Training Outline for the Examination of Hair Evidence

1.0 Purpose – This document provides an outline for training in the collection, preservation, and examination of hair evidence, including the requisite competency testing.

2.0 Scope – This training outline shall be followed by all trainees in the examination of hair, regardless of experience level.

3.0 Module 1 – Casework Familiarization, Search and Recovery of Hair Evidence

3.1 Objectives: Through completion of this module, the trainee shall have developed and demonstrated the theoretical knowledge and/or practical skills in:

3.1.1 The proper procedures for case documentation.

3.1.2 The recognition of hair and other evidential materials and the evaluation of their significance in a particular case.

3.1.3 The detection, collection and preservation techniques appropriate to the different types of trace evidence, including hairs.

3.1.4 The loss, transfer and persistence of trace evidence.

3.1.5 The prevention of contamination and/or loss in handling hair evidence.

3.1.6 The proper procedures for maintaining the chain of custody of the original evidence and any recovered evidence.

3.1.7 The safety procedures for handling potential biohazard materials.

3.2 Reading Assignments

3.2.1 Saferstein R., ed. *The Forensic Science Handbook, vol. 1.* Englewood Cliffs, New Jersey: Prentice Hall, Inc., 1982. Chapter 5: The Forensic Identification and Association of Human Hair.

3.2.2 SWGMAT. “Trace Evidence Quality Assurance Guidelines.” *Forensic Science Communications* 2.1 (2000).

3.2.3 SWGMAT. “Trace Evidence Recovery Guidelines.” *Forensic Science Communications* 1.3 (1999).

3.2.4 D’Andrea, F., F. Fridez and R. Coquoz. “Preliminary Experiments on the Transfer of Animal Hair During Simulated Criminal Behaviour.” *Journal of Forensic Sciences* 43 (1998).

3.2.5 State Crime Laboratory Evidence Guide.

3.3 Exercises

3.3.1 Read the literature pertaining to this module.

3.3.2 Instruction from trainer in the areas of:

3.3.2.1 Documentation.

3.3.2.2 Labeling of evidence.

3.3.2.3 Chain of custody.

3.3.2.4 Proper packaging of hair evidence.

3.3.2.5 Procedures to prevent contamination and loss.

3.3.2.6 Sample selection.

3.3.2.7 Selection of the appropriate detection, collection and preservation techniques for hair and other trace evidence.

3.3.2.8 General laboratory protocols.

3.3.2.9 Health and safety hazards.

3.3.3 Perform casework with qualified Forensic Scientists. This will involve in-depth participation including note taking, collection of hair and mounting of hair.

3.3.4 Process a variety of types of actual or mock evidence using different search techniques including:

- Visual with the aid of lighting techniques.
- Scraping.
- Taping.

3.3.5 Appropriately package the evidence collected.

3.4 Evaluation

3.4.1 Successfully complete a written examination on the reading assignments and exercises.

4.0 Module 2 – Microscopy

4.1 Objectives: Through completion of this module, the trainee shall have developed and demonstrated the theoretical knowledge and/or practical skills in:

4.1.1 How a microscope works.

4.1.2 Proper operation and maintenance of the different types of microscopes.

4.1.3 Proper technique to set up Köhler (or modified Köhler) illumination.

4.1.4 Proper selection of mounting media.

4.2 Reading Assignments

4.2.1 McCrone, W., L. McCrone and J. Delly. *Polarized Light Microscopy*. Ann Arbor, Michigan: Ann Arbor Science Publishers, Inc, 1978.

4.2.2 Saferstein, R, ed. *Forensic Science Handbook.* Volume 1. Englewood Cliffs, New Jersey: Prentice Hall, Inc. 1982. Chapter 9: Foundations of Forensic Microscopy.

4.3 Exercises

4.3.1 Read the literature pertaining to this module.

4.3.2 Instruction from trainer in the areas of:

4.3.2.1 Proper set up of Köhler illumination.

4.3.2.2 Proper color balance of a comparison microscope.

4.3.3 Calibrate the ocular micrometer for all objectives on the trainee's assigned microscope(s).

4.3.4 Selection of mounting media.

4.3.4.1 The trainee shall mount several hairs using different temporary and/or semi-permanent mounting media of known refractive index, such as air, water, xylene, Cytoseal 280.

