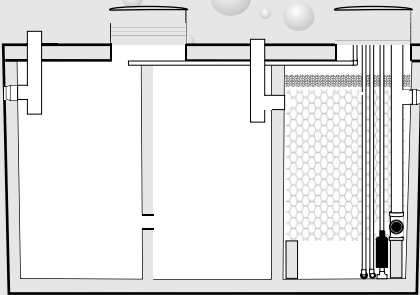




## NITROGEN REDUCING ATU

Baystar's Nitrogen Reducing Treatment Unit (ATU), is a viable form of alternative on-site waste-water treatment producing safer effluents that are necessary to protect human and environmental health.



Baystar Precast Corporation  
925 Skinners Turn Road  
P.O. Box 959  
Owings, MD 20736-0959



baystarprecast@gmail.com

### What is an ATU?

An ATU (Aerobic Treatment Unit) is an advanced form of on-site wastewater treatment system using a natural process to produce safer effluent than conventional outdated septic systems.

### Why is an ATU needed?

State and Federal legislation is focused on reducing on-site wastewater nitrogen levels and improving the overall quality of septic tank effluent. Since the signing of Senate Bill 320 (Bay Restoration Fund) into law, the State of Maryland has initiated efforts to further reduce nitrogen and phosphorus (fertilizer) loading into the Chesapeake Bay and nearby watersheds.

Nitrogen that gets into ground water can affect the quality in drinking wells. It becomes a threat to public health when nitrogen levels exceed drinking water standards.

### How the System Works.

Baystar's ATU utilizes a natural process to treat wastewater. Oxygen, supplied by an external blower, promotes growth of aerobic bacteria. Aerobic bacteria produce much cleaner effluent than anaerobic bacteria found in septic tanks. Cleaner effluent not only helps protect the environment but significantly extend the life of the system's drainfields.

Wastewater from households contains significant amounts of nitrogen. Conventional systems allow most of the nitrogen to enter and degrade ground and surface waters. ATU's can convert nitrogen which is in the form of ammonia when it enters the system to nitrates.

Baystar's ATU incorporates Biological Nutrient Removal (BNR) into its design. Most of the nitrates formed in the aerobic compartment of the system are returned to the beginning of the system where they are biologically converted primarily to nitrogen gas which is released harmlessly into the atmosphere. Baystar's ATU has been shown to remove up to 76% of the nitrogen in wastewater.<sup>1</sup>

### Why is Nitrogen Harmful to the Environment?

In septic effluent, nitrogen is typically present as some form of ammonia. Ammonia is toxic to certain forms of aquatic life. In the aquatic environment, ammonia is oxidized (combines with oxygen) to form nitrite and nitrate. The oxidation of ammonia to nitrite/nitrate can deplete the dissolved oxygen in a body of water. Nitrogen also serves as a nutrient for growth of aquatic weeds and algae which can lead to large areas of growth called "algae blooms". When algae die, they become organic waste and increase the Biological Oxygen Demand (BOD) as they decompose. BOD is the measurement of the amount of oxygen needed for degradation of organic material. When dissolved oxygen in a body of water is depleted by too much organic matter – anaerobic decay, or decay without oxygen takes over. This process of nutrient rich growth and decay is known as eutrophication. Nitrogen from run-off and wastewater effluent can accelerate the biological activity and aging process of waterways. This is the primary reason why nitrogen reduction is such a concern for areas in and around the Chesapeake Bay and other waterways throughout the United States.

<sup>1</sup>Testing was done by NAHBRC a non-profit, non-government agency. For more information, visit [www.NAHBRC.org](http://www.NAHBRC.org).

**ADVANCED ON-SITE WASTEWATER TREATMENT**

For more information visit:  
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