

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

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Introduction

In North Dakota, domestic wastewater typically is treated using facultative pond systems, with mechanical treatment plants limited to the largest cities. The rapid growth of the oil industry in western North Dakota has sparked increased interest in use of modular package mechanical/biological plants to treat domestic wastewater. This document addresses permitting and approval requirements for such treatment systems, as well as other wastewater/water supply infrastructure. In applying these requirements, the North Dakota Department of Health (Department) recognizes there may be unique circumstances. Deviations from the requirements will be considered on a case-by-case basis.

1. Surface Water Discharge of Wastewater

Any discharge of wastewater to surface water requires a North Dakota Pollutant Discharge Elimination System (NDPDES) permit from the Department to be in compliance with state and federal rules.

General Permit

The Department has issued a general NDPDES permit for discharges from modular package wastewater treatment plants. The general permit outlines the discharge limits and eligibility requirements that a plant must meet to obtain coverage. Plants that satisfy the eligibility requirement of the general permit may submit a notice of intent to the Department to obtain coverage. In some instances, the Department may require a plant to obtain an individual permit based on eligibility restrictions or to protect the receiving water.

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. The review process takes into account 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 over winter.

Discharge Limits

Discharge limits for a specific facility are determined during the permit review process. Such limits will likely be similar to those listed in the general permits.

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. With the exception of wastewater stabilization ponds, design must conform to Recommended Standards for Wastewater Facilities (10 States Standards - GLUMRB), 2004 Edition. Wastewater stabilization pond design must conform to Chapter 90, Waste Stabilization Ponds (Lagoons), available under Plan and Specification Review at <http://www.ndhealth.gov/EHS/MF/PlanSpec/>. On a site-specific basis, liquid depths greater than 5 feet (up to 12 feet) may be allowed for ponds storing secondary-treated wastewater.

With respect to location, non-municipal 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 from facility-owned housing units such as within crew camps.

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

- A package wastewater treatment plant must be installed.
- No outside or hauled-in wastewater can be accepted.
- Package treatment plant effluent must not exceed 10 mg/l BOD₅, 10 mg/l TSS, and 126 E. coli colonies per 100 ml.
- Treated effluent storage ponds must provide 180-day storage, and an NDPDES discharge permit must be obtained.
- If discharge will occur from the treated effluent pond, an adequate public drainage way must be available.
- An odor control plan must be included in the plans and specifications for the facility.
- The package treatment plant, any access hatches, and the effluent storage pond must be fenced with six-foot high chain-link security fence topped with barbed (not razor) wire.
- Warning signs must be placed along the fencing.
- There must be a minimum 200-foot separation between the effluent pond fence and any dwelling lot line. The package treatment plant may be located within this 200-foot area, but structures that could be occupied may not.
- 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. For facilities proposing to serve more than 100 people, 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 percent replacement area for the subsurface drain field must be set aside and identified on the site. The Division of Water Quality, Ground Water 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 and on a case-by-case basis. Treated wastewater may only be land applied by a licensed septage hauler or NDPDES permittee.

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. A minimum of seven days storage must be provided. Septage pumpers/haulers must be licensed. 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 and water quality limits must be obtained from the municipality. Plans and specifications for the wastewater collection and transportation 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 Chapter 33-25-01 and require a permit to operate.

8. Other Information

Biosolids and Septage Pumps

Biosolids from wastewater treatment plants must be managed in accordance with the U.S. Environmental Protection Agency's Section 503 Biosolids Rule. Septage haulers and pumpers must obtain a septic pumper license.

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 10 State Standards, the North Dakota State Plumbing Code, and the 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: <http://www.ndhealth.gov/EHS/Publications/OilPatchHousing.pdf>

8. Contacts

Marty Haroldson, NDPDES Permits Program – 701.328.5234; e-mail: mharolds@nd.gov
Dave Bergsagel, Municipal Facilities Division – 701.328.5212; e-mail: dbergsag@nd.gov
Sarah Waldron, Septic Pumper Permits– 701.328.5237; e-mail: sewaldron@nd.gov
Tammy Lamphear, Drinking Water Program – 701.328.5295; e-mail: tmlamphear@nd.gov
Carl Anderson, Ground Water Protection Program –701.328.5213; e-mail: cjanders@nd.gov