4.3.4.2 Evaluate the different media to determine which give the best detail in different parts of the hair.

4.4 Evaluation

4.4.1 Successfully complete a written examination taken from the reading assignments and exercises.

4.4.2 Successfully set up a microscope with Köhler illumination.

5.0 Module 3 – Introduction to Hair – Human and Animal Hairs

5.1 Objectives: Through completion of this module, the trainee shall have developed and demonstrated the theoretical knowledge and/or practical skills in the:

5.1.1 Purpose and function of human and animal hair.

5.1.2 Structures of human and animal hair.

5.1.3 Growth of human hair.

5.1.4 Chemical composition of hair.

5.1.5 History of hair examination.

5.1.6 Identification of hair.

5.2 Reading Assignments

5.2.1 Deedrick, D. and S. Koch. "Microscopy of Hair Part 1: A Practical Guide and Manual for Human Hairs." *Forensic Science Communications* 6.1 (2004).

5.2.2 Deedrick, D. "Hairs, Fibers, Crime, and Evidence." Washington D.C.: FBI Laboratory, 2000, p.3. Also found in *Forensic Science Communications* 2.3 (2000).

5.2.3 Kaszynski, E. "Hair Growth: Mechanism and Regulation." *The Proceedings of the International Symposium on Forensic Hair Comparison*, p.23-24. Washington, DC: Federal Bureau of Investigation, US Government Printing Office. 1987.

5.2.4 Petraco, N., et al. "The Morphology and Evidential Significance of Human Hair Roots." *Journal of Forensic Sciences* 33 (1988): 68-76.

5.2.5 Presley, L.A. and K.W. Hensley. *A Historical Review of Forensic Hair Comparisons*. Federal Bureau of Investigation, Publication #88-01.

5.2.6 Robbins, C.R. *Chemical and Physical Behavior of Human Hair*. New York: Springer-Verlag, 1988.

5.3 Exercises

5.3.1 Read the literature pertaining to this module.

5.3.2 Become familiar with the basic appearance of both human and animal hair by using a stereomicroscope. Observe and make notations regarding the general appearance and characteristics that are visible under the lower power magnification.

5.3.3 Become familiar with the appearance of hair under a compound microscope. Using both human and animal hairs, identify the cuticle, cortex, medulla, cortical fusi, ovoid bodies and pigment granules, when present.

5.3.4 Examine synthetic wig-type fibers and human wig hairs.

5.3.5 Classify the growth phases of human hair based on the root type and discuss the indications of forcible removal.

5.3.5.1 Remove several hairs from a used hair brush. Classify the roots.

5.3.5.2 Pull 20 or more head hairs from your head and one other person's head. Classify the roots.

5.3.5.3 Discuss with the trainer whether any of these hairs would be considered "forcibly removed."

5.4 Evaluation

5.4.1 Successfully complete a written examination on the reading assignments and exercises.

5.4.2 Given a series of 10 slides, correctly identify the samples as hair or not hair.

5.4.3 Given 10 slides, correctly identify the growth phase of the root.

6.0 Module 4 – Identification and Classification of Animal Hairs

6.1 Objectives: Through completion of this module, the trainee shall have developed and demonstrated the theoretical knowledge and/or practical skills to:

6.1.1 Recognize animal hair and hair types (e.g. guard, fur).

6.1.2 Prepare scale casts.

6.1.3 Describe the morphological characteristics which are used in classifying animal hairs.

6.1.4 Identify the following animals/families:

- Deer Family (deer, antelope, caribou, moose, elk).
- Commercial Furs (rabbit, mink, muskrat, chinchilla, raccoon, red fox, beaver, seal, bear).
- Domestic Animals (dog, cat, goat, horse, cow, pig).
- Other, including typical road kill (opossum, skunk, squirrel, mouse, raccoon, rabbit, primates).

6.2 Reading Assignments

6.2.1 Deedrick, D. and S. Koch. "Microscopy of Hair Part II: A Practical Guide and Manual for Animal Hairs." *Forensic Science Communications* 6.3 (2004).

6.2.2 Moore, T.D., et al., eds. *Identification of the Dorsal guard Hairs of Some Mammals of Wyoming* (Bulletin No. 14). Cheyenne, Wyoming: Wyoming Game and Fish Department. 1974.

