STANDARD OPERATING PROCEDURE 2.1.1.4

Instructions for Constructing a Perforated Bucket Sampler to be Used as an Extended Holder for the Direct Filling of Sample Bottles

1.0 INTRODUCTION

Obtaining samples from non-wadeable waters can be challenging. Sample poles can be used to reach out and obtain surface water samples but their reach is limited and waterbody access may not be available or practical. A structure crossing over a waterbody (bridge, overpass…) can offer sampling access by using the "rope and bucket" method.

The "rope and bucket" method has several drawbacks. Water flows may hamper the bucket from quickly sinking. A bucket full of water can be excessively heavy and usually is more water than is needed for testing. Fast flowing waters can still be unsafe to sample. Water collected in the bucket needs to be transferred into a suitable sample container. This Standard Operating Procedure outlines a method to make a bucket sampler can avoid or minimize these drawbacks.

This bucket sampler is weighted so it will not float on the surface. It has places inside it for your sample containers. After the bucket has been lowered and the sample bottles are filled the bucket can be retrieved. Since the bucket has drain-holes, you only are pulling up the bucket and water filled sample containers and not an entire bucket of water. This sampler is a safer and more manageable because it only acts as an extended holder (carriage) for your sample containers.

1.1 Purpose

This Standard Operating Procedure (SOP) describes a method to create a bucket sampler.

2.0 MATERIALS

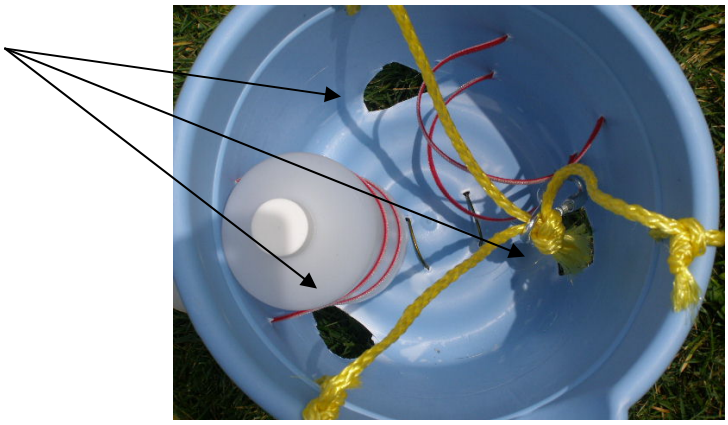
Bucket
Rope
Sample container restraints (Straps: self-closing loop type; hose clamps; plastic or wood blocks and bands made from inner tubes)
Weight* (Diving belt weight, small dumbbell,…)
Fasteners for attaching weight to bucket (Zip ties, wire, bolts/washers/nuts…)
Drill and bits
Awl
Knife

*Alternatively a small layer of a heavy matrix (epoxy…) can be poured into the bucket that will weigh it down.

3.0 PROCEDURES

1. Start with an ordinary bucket.

2. Cut several drain-holes into the bucket



3. Place several well placed sample container straps within the bucket

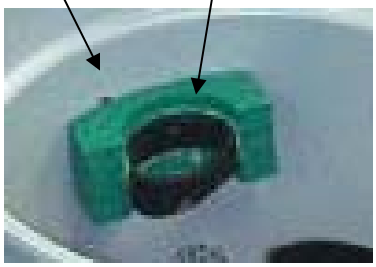
<u>Option 1</u>

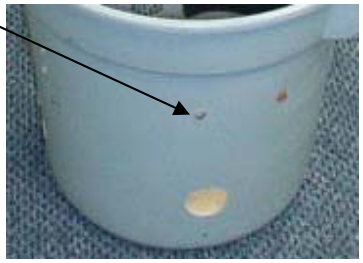
Cut 2 pairs of slits.

Insert sample container holder(s).
In this example a hook an loop closure strap is used.

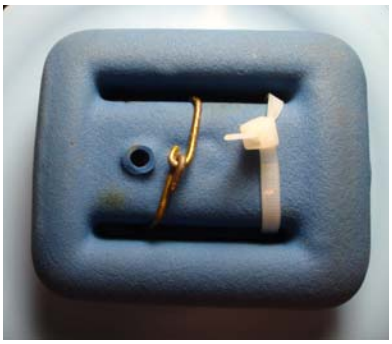
<u>Option 2</u>

In this example the holder was cut out of plastic (wood could also be used).
A section of bicycle inner tube was used to secure to sample container.
The whole apparatus is securely glued and screwed onto the bucket.



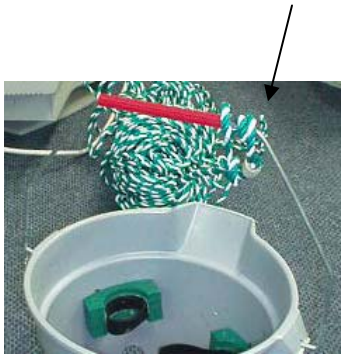


4. Attach a weight to the bottom of bucket. This example uses a dive weight being attached with two methods, cable ties and wire.

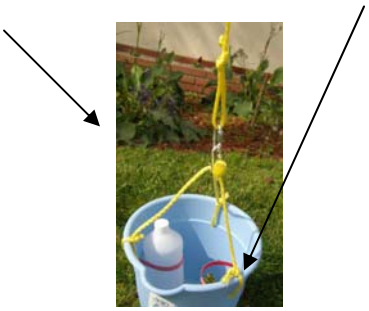


5. Add a rope to the bucket.

If a handle is securely fastened to the bucket a rope can be tied to it.



A bridle can also be made. This is a more securer attachment for the rope.



Examples of completed bucket samplers:

Video showing the use of a bucket sampler can be found on the distance learning CD SWAMP Field Methods Course available from the California State Water Resources Control Board –Surface Water Ambient Monitoring Program or at http://water101.waterboards.ca.gov/swamp/qapp_advisor/FieldMethods/start.html

4.0 REFERENCE

Surface Water Ambient Monitoring Program. 2005. 4.41 Direct filling of a sample bottle in an extended holder. SWAMP Field Methods Course. Compact Disk multi media. California State Water Resources Control Board, Also at http://water101.waterboards.ca.gov/swamp/qapp_advisor/FieldMethods/start.html