

Southeast Coast Network

National Park Service
Inventory & Monitoring Program



Standard Operating Procedure (SOP) # 1.1.6 Shipping and Tracking of Laboratory Samples

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Summary

The following Standard Operating Procedure (SOP) outlines the procedure for shipping and tracking of laboratory samples collected during fixed-station monitoring and coastal assessment synoptic sampling. The purpose of this SOP is to ensure that samples are packed properly and shipped in an efficient manner that allows tracking of shipments and notification of arrival to remote lab. Some of these procedures comply with methods suggested by USEPA (2009); others have evolved over the last five years and are subject to change frequently depending upon the requirements of shippers and the labs contracted to analyze samples. Packing and shipping procedures vary depending on the type of samples being shipped.

Revision Log

Previous Version #	Revision Date	Author	Changes Made	Reason for Change	New Version #
1			Citation updated	Protocol publication	1.1

Equipment/Materials List

- Shipping containers (coolers, boxes, etc.)
- Shipping labels
- Ice (wet ice, dry ice, or ice substitute such as Blue Ice)
- Laboratory Data Sheets

SECN currently uses Fed-Ex to facilitate sampling and equipment logistics at remote park areas. SECN has a dedicated Water Branch account that facilitates shipment tracking and arrival notification as well as simplified billing. All shipping conducted as part of Water Branch operations is required to use this account. Contact Brian Gregory for account information.

Water Samples

Nutrients

- Stored (chilled or frozen) in 125 mL acid washed bottles.
- Confirm labels have the correct site name and collection date.
- Confirm that all information on the field sampling sheet matches the sample label on bottle.
- Make copies of the field sampling sheets and seal it in a plastic bag.
- Place the chilled or frozen sample and sampling sheet in a cooler with wet ice/blue ice.
- Ship samples priority overnight to Chesapeake Biological Laboratory.

Chlorophyll *a*

- Stored (frozen) in labeled aluminum foil pouches and inside sealed plastic bags.
- Confirm that the labels on the tin foil and plastic bag have the correct site name and collection date.
- Confirm that all information on the field sampling sheet matches the sample.
- Make copies of the field sampling sheets and seal in a separate plastic bag.
- Place the frozen chlorophyll *a* sample in the cooler with the frozen nutrient sample (if applicable) and all sampling sheets.

Ship samples priority overnight together with nutrient samples (if applicable) to Chesapeake Biological Laboratory.

Sediment Samples

Grain Size and Total Organic Carbon (TOC)

- Stored in 125 mL bottles (grain size) and 60 mL bottles (TOC).
- Confirm that the labels with sample ID are completed and covered with clear tape.
- Seal the lids with plastic (electrical) tape.
- Place each of the bottles in separate small (sandwich size) self-sealing plastic bags.
- Place the bags in a 1 gallon sealing plastic bag and place inside cooler, allowing for enough space for wet ice in the cooler.

Organics and Metals

- Stored in one 500 mL glass jar (organics/metals).
- Confirm that the labels with sample ID are completed and covered with clear tape.
- Seal the lids of glass jars with plastic (electrical) tape.
- Wrap each of the 500 mL glass jars in bubble wrap and place in separate 1-quart plastic bags.
- Place the bags in a 1-gallon sealing plastic bag and place inside cooler, allowing for enough space for wet ice in the cooler.
- Do not hold these samples longer than two weeks.

Benthic Invertebrate Samples

- Preserved in 100% buffered formalin and sealed at the site with plastic (electrical) tape.
- Confirm that the label with sample ID is completed and covered with clear tape.
- Check to make sure jars are sealed with electrical tape.
- Place up to ten 1-L jars in each cooler.
- Surround the jars with crumpled newspaper, vermiculite, or other absorbent material.

- Samples should be shipped immediately; however, they can be held for up to two weeks and shipped in batches to the laboratory for analysis.

Packing cooler and use of ice during shipping

It is recommended to use non-toxic reusable freezer packs (e.g., also known as “blue ice”) to maintain temperature requirements instead of bags of regular wet ice to prevent leakage. Alternatively, fill 1-gallon freezer bags (number of bags depends on size of cooler and number of samples) full of ice and label as “ICE” to prevent misidentification by couriers of any water leakage as a possible hazardous material spill.

Although acceptable, and sometimes preferable, for shipping chlorophyll *a* samples, the use of dry ice is not recommended for shipping any samples in glass bottles due to the potential for the freezing liquid to expand and break the container. If using dry ice to ship chlorophyll *a* samples, note the presence of dry ice on the FedEx shipping label and use a hazardous shipping sticker for dry ice on the outside of the cooler. The weight estimate for dry ice must be placed on both the shipping label and dry ice sticker. Dry ice is recommended for shipping chlorophyll *a* filters if there is a chance that filters may become contaminated by water produced by melting of wet ice.

- Wet ice should be **double bagged and sealed** to further minimize chance of leakage. Line appropriately sized cooler with a large 30-gallon plastic bag (or smaller for smaller coolers) to prevent leakage. Place bagged samples and ice packs inside the cooler liner. Use as many ice packs as necessary so that the cooler is nearly full. Seal the liner.
- Use packing material (bubble wrap, foam peanuts, etc.) to fill the excess space at the top of the cooler to prevent damage during shipping.
- Secure the cooler with strapping tape.

Laboratory Address and Contact Info:

Carl Zimmerman
Chesapeake Biological Lab
Nutrient Analytical Services Lab
1 Williams Street
Solomons, MD 20688

Phone number: 410-326-4281

Literature Cited

U.S. Environmental Protection Agency. 2009. National Coastal Condition Assessment Field Operations Manual. EPA-841-R-09-003. U.S. Environmental Protection Agency, Washington, D.C.