6.2.3 Ogle, R.R. and G.T. Mitosinka. "A Rapid Technique for Preparing Hair Cuticular Scale Casts." *Journal of Forensic Sciences* 18.1 (1973).

6.3 Exercises

6.3.1 Read the literature pertaining to this module.

6.3.2 The trainee shall begin a reference file of animal guard hairs. This shall include North American mammals indigenous to North Carolina, as well as any common exotics.

6.3.2.1 These hairs shall be mounted on slides using an appropriate mounting medium.

6.3.2.2 Make scale casts of each and draw/describe the observed scale patterns.

6.3.3 Describe those macroscopic and microscopic characteristics that serve to distinguish the hair of different animals.

6.4 Evaluation

6.4.1 Given a minimum of 7 samples, correctly identify the species of animal.

7.0 Module 5 – Identification and Classification of Human Hairs

7.1 Objectives: Through completion of this module, the trainee shall have developed and demonstrated the theoretical knowledge and/or practical skills to:

7.1.1 Identify macroscopic and microscopic characteristics of human hair.

7.1.2 Determine somatic origin.

7.1.3 Determine racial characteristics.

7.1.4 Understand the causes and recognize the effects of cosmetic treatments on the macroscopic and microscopic characteristics of hairs.

7.1.5 Recognize the different types of damage to hairs and understand the causes.

7.1.6 Recognize the different types of diseased hairs and discuss their cause.

7.2 Reading Assignments

7.2.1 Deedrick, D. and S. Koch. "Microscopy of Hair Part I: A Practical Guide and Manual for Human Hairs." *Forensic Science Communications* 6.1 (2004).

7.2.2 Linch, C.A. and J.A Prahlow. "Postmortem Microscopic Changes Observed at the Human Head Hair Proximal End." *Journal of Forensic Sciences* 46.1 (2001):15-20.

7.2.3 Ogle, R. and M. Fox. *Atlas of Human Hair – Microscopic Characteristics.* Boca Raton, Florida: CRC Press, 1999.

7.2.4 Petraco, N. and T. Kubic. *Color Atlas and Manual of Microscopy for Criminalists, Chemists, and Conservators*. Boca Raton, Florida: CRC Press, 2004. Chapter 5: Identification and Comparison of Human Hair.

7.2.5 Saferstein R, ed. *Forensic Science Handbook.* Volume 1. Englewood Cliffs, New Jersey: Prentice Hall, Inc. 1982. Chapter 5: The Forensic Identification and Association of Human Hair.

7.3 Exercises

7.3.1 Read the literature pertaining to this module.

7.3.2 Collect and mount hairs from a minimum of forty (40) different individuals.

7.3.2.1 These should include hairs from as many of the following body areas as possible: head, pubic, arm, leg, facial, chest, axillary, eyebrow, eyelash.

7.3.2.2 Hairs should be collected from the three racial groups (Caucasian, Negroid, Mongoloid) and mixed racial individuals.

7.3.2.3 The hairs representing each individual shall be mounted on slides and filed so that a permanent reference file is established as to race, sex and body area.

7.3.3 Examine the mounted hairs macroscopically and microscopically. Appropriate notes / photographs / sketches shall be made. The following characteristics shall be learned and recognized:

7.3.3.1 Cuticle

- Thickness
- Colors
- Scale patterns
- Damage

7.3.3.2 Cortex

- Pigment colors, size, shape, distribution, clumping, quantity
- Pigment pattern & pattern variations
- Ovoid bodies
- Cortical fusi
- Chemical treatment.

7.3.3.3 Medulla

- Patterns (e.g. fragmented, continuous, discontinuous, amorphous)
- Distribution
- Cellular size

7.3.3.4 Shaft

- Diameter
- Form (e.g., arch, buckling, straight, curly)
- Length
- Debris (e.g., cosmetic treatments, soil, blood, and fecal material)
- Cross sectional shapes (round, oval, and flat)
- Parasites (e.g., lice, lice egg cases)
- Damage (e.g., cut, burned, crushed)

7.3.3.5 Root

- Pigments.
- Cortical fusi.
- Force (follicular tags).
- Growth stage (anagen, catagen, and telogen).
- Shapes (e.g., spade, wine glass, bulb, elongated)
- Decomposition (putrid)

7.3.3.6 Tip

- Frayed, Broken, Split
- Abraded
- Cut (dull, sharp, and razor).
- Natural taper
- Damage (crushed, singed)

7.3.4 Collect and observe the characteristics of hairs that have been cosmetically treated by as many of the following methods as possible: dyed, bleached, tinted, sun lightened, straightened, perm/Jheri-curl, frosted, etc.

