**The Florida Nitrogen Removal Programs June 30, 2015**

The Florida nitrogen removal programs cover most of the state and range in limits from as low as 3 mg/l total nitrogen on a monthly average to 10 mg/l nitrate nitrogen where effluent is used for beneficial reuse such as for irrigation of golf courses and irrigation of lawns and other non-human consumption food crops.

The first major nutrient removal program in Florida began in 1978 with the passage of the Grizzel-Figg Act. The act required low level nitrogen limits (3 mg/l monthly average concentration for total nitrogen) for new wastewater discharges on the west coast of Florida discharging into Tampa Bay and other smaller bays and estuaries south to Fort Meyers.

The Grizzel-Figg Act further provided that all existing discharges over 100,000 gallons per day discharging into the major bays and estuaries on the west coast of Florida upgrade their treatment processes to included low level nitrogen removal of 3 mg/l by 1990. This was the first low level nutrient reduction program of its magnitude in the United States. The low level nutrient limit effected the major metropolitan areas of Tampa-Saint Petersburg, Sarasota, Naples and Fort Meyers.

As a result of the new low nitrogen limits many wastewater treatment plants added denitrification filter technology with methanol as the selected supplemental carbon source. These facilities in the Tampa Bay area continue to this day to use either virgin or reclaimed methanol on a regular basis.

Low level nitrogen limits were later required in the late 1990’s in central and eastern Florida for discharges into fresh water surface waters such as the St. Johns and Indian Rivers and coastal estuaries. The nitrogen limit was the same as the west coast limits of 3 mg/l total nitrogen on a monthly average.

The low level nitrogen limits only covered surface water discharges and any discharge of treated effluent for reclaimed or reuse use were allowed with a nitrate nitrogen limit of 10 mg/l. A nitrate nitrogen limit of 10 mg/l generally did not require the need to use supplemental carbon to reliably achieve the limit. This lead to many treatment facilities only discharging to surface waters during the rainy season where effluent exceeded the needs for reuse within their respective service areas. In addition, some dischargers constructed deep well ground water recharge wells where low level nutrient limits were not required.

Nutrient limits were required recently in Florida as a result of TMDLs covering certain water sheds. Examples include: A major nutrient TMDL in northeast Florida covering dischargers in the Jacksonville area into the St Johns River basin that included an annual mass based nitrogen limit for the 4 major Jacksonville wastewater treatment facilities. A TMDL for the Florida Keys was completed requiring low nitrogen limits for most wastewater treatment plants in the Keys. Most treatment plants in the Keys are relatively small (less than 1 million gallons per day) in flow with the exception of the Key West wastewater treatment facility and the facilities have completed wastewater process improvements using both methanol and glycerin for supplemental carbon to achieve low level nitrogen removal. Nutrient TMDLs were also enacted to protect Florida’s fresh water springs such as the Wakulla Springs near Tallahassee and Silver and Wekiva Springs in central Florida. These TMDLs required limits as low as 3 mg/l total nitrogen for dischargers into ground water in the protested spring drainage area.

In 2012 Florida proposed very low numeric criteria for dischargers in the Western Panhandle, North Central, North East, South West Central and Peninsula areas of the state. The very low nitrogen numeric discharge numbers ranged from 0.5 mg/l - 1.73 mg/l. The very low limits were below the reliably achievable technology limit of approximately 3 mg/l total nitrogen and have not been approved by the U.S. EPA.

The latest major nutrient initiative covers the large metropolitan areas in south east Florida in Broward and Dade Counties. The Leah Schad Memorial Ocean Outfall program requires ocean outfall dischargers in the aforementioned counties to meet advanced wastewater treatment requirements by December 2018 or eliminate the ocean outfall discharge by December 2025. The seven major treatment plants with outfall have the option to meet a 3 total nitrogen limit or use a combination or beneficial water reuse and deep well injection.

Per the latest report to the Florida Legislature (June2015) all seven major dischargers have chosen to use a combination or reuse and deep well injection with a nitrate nitrogen limit of 10 mg/l. This will limit the need for future supplemental carbon in Broward and Dade Counties for major wastewater treatment facilities unless they need to discharge to surface waters.

Overall there are 325 wastewater treatment facilities in Florida that have a design flow greater than 1 million gallons per day. Of the 325 facilities over 30 use a denitrification filter process technology for denitrification with virgin or reclaimed methanol used for supplemental carbon.