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# Puraflo<sup>®</sup>

PEAT FIBRE BIOFILTER *for Wastewater Treatment*

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## *Puraflo<sup>®</sup> Effluent Sampling Protocol*

January 2002

## **Puraflo<sup>®</sup> Effluent Sampling Protocol**

### **Introduction:**

The importance of good sampling practices cannot be over-emphasized. An extremely accurate chemical and biological analysis of a water sample followed by a brilliant assessment of the problems indicated by the analysis is worthless if the sample does not represent the water in your system. The objective of sampling is to collect a portion of wastewater small enough in volume to be transported conveniently and handled in the laboratory while still accurately representing the wastewater being sampled.

***The most important consideration is the development of a contamination consciousness among all involved investigators so that they have an understanding of potential sources of contamination.***

A grab sample (sometimes called an individual discrete sample) is

collected by manually removing a quantity of effluent from a flow stream at a single point in time during the flow day. A grab sample reflects the effluent conditions only at the point of time the sample is collected.

Proper collection of an effluent sample requires specific procedures to be followed. A grab sample of effluent must be a free falling sample, collected from a cleaned effluent pipe, in a proper sample bottle, stabilized during transport, stored for a limited period of time and analyzed by specific laboratory methods.

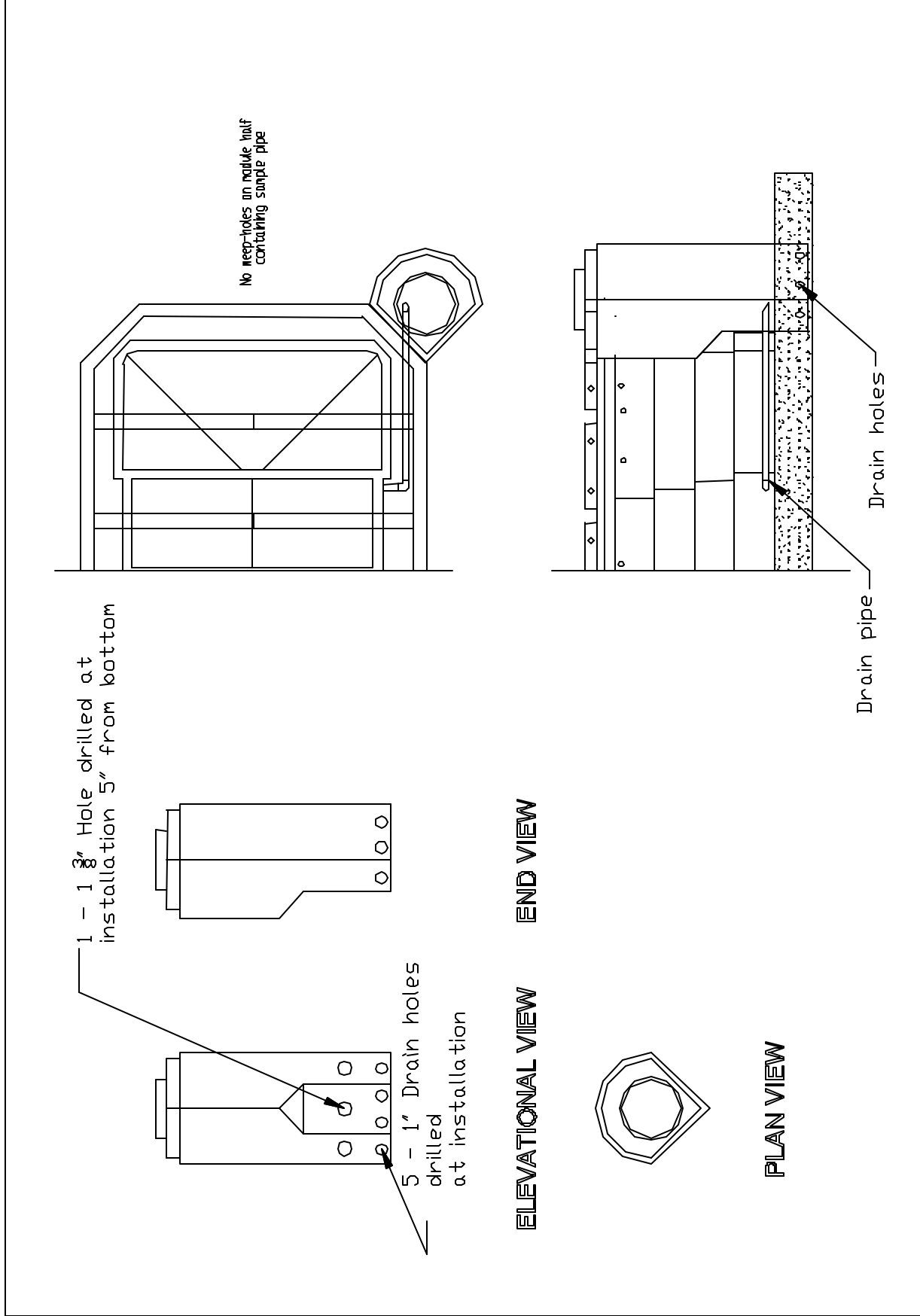
**Please ensure that the person responsible for sampling has read and understands the sampling requirements outlined on the next page before proceeding to the Puraflo<sup>®</sup> Sampling Protocol.**

