

Permitting and Approval Requirements for Modular Package Wastewater Treatment Plants and Other Wastewater/Water Supply Infrastructure

August 1, 2013 (updated September 30, 2020)

Introduction

In North Dakota, domestic wastewater is typically treated using facultative pond systems, with mechanical treatment plants most often limited to larger cities. The growth of the oil industry in western North Dakota sparked increased interest in the use of modular package mechanical/biological plants to treat domestic wastewater. This document addresses the North Dakota Department of Environmental Quality (hereafter referred to as the department) permitting and approval requirements for such treatment systems as well as other wastewater/water supply infrastructure.

1. Surface Water Discharge of Treated Wastewater

Any discharge of treated wastewater to surface water requires a North Dakota Pollutant Discharge Elimination System (NDPDES) permit from the department to comply with state and federal rules.

General Permit

The department has issued general NDPDES Permit NDG420000 for discharges from modular package wastewater treatment plants. The general permit outlines monitoring and reporting requirements for facilities. Plants that satisfy the eligibility requirement of the general permit may submit a notice of intent to the department to obtain coverage under the permit. In some instances, facilities may be required to obtain an individual permit.

Permit Review Timeline

Review of a general permit notice of intent may take up to 60 days. Review of an individual permit application to set discharge limits may take up to 180 days and will consider site-specific information about the receiving stream.

Intermittent Versus Continuous Discharge

Wastewater treatment design standards require 180-day storage to prevent the need to discharge during ice-covered conditions, unless provisions are made for reuse as discussed below. Only the largest rivers in North Dakota (i.e., the Missouri and Red rivers) have sufficient flows during frozen conditions to accommodate wastewater discharges.

Discharge Piping

All discharge lines must be buried and terminate at an acceptable discharge point.

2. Design Approval of Wastewater Systems

Plans and specifications for the wastewater collection and treatment systems must be submitted to and approved by the department's Division of Municipal Facilities prior to construction. The plans and specifications must be stamped by a North Dakota registered engineer. Design must conform to the current Recommended Standards for Wastewater Facilities (10 States Standards - GLUMRB). On a site-specific basis, depths greater than 5 feet of liquid depth (up to 12 feet liquid depth) may be allowed for ponds storing secondary-treated wastewater. Effluent storage ponds deeper than 5 feet of liquid depth will require a minimum of two cells to allow for separation if there are issues with treatment. The smallest cell shall be a minimum of one-third the total capacity.

With respect to location, wastewater stabilization ponds receiving untreated wastewater must be separated by at least 1/4 mile from any neighboring permanent dwellings. Such separation is recommended but not required within facility-owned housing units such as crew camps.

Contingent on local planning/zoning approval, ponds storing treated wastewater may be located closer than 1/4 mile from permanent residential housing, including apartments and mobile home parks, if all the following conditions are met:

1. A package wastewater treatment plant must be installed.
2. No outside or hauled-in wastewater can be accepted.
3. Package treatment plant effluent must not exceed 10 mg/l BOD₅, 10 mg/l TSS, and 126 *E. coli* colonies per 100 ml.
4. Treated effluent storage ponds must provide 180-day storage, and an NDPDES discharge permit must be obtained.
5. If a discharge occurs from the treated effluent pond, an adequate public drainageway must be available.
6. An odor control plan must be included in the plans and specifications for the facility.
7. The package treatment plant, any access hatches, and the effluent storage pond must be fenced with 6-foot high, chain-link security fence topped with barbed (not razor) wire.
8. Warning signs must be placed along the fencing.
9. There must be a minimum 200-foot separation between the effluent pond fence and any dwelling lot line.
10. There must be a minimum 200-foot separation between the package treatment plant and any dwelling lot line.
11. The facility owner must employ or contract with department-certified wastewater operators for operation and maintenance of the wastewater facilities.

