability and resources to meet the requirements.

4.4.1.5 The review of the request shall ensure that the appropriate analytical methods are selected and the lab is capable of meeting the customers' requirements.

4.4.2 Records of reviews, including any significant changes, shall be maintained in the Forensic Lab's LIMS. By creating the request in LIMS, the Forensic Scientist is recording that the request for service has been reviewed. Records shall also be maintained in LIMS of pertinent discussions with a customer relating to the customer's requirements or the results of the work during the period of execution of the contract.

4.4.3 The review shall also cover any work that is subcontracted by the lab.

4.4.4 The customer shall be informed of any deviation from the contract.

4.4.5 If a contract needs to be amended after work has commenced, the same contract review process shall be repeated and any amendments shall be communicated to all affected personnel.

4.5 Subcontracting of tests and calibrations

4.5.1 When the Forensic Lab subcontracts work, this work shall be placed with a competent subcontractor. A competent subcontractor is one that is accredited to and complies with ISO/IEC 17025 or ISO/IEC 17020.

4.5.2 The Forensic Lab shall advise the customer of the arrangement in writing and, when appropriate, gain approval of the customer, preferably in writing.

4.5.3 The Forensic Lab is responsible to the customer for the subcontractor's work, except in the case where the customer or a regulatory authority specifies which subcontractor is to be used.

4.5.4 The Forensic Lab shall maintain a register of all subcontractors that is used for tests and/or calibrations and a record of the evidence of compliance with ISO/IEC 17025 or ISO/IEC 17020 for the work in question.

4.6 **Purchasing**

4.6.1 Purchasing Policy

Supplies (including reagents and consumables) and services that critically affect the quality of the test(s) shall be selected and purchased at a quality appropriate for the analysis (i.e., test or calibration). The purchase, reception, and storage of reagents and consumables that critically affect the quality of the test(s) will follow the procedures outlined below.

When purchasing a new chemical (i.e., a chemical not currently in the laboratory's Chemical Inventory), the requestor will work in conjunction with the laboratory health and safety officer prior to ordering the chemical to ensure that the chemical is labeled, handled, and stored properly.

Each discipline or sub-discipline shall specify the equipment, supplies (including reagents and consumables) and services that critically affect the quality of the test(s) in the applicable analytical method.

4.6.2 Inspection and Verification of Critical Supplies

Purchased supplies (including reagents and consumable materials) that critically affect the quality of the test(s) shall not be used until they have been inspected or otherwise verified as complying with standard specifications or requirements defined in the applicable discipline analytical method. All supplies shall comply with specified requirements before being placed into use. Documentation of the inspection/verification will be maintained.

4.6.2.1 Procedure

Upon receipt, supplies will be inspected and verified as complying with the purchase request by checking the packing slip against the purchase request and against what was actually received to ensure all are in agreement. The item received will be considered to be verified and approved if the labels and shipping documents (i.e., packing slip) match what was ordered.

The person receiving the material will indicate verification and approval by noting the following information on the packing slip:

- date received (Example: "Rcv'd 1/10/01")

- vendor lot number (if not on the packing slip) or the laboratory chemical ID number
- receiver's initials

A Certificate of Analysis (C of A) is also acceptable documentation that the item received meets specification. The item will be considered verified if accompanied by a certificate of analysis and verification of the order as to quantity and identity of the product is completed. Documentation that the Certificate of Analysis was checked must be maintained with the order form and packing slip in the laboratory file (e.g., copy of certificate, or written statement that it was checked).

If the shipping documents and/or labels do not match, the supplies shall not be placed into service until the problem is resolved. Any discrepancies in the order shall be recorded on the order documents and retained with the purchasing records. In addition, if the resolution includes returning the item, this will be noted on the shipping documents.

4.6.2.2 Chemicals Without Assigned Manufacturer Lot Number

If the chemicals received do not have a manufacturer assigned Lot Number, a laboratory chemical ID number will be assigned. The lab chemical ID number can either be the date received (i.e., January 10, 2005 = Lot Number 011005) or a number generated through the laboratory chemical database.

4.6.3 Purchasing Documents

Purchasing documents for items affecting the quality of laboratory output shall contain data describing the services and supplies ordered. These purchasing documents shall be reviewed for technical content by the preparer and approved prior to release.

The description of items for purchase shall be specific enough to ensure the appropriate quality of item is purchased and may include type, class, grade, precise identification, specifications, other technical data, or the quality required.

4.6.4 The Forensic Lab shall evaluate suppliers of critical consumables, supplies, and services which affect the quality of testing and calibration, and shall maintain records of these evaluations.

Vendor Evaluation Criteria

The vendor evaluation will be based on the following criteria:

- Ability to provide a service/product that meets the documented requirements of the discipline or sub-discipline procedure or quality manual, the Quality Assurance Manual, or Operations Manual;
- Ability of vendor to provide service/product in necessary time frame;

As applicable, evaluation may also include one or more of the following:

- Ability of vendor to provide technical support when necessary;
- Ability of vendor to provide adequate instruction on use of service/product;
- Accreditation documents for the vendor (Note: accreditation by an approved accrediting body is required for calibration service providers)

Vendors who are evaluated and selected as part of the contract/procurement process will be considered approved vendors and may be added to the Approved Vendor List. No additional documentation is required in these instances.

4.7 Service to Customers

4.7.1 The Forensic lab shall be willing to cooperate with customers in clarifying requests and in monitoring the lab's performance in relation to the work performed while ensuring confidentiality of the customers.

4.7.1.1 Cooperation shall include providing the customer reasonable access to relevant areas of the lab to witness tests and/or calibrations performed for the customer.

4.7.1.2 The Forensic Lab shall notify the customer of any major delays or deviations in the performance of the tests and/or calibration.

4.7.2 The Forensic lab shall seek feedback from customers. The feedback shall be used and analyzed to improve the management system, testing and calibration activities, and customer service. Feedback will be sought through a biannual customer satisfaction survey. The Forensic Lab Manager will evaluate all responses and attempt to use feedback to improve the services of the Forensic Lab.

4.8 **Complaints**

The Forensic Lab considers complaints as opportunities to evaluate the Forensic Lab and Lab Management System with the possibility of improvement. Any Forensic Lab staff that is aware of a complaint shall notify the Forensic Lab Manager. Complaints shall be handled by the Forensic Lab Manager. The complaint shall be investigated and documented. Documentation shall include a description of the complaint, facts of the investigation, and action taken to remedy and improve. If the complaint is directly related to the Forensic Lab Manager, the next in the chain of command shall be notified.

4.9 Control of Nonconforming Testing

4.9.1 When a potential nonconformity is identified, the Quality Assurance Manager, and/or Forensic Lab Manager should be notified as soon as practicable after a laboratory staff member becomes aware of the nonconformity. The discipline Technical Leader should also be notified if the incident involves nonconforming testing or an unapproved departure from a discipline-specific technical procedure. An Incident Form should be completed and may serve as the means of notification. Refer to the Procedure for Use of an Incident Form (Appendix A).

Nonconformities may include, but are not limited to the following:

- departure from a policy or procedure or accreditation standard
- analytical error
- problem or concern with any aspect of the testing, calibration, proficiency tests, and/or the results generated by the laboratory (including failure to meet the agreed-upon requirements of the customer)
- incidents of evidence contamination
- sample switch events
- concern regarding the care, preservation, or consumption of evidence
- less than satisfactory feedback regarding testimony
- other issues related to the quality management system (e.g., complaints regarding personnel, conflict of interest concerns, etc.)

Authority to Stop Work

The Quality Assurance Manager is responsible for the overall management of nonconforming work and has the authority to suspend analytical operations for an analyst, a laboratory, the laboratory system, a discipline or work unit at any time when a significant quality issue is identified. In addition, all Forensic Lab staff have authority to suspend casework, discontinue the use of specific methods, or take an instrument out of service within their area of responsibility.

Once suspended, work may not resume until authorized by the Quality Assurance Manager.

4.9.2 The procedure for corrective action requests, as outlined in section 4.11, shall be promptly followed if the evaluation of the nonconforming work indicates that nonconforming work could recur or that this is doubt about the compliance of the lab's operations with the Quality Assurance Manual, Technical Analytical Methods, Accreditation Standards, or other agency policy and procedures.

4.10 **Improvement**

The Forensic Lab shall continually improve the effectiveness of its management system through the use of the quality policy, quality objectives, audit results, analysis of data, corrective and preventive actions and management review.