### **General Sampling Requirements:**

- The person responsible for sampling (here after referred to as the sampler) should preferably have a technical background, and where possible, be familiar with the workings of the Puraflo® system. Bord na Móna will provide technical advice and assistance if requested.
- Personal safety should be the first consideration of the sampler. The sampler should wear protective clothing, eye protection and sterile disposable gloves at all times. The gloves should be discarded immediately after sampling i.e. one pair of gloves per sampling event. This safeguards against cross contamination of samples. Always wash hands after sampling.
- All samples shall be obtained, preserved and analyzed in accordance with the guidelines outlined in EPA's document 40 CFR 136.
- All samples for inorganic analysis (i.e. BOD, TSS) should be collected into polyethylene sampling containers (or equivalent). All samples for microbiological analysis should be collected into sterile plastic containers (or equivalent). Different laboratories provide different sampling containers.
- The volume of sample required for proper analysis varies according to the test performed. Confer with the local laboratory to establish the volume requirements needed based on the total number of parameters requiring analysis.
- All sampling containers should be clearly labeled to include, as minimal, the following information: -
  1. A unique sample identification number
  2. The source/location of sample collection
  3. The date and time the sample was collected
  4. The name of the sampler responsible
  5. The name of the treatment system owner
  6. All parameters requiring analysis
- All samples must be properly stored during transportation to the laboratory. This usually involves cooling the sample and storing it in the dark (away from sunlight) to inhibit further biochemical reactions.
- All samples must be delivered to the laboratory within 6 hours of sampling. Therefore, travel time, laboratory operating hours, weekend or holiday schedules all need to be considered with any sampling program.
- The laboratory responsible for analysis should be certified or accredited and have chain of custody and quality control systems in place.

**TABLE 1 PURAFLO® SAMPLING PROTOCOL  
TYPE A SYSTEM – PAD DISPOSAL METHOD**

1. Put on protective clothing, eye protection and gloves.
2. Locate and remove the lid of the sampling chamber, exposing an effluent discharge pipe below. (Figure Type A Schematic). Typically, there should be a slow steady drip of effluent from the discharge pipe.
3. Clean the discharge pipe to remove any build up of residual solids or a 'slimy growth'.
4. Once the effluent is free flowing, carefully place the mouth of the sample bottle directly under the falling stream of effluent. Be careful not to touch the discharge pipe with the mouth of the sample bottle. An extension arm or 'dipping device' may be required. Please ensure that the extension arm or dipping device is thoroughly cleaned and sterilized before and after sampling (See 'Preventing Cross Contamination').
5. Collect a small volume of the effluent into a polyethylene sampling container (or equivalent). Replace the lid of the container and 'swish' the contents around for a few moments. Remove the lid and empty the contents.
6. Refill the container almost to the top, leaving approx. 1-5% of the container volume to allow for thermal expansion during transportation. It may take 10 to 20 minutes to acquire the needed volume prescribed by the accredited lab.
7. If a microbiological sample is required, a sterile plastic container (or equivalent) should be used. Carefully remove the lid of the sampling container using the thumb and forefingers. Fill the bottle to the top, and replace the lid immediately. Do not rinse the bacteriological sampling container, fill it only once, being careful not to allow your hands to come into contact with the rim of the container. Extreme care must be taken because even a properly collected sample can become contaminated.
8. Label all sampling containers with the following information:-
  - A unique sample identification number
  - The source/location of sample collection
  - The date and time the sample was collected
  - The name of the sampler responsible
  - The name of the treatment system owner
  - All parameters requiring analysis
9. Note any unusual occurrences during sampling.
10. Remove the protective gloves and dispose of carefully.
11. Store all samples in ice-packs (or equivalent) for transportation to the lab.
12. Store all samples in the dark.
14. All samples should be delivered to the laboratory within 6 hours of sampling. All samples should be analyzed on the same day as sampling.