3. On-site Subsurface Drain Field Disposal of Wastewater

On-site subsurface drain field disposal systems are limited to 25 people per system or 2,500 gallons per day, whichever is greater. For facilities proposing to serve more than 100 people or 10,000 gallons per day, whichever is greater, a treatment system capable of meeting secondary standards, such as a modular package wastewater treatment plant, must be installed prior to subsurface drain field disposal. Housing units cannot be divided to avoid this requirement. A 100% replacement area for the subsurface drain field must be set aside and identified on the site. The Division of Water Quality's Groundwater Protection Program must be notified about subsurface drain fields intended to serve 20 or more people per day as they are considered Class V underground injection wells.

4. Wastewater Reuse

Wastewater reuse systems must be reviewed and approved by the Division of Municipal Facilities prior to construction. A minimum of secondary treatment must be provided (a higher level of treatment may be required by end users to satisfy reuse needs). If reuse for oilfield hydraulic fracturing (fracking) is planned, two storage options are available: (1) 180-day storage and application for an NDPDES permit from the Division of Water Quality; and (2) the greater of 90-day or 1-million-gallon storage and application for an NDPDES permit. Under Option 2, a plan must be submitted which includes a listing of buyers committed to using the treated wastewater, contracts adequate to cover the volume of wastewater generated, a backup method of disposal, and information describing the water quality that must be achieved and the treatment technology that will be used to achieve it. Backup disposal methods include direct discharge to the environment in compliance with an NDPDES permit, land application via a department-approved method, and subsurface disposal as discussed above. Other backup disposal methods will be reviewed for possible approval if requested.

5. Holding Tanks for Wastewater

Holding tank systems for raw or treated wastewater are allowed only for facilities proposing to serve 100 or fewer people (10,000 gallons per day maximum). A minimum of seven-days storage must be provided. Facilities serving more than 100 people must connect to a municipal system or provide on-site treatment and disposal or reuse.

6. Pretreatment of Wastewater

If treated wastewater will be transferred to a municipal sewer system, approval must be obtained from the municipality. Plans and specifications for wastewater systems must be submitted to and approved by the Division of Municipal Facilities prior to construction.

7. Underground Injection of Wastewater

Injection of wastewater into underground sources of drinking water is prohibited. Wells used to inject wastewater into zones located beneath the lowermost underground source of drinking water are considered Class I injection wells. Class I injection wells are regulated by the Division of Water Quality in accordance with North Dakota Administrative Code (NDAC) Chapter 33.1-25-01 and require a permit to operate.

8. Other Information

Biosolids

Biosolids from wastewater treatment plants must be managed in accordance with the U.S. Environmental Protection Agency's Section 503 Biosolids Rule.

Septic Pumps

Septic pumps must obtain a septic pumper permit in accordance with NDAC 33.1-21-02.

Approval of Treatment Technology

The department does not provide blanket approval of any specific treatment technology or process. Approvals and permits are based on site-specific design.

Water Supply

Plans and specifications for the water supply system must be submitted to and approved by the Division of Municipal Facilities prior to construction. Plans and specifications must be stamped by a North Dakota registered engineer and conform to the 10 State Standards, North Dakota State Plumbing Code, and North Dakota water well installation regulations. Systems that qualify as public water systems must meet specific monitoring/reporting requirements under the Safe Drinking Water Act. Haulers of drinking water must be approved and meet specific requirements.

Other Requirements

For information on other requirements pertaining to oil-field housing, please refer to the following document: <https://deq.nd.gov/Publications/OilPatchHousing.pdf>

8. Contacts

Marty Haroldson, NDPDES Permits Program, 701-328-5234; email: mharolds@nd.gov

Elizabeth Tokach Duran, Municipal Facilities Division, 701-328-5256;

email: etokachduran@nd.gov

Sarah Waldron Feld, Septic Pumper Permitting, 701-328-5237; email: sfeld@nd.gov

Tammy Lamphear, Drinking Water Program, 701-328-5295; email: tmlamphear@nd.gov

Carl Anderson, Groundwater Protection Program, 701-328-5213; email: cjanders@nd.gov