4.11 Corrective Action

4.11.1 When nonconforming work or an unapproved departure from policies and procedures in the quality system or technical procedures has been identified, it will be addressed using the following procedures:

4.11.1.1 A Corrective Action Request (CAR) may be implemented at the discretion of the Quality Assurance Manager whenever a quality concern is identified; however, when evaluation of an issue indicates any of the following, the Corrective Action Procedure shall be implemented:

- nonconforming work could recur
- there is doubt about the overall compliance of the laboratory's operations with its own policies and procedures
- the reliability of test result(s) is in question
- there is potential that erroneous or invalid results have been reported

The analyst(s) involved in the incident shall be notified as soon as practicable if the CAR process is initiated.

Procedure

Step 1: Cause Analysis

The procedure for corrective action shall start with an investigation to determine the root cause(s) of the problem. The objective of any root cause analysis (RCA) is to develop all relevant information regarding the cause and contributing factors that led to the nonconformity.

The root cause analysis should be completed within a reasonable timeframe.

The QAM will assign responsibility for conducting the RCA, generally to the immediate supervisor of the involved analyst(s). The RCA may be performed in consultation with the Technical Leader of the discipline, the analyst(s) involved, and/or the QAM, as applicable. When the issue involves multiple employees, the Lab Manager should be consulted in determining the responsibility for conducting RCA.

As a general guide, the following order of operations may assist in the RCA process:

a. Prior to interviewing the employee, obtain all possible details of the incident by the following means:
   1. Collect and review all relevant documentation, photos, electronic data, etc.
   2. Statements from other analysts and supervisors
b. Interview the employee
c. Conduct any additional investigation indicated in order to conclude the matter

Step 2: Evaluation of RCA Findings

- The Quality Assurance Manager shall evaluate the results of the RCA and ascertain the class and severity of the nonconformity or discrepancy as applicable.
- The following levels of nonconformity should be considered:

  - Level I: The nature or cause of the nonconformity directly affects, raises immediate concern and has a fundamental impact on the work product of the laboratory and/or the integrity of evidence. Level I nonconformities typically result in a discontinuation of the analyst from performing casework or, if a procedure or instrument nonconformity, a discontinuation of the use of the procedure or instrument. The customer(s) may be notified and/or work recalled.

  - Level II: The nature or cause of the nonconformity does not, to any significant degree, affect the fundamental reliability of the laboratory work product or the integrity of evidence. The analyst, laboratory or entire system may be removed from casework, if necessary, depending on the recommendations.

- The Quality Assurance Manager should make the final determination on the findings of the root cause investigation. The information gained from the RCA should be used to develop appropriate corrective or preventive measures if deemed necessary.

Step 3: Development of Corrective Action Plan

- Actions most likely to correct, eliminate, and/or prevent recurrence of the problem shall be selected and implemented.
- Corrective/preventive actions shall be to a degree appropriate to the magnitude and the risk of the problem.
- The Manager and the Technical Leader for the discipline affected may provide input to the QAM on corrective and/or preventive action

plans. The Quality Assurance Manager generally has final authority to determine the appropriate course of corrective action.

- As necessary, the corrective action plan should include the following: Recall and review of prior casework, if necessary, to determine the impact of the nonconformity.
- Consideration of whether the analytical operations for a laboratory, the laboratory system, a discipline, work unit or analyst should be suspended and a plan describing the necessary actions and timeframe to return to casework.
- When needed, a description of how the work will be reassigned until the nonconformity is corrected.
- Identification of any training, equipment, protocol modification, casework re-analysis, or other measures needed to correct the problem and/or prevent recurrence. A reasonable timeline for completion must be established.
- Any steps needed to inform customers of the extent of the problem and recommendations for appropriate resolution.
- Schedule of regular updates to the Quality Assurance Manager on the status of the corrective action.

Step 4: Implementation of CAR Actions
The Quality Assurance Manager will normally assign responsibility for implementation of a corrective action plan to the appropriate Technical Leader. However; depending upon the severity of the nonconformity, a course of corrective action may be ordered by the Lab Manager

The Forensic Lab shall document and implement any required changes resulting from corrective action investigations. Changes to lab policies and procedures resulting from corrective actions will be documented in the appropriate manual(s). Dependent upon the impact of these corrective actions, they may be relayed to lab employees by e-mail, memorandum, etc. to allow for immediate implementation prior to actual manual changes.

Step 5: Completion of the CAR
Following completion of the corrective action, the responsible Manager or Technical Leader should notify the Quality Assurance

Manager of the action taken. Documentation of the specific actions taken and when they were completed will be maintained.

In cases where an analyst has been removed from casework, or when required by the corrective action plan, a follow-up competency or proficiency test will be issued upon successful completion of the required steps of the corrective action.

Upon approval of the Quality Assurance Manager, the CAR will be closed and a date for evaluation of the effectiveness of the CAR actions should be set if deemed necessary.

Step 6: Evaluation of Effectiveness of the CAR
The Quality Assurance Manager will also direct appropriate follow-up action to confirm the effectiveness of the corrective action(s) taken. This may involve review of casework and audits of the area of activity, section or laboratory.

Step 7: Additional Audits

Where the identification of nonconformities or discrepancies casts doubts on the laboratory's compliance with its own policies and procedures, or on its compliance with accreditation requirements, the laboratory shall ensure that the appropriate areas of activity are audited as soon as possible. An additional audit should be necessary only when a serious issue or risk to the management system or agency is identified.

- 4.11.1.2

  The Corrective Action Procedure shall be implemented when:
  - nonconforming work could recur
  - there is doubt about the overall compliance of the laboratory's operations with its own policies and procedures
  - the reliability of the test result(s) is in question
  - there is the potential that erroneous or invalid results have been reported

4.12 Preventive Action

4.12.1 Preventive action is a pro-active process to identify opportunities for improvement rather than a reaction to the identification of problems or complaints. Personnel are encouraged to identify needed improvements and potential sources of nonconformities, either technical or concerning the management system. When improvement opportunities are identified or if preventive action is required, action plans shall be developed, implemented and monitored to reduce the likelihood of the occurrence of such nonconformities and to take advantage of the opportunities for improvement.

Step 1: Notification

Once an opportunity for improvement has been identified, it should be brought to the attention of the Laboratory Manager and/or Quality Assurance Manager, preferably through written correspondence such as e-mail or memorandum.

Step 2: Evaluate the Suggestion and Develop Preventive Action Plan

The Laboratory Manager and/or Quality Assurance Manager shall evaluate the suggestion and work with the submitting individual to develop a preventive action plan. The Technical Leader should be consulted for input as needed.

Apart from the review of the applicable policy, preventive action might involve analysis of data, including trend and risk analyses and proficiency testing results.

Preventive actions shall include the initiation of applicable preventive measures and the application of controls to ensure that they are effective. Actions most likely to prevent the problem shall be selected and implemented. Preventive actions should be to a degree appropriate to the magnitude and the risk of the problem. A reasonable timeline for completion should be included in the plan.

Step 3: Implement Preventive Action Request (PAR)

Changes to laboratory policies and procedures resulting from preventive actions shall be documented in the appropriate manual(s). Dependent upon the impact of these preventive actions, they may be relayed to laboratory employees by e-mail, memorandum, etc. to allow for immediate implementation prior to actual manual changes.

Step 4: Completion of the PAR
Following completion of the preventive actions, the PAR should be closed and a date for evaluation of the effectiveness of the PAR actions shall be set if deemed necessary.

Step 5: Evaluation of Effectiveness of the PAR
The Quality Assurance Manager should direct appropriate follow-up action to confirm the effectiveness of the preventive actions put in place.

4.13 Control of Records

4.13.1 General Records

Quality records provide documented support of the conformity of the quality management system. The records shall include but are not limited to the following (where applicable):

- reports from internal audits
- management reviews
- corrective and preventive actions
- logs
- worksheets
- electronic files
- databases
- method and equipment validation documents
- equipment verification records
- reagent and chemical QC logs
- training records
- proficiency and competency test records
- courtroom testimony monitoring records
- chemical inventory records
- continuing education records
- reference collection records
- case file records

4.13.1.1 Storage, Archive, and Retention

- All records shall be legible and shall be stored and retained in such a way that they are readily retrievable in facilities that provide a suitable environment to prevent damage or deterioration and to prevent loss.