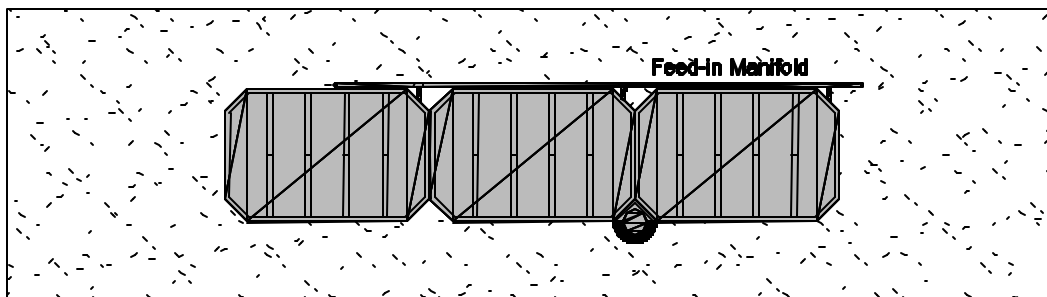


|                   |                        |
|-------------------|------------------------|
| Project Reference | PURAFLO PEAT BIDFILTER |
| Drawing Title     | SAMPLE CHAMBER DETAIL  |
| Scale             | 1:20                   |
| Date              | JAN. 15, 1998          |
| DWG. BY:          | GMD/D                  |

**TABLE 2 PURAFLO<sup>®</sup> SAMPLING PROTOCOL  
TYPE B SYSTEM – TRENCH DISPOSAL METHOD**

1. Put on protective clothing, eye protection and gloves.
2. Locate and remove the lid of the sampling chamber, exposing an effluent discharge pipe below. (Figure Type B Schematic). Typically, there should be a slow steady drip of effluent from the discharge pipe.
3. Clean the discharge pipe to remove any build up of residual solids or a 'slimy growth'.
4. Once the effluent is free flowing, carefully place the mouth of the sample bottle directly under the falling stream of effluent. Be careful not to touch the discharge pipe with the mouth of the sample bottle. If the sampling bottle is too tall to fit under the discharge pipe, a 'dipping device' (Figure 4) may be required. Please ensure that the dipping device is thoroughly cleaned and sterilized before and after sampling (See 'Preventing Cross Contamination').
5. Collect a small volume of the effluent into a polyethylene sampling container (or equivalent). Replace the lid of the container and 'swish' the contents around for a few moments. Remove the lid and empty the contents.
6. Refill the container almost to the top, leaving approx. 1-5% of the container volume to allow for thermal expansion during transportation. It may take 10 to 20 minutes to acquire the needed volume prescribed by the accredited lab.
7. If a microbiological sample is required, a sterile plastic container (or equivalent) should be used. Carefully remove the lid of the sampling container using the thumb and forefingers. Fill the bottle to the top, and replace the lid immediately. Do not rinse the bacteriological sampling container, fill it only once, being careful not to allow your hands to come into contact with the rim of the container. Extreme care must be taken because even a properly collected sample can become contaminated.
8. Label all sampling containers with the following information:-
  - A unique sample identification number
  - The source/location of sample collection
  - The date and time the sample was collected
  - The name of the sampler responsible
  - The name of the treatment system owner
  - All parameters requiring analysis
9. Note any unusual occurrences during sampling.
10. Remove the protective gloves and dispose of carefully.
11. Store all samples in ice-packs (or equivalent) for transportation to the lab.
12. Store all samples in the dark.
13. All samples should be delivered to the laboratory within 6 hours of sampling. All samples should be analyzed on the same day as sampling.

