

SUBCHAPTER A: EFFLUENT LIMITATIONS
§§309.1 - 309.4
Effective November 26, 2009

§309.1. Scope and Applicability.

(a) The purpose of these sections is to promulgate a set of effluent quality limitations for treated domestic sewage which will be required of permittees as appropriate to maintain water quality in accordance with the commission's surface water quality standards. Any incorporation of federal regulations into this chapter shall apply only to disposal of domestic sewage.

(b) Secondary treatment, with exceptions applicable to certain stabilization pond systems and other natural systems, is defined as a minimum reduction of pollutants to meet the following quality:

Biochemical Oxygen Demand (BOD ₅), 5-Day (milligram per liter, mg/l)	
30-Day Average	20
7-Day Average	30
Daily Maximum	45
Single Grab	65
Total Suspended Solids (TSS) (mg/l)	
30-Day Average	20
7-Day Average	30
Daily Maximum	45
Single Grab	65
Dissolved Oxygen (DO) (mg/l)	
Single Grab (minimum)	2.0
pH (Standard Units)	
Within limits of 6.0-9.0	

(c) Effective April 1988, all permits containing an ammonia-nitrogen effluent limit are hereby modified to change BOD₅ to carbonaceous biochemical oxygen demand (CBOD₅).

(d) Effective January 1, 1988, any permit containing a BOD₅ effluent limitation may be monitored and reported as CBOD₅ as long as nitrogen is monitored and reported as ammonia-nitrogen at the same sampling frequency. If the permit authorizes a discharge to land or an evaporation pond only, ammonia-nitrogen monitoring and reporting are not required to change to CBOD₅.

(e) The State of Texas has established a state water quality management program and a continuing planning process which sets forth the strategy and procedures for accomplishing the management program's objectives. Essential elements of the program include updates of basin plans, total

maximum daily loads, and wasteload evaluations by basin segments. In order to achieve compliance with water quality standards within certain segments, more stringent effluent quality limitations other than basic secondary treatment may be required to protect water quality.

Adopted May 7, 1998

Effective June 5, 1998

§309.2. Rationale for Effluent Sets.

(a) The effluent sets in §309.4 of this title (relating to Table 1, Effluent Limitations for Domestic Wastewater Treatment Plants) are intended to represent standard levels of treatment normally required for domestic wastewater treatment plants.

(b) Modifications to the uniform sets of effluent criteria listed in §309.4 of this title may be considered by the commission when effluent limits more stringent than secondary treatment are required in order to maintain desired water quality levels.

(c) On a case-by-case basis, modifications to the uniform effluent criteria listed in §309.4 of this title may be considered by the commission for certain existing, natural systems which cannot consistently meet pH or total suspended solids criteria due to the inherent variability of a particular system. Modifications to the criteria may be allowed for a natural system designed for treatment or polishing with a discharge directly into surface waters. Natural systems include, but are not necessarily limited to, aerated lagoons followed by stabilization ponds, facultative ponds, stabilization ponds, and constructed wetlands. For the purpose of this chapter, playa lakes are not considered natural systems. The commission will consider the following factors in approving a modification to the criteria:

(1) Any modification shall not allow a discharge which would cause a violation of the commission's surface water quality standards or any applicable total maximum daily loads (TMDLs) or wasteload evaluation.

(2) A proposal for a modification must be supported by an engineering report, prepared and sealed by a qualified professional engineer representing the permit applicant, which justifies the request for modification with specific information relating to the proposed design and that design's inherent limitations. For considering a request for modification of an existing system that cannot achieve permitted pH or TSS limitations, the engineering report must also document past efforts of design modification, operation, and maintenance, and include data showing for the past three years, influent and effluent hydraulic and organic loadings and the resultant effluent quality achieved.

(3) The commission may set narrative effluent limitations and effluent monitoring requirements as an alternative to a specific numerical effluent limitation when a specific numeric effluent limitation cannot be met because of, but not limited to, seasonal or operational factors. These narrative requirements shall ensure that necessary operational and maintenance actions are consistently carried out by the permittee to meet applicable water quality standards. The commission may request resumption of the original numerical limitations at the expiration of the permit based on a review of the discharge effluent data.

