Attachment T28: Project-Specific Information on Processing Fish Tissue Samples

I. Introduction

AttachmentT1 of the Benthic QAPP Addendum No. 5 (Alpha Analytical's Tissue Preparation and Homogenization SOP, OP-003, Revision 3, April 29, 2010) presents the laboratory SOP for the processing and preparation of fish tissue samples, including rinsate blank preparation and decontamination of tissue processing equipment, for the Lower Passaic River Restoration Project (LPRRP) tissue samples. The project-specific SOP for decontamination procedures of field equipment are presented in Attachment I of the Fish/Decapod QAPP (Windward 2009). This attachment presents additional details on preparing specific samples in the laboratory not specified in the laboratory SOP (Attachment T1)[1]. If there is a discrepancy between the laboratory SOP (Attachment T1) and Attachment T28, Attachment T28 will be followed.

II. Sample Compositing and Processing

All sample preparation (e.g., compositing and homogenization) will occur at the analytical laboratory. Once the fish samples are all collected and submitted to the laboratory, Windward will prepare an individual and compositing sample analysis memorandum that will provide the plan for chemical analysis of the individuals collected. A compositing plan for tissue samples collected from above Dundee Dam will be determined following the completion of collection, taking into account the compositing plan used for analyzing fish samples from the LPRSA. Once the individual and composite sampling analysis memorandum is approved by USEPA, sample homogenates will be prepared in the laboratory based on species-specific sample types as presented in Worksheet 11 of this QAPP Addendum.

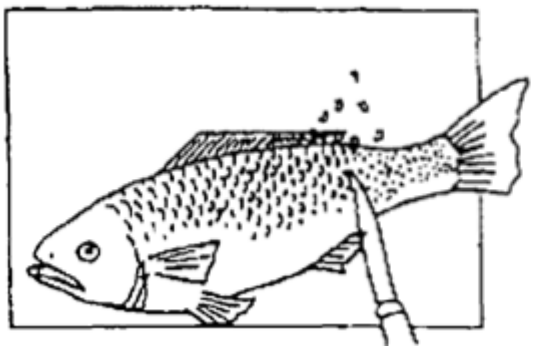
The decision to analyze fish species as skin-on or skinless fillets is based on USEPA guidance and typical consumption practices (USEPA 2000). Scaled fish (including perch, largemouth bass, and carp) will be analyzed as skin-on fillets after removing scales. Scaleless fish (including catfish, brown bullhead, and eel) will be analyzed as skinless fillets. For all composites, multiple individuals per sample are targeted to meet the anticipated minimum sample mass requirements (150 g pre-homogenization and 105 g post-homogenization). Additional tissue mass will be needed for certain samples to accommodate USEPA split sample objectives.

[1] This was originally presented as the Addendum to Attachment O (also Attachment T1) in the Fish/Deacpod QAPP (Windward 2009) and has been modified for the Benthic QAPP Addendum No. 5.

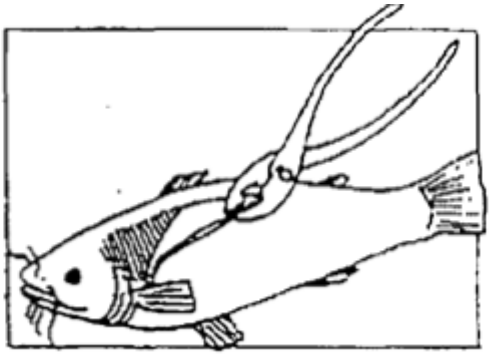
III. Additional details on fillet sample preparation

The laboratory procedure for tissue preparation and homogenization is presented in the Attachment T1 prepared by Alpha Analytical Laboratory (Tissue Preparation and Homogenization SOP ID No. 2166 (OP-003), Revision 3, July 25, 2012). Fish fillet preparation procedures are presented in Figure 1 (Malcolm Pirnie et al. 2006). White perch,largemouth bass (or surrogate bass species), and carp fillets will be prepared with skin remaining on but scales removed.