7.3.5 Collect and observe the characteristics which result from damage to hairs by crushing, cutting (scissors, knife, razor, etc), burning, friction against the scales of the hair, etc.

7.3.6 Observe and describe those macroscopic and microscopic characteristics that serve to distinguish different racial groups.

7.3.7 Observe and describe those macroscopic and microscopic characteristics that serve to distinguish different body area origins.

7.4 Evaluation

7.4.1 Given a series of a minimum of 10 slides, correctly identify the somatic (body region) origin of the hairs.

7.4.2 Given a series of a minimum of 10 slides, correctly identify the racial origin of the hairs.

7.4.3 Successfully complete a written examination covering the reading assignments.

8.0 Module 6 – Hair Comparisons

8.1 Objectives: Through completion of this module, the trainee shall have developed and demonstrated the theoretical knowledge and/or practical skills to:

8.1.1 Describe a hair standard and how one is obtained.

8.1.2 Evaluate the adequacy of a hair standard for comparison purposes.

8.1.3 Describe a "combing" and how one is obtained.

8.1.4 Determine if a single questioned hair is suitable for comparison purposes.

8.1.5 Perform proper microscopic comparisons between questioned hairs and known standards.

8.2 Reading Assignments

8.2.1 Bisbing, R. "Human Hair in Forensic Perspective." *Proceedings of the International Symposium on Forensic Hair Comparison*, Washington, DC: Federal Bureau of Investigation, US Government Printing Office, 1987.

8.2.2 Bisbing, R.E. and M.F. Wolner. "Microscopical Discrimination of Twins' Head Hair." *Journal of Forensic Sciences* 29.3 (1984):780-786.

8.2.3 Deedrick, D. and S. Koch. "Microscopy of Hair Part 1: A Practical Guide and Manual for Human Hairs." *Forensic Science Communications* 6.1 (2004).

8.2.4 Ogle, R. and M. Fox. *Atlas of Human Hair – Microscopic Characteristics.* Boca Raton, Florida: CRC Press, 1999.

8.2.5 Saferstein R., ed. *The Forensic Science Handbook.* Volume. 1. Englewood Cliffs, New Jersey: Prentice Hall, Inc. 1982. Chapter 5: The Forensic Identification and Association of Human Hair.

8.2.6 SWGMAT. "Forensic Human Hair Examination Guidelines." *Forensic Science Communications* 7.2 (2005).

8.3 Exercises

8.3.1 Read the literature pertaining to this module.

8.3.2 Observation and Discussion:

8.3.2.1 The trainee shall observe the trainer performing a hair comparison.

8.3.2.2 The trainer shall explain to the trainee what constitutes an adequate representative sample.

8.3.2.3 The trainer shall explain the process of comparison and the significance of the characteristics observed while comparing two samples.

8.3.2.4 The criteria for arriving at possible conclusions resulting from a comparison shall be discussed.

8.3.3 Variations within a known hair sample

8.3.3.1 Collect both a combed and pulled hair sample from a known source – a minimum of 20-25 hairs from different areas of the head and pubic region.

8.3.3.2 These hairs shall be observed first with the unaided eye and then with the stereomicroscope. All of the hairs shall then be mounted and examined using the light microscope. The similarities and differences within the known hair sample shall be noted. The trainee shall evaluate the variation in color, diameter, medullation and scale features observed along the length of single hairs and among hairs within the sample.

8.3.3.3 This exercise shall be repeated a minimum of four (4) times with hairs from other known sources, preferably from individuals of different racial groups.

8.3.4 Performing hair comparisons

8.3.4.1 The trainee shall select a single hair from each of the known samples and compare this hair to its known source and to all other collected known hair samples.

8.3.4.2 The trainer shall provide the trainee with known hair samples from individuals with similar hair coloring and length for comparison exercises.

8.3.4.3 The trainee shall perform a minimum of five head and five pubic hair comparisons from each of the different racial groups.

8.4 Evaluation

8.4.1 The trainee will be given a set of a minimum of 5 questioned hairs to compare to a minimum of 10 known hair standards. The trainee shall determine correctly the known hair standard from which the questioned hair originated.