(4) The commission may suspend setting a specific numerical effluent limitation for a temporary period of time not to exceed the remainder of the permit term, pending a review of the actual performance of a natural system's design as long as the facility meets paragraph (1) of this subsection. During any temporary suspension, the permittee must document that the system is operated and maintained for optimal performance in accordance with an operation and maintenance manual prepared in accordance with Chapter 317 of this title (relating to Design Criteria for Sewerage Systems) and is meeting water quality standards. After review of performance data and related information submitted by the permittee in a permit application, at time of permit renewal or amendment, or when submitted at the request of the executive director, the commission may set specific numerical effluent limitations consistent with the criteria of this subchapter and the performance documented for the particular system.

Adopted May 7, 1998

Effective June 5, 1998

§309.3 Application of Effluent Sets.

(a) Discharges into effluent limited segments.

(1) All discharges into effluent limited segments shall, at a minimum, achieve secondary treatment. An effluent limited segment is any segment which is presently meeting or will meet applicable water quality criteria following incorporation of secondary treatment for domestic sewage treatment plants and/or best practicable treatment for industries.

(2) New or increased discharges into effluent limited segments shall achieve that level of treatment deemed necessary by the commission, based on the assimilative capacity and uses of the receiving stream.

(b) Discharges into water quality limited segments.

(1) All discharges into water quality limited segments for which evaluations have been developed shall, at a minimum, achieve the treatment level specified in the recommendations of the evaluation for that discharge. A water quality limited segment is a surface water segment classified by the commission as water quality limited where conventional treatment of waste discharged to the segment is not stringent enough for the segment to meet applicable water quality standards; monitoring data have shown significant violations of water quality standards; advanced waste treatment for point sources is required to protect existing exceptional water quality; or the segment is a domestic water supply reservoir used to supply drinking water.

(2) Discharges into water quality limited segments for which wasteload evaluations or total maximum daily loads have not been developed shall, at a minimum, achieve secondary treatment as provided by §309.1 of this title (relating to Scope and Applicability).

(c) Discharges into certain reservoirs. Any discharge made within five miles upstream of a reservoir or lake which is subject to on-site/private sewage facility regulation adopted under Texas Water Code, Chapter 26 or Texas Civil Statutes, Article 4477-7e, or which may be used as a source for public drinking water supply shall achieve, at a minimum, Effluent Set 2 in §309.4 of this title (relating to Table 1, Effluent Limitations for Domestic Wastewater Treatment Plants). Five miles shall be measured in

stream miles from the normal conservation pool elevation. The commission may grant exceptions to this requirement where it can be demonstrated that the exception would not adversely impact water quality.

(d) Discharges from stabilization ponds. Effluent Set 3 in §309.4 of this title shall apply to stabilization pond facilities in which stabilization ponds are the primary process used for secondary treatment and in which the ponds have been designed and constructed in accordance with applicable design criteria. Effluent Set 3 in §309.4 of this title is considered equivalent to secondary treatment for stabilization pond systems.

(e) Discharge to an evaporation pond. Effluent discharged to evaporation ponds must receive, at a minimum, primary treatment, be within the pH limits of 6.0 - 9.0 standard units, and have a quality of 100 milligrams per liter five-day biochemical oxygen demand or less on a grab sample. For the purpose of this subsection, primary treatment means solids separation which is typically accomplished by primary clarifiers, Imhoff tanks, facultative lagoons, septic tanks, and other such units.

(f) Land disposal of treated effluent. The commission may authorize land disposal of treated effluent when the applicant demonstrates that the quality of ground or surface waters in the state will not be adversely affected. Each project must be consistent with laws relating to water rights. The primary purpose of such a project must be to dispose of treated effluent and/or to further enhance the quality of effluent prior to discharge.

