

Set-up & Pre-Collection Checks

- **Logistics & Organization:**
 - Verify all equipment for collection are with collection team
 - Ensure all sampling containers have the appropriate label and are arranged for efficient collection.
 - Charge all devices needed for collection and field.
 - Freeze blue ice packs for 3-24hrs to be fully frozen. Lay the pack flat to ensure the pack freezes evenly.
- **Permitting & Safety:**
 - Confirm permitting for collection site
 - Notify necessary groups if the team is going to a remote location without cell service in case there is an emergency. Let them know the sites you are going and the approximate time you will be back in cell service range.
 - Bring enough drinking water for the collection (general guidelines):
 - Cool conditions(4–16°C): 0.5L per person, per hour.
 - Warm/Hot conditions (16–32°C+): 0.7L per person, per hour.
 - Avoid carrying too much water, plan refills with a filter and if field work will take 5hr+ bring electrolytes and/or sodium mix to avoid exercise-associated hyponatremia
- **Support:** Ensure everything is ready to secure samples upon return from the field and check-in samples. If possible or needed, set-up lab prior to departing.

MATERIALS: Pre-labeled Whirl-Paks (4 oz and 1 Liter), Sterile scoop, Reinforced nitrile gloves, power banks and chargers, food/snacks, ice packs, cooler for sample transport, drinkable water, region specific gear.

Collection

- **Arriving at the site**
 - Assess the site for safety - team safety is always first, and be aware of quickly changing environmental conditions. Survey the scene for 5-10min to select sites for geochemistry, collection and photography. Once assessment is complete, select a location to set-up gear and collect equipment.

Metadata Collection:

- Collect the following information about each sample:
 - Field ID
 - Time of Collection
 - Type of Sample
 - Depth (m) (if water/sediment)
 - Temperature (C)
 - Photo of sample
 - Additional geochemistry

Sampling Order:

- Collect in the following order per site to minimize contamination between samples:*
1. Water
 2. Sediment
 3. Soil
 4. Biomass

Water Sampling

1. Use pre-labeled 1 L Whirl-Pak.
2. Submerge the open end of the bag into the water to the desired depth and allow to fill passively. Twist 3x to seal.
3. Store upright on ice packs until sample can be transported to the lab.

Soil Sampling

1. Identify the sample and prepare a pre-labeled 4 oz Whirl-pak.
2. Use a sterile scoop to collect the top 1–3 cm.
3. Seal by twisting tabs 3×, store upright on ice packs until sample can be transported to the lab.

Sediment Sampling

1. Identify the sample and prepare a pre-labeled 4 oz Whirl-pak.
2. Use a sterile scoop to collect the top 1–3 cm.
3. Transfer into 4 oz Whirl-Pak with ~25% adjacent water (~15 mL).
4. Seal by twisting tabs 3×; store upright on ice packs until sample can be transported to the lab.

Biomass Sampling

1. Use sterile scoop/tweezers to collect 1–5 mm of active surface layer.
2. Transfer into 4 oz Whirl-Pak with enough adjacent water to form slurry (~15 mL).
3. Seal bag and store in mesh bag.

- **During Collection**
 - Handle all samples with reinforced nitrile gloves.
 - Avoid overfilling bags; ensure 3 twists minimum when sealing.
 - Monitor samples once on ice packs to maintain the correct storage temperature and avoid leaks.

- **Safety & Logistics**
 - Depending on the site, be wary of excess heat (i.e. geothermally heated water/steam), chemical burns from academic or alkaline environments, unstable ground. Natural hot springs and venting sites may also expel noxious gases (i.e. hydrogen sulfide)

Post-Collection

- **Lab Transfer**
 - Keep samples upright during transportation.
 - Take photos of the metadata taken in the field as a backup. Upload to the cloud.
- **Initial Handling**
 - Confirm each Whirl-Pak is sealed and undamaged.
 - Stand all samples upright; avoid stacking or crushing.
 - Keep samples on ice or at 4 °C until check-in.
- **Final Notes**
 - Flag any compromised samples (leaks, contamination, missing metadata).
 - Notify person leading Check-In when samples are ready for intake