9.0 Module 7 – Hair and DNA

9.1 Objectives: Through completion of this module, the trainee shall have developed and demonstrated the theoretical knowledge and/or practical skills in the:

9.1.1 Basics of forensic DNA analysis.

9.1.2 Criteria for suitability of a hair for nuclear DNA (nDNA) or mitochondrial DNA (mtDNA) analysis.

9.1.3 Significance of the nDNA and mtDNA results.

9.1.4 Complementary nature of comparison microscopy and mtDNA testing.

9.1.5 Removal of a hair root and preparation for nDNA testing.

9.2 Reading Assignments

9.2.1 Linch, C., S. Smith and J. Prahlow. "Evaluation of the Human Hair Root for DNA Typing Subsequent to Microscopic Comparison." *Journal of Forensic Sciences* 43.2 (1998): 305-314.

9.2.2 Melton, T., et al. "Forensic Mitochondrial DNA Analysis of 691 Casework Hairs." *Journal of Forensic Sciences* 50.1 (2005):73-80.

9.2.3 Houck, M. and B. Budowle. "Correlation of Microscopic and Mitochondrial DNA Hair Comparisons." *Journal of Forensic Sciences* 47.5 (2002): 964-967.

9.3 Exercises

9.3.1 Read the literature pertaining to this module.

9.3.2 Discussion:

9.3.2.1 The trainer and trainee shall discuss determining the suitability of a hair for nDNA or mtDNA analysis.

9.3.2.2 The trainer shall discuss the complementary nature of hair comparisons and mtDNA analysis and the significance of each.

9.3.3 Examine fifty (50) hair roots and determine their suitability for nDNA analysis.

9.3.4 Prepare ten (10) hair roots for nDNA analysis.

9.4 Evaluation

9.4.1 Successfully complete a written examination covering the reading assignments and exercises.

10.0 Module 8 – Casework, Interpretation and Reporting

10.1 Objectives: Through completion of this module, the trainee shall have developed and demonstrated the theoretical knowledge and/or practical skills to:

10.1.1 Reach scientifically supportable conclusions based upon analytical results.

10.1.2 Perform independent casework.

10.1.3 Write Laboratory Reports with appropriate limitations, interpretations, conclusions and statements.

10.2 Reading Assignments

10.2.1 Barnett, P. and R. Ogle. "Probabilities and Human Hair Comparison." *Journal of Forensic Sciences* 27.2 (1982):272-278.

10.2.2 Deedrick, D. and S. Koch. "Microscopy of Hair Part 1: A Practical Guide and Manual for Human Hairs." *Forensic Science Communications* 6.1 (2004).

10.2.3 Exline D.L., F.P. Smith and S.G. Drexler. "Frequency of Pubic Hair Transfer During Sexual Intercourse." *Journal of Forensic Sciences* 43.3 (1998): 505-508.

10.2.4 Gaudette, B. "A Supplementary Discussion of Probabilities in Human hair Comparison." *Journal of Forensic Sciences* 27.2 (1982): 279-289.

10.2.5 Gaudette, B. and A. Tessarola. "Secondary Transfer of Human Scalp Hair." *Journal of Forensic Sciences* 32.5 (1987): 1241-1253.

10.2.6 Gaudette, B. and E. Keeping. "An Attempt at Determining Probabilities in Human Scalp Hair Comparison." *Journal of Forensic Sciences* 19.3 (1974): 599-606.

10.2.7 Gaudette, B. "Probabilities and Human Pubic Hair Comparisons." *Journal of Forensic Sciences* 21.3 (1976): 514-517.

10.2.8 Gaudette, B. "Some Further Thoughts on Probabilities and Human Hair Comparisons." *Journal of Forensic Sciences* 23.4 (1978): 758-763.

10.2.9 Gaudette, B. "The Future of Forensic Hair Comparison." *The Proceedings of the International Symposium on Forensic Hair Comparison*, Washington, DC: Federal Bureau of Investigation, US Government Printing Office, 1987. P. 127-136.

10.2.10 Mann, M. "Hair transfers in Sexual Assault: A Six Year Case Study." *Journal of Forensic Sciences* 35.4 (1990): 951-955.

10.2.11 Oien, C. "Forensic Hair Comparison: Background Information for Interpretation." *Forensic Science Communications* 11.2 (2009).