- At a minimum the records will be retained for a period of one accreditation cycle. Otherwise, retention of technical and quality records is guided by the Ada County Policy for record retention. Disposal of records may occur at any time after the retention schedule has been met. Disposal may be by any means that render the records unreadable (e.g., shredding or burning).

- Internally controlled documents are archived in the Forensic Lab quality system folder when no longer in use.

4.13.1.2 Security

All records shall be held secure and in confidence. Forensic Lab staff has access to quality system records necessary to perform their job functions.

4.13.1.3 Digital Storage

Original technical notes and reports are digitally stored on the Laboratory Information Management System (LIMS) that backs up to a secure cloud. Access to LIMS is limited to lab personnel and is password protected. LIMS retains a history of all reports accessed and limits alterations with controlled access. LIMS is both password protected and has user restrictions.

Quality documentation that is digitally stored is saved on the Ada County's secure server which is backed up daily.

4.13.1.4 Case Communication

All communications that form the basis for decisions in casework must be documented in the case record. These communications may include, but are not limited to, communications with the agency, the Prosecuting Attorney, another Forensic Lab staff member, or any combination thereof. The date, with whom the communication took place, and the conversation (in substance) will be documented.

4.13.2 Technical Records

4.13.2.1 The Forensic Lab shall retain records of original observations and supporting documentation for each test which shall contain sufficient information to facilitate, if possible, identification of factors affecting the uncertainty and to enable the test or calibration to be repeated under conditions as close as possible to the original. The records shall include the identity of the Forensic Lab staff responsible for sampling, performance of each test, and checking of results.

4.13.2.2 Observations, data, and calculations shall be recorded at the time they are made and shall be identifiable to a specific task.

4.13.2.2.1 Examination records shall include, at a minimum, the start and end dates of the testing.

4.13.2.3 When mistakes occur in records, each mistake shall be crossed out, not erased, made illegible or deleted, and the correct value entered alongside.

4.13.2.3.1 Any change made to existing hardcopy examination records shall be initialed by the person making the change.

4.13.2.3.2 Changes made to completed examination records generated and/or maintained in an electronic form shall be tracked through LIMS. Examination records shall be considered completed prior to technical or administrative review.

4.13.2.4 The technical case record shall consist of examination and/or administrative records.

4.13.2.5 Examination records to support conclusions shall be such that in the absence of the analyst, another competent reviewer could evaluate what was done and interpret the data.

4.13.2.5.1 When instrumental analysis is performed, operating parameters shall be recorded.

4.13.2.6 The unique case identifier and the analyst's initials (either handwritten or secure electronic) shall be on each page of the examination records.

4.13.2.6.1 The beginning page of the examination record shall indicate the total number of pages (e.g. page 1 of 5).

4.13.2.7 When examination records are prepared by an individual other than the analyst who interprets the findings, prepares the test report, and/or testifies concerning the records, the handwritten initials or electronic equivalent of the preparing individual shall be on the page of examination records representing his/her work.

4.13.2.8 All administrative records, received or generated by the Forensic Lab, for a specific case, shall be identified by the unique case identifier used by the lab.

4.13.2.9 The unique identifier for each case for which data was generated shall be appropriately recorded on the printout when data from multiple cases is recorded on a single printout.

4.13.2.10 When examination records are recorded on both sides of a page, each side shall be treated (identified and initialed as a separate page.

4.13.2.11 Examination records shall be of permanent nature).

4.13.2.12 Verifications of technical work shall be conducted by an individual having expertise gained through training and casework experience specific to the type of casework. A record of the verification shall be made to indicate that the critical finding has been checked and agreed to, by whom, and when the verification was performed.

4.13.2.13 Where abbreviations or symbols specific to the Forensic Lab are used in examination records, the meaning of the abbreviations or symbols shall be clearly defined by the lab.

4.14 **Internal Audit**

4.14.1 The Forensic Lab shall conduct internal audits of its activities to verify that is operations continue to comply with the requirements of the management system and the ISO 17025 standards. The internal audit shall address all elements of the management system. It is the responsibility of the quality manager to plan and organize audits. Such audits shall be carried out by trained and qualified personnel who are, wherever resources permit, independent of the activity audited.

4.14.1.1 Internal audits shall be conducted annually.

4.14.1.2 Records of internal audits shall be retained for five years.

4.14.2 When audit findings cast doubt on the effectiveness of the operations or on the correctness or validity of the Forensic Lab's test results, the lab shall take timely corrective action, and shall notify the customers in writing if investigations show that the Forensic Lab results may have been affected.

4.14.3 The area of activity audited, the audit findings and corrective actions that arise from them shall be recorded.

4.14.4 Follow up audit activities shall verify and record the implementation and effectiveness of the corrective action taken.

4.14.5 The Forensic Lab shall submit an Annual Report to the accrediting body within 30 days following the Forensic Lab's accreditation anniversary date.

4.15 **Management Reviews**

4.15.1 Management reviews shall be conducted at least annually.

4.15.2 Records of management reviews shall be kept for five years.

5.0 Technical Requirements

5.1 General

5.1.1 Correctness and Reliability Factors

Factors affecting the correctness and reliability of the tests performed by the Forensic Lab may include contributions from personnel, accommodation and environmental conditions, methods and method validation, equipment, uncertainty of measurement and traceability, sampling, and the handling of test and calibration items.

5.1.2 The Forensic lab shall take into account factors noted in 5.1.1 when developing methods and procedures, in the training and qualifications of personnel, and in selecting equipment utilized in testing.

5.1.3 Quality Control of Critical Chemicals and Reagents

5.1.3.1 Reagents made in the lab shall be labeled with, at a minimum, the identity of the reagent and the date of preparation or lot number. Records shall be maintained identifying who made the reagent and that its reliability was tested and the reagent worked as expected. The reliability testing shall occur before use or, if appropriate, concurrent with the test.

5.1.3.2 Reagent reliability testing shall be further described in the appropriate analytical method. This includes, but is not limited to, the use of controls, reagent expiration, and documentation.

5.2 **Personnel**

5.2.1 The Forensic Lab management shall ensure that all personnel have the knowledge, skills, abilities, and experience to perform their assigned duties. Training records will be sufficiently detailed to provide evidence that staff has been properly trained and that their ability to perform the tasks of their specific discipline or sub-discipline has been assessed.

5.2.1.1 A training manual shall be written for each forensic discipline.

5.2.1.1.1 Past work experience and training may be substituted for the training program to the extent that it has been demonstrated to be relevant and sufficient.

5.2.1.2 Discipline training manuals shall include training in the presentation of evidence in court.

5.2.1.3 Discipline training manuals shall include the application of ethical practices in forensic science, general knowledge of forensic science, and applicable criminal and civil law and procedures.

5.2.2 The Forensic Lab management shall formulate goals with respect to the education, training, and skill of laboratory personnel.

5.2.2.1 Lab staff are encouraged and supported to participate in professional organizations.

5.2.2.2 Lab staff are encouraged and supported to attend technical and/or professional development courses, conferences, and seminars. The process of applying for training is completed through ACSO training department's Training Request Form.

5.2.2.3 Forensic Lab management shall create a strategic plan that addresses development of laboratory disciplines, improvement of knowledge and skills, and future advancements.

5.2.2.4 Forensic Lab management shall conduct annual personnel evaluations according to ACSO human resource's procedures. Evaluations shall include setting individual training or continuing education.

5.2.3 The Forensic Lab shall use personnel who are employed by, or under contract to, the laboratory. Where contracted or additional technical and key support personnel are used, the laboratory shall ensure that such personnel are supervised and competent and that they work in accordance with the management system.

5.2.4 The Forensic Lab shall maintain current job descriptions for lab staff.

5.2.5 Forensic Lab management shall authorize specific personnel to perform particular types of sampling, testing, issuing test reports, giving opinions and interpretations, and operating particular types of equipment. The Forensic Lab shall maintain records of the relevant authorization(s), competence, educational and professional qualifications, training, skills and experience of all technical personnel, including contracted personnel. This information is available to all lab staff and shall include the date on which authorization and/or competence is confirmed.

5.2.6 Technical Personnel Qualifications

5.2.6.1 Education

5.2.6.1.1 Forensic Scientists working in the Forensic Lab shall possess a baccalaureate or an advanced degree in Biology, Chemistry, Forensic Science, or a related field.

5.2.6.2 Competency Testing

5.2.6.2.1 All Forensic Scientists, regardless of academic qualifications or past work experience, shall satisfactory complete a competency test in each category of testing prior to assuming responsibility for laboratory casework or crime scene duties.

