

Nitrex™ Nitrogen Removal Filter State of Maryland

SAMPLING PROTOCOL



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Environmental Engineers/Consultants

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1. Introduction

This Nitrex™ System Sampling Protocol Manual describes the procedures that need to be followed for proper sampling of the Nitrex™ System to be in compliance with Maryland Department of the Environment (MDE) Bay Restoration Program grants.

A complete Nitrex™ system includes the following components:

1. 1,500 gallon Septic / Recirculation tank and pretreatment system feed pump chamber.
2. Nitrifying Pretreatment System
3. Nitrex™ Feed Pump Chamber, if necessary
4. Nitrex™ Denitrification Filter

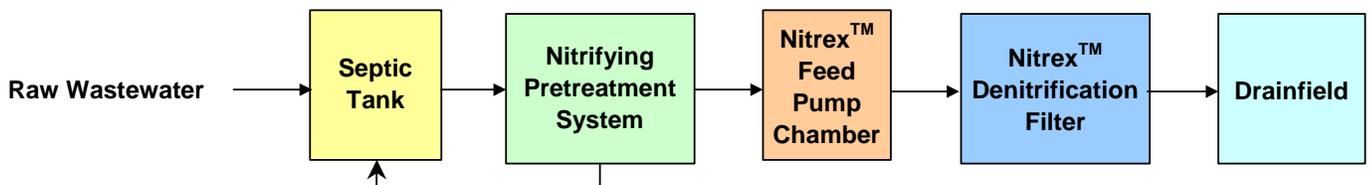
Flat sites generally require the Nitrex™ Feed Pump Chamber, as the drop between the pretreatment system effluent and the drainfield distribution box inlet invert is generally not sufficient to allow for gravity flow.

This Sampling Protocol has been developed for Nitrex™ denitrification filter using a recirculating media filter (RMF) that recirculates water back to the septic tank for pretreatment. Other pretreatment options, such as a single pass sand filter or RMF with a separate recirculation tank, will differ. Separate sampling protocols will be developed for other Nitrex™ system configurations.

2. Typical Nitrex™ System Configuration

The Nitrex™ Filter is the last component of the treatment system, prior to discharge to the drainfield. As such, the Nitrex™ Filter effluent represents the system effluent. Figure 1 shows a process flow diagram for a typical Nitrex™ System using a recirculating media pretreatment unit.

Figure 1: Typical Nitrex™ System Process Flow Diagram



3. Nitrex™ Sampling Protocol

Sampling will be done at the following three locations:

1. Pretreatment feed pump station – sample from pressure sample port
2. Nitrex™ Feed Pump Chamber – sample from pressure sample port
3. Nitrex™ Effluent – sample taken from sample port

Table 1 details the locations and constituents that are to be sampled. The appropriate location for sampling the pretreatment system feed pump is within the pump vault in the section the pump is located, as shown on Figure 2. It will be necessary to manually start the pump to collect the sample. This water has passed through the influent screen and represents the water that is being fed to the pretreatment system. The Nitrex™ feed pump station is equipped with a sample valve and tubing to allow for collection of a sample off the pump discharge, as shown on Figure 3. It will be necessary to manually start the pump to collect the sample. The Nitrex™ effluent will be sampled by drawing its sample from the Nitrex™ effluent sample port stilling well, as shown in Figure 4. Figure 5 shows the plan and profile of a typical system with the sampling locations highlighted.

Table 1: Sampling Locations and Constituents

	Pretreatment Feed Pump Chamber	Nitrex™ Feed Pump	Nitrex™ Filter Effluent
pH	x	x	x
BOD ₅	x	x	x
TSS	x	x	x
Alkalinity	x	x	x
TKN	x	x	x
NH ₄	-	x	x
NO ₃ - N	-	x	x
NO ₂ - N	-	x	x

Only sampling of the Nitrex™ Filter effluent is required by MDE. Other sampling will be performed at the discretion of Lombardo Associates, Inc.