(1) When irrigation systems ultimately dispose of effluent on land to which the public has access, Effluent Set 4 in §309.4 of this title, at a minimum, shall apply. The pH shall be within the limits of 6.0 - 9.0 standard units unless a specific variance is provided in the permit based upon site-specific conditions. When lands to which the public does not have access are to be used for ultimate disposal of effluent, the effluent must, at a minimum, receive primary treatment. Effluent Set 5 in §309.4 of this title shall apply and the pH shall be within the limits of 6.0 - 9.0 standard units unless a specific variance is provided in the permit based upon site-specific conditions. For irrigation systems, primary treatment is the same as described in subsection (e) of this section. Effluent may be used for irrigation only when consistent with Subchapters B and C of this chapter (relating to Location Standards and Land Disposal of Sewage Effluent).

(2) When overland flow systems are utilized for effluent treatment, the public shall not have access to the treatment area. Primary treated effluent meeting Effluent Set 6 in §309.4 of this title, within the pH limits of 6.0 - 9.0 standard units may be used consistent with environmental safeguards and protection of ground and surface waters. For overland flow systems, primary treatment is the same as described in subsection (e) of this section. At a minimum, Effluent Set 1 in §309.4 of this title shall apply to discharges from overland flow facilities except where more stringent treatment levels are required to meet water quality standards.

(3) When evapotranspiration beds, low pressure dosing, or similar soil absorption systems are utilized for on-site land disposal, the effluent shall, at a minimum, receive primary treatment and meet Effluent Set 7 in §309.4 of this title. Use of these on-site systems shall be consistent with environmental safeguards and the protection of ground and surface waters. Primary treatment is the same as described in subsection (e) of this section.

(4) When subsurface area drip dispersal systems, or similar soil absorption systems ultimately dispose of effluent on land where there is the significant potential for public contact, as defined in §222.5 of this title (relating to Definitions), Effluent Set 4 in §309.4 of this title, at a minimum, shall apply. The pH shall be within the limits of 6.0 - 9.0 standard units unless a specific variance is provided in the permit based upon site-specific conditions.

(5) When subsurface area drip dispersal systems, or similar soil absorption systems ultimately dispose of effluent on land where there is the minimal potential for public contact, as defined in §222.5 of this title, Effluent Set 5 in §309.4 of this title, at a minimum, shall apply. The pH shall be within the limits of 6.0 - 9.0 standard units unless a specific variance is provided in the permit based upon site-specific conditions.

(6) Treated effluent may be land applied only when consistent with Subchapters B and C of this chapter. Use of subsurface area drip dispersal systems shall be consistent with environmental safeguards and the protection of ground and surface waters.

(7) For the purpose of this subsection, primary treatment means solids separation which is typically accomplished by primary clarifiers, Imhoff tanks, facultative lagoons, septic tanks, and other such units.

(g) Disinfection.

(1) Except as provided in this subsection, disinfection in a manner conducive to the protection of both public health and aquatic life shall be achieved on all domestic wastewater which discharges into waters in the state. Any appropriate process may be considered and approved on a case-by-case basis.

(2) Where chlorination is utilized, any combination of detention time and chlorine residual where the product of chlorine (Cl_2 mg/l) X Time (T minutes) equals or exceeds 20 is satisfactory provided that the minimum detention time is at least 20 minutes and the minimum residual is at least 0.5 mg/l. The maximum chlorine residual in any discharge shall in no event be greater than four mg/l per grab sample, or that necessary to protect aquatic life.

(3) On a case-by-case basis, the commission will allow chlorination or disinfection alternatives to the specific criteria of time and detention described in paragraph (2) of this subsection that achieve equivalent water quality protection. These alternatives will be considered and their performance standards determined based upon supporting data submitted in an engineering report, prepared and sealed by a registered, professional engineer. The report should include supporting data, performance data, or field tracer studies, as appropriate. The commission will establish effluent limitations as necessary to verify disinfection is adequate, including chlorine residual testing, other chemical testing, and bacteria testing as specified in subsections (h) or (i) of this section.