5.2.6.2.2 Competency testing shall include:

5.2.6.2.2.1 Examination of sufficient unknown samples to cover the anticipated spectrum of assigned duties and evaluate the individual's ability to perform proper testing methods.

5.2.6.2.2.2 A written test report to demonstrate the ability to properly convey results

5.2.6.2.2.3 A written or oral examination to assess knowledge of the forensic discipline.

5.2.7 The Forensic Lab maintains literature resources for each discipline.

5.3 **Accommodation and Environmental Conditions**

5.3.1 Environmental Conditions

Laboratory facilities shall have appropriate energy sources, lighting, and environmental conditions to facilitate correct performance of the tests. The laboratory shall ensure that the environmental conditions do not invalidate the results or adversely affect the required quality of any measurement. Particular care shall be taken when sampling and tests are undertaken at sites other than a permanent laboratory facility. When there are specific environmental conditions for the technical requirements of a tests or calibrations, the conditions must be documented in the case record.

5.3.2 Monitoring Environmental Conditions

The laboratory shall monitor, control, and record environmental conditions as required by the relevant specifications, methods, and procedures or where they influence the quality of the results. Due attention shall be paid, for example, to biological sterility, dust, electromagnetic disturbances, radiation, humidity, electrical supply, temperature, and sound and vibration levels, as appropriate to the technical activities concerned. Tests and/or calibrations shall be stopped when the environmental conditions jeopardize the results of the tests and the lab manager will be notified as soon as practicable.

5.3.3 Separation of Analytical Areas

There shall be effective separation between neighboring areas in which there are incompatible activities. Each employee will have enough working space to accomplish assigned tasks without the risk of mishandling or contaminating evidence. Each employee is responsible to take appropriate measures to prevent contamination.

5.3.4 Control of Analytical Areas

Access to and use of areas affecting the quality of the tests and/or calibrations shall be controlled.

5.3.4.1 Analytical area security

5.3.4.1.1 Access to operational areas of the laboratory is controlled and limited. All visitors must be accompanied by lab personnel.

5.3.4.1.1.1 Level 1 Visitor – frequent visitors to the lab. This level is identified as having a background security check performed as employment for the Ada County Sheriff's Office. This level is allowed in the laboratory based upon the Lab Manager's discretion. This includes the Sheriff, the Major, the Police Service's Bureau Captain and Lieutenant, IT staff specifically assigned to the Forensic Lab, and detectives. These

visitors shall be escorted at all times, but do not need to sign the visitor's log.

5.3.4.1.1.2 Level 2 Visitor - This level is identified as not having a background security check performed as employment for the Ada County Sheriff's Office or does not have frequent interaction in the lab. These visitors shall be escorted at all times and shall sign the visitor's log.

5.3.4.1.2 All entrance/exit points of the operational area of the laboratory is security controlled at all times

5.3.4.1.3 All keys of the laboratory are documented in a key log and their distribution limited to individuals designated by the Lab Manager to have access.

5.3.4.1.3.1 Key logs shall be audited annually and contain the following information:

- list of all keys for each lock identifying total number of keys per lock, each identified with unique key number
- name of each individual receiving a key
- date assigned
- signature or initials of person receiving key

5.3.4.1.4 The laboratory is monitored during vacant hours by an intrusion alarm or by security personnel. This alarm shall be tested annually.

5.3.4.1.5 Evidence storage areas are secured to prevent theft or interference and there is limited, controlled access. The storage area shall be of sufficient size and design to ensure the integrity and identity of the evidence in order to prevent loss, deterioration, and contamination of the evidence.

5.3.5 Measures shall be taken to ensure good housekeeping in the laboratory. See discipline analytical methods for specifics.

5.3.6 The laboratory's health and safety program is documented in the Ada County Sheriff's Office Forensic Crime Lab Health and Safety Manual.

5.4 Test and Calibration Methods and Method Validation

5.4.1 General

The Forensic Lab will use appropriate technical procedures and methods that have been scientifically validated and accepted for use in the field of forensic science. This includes methods and procedures for the sampling, handling, transport, storage and preparation of evidence items, for the operation of all relevant equipment and, where appropriate, an estimate of the measurement of uncertainty as well as statistical techniques for analysis of data. All methods and procedures will be documented and readily available for review by laboratory personnel.

Each forensic discipline will have an analytical method applicable to the work performed in that area. The analytical methods will be periodically reviewed to ensure that they are up to date.

Analytical methods for each discipline or sub-discipline will define the following, where applicable:

- scope of the analysis conducted in the discipline or sub-discipline
- definitions of terms that are specific to the area of expertise
- precautions and/or limitations of the procedures
- methods, reagents, standards and controls used
- quality assurance measures
- safety concerns specific to the area of expertise
- examination documentation requirements
- guidelines for interpretation of results and reporting
- critical reagents and equipment
- equipment/instrument specifications required for the test
- equipment/instrument operation, maintenance and calibration/verification procedures (including calibration schedule where applicable, see section 5.5.2) that are not covered in the Quality Assurance Manual

5.4.1.1 Deviation from Policy or Analytical Methods

5.4.1.1.1 For a deviation that affects casework, the deviation request shall be approved prior to the work that is performed.

5.4.1.1.2 For a deviation from an analytical method, the approval shall be from the assigned discipline leader or Forensic Lab Manager.

5.4.1.1.3 For a deviation from quality procedures, the approval shall be from the Quality Manager or Forensic Lab Manager.

5.4.2 Selection of Methods

The Forensic Lab shall select technical procedures that meet the needs of the customer and are appropriate for the test(s) to be performed.

Procedures published in international, regional or national standards, by reputable technical organizations, from relevant scientific text or journals, or provided by the equipment or instrument manufacturer shall preferably be used. The laboratory shall ensure that it uses the latest valid edition of a standard unless it is not appropriate or possible to do so. The standard procedures selected shall be validated according to the procedures for validation outlined in this manual and, when necessary, the standard shall be supplemented with additional details to ensure consistent application.

The Forensic Lab shall confirm that it can properly use a standard procedure prior to introducing it for forensic examinations. This process shall be repeated if the standard procedure changes to a degree that could affect the outcome of the test.

Laboratory-developed procedures or those adopted by the laboratory may also be used if they are appropriate for the intended use, documented, properly validated according to the procedures for validation outlined in section 5.4.5, and approved for use.

The Forensic Lab will select the appropriate methods on behalf of the customer. This is communicated to the customer on the lab submittal form or the web site.

5.4.3 Laboratory-developed Methods

When the Forensic Lab develops procedures or methods, the methods shall be properly validated according to the procedures for validation outlined in section 5.4.5.

5.4.4 Non-standard Methods

Non-standard methods may be used when necessary to meet the customer's request. When this occurs, the method developed shall have been validated appropriately before use. Changes to or deviations from established procedure shall be approved.

5.4.5 Validation of Methods

5.4.5.1 Validation is the confirmation by examination and the provision of objective evidence that the particular requirements for a specific intended use are fulfilled.

5.4.5.2 The Forensic Lab shall validate all non-standard, laboratory-developed, standard methods used outside of their intended scope, and modifications of standard methods to confirm that the methods are fit for the intended use. The validation shall be as extensive as is necessary to meet the needs of the given application or field of application.

5.4.5.2.1 Validation records shall include record of the results obtained, the procedure used for the validation, and a statement as to whether the method is fit for the intended use. Validation records shall include the use of Forensic Lab Validation Form.

5.4.5.2.2 If changes are made in the validated non-standard methods, the influence of such changes should be documented and, if appropriate, a new validation should be carried out.

5.4.5.3 The range and accuracy of the values obtainable from validated methods, as assessed for the intended use, shall be relevant to the customer's needs.

5.4.6 Estimation of uncertainty of measurement

Where required, the disciplines and sub-disciplines within the Forensic Lab shall estimate and report uncertainty of measurement in compliance with the most current published version of the ASCLD-LAB Policy on Measurement Uncertainty.

5.4.6.1 The Forensic Lab does not perform calibrations in any of the disciplines listed in the scopes of accreditation.

5.4.6.2 Discipline analytical methods shall include a procedure for estimating uncertainty of measurement when required for interpretation of the test result. Analytical methods shall also define parameters of reporting uncertainty of measurement.