4. Frequency and Method of Sampling

For the first twelve Nitrex™ units, sampling is required to be performed quarterly after a start-up period of three (3) months for the first year. After the second year and for all systems after the first 12, annual sampling is required. It is proposed that grab samples be taken for the pretreatment feed and Nitrex™ feed and composite sample for Nitrex™ Filter effluent.

Figure 2: Pretreatment Advantex™ Tank Sampling Location

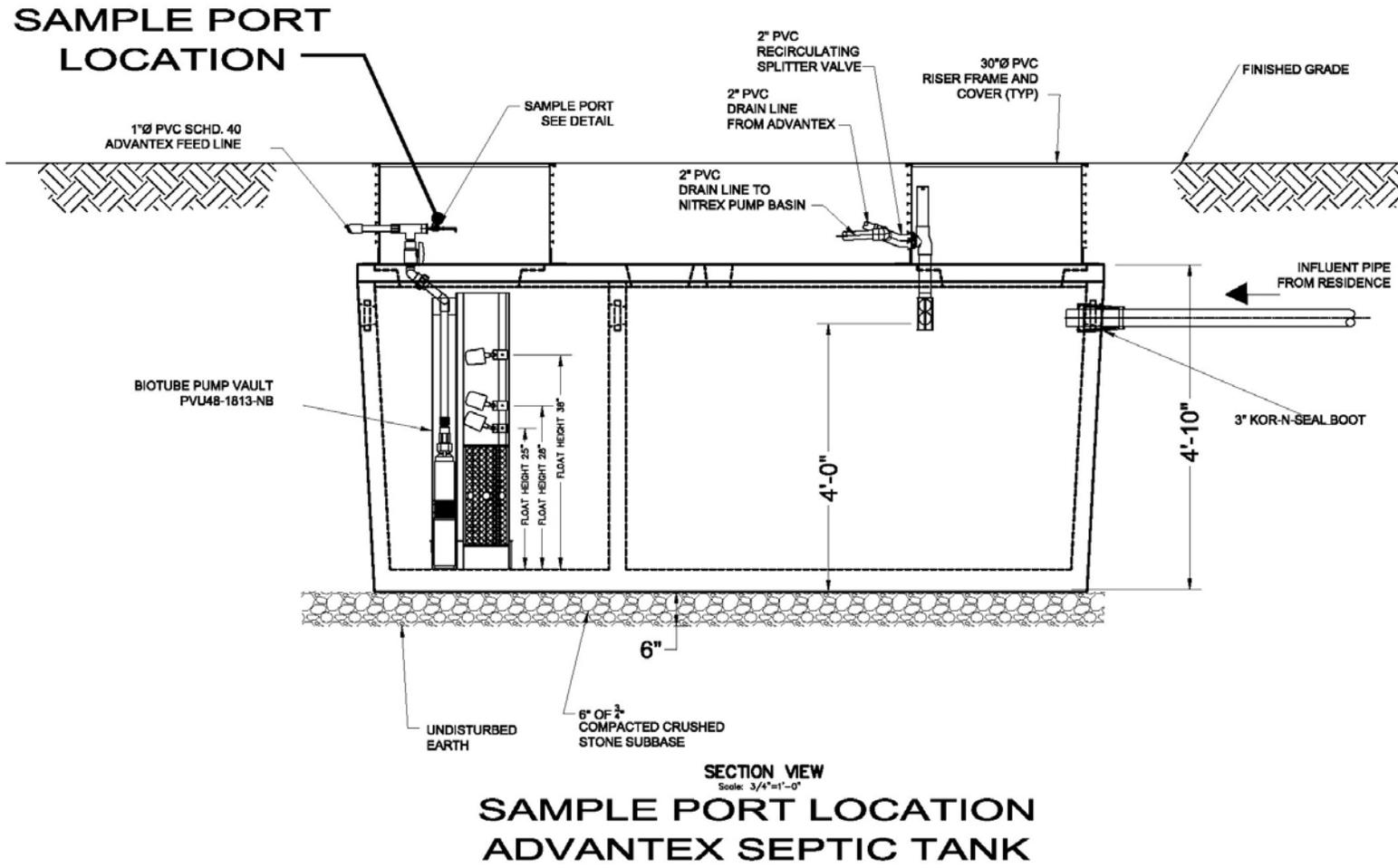
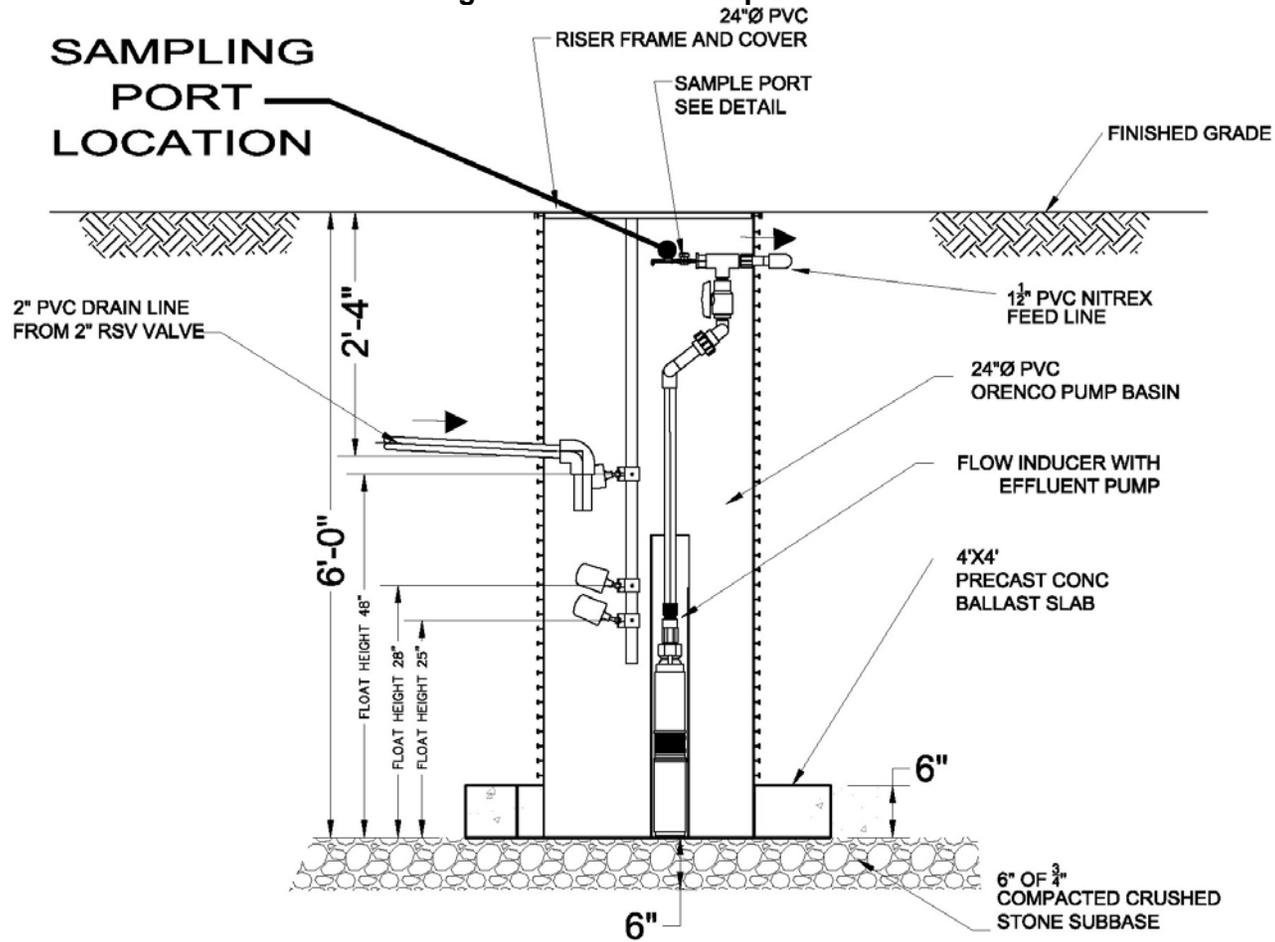


Figure 3: Nitrex™ Pump Basin



SECTION VIEW
Scale: 3/4"=1'-0"

