

STATE OF MISSOURI
DEPARTMENT OF NATURAL RESOURCES

Matt Blunt, Governor • Doyle Childers, Director

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MEMORANDUM

DATE:

TO: Water Pollution Control Branch Staff
Regional Directors
Regional Office Water Pollution Staff

FROM: Edward Galbraith, Director
Water Protection Program

SUBJECT: Lagoon Operating Permit Renewal Guidance

Intent

Waste stabilization ponds (lagoons) are an important wastewater treatment technology in terms of cost effectiveness and operational viability. Lagoons that are properly designed, operated, and maintained can be protective of water quality where instream assimilative capacity exists. The intent of this guidance is to establish a procedure for operating permit renewals for lagoons that have “equivalent to secondary” treatment (lagoon) effluent limits in the absence of a water quality impact study.

This guidance does not prohibit establishing alternative methods of analysis or permit limits, provided the alternatives are technically sound, protective of water quality and consistent with federal and state regulations and this memorandum. Because this guidance document can not encompass all situations encountered when renewing a facility operating permit, staff are encouraged to contact the Water Protection Program (WPP) with site specific questions.

Statement of Issue

10 CSR 20-7.015(8)(B) “Effluent Regulation” requires discharges from domestic wastewater treatment facilities to meet standard secondary treatment technology effluent limitations for Biochemical Oxygen Demand (BOD₅) and Total Suspended Solids (TSS). If a facility proposes to use a lagoon or other “equivalent to secondary” treatment technology, state rule requires a water quality impact study to demonstrate that equivalent to secondary treatment will be protective of instream water quality.

The vast majority of these facilities have not had a water quality impact study conducted as required under state rule. In order to proceed with permit renewal, the department must have assurance that the effluent limitations found in the operating permit are protective of water quality. The procedures and mechanisms contained within this memo will provide department staff with a means of renewing these permits in conformance with this requirement.

All of these actions are consistent with existing permit renewal conditions, and include no new interpretation of existing regulations.



Low Flow Stream Surveys

The Water Protection Program will conduct low flow stream surveys of receiving streams of lagoon facilities using program staff and consultants. Low flow surveys have been conducted by the department for many years, but these efforts have not focused on determining water quality impacts from a particular treatment technology. The WPP expects to finalize all stream surveys for affected lagoon facilities within a five-year permit cycle. These low flow surveys will be considered equivalent to water quality impact studies by the program. In the event contractors are utilized to conduct low flow surveys, a Quality Assurance Project Plan (QAPP) must be submitted by the contractor or permittee and approved by the Department prior to field work.

Low flow surveys must include, at minimum, a visual observation of the receiving stream during critical low flow conditions, but can also include Benthic Assessment of Streams/Stream Measurements and water quality analysis and invertebrate surveys. All surveys must adhere to the attached Standard Operating Procedures.

Renewal of Existing Lagoon Permits

The Program directs that water pollution control staff in the central office and Field Services Division immediately begin renewing all lagoon permits consistent with the attached flow chart for issuing operating permit renewals for lagoons.

At renewal, the permit writer will review and update a facility's operating permit to incorporate new water quality criteria, receiving stream classification, or wasteload allocations and monitoring requirements as stipulated by a Total Maximum Daily Load (TMDL) or enforcement action. Permit writers must use the attached checklist to ensure that relevant factors are considered during renewal.

Effluent limitations for BOD₅, TSS, and pH must be consistent with those found in regulation for the receiving waterbody [10 CSR 20-7.015(2) – (8)] unless more stringent limits are required by a TMDL or wasteload allocation study. In such cases, the department must conduct a formal water quality review before renewal of the operating permit.

If the facility discharges to or within two (2) miles of a stream designated for whole body contact recreation, the operating permit must include effluent limitations for fecal coliform and Total Residual Chlorine (TRC), if chlorine is used as a disinfectant. Operating permits for Publicly Owned Treatment Works (POTWs) and those facilities with observable receiving stream impacts must include influent monitoring and reporting for BOD₅ and TSS at the minimum regulatory frequency. Influent monitoring must be compared with effluent monitoring to determine whether the facility is meeting the removal efficiency requirement for equivalent to secondary treatment (> 65%). For all other lagoon operating permits, percent removal need not be reported to the department, but any influent and effluent data must be available for department inspection and review.

The monitoring frequency required in the permit must be at or above the regulatory minimum frequency found in Table 1 for the facility design flow. For those facilities that meet the criteria in Table 2 and have permits reopened because there is known water quality impact, the operating permit may require an increase in monitoring frequency above the minimum requirement. This will ensure collection of an adequate number of samples to conduct reasonable potential and facility compliance analyses. A decrease in monitoring

frequency may occur if a facility demonstrates it is consistently in compliance with effluent limitations and the receiving waterbody is achieving water quality standards. However, any decrease in monitoring frequency may not cause the facility to monitor or report less frequently than that required by regulation.

As it conducts low flow surveys, the WPP will provide Regional Office staff with information regarding facilities that have observable impacts on their receiving stream. Regional offices will notify these facilities of the department’s intent to open the operating permit for cause. The WPP will continue to handle those facilities that have design flows greater than 1 MGD.

If a low flow survey indicates that water quality is being compromised by the facility, the permit writer must be reopen the permit and include a schedule of compliance for upgrade. In the event that the facility believes that no upgrade is necessary to mitigate for water quality impacts, the permit may be modified to require additional requirements including but not limited to additional monitoring, an engineering evaluation, proper operational maintenance and visual inspections.

Table 1. Regulatory Minimum Monitoring Frequency

Design Flow (gpd)	Once/Quarter	Once/Month	Twice/Month	Once/Week
0 – 200,000	X			
200,001 – 600,000		X		
600,001 – 999,999			X	
> 999,999				X

Table 2. Recommended Increased Effluent Monitoring Frequency when Permit is reopened to address water quality impact.

		Once/Quarter	Once/Month	Once/Week
Facility Age	0 – 10 years	X		
	10 – 20 years		X	
	> 20 years			X
Actual Flow/Design Flow	< 0.85	X		
	0.85 – 1.0		X	
	> 1.0			X
Stream Flow/Design Flow	< 10:1		X	
	= 10:1	X		

EG:rmb

Attachment

- c: Jim Macy, FSD
- Bruce Martin, FSD
- Daniel Schuette, DEQ
- Earl Pabst, DEQ