5.4.6.2.1 When the nature of the test method precludes rigorous, metrologically and statistically valid, calculation of uncertainty of measurement, the discipline or sub-discipline shall at least attempt to identify all the components of uncertainty and make a reasonable estimation, and shall ensure that the form of reporting of the result does not give a wrong impression of the uncertainty. Reasonable estimation shall be based on knowledge of the performance of the method and on the measurement scope and take into consideration factors that may affect the measurement result.

5.4.6.3 When estimating the uncertainty of measurement, all uncertainty components which are of importance in the given situation shall be taken into account using appropriate methods of analysis.

5.4.6.3.1 Sources contributing to the uncertainty include, but are not necessarily limited to, the reference standards and reference materials used, methods and equipment used, environmental conditions, properties and condition of the item being tested or calibrated, and the operator.

5.4.7 Control of data

5.4.7.1 Calculations and data transfers shall be subject to appropriate checks in a systematic manner.

5.4.7.2 When computers or automated equipment are used for the acquisition, processing, recording, reporting, storage or retrieval of test data, the laboratory shall ensure that:

a) software developed in-house is documented in sufficient detail and is suitably validated prior to use
b) procedures are established and implemented for the protection of the data including, but not limited to integrity and confidentiality of data entry or collection, data storage, data transmission and data processing
c) computers and automated equipment are maintained to ensure proper functioning and are provided with the environmental and operating conditions necessary to maintain the integrity of test data.

Commercial off-the-shelf software (e.g. word processing, database and statistical programs) in general use within their designed application range may be considered to be sufficiently validated.

At a minimum, spreadsheets or other programs used for the calculations of test data shall be verified prior to being placed into service and cells containing critical formulas/calculations will be locked to prevent inadvertent alterations.

5.4.7.2.1 Digital Evidence shall be stored in LIMS, which is appropriately secured to prevent unauthorized access.

5.5 **Equipment**

5.5.1 The Forensic Lab shall be furnished with all items of sampling, measurement and test equipment required for the correct performance of testing. In cases where the Forensic Lab needs to use equipment outside its permanent control, it shall ensure that the requirements of the Forensic Management system are met.

5.5.2 Equipment and its software used for testing shall be capable of achieving the accuracy required by the discipline's analytical methods and shall comply with specifications relevant to the tests. Before being placed into service, equipment shall be calibrated or checked to establish that it meets the specifications which are defined in the discipline's analytical methods.

5.5.3 Equipment shall be operated by authorized personnel. Personnel who have been authorized to conduct casework are authorized to use equipment that is covered in the discipline's training manual. Up-to-date instructions on the use and maintenance of equipment shall be readily available for use by the appropriate personnel.

5.5.4 Each item of equipment and its software used for testing that is significant to the result shall, when practicable, be uniquely identified.

5.5.5 Records shall be maintained of each item of equipment and its software significant to the tests performed. The records shall include:

- The identity of the item of equipment and its software;
- The manufacturer's name, type identification, and serial number or other unique identification;
- Checks that equipment complies with the specifications;
- The current location, where appropriate;
- The manufacturer's instructions, if available, or reference to their location;
- Dates, results, and copies of reports and certificates of all calibrations, adjustments, acceptance criteria, and the due date of next calibration;
- The maintenance plan, where appropriate, and maintenance carried out to date;
- Any damage, malfunction, modification, or repair to the equipment.

5.5.6 The Forensic Lab shall have procedures for safe handling, transport, storage, use and planned maintenance of measuring equipment to ensure proper functioning and in order to prevent contamination or deterioration.

5.5.7 Equipment that has been subjected to overloading or mishandling, gives suspect results, or has been shown to be defective or outside specified limits, shall be taken out of service. It shall be isolated to prevent its use or clearly labelled or

marked as being out of service until it has been repaired and shown by calibrations or test to perform correctly. The effect of the defect or departure from specified limits on previous tests shall institute a nonconforming testing procedure per section 4.9.

5.5.8 Whenever practicable, all equipment under the control of the Forensic Lab, which requires calibration, shall be labelled, coded, or otherwise identified to indicate the status of calibration, including the date when last calibrated and the date or expiration criteria when recalibration is due.

5.5.9 When, for whatever reason, equipment goes outside the direct control of the Forensic Lab, the lab shall ensure that the function and calibration status of the equipment are checked and shown to be satisfactory before the equipment is returned to service.

5.5.10 When intermediate checks are needed to maintain confidence in the calibration status of the equipment, these checks shall be carried out according to the discipline's analytical methods.

5.5.11 Where calibrations give rise to a set of correction factors, the Forensic Lab shall remove and replace all copies as per the discipline's analytical method.

5.5.12 Test equipment, including both hardware and software, shall be safeguarded from adjustments which would invalidate the test results, by being secured in the Forensic Lab.

5.6 **Measurement Traceability**

5.6.1 All equipment used for tests, including equipment for subsidiary measurements having a significant effect on the accuracy or validity of the results of the test, calibration, or sampling shall be calibrated before put into service. Each discipline's analytical method shall have a procedure for the calibration and/or performance check of its equipment and include a list of the equipment requiring external calibration.

5.6.2 Specific Requirements

5.6.2.1 Calibration - The Forensic Lab is not a calibration laboratory.

5.6.2.2 Testing

5.6.2.2.1 All calibration and test equipment used in the Forensic Lab that has a significant effect on the measurement result and the associated uncertainties of measurement will be traceable to national and/or international standards of measurement. This shall be done through the use of a measurement standard (e.g., NIST traceable weights). The Forensic Lab will safely handle, transport and store these measurement standards to prevent contamination or deterioration and to protect their integrity.

5.6.2.2.2 Where traceability of measurements to SI units is not possible and/or not relevant, Sections shall establish traceability to other measurement standards such as certified reference materials or reference standards, consensus standards, or other verified source.

5.6.2.2.3 When external calibrations are performed, service providers that demonstrate competence, measurement capability and traceability will be used. Calibration certificates from these providers will contain the measurement results, including the measurement uncertainty and/or a statement of compliance with an identified metrological specification. If available, the laboratory shall use a supplier of external calibration services that is either a National Metrology Institute (NMI) that is a signatory to the BIPM-CIPM Mutual Recognition Arrangement or a service supplier accredited to ISO/IEC 17025:2005 by an accrediting body that is a signatory to the IAAC Multilateral Recognition Arrangement or the ILAC Mutual Recognition Arrangement, with a scope of accreditation covering the calibration performed, for all calibration of equipment where the calibration of the equipment has a

significant effect on (a) the accuracy or validity of sampling or a test result, or (b) the total uncertainty of the test result.

5.6.2.2.4 Documentation of traceability will be maintained by the appropriate laboratory section.

5.6.3 Reference standards and reference materials

5.6.3.1 Reference standards

Reference standards that are considered critical to the outcome of a test shall be calibrated. Calibration service providers used for calibration or recertification of these standards shall meet the requirements specified in 5.6.2.2.3 above. Reference standards shall be calibrated before and after any adjustment. If mishandling of standards brings accuracy into question, the standards shall be taken out of service and recalibrated.

Measurement standards or materials (e.g., thermometers, weights) used to check accuracy of other equipment or instruments shall not be used for other purposes. All calibrations and adjustments to these materials will be documented.

Calibration will be according to the schedule in the discipline's analytical method:

5.6.3.2 Reference materials

Where possible, reference materials shall be traceable to SI units of measurement or to certified reference materials. Internally developed reference materials must be checked against published references or certified reference material as far as is technically and economically practicable. Documentation of traceability must be maintained in the laboratory.

Note that reference materials are commonly referred to as "standards" in many forensic disciplines (e.g., drug standards).

5.6.3.2.1 Reference collection of data or items/ materials encountered in casework which are maintained for identification, comparison or interpretation purposes (e.g., mass spectra, paint samples, controlled substance standards, hair samples, DNA profiles, frequency databases) shall be fully documented, uniquely identified and properly controlled.

For the purposes of this procedure an item is considered fully documented when there is documentation as to the source of the material and the date it was acquired (if known). Documentation may be made on the reference material itself, on its proximal packaging, or as part of a database record.

5.6.3.3 Intermediate Checks

Procedures and schedules for checks needed to maintain confidence in the calibration status of reference, primary, transfer or working standards and reference materials shall be contained in the discipline's analytical methods.

5.6.3.4 Transport and storage

The following general precautions shall be taken to avoid contamination or deterioration when handling, transporting, storing and using reference standards and reference materials:

- Personal protective equipment will be used when appropriate.
- Appropriate steps will be taken to avoid contamination of the reference standard or material (i.e., use of clean tools and containers, not returning excess material to storage containers).
- Reference standards and materials shall be appropriately stored and secured to ensure their integrity.