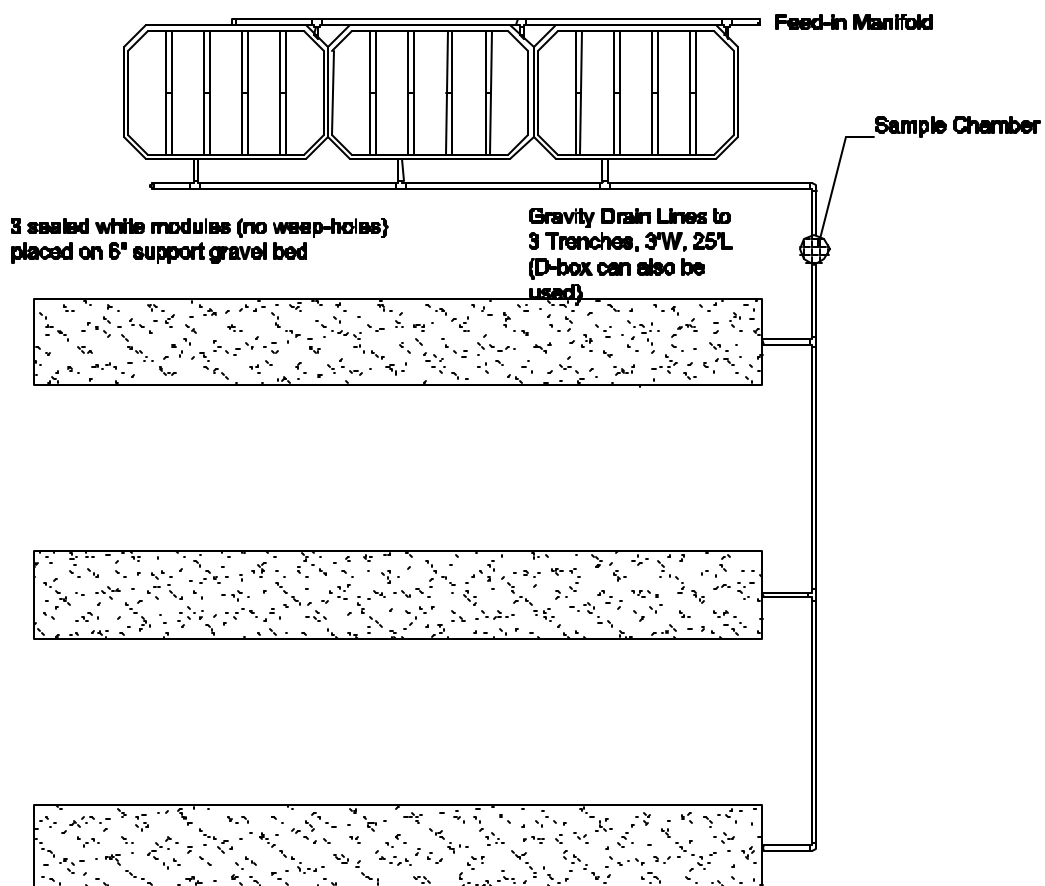
## PAD DISPOSAL METHOD - TYPE A



3 Treatment Modules, two blue modules with weep holes and one green sampling module, drain into a 10' by 36' Pad

Pad dimensions can be selected to match site conditions and modules can be installed side by side as well as end to end (as shown above)

## TRENCH DISPOSAL METHOD - TYPE B





### **Preventing Cross Contamination**

In order to prevent cross contamination, all sampling equipment and containers should be clean and sterile. Where possible, all sampling containers (especially if using polyethylene) should be brand new. If an extension arm or

dipping device is to be used, the equipment should be cleaned thoroughly before and after with a laboratory grade detergent such as 'Alconox' or equivalent.

#### **Note**

**Turning on the pump to force a sample will result in erroneous and non-representative readings that will require re-sampling.**

**If a sample cannot be taken due to inadequate flows the residence should be checked to ensure that it is currently occupied.**

**If the residence is not being lived in a representative sample cannot be taken.**

**If the residence is occupied, the pump should cycle within the next two hours.**

**If you still have a problem, please call the manufacturer of Puraflo® - Bord na Móna at 1-800- PURAFLO (787-2356)**

