



Wastewater Treatment Plant  
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December 8<sup>th</sup> 2023

Macomb WWTP NARP

Dear Agency,

The information included in this letter are for the requirements on the permit for the City of Macomb Wastewater Treatment Plant permit #IL0029688 which states the need to establish a NARP due to a waterbody downstream that is at risk of eutrophication.

The City of Macomb has been involved with the Illinois River Watershed Study Group to try and work with other stakeholders in the Illinois River watershed to come up with plans to decrease pollutants, and increase the water quality of the watershed. A mission was created: **“The mission of the Illinois River Watershed Study Group (IRWSG) is to facilitate improvements in long-term water quality in the Illinois River watershed, with an initial focus on phosphorus loads and eutrophication. IRWSG’s near-term goals include monitoring data collection efforts and identifying where data gaps exist that may require additional research and possible funding”**. An introductory meeting was held via Zoom on May 18<sup>th</sup> 2022, an in-person meeting was held on July 19<sup>th</sup> 2022 at Starved Rock Lodge in Oglesby, IL, and a Hybrid meeting was done via Zoom on November 9<sup>th</sup> 2022. No stakeholder meetings have taken place in 2023, so progress has been stalled out as the committee awaits more data collection, and topic identification. The City of Macomb will continue its involvement with the IRWSG and any other groups to try and achieve results for water quality improvements.

The discharges of the Macomb WWTP effluent start at Killjordan Creek which is a tributary of Troublesome Creek, a tributary of La Moine River. Knowing that the La Moine River is listed on the IEPA 303d list of impaired waters, the City, in conjunction with the IRWSG, are collecting data from the WWTP discharge for the median sestonic chlorophyll A concentration as well as pH values to ensure they are below the upper standards. To Date, lab results from the discharge as well as downstream monitoring have not shown substantial risk of eutrophication. pH values are collected at least three times per week on the effluent. Whereas one day measured a pH of 8.2 and one day 8.1, all other days are less than or equal to 8.0. Similarly, Chlorophyll A samples were taken upstream and at 4 locations downstream of the effluent. The

upstream had a chlorophyll A concentration of 4.8\_mcg/l and the downstream results were <1, <1, 1.5, and 1.3 respectfully. We will continue to monitor during the spring and summer months to collect more datapoints of chlorophyll and other labs including Fecal, BOD5, SS, Phosphorus, NH3, pH, and temperature.

The City recognizes that the existing wastewater treatment and tertiary filtration are not capable of reducing phosphorus enough to meet the limits established on our permit. The monthly average of phosphorus in the effluent is 2.7 mg/l with some months in excess of 5 mg/l. the existing activated sludge system is very limited in achieving biological nutrient removal with the only mixing coming from fine bubble diffusers and the lack of anoxic and anaerobic zones.

We are looking for and planning changes that will help the current treatment system. A few items that are being considered are point source reductions that could be attained by upgraded treatment technology at discharge sites, limits on industrial users by categorical pretreatment standards, limits on citizens by updated ordinances and education. For example, the use of fertilizers for lawn and garden shall be in accordance with labels and limit the contact with impermeable surfaces to not allow fertilizer to reach the storm sewers. Social media and public information are a great way to spread awareness of impacts from these practices. Also continued leaf, grass clipping and yard waste disposal by way of our community's waste management company. Mulching or composting of leaves to return the nutrients to the soil and to keep out of rivers is another good practice. Increased street sweeping of city roads will also help limit the amount of debris and excess nutrients reaching the waterways. Additionally, the City of Macomb WWTP is out for bid for the first of two projects at the wastewater plant that should be completed in the next 2 years. The two projects include replacement of end-of-life equipment and the addition of equipment needed to meet permit requirements. Those upgrades include but are not limited to the following:

1. Replacement of existing medium duty bar screens with center-flow perforated plate fine screens with screenings washer and compactor
2. Replace aerated grit chamber with a vortex style pista-grit system
3. Replace weirs, baffles, troughs, and launders in all clarifiers
4. Replace roll-air aerobic digesters with enviro-mix compressed gas mixing system and diffusers
5. Installation a re-use water system
6. Install a non-contact ultraviolet disinfection system to meet fecal coliform limits.

After these upgrades are complete, an RFQ will be advertised to solicit engineering services for biological nutrient removal to meet future permit requirements of phosphorus and nitrogen, as well as upgrades to the existing sludge handling facilities to handle the increase in sludge production from BNR. No timeline has been established yet for implementation of BNR as funding needs to be secured and further research needs to be done in order to see if BNR or utilizing other chemicals would be the City's most economical option to meet nitrogen and phosphorus limits at the wastewater treatment plant.

Included with this report is the first of four WET (whole effluent toxicity) tests that the wastewater treatment plant is to collect before the expiration of the NPDES permit. Also included is a report

that was done by a student at Western Illinois University titled Assessment of Wastewater Discharge Impact in Relation to Kill-Jordan Creek Macomb, Illinois.

The City of Macomb Wastewater Treatment Plant will continue to make progress toward the goal of improving the overall water quality of the watershed.

Sincerely,

Josh Peters  
Wastewater Treatment Manager