The following additional precautions shall be taken to protect the integrity of reference weights and length standards used to calibrate and verify balances, calipers, and micrometers:

- They will be stored and transported in the manufacturer's original packaging or equivalent container.
- Appropriate gloves and/or forceps will be used when handling.

5.7 **Sampling**

5.7.1 Sampling Plan

As applicable, each discipline shall document in their analytical method a sampling plan based on appropriate statistical methods. The sampling process shall address the factors to be controlled to ensure the validity of the test results.

5.7.2 Sampling Deviations

If a deviation from the documented sampling procedure is requested by the customer or deemed appropriate by the analyst, the process for Deviation from Procedure shall be followed. If approved, the deviation shall be recorded in detail in the case notes and communicated to the appropriate personnel.

5.7.3 Sampling Procedures

Sampling shall be documented in the case record. If necessary for the interpretation of test results and conclusions, the sampling plan used will be included in laboratory reports. Sampling procedures should describe the selection, sampling plan, withdrawal and preparation of a sample or samples from a substance, material or product to yield the required information.

If the discipline utilizes more than one sampling procedure, the procedure used must be documented in the case packet.

Documentation of sampling shall include the following:

- The date of sampling
- Reference to the sampling plan and procedure used
- Identification of the sampler
- Details of any environmental conditions during sampling that may affect the interpretation of the test results;
- The location of the sampling including any diagrams, sketches, photographs or other equivalent means used to illustrate location of sample(s) taken
- The statistics the sampling procedures are based upon (if appropriate)
- Unambiguous identification of the substance, material or product sampled;

- Any standard or other specification for the sampling method or procedure, and deviations, additions to, or exclusions from the specification concerned.

5.8 Handling of Test and Calibration Items

5.8.1 To ensure the integrity of evidence and to protect the interests of the laboratory and the customer, the following procedure will be used for the transportation, receipt, handling, protection, storage, retention and/or disposal of evidence.

5.8.1.1 Evidence Submission and Chain of Custody

The chain of custody (COC) on all evidence received from the time of initial submission of evidence to the laboratory system to the time of evidence return to agencies shall be documented and retained. The Forensic Lab will use the electronic tracking system employed by ACSO Property and Evidence. The ACSO Property and Evidence electronic chain of custody (COC) is the official chain of custody.

The chain of custody documentation for all evidence shall meet the following minimum requirements:

- Date of receipt of evidence and all internal transfers
- Description or unique identifier of the evidence
- Each laboratory staff member shall acknowledge by signature, initials, equivalent identification or secure electronic equivalent, at the time of transfer, when they take possession of evidence or transfer evidence to a permanent storage location.

5.8.1.1.1 Chain of Custody for Subdivided Evidence

When evidence is subdivided in the lab, sub-items shall be tracked through a documented COC record to the same extent that the original items of evidence are tracked.

5.8.1.1.2 Evidence Seals

5.8.1.1.2.1 Unless it is not physically possible, evidence will be properly sealed before submission to the Forensic Lab. If evidence is not properly sealed upon receipt, lab personnel must either have the submitting personnel make a proper seal prior to accepting the evidence or seal the evidence with a proper seal.

5.8.1.1.2.2 Evidence seals shall be tamper-evident [e.g., heat seals, tamper-evident adhesive seals, tamper-evident tape, tamper evident gum (adhesive), or the equivalent]. Staples are not acceptable seals.

5.8.1.1.2.3 Sealed evidence shall be initialed; when possible, the initials should cross over the seal in such a way as to provide visual indication of entry into the evidence package if the seal is broken.

A seal originating from laboratory personnel will also include the date.

5.8.1.1.2.4 Evidence in temporary storage does not need to be sealed. All unsealed evidence shall be stored in a manner to minimize potential loss, cross-transfer or contamination of the evidence.

5.8.1.1.3 Receipt of Evidence

Evidence may be submitted to the Forensic Lab by one of the following methods:

- Obtained from ACSO Property and Evidence
- Personal/Individual delivery
- First Class U.S. Mail
- Commercial Parcel Delivery Providers (i.e. Fed Ex, UPS, etc.)
- Electronic transfer of digital images or data

5.8.1.1.3.1 Procedure for the Receipt of Evidence

- <u>Evidence Received from ACSO Property and Evidence</u>
  For evidence that is personally obtained from property, the initial COC of when evidence is obtained will be documented on the item of evidence with a date and signature. The COC will also be completed in the ACSO Property and Evidence electronic tracking system.

- <u>Personally Delivered Evidence</u>
  For evidence that is personally delivered, the initial COC of when evidence is received in the laboratory will be documented on the item of evidence with a date and signature. The item(s) of evidence will be secured by the receiving analyst in a temporary storage locker. In the case of a large item, the item will be secured in the lab.

- <u>Shipped Evidence</u>
  The initial chain of custody (when evidence is received in the laboratory) shall be documented by the person who signed for/received the shipment on the item of evidence. The item(s) of evidence will be secured by the receiving analyst in a temporary storage locker. In the case of a large item, the item will be secured in the lab.

- <u>Electronic receipt of digital images or data</u>

Each discipline that accepts digital images will define in their procedures manual when the use of electronically-received digital images is acceptable. The chain of custody will begin when the image is received (e.g., time/date on email). In the Evidence Submission description field enter the number of images received and how received. Information about the file names and format, if available, should be recorded in the case record. Copies of these images may be returned to the submitting party. The disciplines will have procedures in place to ensure the images will be handled in a way to maintain their integrity.

5.8.1.1.4 Evaluation of Evidence Submission

Evidence items received will be inventoried against the Evidence Processing Request or equivalent to ensure that the items listed are the items received. If a discrepancy is noted it will be documented on the Evidence Processing Request or equivalent and the customer notified.

5.8.1.1.5 Returning Evidence

Evidence shall be returned in the same manner it was received. (eg. If obtained from ACSO Property returned to ACSO Property).

5.8.2 Evidence Itemization and Exhibit Numbering

5.8.2.1 All evidence will be itemized, assigned a unique exhibit (item) number and recorded in LIMS. The receiving analyst will log the evidence into LIMS and check previous submittals to ensure the exhibit number is unique. When possible, the unique item number will be the same as the number given by the submitting party. The identification will be retained throughout the life of the item in the laboratory and report. The unique exhibit (item) number will be used to label the evidence (when possible) and in the records or other documents to ensure that the items cannot be confused.

5.8.2.2 The first analyst retrieving evidence will be responsible for assigning evidence exhibit numbers for the entire submission. If a single submission is split the unique exhibit number will be the original number with a period and a number. (eg. NW-1 split into five exhibits would be NW-1.1, NW-1.2, NW-1.3, NW-1.4, and NW-1.5).

5.8.3 Upon receipt of the test item, abnormalities or departures from normal or specified conditions, as described in the analytical method, shall be recorded.

5.8.3.1 When there is doubt as to the suitability of an item for testing, when an item does not conform to the description provided by the Evidence Processing Request, or when the test required is not specified in sufficient detail, the lab shall consult the customer for further instructions before proceeding and shall record the discussion.

5.8.4 Evidence Handling

The Forensic Lab shall have appropriate facilities for avoiding deterioration, loss or damage to the evidence during storage, handling and preparation. The procedure of how to avoid deterioration, loss or damage to the evidence during storage, handling and preparation can be found in the specific discipline analytical methods, where appropriate.

All employees will share in the responsibility of ensuring that evidence is not lost, contaminated, or compromised in some other fashion. In the event that evidence is lost, contaminated or comprised an incident report will be completed.

When special handling instructions are provided with the evidence they shall be followed unless the customer agrees to a change.

The following procedures should be used for the special evidence situations listed below.

- Firearms
  Any firearm submitted to the Forensic Lab shall be in a safe condition (e.g., action secured open with a zip-tie, flex cuff through the barrel, etc.). When a firearm is submitted in a sealed package, it will be received into the Forensic Lab and the safe condition will be confirmed by the first analyst that breaks the packaging seal. Every analyst that handles the firearm must also ensure that the weapon is safe prior to examining it, transferring it to another examiner, or returning it to ACSO Property and Evidence or submitting agency.

