Duplicate nutrient samples were collected at each time point from water pumped to the surface at SATURN-03, collected in temporary bottles and then filtered into 30 ml HDPE storage bottles. All bottles for collection and storage of samples, syringes, and filter housings were washed with 10 % hydrochloric acid and rinsed 3 times with deionized water before use. Bottles, syringes, and filter housings were dried, capped, and stored in clean Ziploc bags until use. Collection bottles were rinsed three times with sample and filled by gently pushing sample through a clean Swinnex filter holder and combusted 25mm glass fiber filter (Whatman GF/F) using a clean 60-ml syringe. Storage bottles were rinsed three times with filtered sample before final filling, leaving sufficient head space for freezing. Samples were frozen in an upright position in a −20 °C freezer.

Nutrient concentrations were determined using an Astoria Analyzer (Astoria-Pacific, Clackamas, OR, USA). Before analysis, all samples were thawed in a water bath (55 °C) and then cooled to room temperature. Nitrate, nitrite, ammonium, and orthophosphate were determined using manufacturer recommended methodology based on common wet chemistry approaches (Armstrong et al. 1967, EPA 1984, EPA 1997). These methods have minimum detection limits (MDL) of 0.5, 0.2, 0.3, 0.2 μM, respectively. Quality assurance was maintained by running certified reference material (ERA catalog #4023).

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