PERMIT RATIONALE FOR REISSUANCE

Hattiesburg Laurel Regional Airport Authority

Jones County

March 29, 2023

1. FACILITY INFORMATION

Facility Address: 1002 Terminal Drive, Moselle, MS 39459 sell

NPDES Water Permit No.: MS0031542

Standard Industrial Classification (SIC) Code: 4581

Permit Writer: Deanna Rush

EPD Branch: Water Branch 1

1. NATURE OF BUSINESS

Hattiesburg Laurel Regional Airport Authority (HLRAA) operates a wastewater treatment system, which treats domestic wastewater from the airport and from several businesses in the business park. Effluent from this treatment system discharges into a stream.

1. EFFLUENT AND RECEIVING STREAM FLOW DATA

Outfall 001 - treated domestic wastewater from the airport and businesses in the business park. The application reported effluent discharge at a maximum daily flow of 0.017 MGD. The permit limits the average flowrate to 0.05 MGD. Outfall 001 discharges into an unnamed tributary of the Leaf River. The unnamed tributary has a 7Q10 flow (lowest 7-day average flow that occurs (on average) once every 10 years) of zero. MDEQ classifies the receiving stream as Fish and Wildlife.

1. 303 (d) and TMDL ISSUES

Mississippi’s 2022 List of Impaired Water Bodies did not list the unnamed tributary or the Leaf River. The permit complies with the following Total Maximum Daily Load (TMDL’s):

Fecal Coliform TMDL for Leaf River Pascagoula River Basin Mississippi, Final Report May 2007, ID 400050301. The Permit complies with the TMDL by establishing E.coli limitations.

Phase 1, Total Maximum Daily Load For Organic Enrichment/Low Dissolved Oxygen due to Nutrients In the Leaf River Pascagoula Basin, Smith, Covington, Jones, Forrest Counties Mississippi. Final Report, June 2005, ID 405063004.

1. TYPE OF WASTEWATER TREATMENT:

HLRAA operates an activated sludge treatment system, and they plan to install a new aerobic treatment system in the near future. The existing system is a three compartment (aeration, clarification, and chlorination) activated sludge system with a design flow of 20,000 MGD. The new system will have a design flowrate of 50,000 gpd. Wastewater will either flow to one system or the other, but not to both systems simultaneously. The maximum flow to the receiving stream based on treatment system design and on alternating operation of the systems is 50,000 gpd.

1. EPA APPLICABLE CATEGORICAL GUIDELINES

Not Applicable.

VII. DATA FROM APPLICATION FORM 2E

|  |  |  |
| --- | --- | --- |
| Parameter | Maximum Daily Concentration Value  | Maximum Daily Mass Value  |
| Biochemical Oxygen Demand (BOD5) | 296 mg/L  | 42 lbs/day |
| Chemical Oxygen Demand (COD) | 28 mg/L | 4.0 lbs/day  |
| Total Organic Carbon (TOC) | <15 mg/L  |  N.A.  |
| Oil and Grease  | <3 mg/L  |  N. A.  |
| Total Suspended Solids (TSS)  | 25 mg/L  | 3.5 lbs/day  |
| Ammonia (as N) | <0.2 mg/L  | N.A.  |
| Flow | 0.017 MGD  | N.A.  |
| Temperature (winter, summer)  | Ambient  | N.A.  |
| pH  | 7.8 S.U.  | N.A.  |
| Chlorine, Total Residual  | <0.2 mg/L  | N.A.  |
| E. Coli | TNTC | N. A.  |

 TNTC = Too Numerous to Count

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#### VIII. WATER QUALITY LIMITATIONS BASED ON WASTELOAD ALLOCATION

|  |  |
| --- | --- |
| Parameter | Average |
| Flow | 0.05 MGD  |
| Carbonaceous Biological Oxygen Demand (5-day) - CBOD5 | 16 mg/L  |
| Total Ammonia Nitrogen | 1.37 mg/L |
| Minimum Dissolved Oxygen  | 6 mg/L  |
| E.coli | 126 col/100 ml  |
| Chlorine, Total Residual  | 0.011 mg/L |
| Nitrogen, Total | Report lbs/day  |
| Phosphorus, Total  | Report lbs/day  |
| pH  | 6-9 S.U.  |

#### IX. TOXICITY SCREENING

The quarterly average chlorine limitation equals the chronic water quality criteria, and the quarterly maximum chlorine limitations equals the acute water quality criteria; therefore, the permit limitations ensure protection of the stream from chlorine toxicity.