- Biohazard/Biodegradable Materials
  Any evidence items with potential biohazard or biodegradable material (urine, blood, feces, saliva,) should be clearly and boldly labeled with a "biohazard" label affixed to the outside of the container.

- Syringes
  The following conditions must be met prior to submission of a syringe with a needle.

  A.) The syringe must be the only drug item in the case or must be needed to establish probable cause.

  NOTE: If there are other suspected controlled substances, they will be analyzed first. In the event the other items do not contain controlled substances, then the syringe can be submitted for analysis if still required for the case. The syringe will be analyzed when necessary to support the probable cause even if other suspected controlled substances are present in the case.

  B.) Submission of a syringe requires prior laboratory approval.

  If the above conditions are not met and the submitting party still wants the syringe analyzed, then either the evidentiary material shall be removed from the syringe (i.e. empty the contents of the syringe into a sealed vial) or evidence rendered safe (i.e. properly remove the needle from the syringe) prior to submission to the laboratory.

- Latent Print Standards/Exemplars (e.g., tenprint cards, palmprint standards)
  Latent Print standards and exemplars are not considered evidence when they are printed copies from a database. All other latent exemplars will be treated as evidence.

- Liquid Contents in Evidence Containers
  Liquid contents submitted within evidence containers are also considered potential evidence. When processing a crime scene or when evidence is submitted to the laboratory with liquid contents, the liquid contents will not be discarded unless the analyst has been given authorization to do so from the submitting party.

5.8.4.1 Evidence Storage (when not in process of analysis)

Evidence will be sealed and stored under secured conditions (locked door, locked refrigerator, limited access, etc.) when not in the process of

analysis. Each analyst will be designated a secure storage location as their primary evidence locker. Other storage locations may be designated as temporary evidence storage lockers as needed.

Evidence will not be permanently stored in the case folder.

Work product, however defined by a given discipline (e.g. extracted DNA product), should be maintained in the same manner as evidence such that the risk of loss, contamination, and/or deleterious change is minimized.

5.8.4.2 Evidence in the Process of Analysis

Evidence in the process of examination shall be in a secure laboratory area. Examples of short periods of time may include, but are not limited to, rest breaks, meal periods, phone calls and short conferences.

All evidence shall be kept in the evidence locker or a secure temporary evidence storage area during the hours the laboratory is vacant. In the event that evidence needs to be kept out to allow for drying or another justifiable reason, it should not be disturbed.

5.8.4.2.1

Evidence is considered to be in the process of examination from the time it is initially opened/accessed for analysis until completion of exams and release of the report (administrative review milestone). The process of examination shall not be open-ended and shall be based upon a justifiable expectation of frequent examination. When the process of examination is lengthy (e.g., greater than 1 year), justification shall be recorded in the case record.

When not being actively accessed, evidence shall be maintained in designated temporary evidence storage. Access shall be limited to personnel designated by the Forensic Lab Manager and containers/items shall be secured to prevent loss or contamination. Containers/items shall be re-sealed following completion of analysis and retained in secure storage until transferred for further examinations or return to the customer.

5.8.4.3 Marking Evidence and Evidence Containers

All evidence examined will be marked with the laboratory case number, the exhibit/item number and the analyst's initials. Should the evidence item not lend itself to marking, the proximal container must be marked.

5.8.4.4 Digital Images Generated by Lab Staff

5.8.4.4.1 The intended purpose of the documentary image is to document observations and/or analytical results. Enhancements may be performed on these images directly and are not required to be tracked. File format is at the examiner's discretion.

5.8.4.4.2 The intended purpose of examination quality images is to record detail so an analyst can use the image to perform a comparison. The specific image resolution and file format requirements will be defined in the discipline's analytical method. Enhancements of examination quality images will be made on a work copy. The enhancements and the order they were applied will be documented either in the case notes or electronically (e.g., Photoshop or LIMS). Any examination quality image used to support a result or conclusion will be a part of the case record and stored in an unalterable fashion. The original image should be archived as soon as practical.

5.8.4.5 Evidence collected from a crime scene by lab staff shall be protected from loss, cross transfer, contamination and/or deleterious change, whether in a sealed or unsealed container, during transport to the Forensic Lab or ACSO Property and Evidence. Where appropriate, further processing to preserve, evaluate, document, or render evidence safe shall be accomplished prior to final packaging. Evidence collected from a crime scene shall be appropriately identified, packaged, and submitted to ACSO Property and Evidence as soon as practical.

5.8.4.6 The Forensic Lab has an individual characteristic database that is used for friction ridge searches.

5.8.4.6.1 Fingerprint database samples are not considered to be evidence.

5.8.4.6.2 Each sample in the fingerprint database shall be uniquely identified by either a Terminal Control Number (TCN), or a combination of State Identification Number (SID) and date of arrest, or name and date of arrest.

5.8.4.6.2.1 Records prior to 2015 were not controlled and may not provide this unique identification. These records shall only be used when another record is not available.

5.8.4.6.3 Fingerprint database samples shall be restricted to the Forensic Lab staff.

5.9 Assuring the Quality of Test and Calibration Results

5.9.1 The Forensic Lab will use a variety of quality control procedures for monitoring the validity of tests and calibrations performed. These include, but are not limited to, the use of certified or secondary reference materials and collection, use of controls, replicate testing using the same or alternative methods, repeat testing (re-examination), correlation of results for different characteristics of an item, and a documented proficiency testing program. The monitoring will be planned and any resulting data will be recorded and reviewed.

The selected methods should be appropriate for the type and volume of the work undertaken. Where practicable, statistical techniques shall be applied to the reviewing of the results.

5.9.1.1 Specification of Controls and Standards

The appropriate controls and standards will be specified in the discipline or sub-discipline technical procedures and their use recorded in the case record.

5.9.2 Quality Control Data

Quality control data shall be analyzed and, where they are found to be outside pre-defined criteria, planned action shall be taken to correct the problem and to prevent incorrect results from being reported.

5.9.3 Proficiency and Competency Testing

The proficiency testing program outlined below applies to analysts in each discipline in which casework is performed.

5.9.3.1 Procedures used for Tests

When completing proficiency or competency tests, analysts shall follow approved technical procedures.

5.9.3.1.1 Additional Responsibilities of the Test Taker

The test taker is responsible to complete assigned tests as they would normal casework (e.g., log in to LIMS, itemize evidence, produce case records and a formal report) within listed timelines following all provided instructions. Any instructions regarding exceptions to working like normal casework will be indicated in test instructions sheet. In addition,

if the assigned analyst is unable to work the test as they would normal casework, they will document this fully in the case notes.

5.9.3.2 Proficiency Testing Program Compliance

The proficiency testing program will comply with the requirements of the accrediting body.

5.9.3.3 Proficiency Testing Frequency

Each analyst engaged in testing activities shall successfully complete a minimum of one internal or external proficiency test per calendar year in each forensic discipline in which they perform casework.

5.9.3.4 External Proficiency Requirements

The Forensic Lab shall successfully complete at least one external proficiency test annually in every discipline for which it holds or seeks accreditation. Test providers approved by the accrediting body will be used where available. When there is not an approved provider available, the laboratory shall locate and use a source of an external test in the discipline.

5.9.3.5 Proficiency and Competency Test Records

Proficiency and competency test documentation maintained by the Quality Assurance Manager shall include, but is not limited to, the following:

- A unique test number
- How samples were obtained or created and expected responses
- Written instructions for completion
- Identity of the test taker
- Date of completion
- Proficiency test results (e.g., copy of the proficiency/competency test case report)
- Any discrepancies noted
- An indication that the test has been reviewed (i.e., copy of Test Review Form)
- Details of Corrective/Preventive Actions taken when necessary
- Dates of analysis
- Originals or copies of all data and notes supporting the conclusions (full details of the analyses/examinations undertaken and the results and conclusions obtained)

5.9.3.6 Test Record Retention

These records will be maintained for five years.

5.9.4 Technical Review

The analyst completing the request for analysis is the person responsible for ensuring that established policies and procedures have been followed and the conclusions reached are accurate (i.e., reasonable and supported by the examination documentation) and properly qualified. Regular and diverse reviews (i.e., reviews by different analysts) are encouraged. Examination records and laboratory reports will be technically reviewed as outlined below.

5.9.4.1 Technical Review Scope

Technical review is a review of the case file and the laboratory report to ensure that the examination has met current peer expectations regarding case management and analysis, proper technical procedures and analytical methods have been followed, and that the analytical findings, interpretation of results, and other documentation support the conclusions in the report.