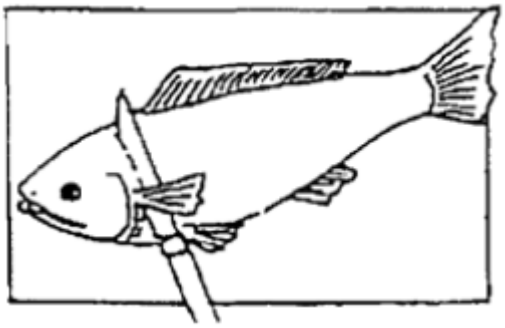
Figure 2: Fish Fillet Preparation Procedures



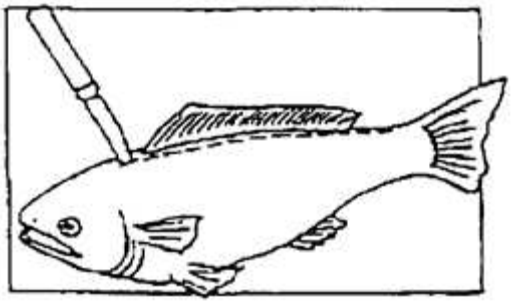
1. Removing Fish Scales: Remove the scales (by scraping with the edge of a knife) and rinse the fish with deionized water. Scales are not included in the carcass tissue.



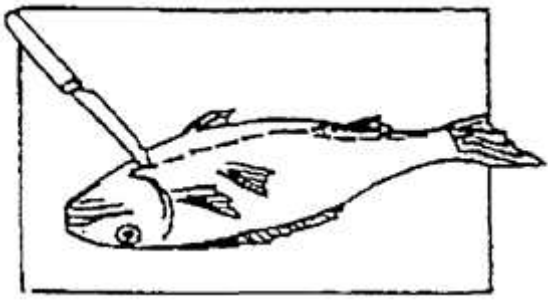
1b. Removing Skin on Scaleless Fish: Cut the skin behind the gill cover. Using a knife blade, pliers or other cleaned utensils, pull the skin off towards the tail of the fish. Note: This step applies only to catfish and other scaleless fish.



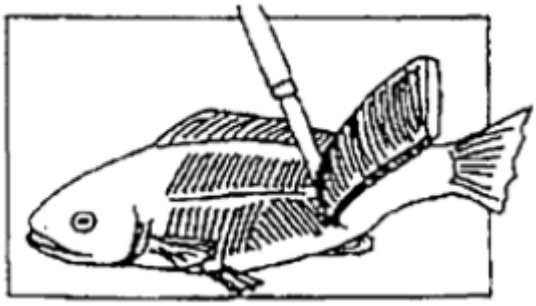
2. To fillet the fish, make a cut behind the entire length of the gill cover, cutting through the skin and flesh to the bone.



3. Make a shallow cut through the skin (on either side of the dorsal fin) from the top of the head to the base of the tail.



4. Make a shallow cut along the belly from the base of the pectoral fin to the tail. A single cut is made from behind the gill to the anus and then a cut is made on both sides of the anal fin. Do not cut into the gut cavity as this may contaminate fillet tissue.



5. Remove the fillet.

IV. Additional details on preparing tissues for shipment

1. Wrap each bagged sample jar in bubble wrap and secure with tape or place sample jar in a bubble bag and seal.

2. Fill temperature blank with water and freeze. Once frozen, place the temperature blank container inside the cooler among sample jars.

3. Complete the appropriate chain-of-custody form for each sample container. Place chain-of-custody in a small plastic bag inside the cooler.

4. Pack the samples in a cooler containing wet and dry ice. Ensure that the dry ice does not physically touch the sample jars. Ensure the appropriate labels are applied to the cooler for the dry ice documentation.

5. Sign, date, and affix custody seals to the top of the cooler. Send the cooler via overnight delivery (avoid sending on Friday for Saturday delivery whenever possible).

V. References

Malcolm Pirnie, Earth Tech, Battelle. 2006. Lower Passaic River Restoration Project. Draft field sampling plan. Volume 2. Prepared for US Environmental Protection Agency, US Army Corps of Engineers, and New Jersey Department of Transportation/Office of Maritime Resources. Malcolm Pirnie, Inc., White Plains, NY; Earth Tech, Inc., Bloomfield, NJ; Battelle, Stony Brook, NY.

USEPA. 2000. Guidance for assessing chemical contaminant data for use in fish advisories. Volume 1: Fish sampling and analysis. Third ed. EPA 823-B-00-007. US Environmental Protection Agency, Washington, DC.

Windward. 2009. Lower Passaic River Restoration Project. Lower Passaic River Study Area RI/FS. Quality Assurance Project Plan: Fish and decapod crustacean tissue collection for chemical analysis and fish community survey. Final. Prepared for Cooperating Parties Group, Newark, NJ. Windward Environmental LLC, Seattle, WA.