SAMPLING PORT LOCATION NITREX™ PUMP BASIN

Figure 4: Nitrex™ Effluent Sampling Location

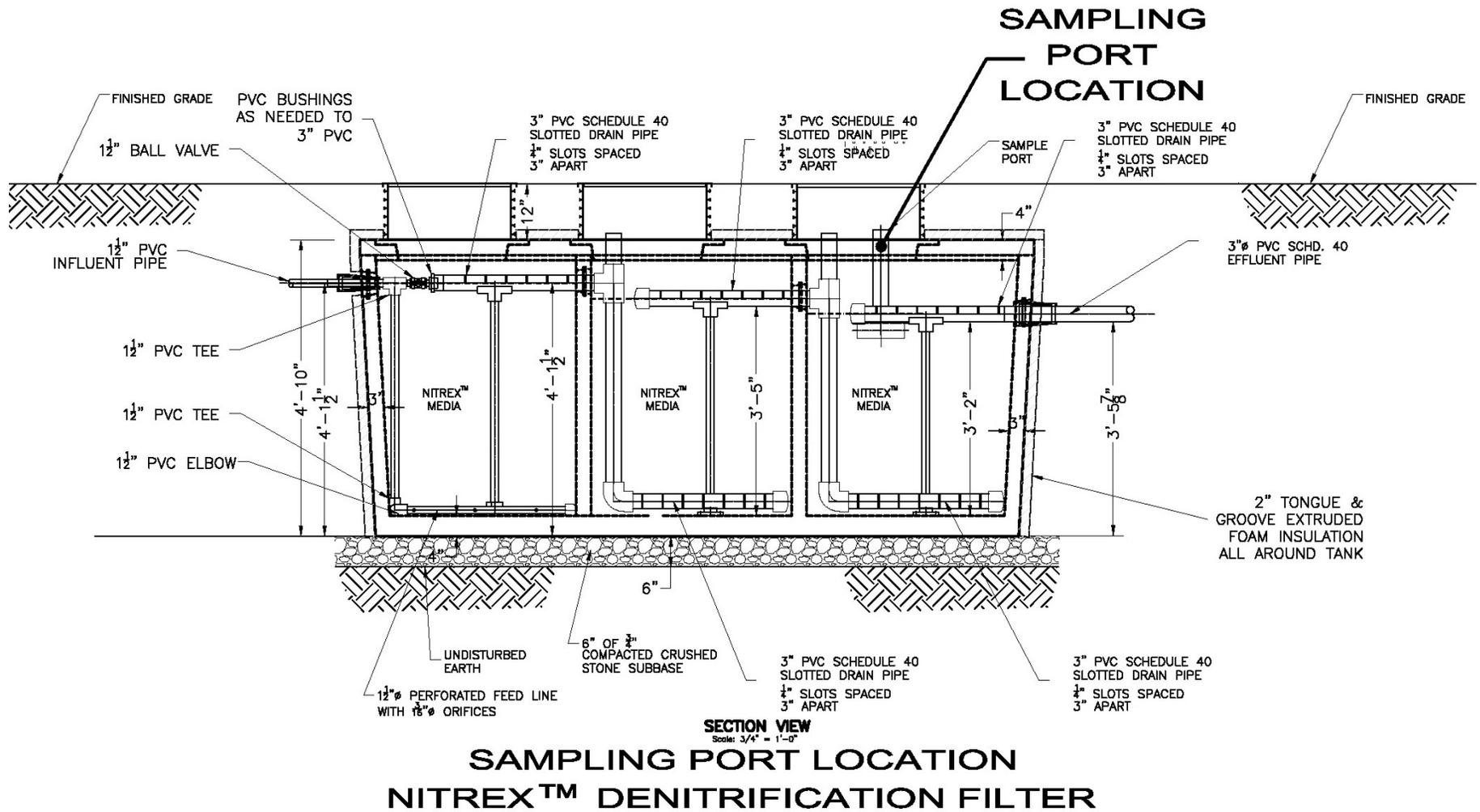


Figure 5: Nitrex™ Filter Plan and Profile