(4) Except as provided herein, disinfection of domestic wastewater which is discharged by means of land disposal or evaporation pond shall be reviewed on a case-by-case basis to determine the need for disinfection. All effluent discharged to land to which the public has access must be disinfected and if the effluent is to be transferred to a holding pond or tank, the effluent shall be rechlorinated to a trace chlorine residual at the point of irrigation application. All effluent discharged to land via a

subsurface area drip dispersal system to which there is a potential for public contact shall be disinfected and shall comply with an *Escherichia coli* (*E. coli*) bacteria effluent limitation of 126 colony forming units per 100 milliliters of water or a fecal coliform effluent limitation of 200 colony forming units per 100 milliliters water, per grab sample, in accordance with paragraph (1) of this subsection.

(5) Unless otherwise specified in a permit, chemical disinfection is not required for stabilization ponds when the total retention time in the free-water-surface ponds (based on design flow) is at least 21 days.

(h) Effluent limitations for bacteria.

(1) To demonstrate the disinfection level in effluent discharged into water in the state by its wastewater treatment facility, a permittee shall measure the amount of bacteria in the effluent.

(A) To demonstrate disinfection, *Escherichia coli* (*E. coli*) must be the indicator bacteria measured for discharges to fresh water.

(B) To demonstrate disinfection, *Enterococci* must be the indicator bacteria measured for discharges to salt water.

(2) The monthly average bacteria effluent limitation in a Texas Pollutant Discharge Elimination System (TPDES) permit must be the applicable geometric mean for the most stringent contact recreation category as specified in Chapter 307 of this title (relating to Texas Surface Water Quality Standards).

(3) The daily maximum bacteria effluent limitation in a TPDES permit must be the applicable single grab sample for the most stringent contact recreation category in Chapter 307 of this title.

(i) More stringent requirements. The commission may impose more stringent requirements in permits than those specified in subsections (a) - (h) of this section, on a case-by-case basis, where appropriate to maintain desired water quality levels or protect human health.

Adopted November 4, 2009

Effective November 26, 2009

§309.4. Table 1, Effluent Limitations for Domestic Wastewater Treatment Plants.

This table contains the sets of effluent criteria for waste discharge permits.

Table 1
Effluent Limitations for Domestic Treatment Plants

Set	Direct Discharge	30-Day Average		7-Day Average			Daily Maximum			Single Grab			DO MIN
		BOD ₅	TSS	BOD ₅	TSS	BOD ₅	TSS	BOD ₅	TSS	BOD ₅	TSS		
1	Secondary treatment	20	20	30	30	45	45	65	65	65	65	2.0	
2	Enhanced secondary treatment	10	15	15	25	25	40	35	60	60	60	4.0	
3	Stabilization ponds	30	90	45	--	70	--	100	--	100	--	4.0	
4	Land Treatment/Disposal Irrigation (public exposure*)	20	20	30	30	45	45	65	65	65	65	--	
	Subsurface area drip dispersal system (public contact**) Using stabilization ponds	30	90	45	--	70	--	100	--	100	--	--	
5	Subsurface area drip dispersal system using stabilization ponds (public contact**)	--	--	--	--	--	--	100	--	100	--	--	
	Irrigation (no public exposure)	--	--	--	--	--	--	100	--	100	--	--	
6	Subsurface area drip dispersal system (no public contact)	--	--	--	--	--	--	100	--	100	--	--	
	Overland flow (applied effluent)	--	--	--	--	--	--	100	--	100	--	--	
7	Evapotranspiration beds and low pressure dosing	--	--	--	--	--	--	100	--	100	--	--	

		30-Day Average			7-Day Average			Daily Maximum			Single Grab			DO MIN
		CBO D ₅	TSS	NH ₃ -N	CBO D ₅	TSS	NH ₃ -N	CBO D ₅	TSS	NH ₃ -N	CBO D ₅	TSS	NH ₃ -N	
2N	Enhanced Secondary with Nitrification	10	15	3	15	25	6	25	40	10	35	60	15	4.0
2N1	Secondary with Nitrification	10	15	2	15	25	5	25	40	10	35	60	15	4.0

Note: * – Public Exposure: The potential for the public to come into direct contact with treated effluent.
 ** – Public Contact: The potential for the public to come into contact with the soil over a dispersal zone, as defined in 30 TAC §222.5.