#### X. PROPOSED FINAL LIMITATIONS

1. Average Permit Limitations - Outfall 001

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Parameter | Water Quality Limitation | Present Permit Limitation | Proposed Permit Limitation | Monitoring Frequency | Monitoring Type  | Basis of Permit Limitations |
| Total Ammonia Nitrogen  | 1.37 mg/L | 2 mg/L  | 1.37 mg/L  | Quarterly  | 24-hr Composite Sample | WLA |
| Chlorine, total residual  | 0.011 mg/L | 0.011 mg/L | 0.011 mg/L  | 2 times/week | Grab Sample  | WQBEL |
| E Coli  | 126 col/100 ml  | 126 col/100 ml | 126 col/100 ml | Quarterly  | Grab Sample  | WQBEL |
| Flow  | 0.050 MGD | 0.050 MGD | 0.050 MGD | 2 times/week  | Instantaneous Sampling  | WLA  |
| Kjeldahl Nitrogen, total | Report lbs/day | Report lbs/day and mg/L  | Report lbs/dayand mg/L  | Quarterly | 24-hr Composite Sample | WLA  |
| Nitrate-Nitrite Nitrogen | Report lbs/day | Report lbs/day and mg/L  | Report lbs/day and mg/L  | Quarterly | 24-hr Composite Sample | WLA |
| Nitrogen, Total  | Report lbs/day  | Report lbs/dayand mg/L  | Report lbs/day and mg/L  | Quarterly  | Calculation | WLA |
| BOD (5-day)  | 16 mg/L(CBOD5) | 14 mg/L BOD5 | 16 mg/L BOD5  | Monthly  | 24-hr Composite Sample | WLA |
| Oxygen, dissolved  | 6.0 mg/L (min.)  | 6.0 mg/L (min.)  | * 1. mg/L

(min.)  | Monthly  | Grab Sample  | WQBEL  |
| pH  | * 1. S.U.

(min.) | 6.0 S.U.(min.)  | 6.0 S.U.(min.)  | 2 times/week | Grab Sampling  | WQBEL |
| Phosphorus, Total | Report lbs/day  | Report lbs/day and mg/L  | Report lbs/day and mg/L  | Quarterly  | 24-hr Composite Sample | WLA  |
| Total Suspended Solids (TSS)  | N.A.  | 30 mg/L  | 30 mg/L  | Monthly  | 24-hr Composite Sample  | Secondary Treatment Regulations  |

WQBEL = Water Quality Based Effluent Limitation; WLA = Waste Load Allocation

1. Maximum Permit Limitations - Outfall 001

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Parameter | Water Quality Limitation | Present Permit Limitation | Proposed Permit Limitation | Monitoring Frequency | Monitoring Type  | Basis of Permit Limitations |
| Total Ammonia Nitrogen  | N.A.  | 3 mg/L  | 3 mg/L  | Quarterly  | 24-hr composite | Current Permit Limitation  |
| Chlorine, total residual  | N.A.  | 0.019 mg/L | 0.019 mg/L  | 2 times/week | Grab Sample  | WQBEL  |
| E Coli  | N.A.  | 410 col/100 ml | 410 col/100 ml | Quarterly  | Grab Sample  | WQBEL |
| Flow  | N.A.  | Report MGD | Report MGD | 2 times/week  | Instantaneous Sampling  | Technical Judgment  |
| Kjeldahl Nitrogen, total | Report lbs/day | Report lbs/dayand mg/L  | Report lbs/dayand mg/L  | Quarterly | 24-hr Composite Sample  | Technical Judgment |
| Nitrate-Nitrite Nitrogen | Report lbs/day | Report lbs/dayand mg/L  | Report lbs/dayand mg/L  | Quarterly | 24-hr Composite Sample  | Technical Judgment |
| Nitrogen, Total  | Report lbs/day | Report lbs/dayand mg/L  | Report lbs/dayand mg/L  | Quarterly  | Calculation | Technical Judgment |
| BOD (5 day)  | N.A.  | 20 mg/L BOD5 | 24 mg/L BOD5  | Monthly  | 24-hr Composite Sample  | Technical Judgment  |
| pH  | 9.0 S.U. (min.) | 9.0 S.U.(min.)  | 9.0 S.U.(min.)  | 2 times/week | Grab Sampling  | WQBEL |
| Phosphorus, Total | Report lbs/day | Report lbs/dayand mg/L  | Report lbs/dayand mg/L  | Quarterly  | 24-hr Composite Sample  | Technical Judgment |
| Total Suspended Solids (TSS)  | N.A.  | 45 mg/L  | 45 mg/L  | Monthly  | 24-hr Composite Sample  | Secondary Treatment Regulations  |

WQBEL = Water Quality Based Effluent Limitation; WLA = Waste Load Allocation

#### XI. CHANGES TO THE DRAFT PERMIT

The Environmental Permits Division (EPD) changed the sample type from grab samples to 24-hour composite samples for ammonia nitrogen, biochemical oxygen demand (BOD5), Kjeldahl nitrogen, nitrite/nitrate, total suspended solids and phosphorus. Twenty-four hour composite samples are required for these parameters except in cases where the permittee takes samples from effluent in a holding pond or impoundment with a retention period greater than 24-hours.

The previous WLA based the BOD5 limit on a flowrate of 0.07 MGD. Because the flowrate is limited to 0.05 MGD, the current WLA allows an increase in average BOD5 limitation from 14 mg/L to 16 mg/L. EPD determined the maximum BOD5 limitation by multiplying the average (20 mg/L) BOD5 limitations by a factor of 1.5.

The WLA recommended an average ammonia limitation of 1.37 mg/L since the receiving stream has a 7Q10 flow of zero; therefore, EPD decreased the average ammonia limitation from 2.0 mg/L to 1.37 mg/L and maintained the maximum ammonia permit limitation of 3 mg/L.

XII. BPJ STATEMENT:

It is our Best Technical Judgment that the foregoing limitations will protect waters of the state.