Syllabus Qualified Environmental Sampler Workshop

Day one (Environmental Sampling)

Introduction to Qualified Environmental sampler (8-10 AM)
Environmental Sampler, requirements for laboratory testing (compliance/restoration)

Water in the environment (10:15 – 12:15 PM).
Water Cycle, water in permafrost environments, watersheds and aquifers
Sources of water and contaminants, drinking water versus recreational water, water quality standards.
QA/QC protocol, site assessment, data quality objectives (sampling strategy, sampling design), health and safety plan.

Lunch Break (12:15 – 1:15 PM)

Lab: Sampling and field testing program (1:15 – 3:15)
Preparation for field sampling, establishing a field
sampling plan, proper planning, sample documentation and Chain of Custody (COC) procedures, sample packaging, handling and transportation.

Lab: (3:30 – 5:00 PM) Introduction to field testing instruments, handling and calibration - Questions and discussion

Day two (Surface and Groundwater)

Lab: Case study of nearby surface water (8:30-10:00),
Outline of sampling plan, preparation for field sampling, packing, QA/QC protocol.

Lab: Calibration of instrumentation. (10:15 – 12:15 PM) Representative sampling, preparation for field sampling, instrument calibration (YSI, turbidity meter).

Lunch Break (12:15 – 1:15 PM)

Field exercise (1:15 -3:00): Sample collection (surface water), testing of chemical and physical water characteristics (YSI, Hach kit) pH, conductivity, oxygen content, temperature, turbidity and other specific tests, Sampling of surface water, sample preservation (filtration, acidification, and sampling without headspace), packaging, COC and shipping.

Lab exercise: (3:15-5:00), Final packing of cooler, COC preparation and shipping. - Questions and discussion.

Day three (Groundwater)

Introducton to groundwater (8:00 – 10:00 AM PM)
Groundwater aquifers and flow, sampling strategies of groundwater, sampling procedures and equipment (pump), safety

Lab: (10:15 – 12:15 PM)
Calibrating field monitoring equipment, creating sampling plan, gathering and packing of sampling equipment and container, COC documentation.

Lunch Break (12:15 – 1:15 PM)

Field exercise: (*1:15 – 4:00PM*)
Sampling of groundwater well (measuring the head, pumping, sampling with automated pump and bailer), Field testing and measurement of water using flow cell. Sample collection, preservation, storage and shipment.

Lab exercise (4:00-5:00):
Final packing, COC and shipping of samples - Questions and discussion

Day four (Soils)

Soil sampling (8 – 10 AM)
Introduction to soils in Arctic Environments, Permafrost
Physical and chemical properties, engineering properties, soil classification, soil sampling equipment,

Sampling strategies, methods of soil assessment (10:15-11:00 PM)
Contaminated (Hydrocarbons) site assessment and sampling, safety
Hazardous/non-hazardous, levels of contamination, soil collection container and preservation, storage, holding times, packing, and shipping. Field screening methods (PID, Petroflag, Gas Chromatograph)

Lab: Soil sampling procedures and restoration (11:15 – 12:15 PM)
Preparation for soil collection, planning of field sampling, packing of cooler and sampling equipment.

Lunch Break (12:15 – 1:15 PM)

Field exercise (2:30 – 5:00 PM):
Soil excavation/sampling using shovel and Auger, soil description, sample collection and preservation. Packing for shipment, COC.

Lab exercise: basic soil properties: grains size distribution. Determine grain size distribution by settling and sieving method and classify soil based on grain size - Questions and discussion.

Certification (3:30 to 5:00 PM)