10.2.12 Wickenheiser, R. and D. Hepworth. "Further Evaluation of Probabilities in Scalp Hair Comparison." *Journal of Forensic Sciences* 35.6 (1990): 1323-1329.

10.3 Exercises

10.3.1 Read the literature pertaining to this module.

10.3.2 Under the direct supervision of the trainer, the trainee will process existing cases. The following aspects of casework will be covered:

- Determination of the appropriate type of analysis based upon the circumstances of the incident.
- Initial intake and evidence handling procedures.
- Note taking.
- Collection of hair for further analysis.
- Slide preparation.
- Examination of slides.
- Results of analysis.
- Report writing.

10.3.3 Discussion:

10.3.3.1 The trainer and trainee shall discuss and understand the conclusions from a hair comparison. The trainer and trainee shall discuss and understand how the meanings and limitations of conclusions from a hair comparison differ. The trainer and trainee shall discuss factors that affect the strengths and weaknesses of an association.

10.3.3.2 The trainer and trainee shall discuss and understand the difference between, and significance of, Type I and Type II errors in hair comparisons.

10.4 Evaluation

10.4.1 The trainee shall be given two (2) mock cases to be treated as actual cases.

10.4.2 Successfully complete a final written examination covering all aspects of training.

10.4.3 Successfully complete a final competency test consisting of matching 100 questioned hair samples to 100 known hair standards.

11.0 Module 9 – Preparation for Court

11.1 Objectives: Through completion of this module, the trainee shall have developed and demonstrated the theoretical knowledge and/or practical skills to:

11.1.1 Demonstrate courtroom procedures

11.1.2 Present the results of a hair examination in court effectively.

11.1.3 Describe the legal and ethical obligations of an expert witness.

11.1.4 Describe the admissibility standards set by *Daubert* and *Frye*.

11.2 Reading Assignments

11.2.1 CVs or Statements of Qualifications of other Forensic Scientists.

11.2.2 *Daubert v. Merrill Dow Pharmaceuticals*, 509 U.S. 579 (1993).

11.2.3 *Frye v. United States*, 293 F. 1013 (DC Cir. 1923).

11.2.4 Feder, H.A. and M.M. Houck. *Succeeding as an Expert Witness*, 4th ed. Boca Raton: CRC Press, 2008.

11.2.5 Houck, M., et al. "Locard Exchange: The Science of Forensic Hair Comparisons and the Admissibility of Hair Comparison Evidence: Frye and Daubert Considered." *Modern Microscopy Journal* accessed at http://www.modernmicroscopy.com/main.asp?article=36.

11.2.6 Houck, M. "Statistics and Trace Evidence: The Tyranny of Numbers." *Forensic Science Communications* 1.3 (1999).

11.2.7 Kogan, J.D. "On Being a Good Expert Witness in a Criminal Case." *Journal of Forensic Sciences* 23.1(1978): 190-200.

11.2.8 Philipps, K.A. "The Nuts and Bolts of Testifying as a Forensic Scientist." *Journal of Forensic Sciences* 22.2 (1977): 457-463.

11.2.9 Ron Smith and Associates, Inc. "Courtroom Testimony Techniques: Success Instead of Survival." Collinsville, Mississippi.

11.2.10 Tanton, R.L. "Jury Preconceptions and Their Effect on Expert Scientific Testimony." *Journal of Forensic Sciences* 24.3 (1979): 681-691.

11.3 Exercises

11.3.1 Read literature pertaining to this module.

11.3.2 Prepare or update a CV or Statement of Qualifications reflective of experience in hair examination.

11.3.3 Prepare a series of qualifying questions and answers to those questions for use in a voir dire.

11.3.4 Observe pretrial conferences and courtroom testimony of qualified Forensic Scientist, if possible.

11.4 Evaluation

11.4.1 Using the mock cases from Module 8, successfully complete a moot court or roundtable discussion.

12.0 Records

- Training file
- Training checklist

13.0 Attachments – N/A

Revision History		
Effective Date	Version Number	Reason
09/17/2012	1	Original Document
10/18/2013	2	Added issuing authority to header
08/29/2014	3	Updated header to Physical Evidence Section – Trace Unit, issuing authority to Physical Evidence Section Forensic Scientist Manager. Updated all references in procedure from Trace Evidence Section to Trace Unit. Grammar