

3.5.7.2 Overview of the Permit/No-Discharge Permits/ Effluent Limits/Final Effluent Limits

Applicability:

Discusses the development of final effluent limits for issuance in new no-discharge permits. Also applies to modifications and renewals of no-discharge permits.

Content:

No-discharge facilities are designed, constructed and operated to hold or irrigate, or otherwise dispose, without discharge to surface or ground waters except for discharges caused by catastrophic and chronic storm events (see 10 CSR 20-6.015(1)(B)7). Final effluent limits for no-discharge permits apply during the periods that the facilities are impacted and discharging due to such storm events. Additionally, final effluent limits apply to discharges from no-discharge facilities that have Partial Irrigation Facilities/System Requirements.

Facilities with Partial Irrigation System Requirements are allowed to discharge during the growing season when excess wastewater has accumulated above feasible irrigation rates or consumptive irrigation needs. Facilities with a combined irrigation and discharge designation may discharge as specifically authorized in the permit.

The final effluent limits are based on the type of wastewater and the degree of treatment it will receive in storage lagoons. The basic categories of wastewater are:

- domestic waste, or primarily domestic waste, that is stored and land applied at both publicly and privately owned treatment works, and
- industrial waste from manufacturing, commercial, mining and silvacultural operations.

Information about animal waste is found in Permits Manual topics dealing with AFOs and CAFOs. Storm water information is found in topics dealing with storm water sources, land disturbance, MS4 permits and industrial permits.

For facilities that treat primarily domestic wastewater or industrial wastewater, the permit writer must consider effluent limits based on either the technology to treat pollutants (technology based limits) or the designated uses of the receiving waters (water quality based limits).

Technology based limits for municipal treatment plants and other facilities that treat primarily domestic wastewater are derived from the secondary treatment standards. For the most part, since no-discharge facilities typically rely on lagoons for wastewater storage, the "equivalent to secondary treatment" provisions apply. The final, technology-based effluent limits would be based on the lagoon standards. Close consideration needs to be given to partial irrigation facilities that may discharge during the growing season, which also may be the recreational season. The control of bacteriological levels (presently fecal coliform levels) needs to be addressed by the permit writer.

Secondary treatment and equivalent treatment are described in Permits Manual topics 5.3.2.1 and 5.3.2.2, respectively. Additionally, the Effluent Regulations, 10 CSR 20-7.015, present domestic wastewater effluent limits for all waters in the state based upon, or reflective of, the secondary treatment standards. Specifically, these limits are in 10 CSR 20-7.015(2), (3), (4), (6) and (8).

There are two general approaches for developing technology based limits for industrial facilities: 1) using the national effluent limitation guidelines (ELGs) or 2) using best professional judgment

(BPJ) in the absence of ELGs. For industries, the national ELGs represent the demonstrated performance of a reasonable level of treatment that is within the economic means of the category of industrial facilities. The ELGs, also known as the categorical standards, are presented in the Code of Federal Regulations at 40 CFR 400 through 471. The ELGs are likely to be based on treatment in facilities relying on mechanical, physical/chemical technologies. No-discharge facilities are typically based on a storage lagoon design. Therefore, a BPJ approach can be anticipated as being needed.

BPJ limits are technology-based limits derived on a case-by-case basis for industrial facilities when ELGs are not available for a particular pollutant of concern. Permits Manual topics 4.7.4.1.2, 4.7.4.2.2 and 4.7.4.3.2 dealing with Industrial Permits and 5.3.3 Best Professional Judgment should be reviewed for additional information about industrial permits. 10 CSR 20-7.015(9)(G)1 addresses the setting of industrial permit limitations.

The permit writer must propose final effluent limits based on the degree of reduction of waste concentration that is projected to occur during the time the wastewater is expected to be held in the storage lagoon(s). Factors to be taken into consideration in this BPJ process include, but are not necessarily limited to:

- employing a “worst case” assumption of a storage lagoon full to its pump-down volume,
- determining a realistic rate of wastewater inflow to the lagoon (including possible increases during wet weather), the storage volume of the lagoon and a resultant average retention period,
- estimating the degree of reduction of waste concentration that occurs during this retention period, and,
- for discharges resulting only from storm events, estimating the effect of dilution of waste concentration that will occur as the lagoon receives precipitation directly to its surface raising it from its pump-down volume to its point of overflow.

The permit writer then must consider the impact of the possible discharge on the receiving water during or following chronic or catastrophic storm events, or during the periods that discharge is allowed. It may be that the projected degree of treatment will not sufficiently protect the receiving stream’s designated uses. In which case, the development of more stringent effluent limits is necessary to ensure that water quality standards are met. This requires the development of water quality-based effluent limitations (WQBEL), which, in turn, may result in the permittee providing greater storage volumes and retention times in the lagoons or the use of other technological approaches. The permit writer must make this determination at each permit issuance or renewal, especially if the facility is reporting increases in received wastewater volumes or concentrations or other changes in waste characteristics.

Legal References:

Code of State Regulations

[10 CSR 20-6.010\(5\)\(A\) and \(E\)](#)

Construction and Operating Permits - Operating Permits -
(A) Required-
(E) Effluent Limits Required

[10 CSR 20-6.010\(8\)\(A\)1 & 2 and \(B\)](#)

Construction and Operating Permits - Permit Terms and Conditions -
(A) 1 & 2 Standard Conditions-
(B) Effluent Limits, Monitoring and other Conditions

[10 CSR 20-6.015\(1\)\(B\)7](#)

No-Discharge Permits - Definitions

[10 CSR 20-6.015\(2\)](#)

No-Discharge Permits - General

[10 CSR 20-6.015\(4\)](#)

No-Discharge Permits - Permits

[10 CSR 20-7.031](#)

Water Quality Standards

Other Links:

[3.2.7.2 Final Effluent Limits](#) (Site-Specific Permits)

[4.7.4.1.2 Industrial Permits](#)

[5.3. Technology-Based Effluent Limits](#) (all topics)

[5.4 Water Quality-Based Effluent Limits](#)

[5.4.5 Effluent Limits for Specific Waters](#)

Key Words:

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