

Shoreline Sediment Sampling Protocols for NRDA

Sampling Objectives

The focus of this document is collection of sediment samples by hand / hand tools (i.e. without use of specialized sampling devices or equipment) in the intertidal zone. Sediment samples may be collected to support various objectives during a natural resource damage assessment. Samples may be taken to investigate an exposure pathway; to investigate levels at which biota in sediment are exposed; to assist in evaluations of weathering and fingerprinting of oil; to measure sediment characteristics for interpreting chemical and biological results; and for other reasons. These protocols do not address sediment sampling objectives; prior to collecting samples a plan should be drawn up that clearly establishes specific sampling objectives including the types (e.g. depth of sample, composite versus discrete) and locations of samples to be collected. These protocols support natural resource damage assessments by providing the procedures that ensure sample integrity and the reliability of chemical characterizations as evidence in a damage assessment case. For detailed step-by-step instructions on how to collect various types of samples, refer to your sampling plan or other agreed upon SOPs.

Sample Volumes Required for Common Analyses

<u>Type of Analysis</u>	<u>Sample Volume</u>
PAHs (including alkylated PAHs), TPH/THC, and TOC	Two each 250 mL (8oz) glass jars filled $\frac{3}{4}$ full; (Alternatively, one 500 ml (16 oz) jar filled $\frac{3}{4}$ full)
Grain Size	100 g in resealable (e.g. Ziploc) bag or 4 oz jar

Sampling Equipment/Containers and Collection Methods

- Collect shoreline sediment samples (wearing clean nitrile or other non-contaminating gloves) by scooping sediment into the sample container using a clean utensil (e.g. wooden tongue depressor, spoon). To avoid potential cross-contamination, use pre-cleaned disposable utensils or wrap utensils in foil and discard foil between samples.
- Avoid or remove stones, sticks, and other debris; do not include visible oil or tar balls (see separate protocol for collection of oil samples if that is the intent).
- Sediment samples for PAHs and TPH/THC should be placed in glass containers with Teflon-lined lids, certified clean for semi-volatile analysis. Grain size samples may be placed in a plastic bag or small jar.
- Each sediment sample for PAHs and TPH/THC may be placed in one 500 ml (16 oz) jar filled $\frac{3}{4}$ full, or in two 250 ml (8 oz) glass jars filled $\frac{3}{4}$ full (to facilitate shipping and handling). If sample volume is split between two containers, both containers should receive the same sample ID (label the first container, "XYZ...1 of 2" and the 2nd container, "XYZ...2 of 2") and recorded on a single line of the CoC form.
- If placing sediment in more than one jar, or if compositing samples from more than one location, the sample must be mixed before placing in the jar(s). This should be performed in a disposable aluminum pan, on aluminum foil, or on other disposable, non-contaminating material.
- Segregate dirty/clean areas. Lay out clean substrates to work on and replace frequently.

Preservation/Holding Times

- Immediately place all sediment samples into coolers and keep on ice until prepared for shipment.
- Sediment samples should be shipped for arrival at the lab within 7 days of collection. Sediment samples that will not be analyzed within 7 days of collection must be frozen for long term storage by the lab (with the exception of grain size samples, which should not be frozen).

Labeling / Documentation / Other Considerations

- Prepare sample labels following sample ID protocol provided in the instructions from the trustee data management team.
- Take precautions to avoid cross-contamination of the site from oil on boots and shovels.
- Affix sample ID labels to each container and cover with clear tape wrapped around the entire container circumference.
- Preserve all original field notebooks, which should be signed and dated. If crossing out or correcting any entries, date and initial when making the changes. Documentation is critical; original records will be gathered and kept on file by the trustees.
- Record the presence of oil, weather conditions, etc. in field notes. Record GPS coordinates for each sample. Take photographs of the sampling locations and sample collection itself if possible; make sure each photograph or series can be later associated with the corresponding sampling locations (e.g. through use of GPS Photolink software or by keeping a detailed photo log). Do not delete or alter any photos (see separate NRDA Field Photography Guidance).
- Ship known oil-contaminated samples separate from non-contaminated or low contaminated samples to reduce risk of cross-contamination.
- See related NRDA protocol documents for specific sample shipping and notification/ sampling documentation instructions.