All disciplines with at least two trained and authorized analysts shall perform 100% technical review (including amended report requests) prior to the release of a report. For disciplines without two trained and authorized analysts, at least 10% of cases shall be technically reviewed. Generally, technical review shall include an administrative review as described below. Technical review shall include, at a minimum, a review of the examination documentation and report to ensure:

- the customer's request has been met or appropriate communication was made to inform the customer that the requested analysis was not conducted
- the analyst followed established procedures and that test parameters (e.g., instrument operating parameters) are appropriate for the examination
- any deviations from established procedures associated with the case file are maintained as part of the numbered pages of the examination documentation
- standards and controls are adequate for the procedure and documented in the case record
- results, interpretations, conclusions and opinions are communicated accurately, clearly and unambiguously and are supported by the examination documentation

- conclusions are properly qualified where necessary or required
- the test report contains all required information.

Technical reviews shall be documented in the Forensic Lab LIMS.

5.9.4.2 Technical Reviewer Qualifications

Technical reviews shall be conducted by individuals authorized by lab management based on expertise gained through training and casework experience in the category of testing being reviewed. In addition, the reviewer shall have knowledge of the lab's technical procedures.

5.9.4.3 Restrictions on Choice of Technical Reviewer

Technical reviews shall not be conducted by the author or co-author(s) of the examination records or test report under review.

5.9.5 Administrative Review

Administrative review is the final review of case records and the laboratory report prior to the release of the report to the customer. Administrative review shall be performed for all requests and shall be performed by someone other than the author of the report.

5.9.5.1 At a minimum, the administrative review shall include:

- A review of the test report for spelling and grammatical accuracy;
- A review of all administrative and examination records to ensure that the records are uniquely identified according to laboratory policy and/or analytical methods;
- A review of the test report to ensure that all key information is included.

Most administrative reviews are performed along with the technical review. While it is preferred that administrative review be performed by a qualified technical reviewer, administrative review may be performed by any analyst or supervisor.

Administrative reviews shall be documented in the Forensic Lab LIMS.

5.9.6 Monitoring of Court Testimony

The testimony of each analyst shall be monitored at least once annually. The supervisor shall review the evaluation with the analyst. Each analyst shall be given feedback, both positive and in any area needing improvement. If the feedback is less than satisfactory an incident form shall be completed and the appropriate remedial action will be identified.

Methods of monitoring testimony include:

- Direct Observation
  If the analyst's testimony was directly observed, the Testimony Review Form shall be completed and submitted to the analyst's supervisor.

- Review of Transcripts
  Transcripts of testimony may be reviewed to evaluate the testimony of an analyst. The Testimony Review Form shall be completed by the supervisor or designee.

- Solicitation by Supervisor
  A supervisor may solicit information from an officer of the court in order to evaluate the testimony of an analyst. The Testimony Review Form or other equivalent documentation shall be completed.

5.9.7 Records of testimony monitoring shall be retained for five years.

5.9.8 Verification of Physical Comparisons

5.9.8.1 Disciplines, such as latent examinations, that make conclusions based on comparisons shall have a verification performed by an authorized individual when the conclusion results in a significant association. This shall be defined in the discipline's analytical method.

5.9.8.1.1 Documentation of the verification shall be contained in the examination notes.

5.9.8.1.2 If the conclusion is not agreed upon in the verification process, the conclusion will move to a less finite opinion. (eg. A latent is concluded to be excluded. The verifier does not agree with this conclusion. The reported conclusion is inconclusive.) The documentation shall clearly show this discussion.

5.10 **Reporting the Results**

5.10.1 General

The results of each test or series of tests carried out by the Forensic Lab shall be reported accurately, clearly, unambiguously and objectively, and in accordance with any specific instructions in the test methods.

The results shall be reported, usually in a test report, and shall include all information requested by the customer and necessary for the interpretation of the test results and all information required by the method used.

In the case of tests performed for customers, or in the case of written agreement with the customer, the results may be reported in a simplified way or orally prior to technical review. All documentation shall be readily available in the lab LIMS.

5.10.2 Report Content

The author of the report is the person responsible to ensure that the distributed report is an accurate representation of the case results. The report should be as brief and clear as possible in order to facilitate understanding by the reader; thus, the use of technical terms should be limited. If used, such technical terms should be defined in such a manner that they are understandable to a lay person.

All report content shall be supported by information that can be located in the case record.

Reports shall contain, as appropriate:

- A title (e.g. "Analytical Report")
- The name and address of the laboratory (and the location where the tests or calibrations were carried out if different from the lab address)
- The laboratory case number unique to the report (to be included on each page of the report)
- Page numbers, if the report is more than one page in length
- The report date shall be the same as or later than the date of all changes in the report.
- The name and address of the investigating agency, attention to the investigating officer (or designee), and the agency case number.

- A description of all evidence received by the analyst and analyzed including the laboratory exhibit number (or other unique identifier).
- References to further work that is being referred by the reporting analyst to other disciplines or laboratories.
- The date of receipt and examination if this is critical to the validity of the test results. This will be defined in the discipline's analytical method if applicable.
- Reference to other items of evidence taken into the possession of the reporting analyst but not examined.
- Analytical results, including the units of measurement where appropriate, and/or conclusions. Note that results and/or conclusions shall be clearly identified. This can be accomplished by clearly identifying results and/or conclusions in the body of the report.
- Inconclusive results shall be qualified, including a qualifying statement describing why no conclusions can be drawn.
- Uncertainty of measurement, when this uncertainty is of significance to the requestor or the interpretation of the results.
- Clear identification of any test results that were generated by subcontractors (see 5.10.6).
- Signature block with signature (may be digital) and title of person(s) authorizing the test report.

References to previous laboratory reports may be included at the discretion of the reporting analyst.

Any information not specified above pertaining to the case and the tests performed shall be maintained in the case record, as it is not possible to include all the case related information in a report.

5.10.3 Test reports

5.10.3.1 In addition to the requirements listed in 5.10.2, test reports shall, where applicable and necessary for the interpretation of the test results, include the following:

a) deviations from, additions to, or exclusions from the test method, and information on specific test conditions, such as environmental conditions;

b) a statement of compliance/non-compliance with requirements and/or specifications;

c) opinions and interpretations (see 5.10.5);

d) additional information which may be requested by the customer.

5.10.3.2 Documentation of sampling shall be in accordance with the requirements in section 5.7.3. When necessary for the interpretation of the test results, supporting information from the documentation will be included in the report.

5.10.3.3 The report shall be released electronically or hard copy after technical and administrative review. The report shall only be released to the prosecutor's office or the submitting agency.

5.10.3.4 Lab staff who issue findings, including writing test reports and providing testimony based on examination records generated by another person(s) shall complete and document the review of all relevant pages of examination records in the case record.

5.10.3.5 When associations are made, the significance of the association shall be communicated clearly and qualified properly in the test report.

5.10.3.6 When comparative examinations result in the elimination of an individual or object, the test report shall clearly communicate the elimination.

5.10.3.7 When no definitive conclusions can be reached, the test report shall clearly communicate the reason(s).

5.10.4 Calibration certificates – The Forensic Lab does not conduct calibrations or issue report/certificates of such.

5.10.5 Opinions and Interpretations

When opinions and interpretations are included in a report, the Forensic Lab shall document the basis upon which the opinions and interpretations have been made. Opinions and interpretations shall be clearly marked as such in a test report.

5.10.6 Test results obtained from subcontractors

When work is subcontracted, the subcontractor shall report the results to the laboratory in writing or electronically. When a test report contains results of tests performed by subcontractors, these results shall be clearly identified.

5.10.7 Electronic transmission of results

In the case of transmission of test or calibration results by telephone, facsimile or other electronic means, the requirements outlined in this manual shall be met (see also 5.4.7).

5.10.8 Format of reports and certificates

Reports will be issued with the title of the testing conducted. The format shall be designed to minimize the possibility of misunderstanding or misuse.

5.10.9 Amendments to test reports

When an amendment to a report is required after issue to correct a substantive error, the change shall be made in the form of a new "Amended Report". Amended reports shall meet all reporting criteria and must be titled "Amended Report".

In addition, a reference to the original report ("Refer to report by John Doe dated 01/01/01") shall be made in the body of the "Amended Report". Amended reports should also reference the information being amended. For example, "Refer to report by John Doe dated 01/01/01. This report has been amended to correct the previously reported agency case number. All results and conclusions remain the same."