GROUNDWATER BASIS FOR DECISION MEMO

Permit Processor: Justin Pung
Date: August 25, 2023
Permit No. GW1810271
Facility's Designated Name: Tuscarora Twp Wastewater Treatment Facility (WWTF)

Monitoring Point: EQ-1

Parameter	Monthly Average	Maximum Limit (Quantity)		Minimum/Maximum Limit (Concentration)					
		Maximum	Units	Minimum	Maximum	Units	Monitoring Frequency	Sample Type	Basis for Limits
Flow (Daily)		190,000	GPD				Daily	Direct Measurement	PWJ
Flow (Annually)		**69,350,000/** *34,675,000*	GPY				Annually	Calculation	PWJ
Total Inorganic Nitrogen					5.0	mg/L	Twice Weekly	Calculation	WQS
Ammonia Nitrogen					(report)	mg/L	Twice Weekly	Grab	PWJ
Nitrate Nitrogen					(report)	mg/L	Twice Weekly	Grab	PWJ
Nitrite Nitrogen					(report)	mg/L	Twice Weekly	Grab	PWJ
pH				6.5	9.5	SU	Twice Weekly	Grab	WQS
Biochemical Oxygen Demand (BOD5)					(report)	mg/L	Twice Weekly	Grab	PWJ
Dissolved Oxygen				(report)		mg/L	Twice Weekly	Grab	PWJ
Chloride					**500** / *250*	mg/L	Twice Weekly	Grab	WQS

Sodium					**400***/150*	mg/L	Twice Weekly	Grab	WQS
Total Phosphorus	**1.0**				*1.0*	mg/L	Twice Weekly	Grab	WQS
Total Suspended Solids					**(report)**	**mg/L**	Twice Weekly	**Grab**	PWJ
Iron					**(report)**	**ug/L**	Twice Weekly	**Grab**	**PWJ**

Limit Change Key
Normal Type = existing requirement - carried over from previous version of permit
Bold Type = new requirement - not in previous version of permit
Italic = deleted requirement - not carried over from previous version of permit

Basis for Limits Key
WQS - Water Quality Standard
PWJ - Permit Writer's Judgment

PERMIT CONDITIONS: (Discharge Season)
Effluent Limitations and Monitoring, EQ-1
Rapid Infiltration Basin Limitations and Monitoring
Groundwater Monitoring and Limitations, MW-3
Groundwater Monitoring and Limitations, MW-1 and MW-2
Groundwater Monitoring and Limits, MW-5, MW-6
Schedule of Compliance
Facility Operation and Maintenance
Water Additive Request
Residuals Management Program for Land Application of Biosolids
Michigan Industrial Waste Pretreatment Program
Additional Monitoring Requirements

NOTES:

The effluent monitoring in the new permit will include the same limits and the same monitoring frequencies for the following parameters: Daily Flow Volumes; Total Inorganic Nitrogen (TIN); Ammonia; Nitrate; Nitrite; pH; Biochemical Oxygen Demand (BOD); and Dissolved Oxygen (DO).

The following effluent monitoring parameters have been modified or added:

- Based on the proposed permit application and additional information submitted for the expansion of the WWTF, the permit will authorize the discharge of up to 69,350,000 gpy. Based on the recommendation of the Soil Scientist for the capacity of the RIBs, the daily discharge volume will be 190,000 gpd.
- Sodium and Chloride have been increased to 400 mg/L and 500 mg/L based on Section 3109e of Part 31, Water Resources Protection (Part 31), of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended.
- Total Phosphorus will remain 1.0 mg/L, but the limit will be enforced as a monthly average, instead of maximum daily limit.
- Total Suspended Solids (TSS) has been added to evaluate concentrations of organic and inorganic particles in the wastewater. High TSS can decrease DO in wastewater, which then impacts bacterial treatment like sequencing batch reactors.
- Iron has been added to the effluent sample due to the use of Ferric Chloride as a treatment additive. Rule 2222 of the Part 22 Rules, Groundwater Quality, promulgated under Part 31 requires a limit of 300 ug/L. The permit has been prepared to require no limit (report only) for Iron to allow for the evaluation of the levels in the effluent.

Groundwater Recommendations:

- Monitoring of MW-4 is not required in the permit.
- Based on the Geologist Recommendations Fact/Decision Sheet, Arsenic will be added to the upgradient and downgradient monitoring wells parameters.
- The Geologist Recommendations Fact/Decision Sheet also recommends changing the limits for several of the downgradient well parameters. Arsenic, Iron, and Manganese were recommended to change from report only to a specified limit. It has been determined that the downgradient limits for Arsenic will remain report only to allow for further evaluation of the upgradient and downgradient levels of these parameters.
- The downgradient well limit for Sodium was increased from 120 mg/L to 230 mg/L based on Section 3109e of Part 31.
- Closure and replacement of MW-6.
- A review of the wastewater characterization submitted from the carwash connected to the wastewater collection system indicated that Aluminum, Antimony, Iron, Lead, Manganese, Phosphorus, and Titanium levels exceed Part 22 limits. Also, concerning: Beryllium, Thallium, and Vanadium sample reporting limits used were too high (higher than the Part 22 limits). Due to this, all of these parameters have been added to the upgradient and downgradient groundwater monitoring. Iron,

Manganese, and Phosphorus are already on the groundwater monitoring lists and will be monitored as specified above. The rest of the parameters listed in this paragraph will be required to sample annually at report only.

Schedule of Compliance (SOC)

- The staff Geologist recommended the installation of a new monitoring well to replace the monitoring well that is proposed to be abandoned. Due to this, SOCs have been added requiring the submittal of a work plan for the installation of new monitoring wells and abandonment of the existing monitoring well. After the installation of the new wells, the permit will require the submittal of a well installation report and an updated sampling and analysis plan (SAP).
- SOCs will be required for an updated SAP, and Discharge Management Plan (DMP).
- SOCs will be required for the submittal of as built plans for the WWTF once the WWTP is completed; and an Operation and Maintenance Manual (OMM) once the expanded WWTF starts operation.

The Facility has a Residuals Management Plan, which was approved on May 22, 2018. Due to this, the Biosolids RMP language for an existing RMP are included in the permit.