CHAPTER 7081
MINNESOTA POLLUTION CONTROL AGENCY
MIDSIZED SUBSURFACE SEWAGE TREATMENT SYSTEMS

7081.0010 PURPOSE AND INTENT.

The proper location, design, installation, use, and maintenance of midsized subsurface sewage treatment systems (MSTS) protects the public health, safety, and general welfare by the discharge of adequately treated sewage to the groundwater In accordance with the authority granted in Minnesota Statutes, chapters 103F, 103G, 115, and 116, the Pollution Control Agency, hereinafter referred to as the agency, provides minimum environmental protection standards for MSTS as defined in this chapter.

These standards shall be adopted countywide and administered and enforced by local units of government as directed by chapter 7082 and Minnesota Statutes, section 115 55

This chapter does not regulate subsurface treatment systems that do not receive sewage as defined in this chapter If systems regulated under this chapter receive both sewage and nonsewage, the requirements of this chapter apply, plus any additional requirements governing the nonsewage portion of the wastewater Systems serving two or more dwellings, systems serving other establishments that serve over 20 persons, and systems receiving nonsewage are also regulated under Code of Federal Regulations, title 40, parts 144 and 146.

This chapter does not contain design standards for sewage treatment systems that discharge to the ground surface or surface waters. Those systems require a national pollution discharge elimination systems permit

Primarily, this chapter provides measurable performance outcomes for MSTS, but this chapter also includes limited design, construction, inspection, and operational standards that are believed to reasonably protect surface water, groundwater, public health, safety, general welfare, and the environment

In conjunction with these standards, the agency encourages the use of advanced treatment methods and waste reduction to further reduce the discharge of contaminants

Other chapters that have a bearing on MSTS are standards for individual subsurface sewage treatment systems in chapter 7080, administrative requirements for subsurface sewage treatment systems local permit and inspection programs in chapter 7082 and certification and licensing requirements for those who design, install, inspect, maintain, or operate subsurface sewage treatment systems and product registration m chapter 7083.

Statutory Authority: *MS s 115 03, 115 55*

History: *32 SR 1400*

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7081.0020 DEFINITIONS.

Subpart 1 **Certain terms.** In addition to the definitions in chapters 7080, 7082, and 7083 and Minnesota Statutes, section 115.55, which are incorporated by reference, the terms used in this chapter have the meanings given them. For the purposes of this chapter, if a term used in this chapter is defined in chapter 7080, 7082, or 7083, it shall apply to MSTS and other SSTS if referenced in later chapters. Certain terms or words used in this chapter must be interpreted as follows the words "shall" and "must" are mandatory and the words "should" and "may" are permissive All distances specified in this chapter are horizontal distances unless otherwise specified

Subp 2 **Capillary fringe.** "Capillary fringe" means the soil layer directly above a saturated layer in which the pore spaces are nearly filled with water as water is drawn upward due to adhesive and cohesive forces

Subp 3 **Groundwater mound.** "Groundwater mound" means the rise in height of the periodically saturated soil or regional water table caused by the addition of sewage effluent from a subsurface sewage treatment system into the soil

Subp 4. **Midsized subsurface sewage treatment system or MSTS.** "Midsized subsurface sewage treatment system" or "MSTS" means an individual sewage treatment system, or part thereof, as set forth in Minnesota Statutes, sections 115 03 and 115 55, that employs sewage tanks or other treatment devices with final discharge into the soil below the natural soil elevation or elevated final grade and that is designed to receive sewage from dwellings or other establishments with a design flow of greater than 5,000 gallons per day to 10,000 gallons per day

Design flows must be determined by part 7081 0110. MSTS also includes on-lot septic tanks, holding tanks, and privies that serve these same facilities but does not include any pump tanks used in a sewage collection system MSTS does not include those components defined as plumbing under chapter 4715 or sewage collection systems

Subp. 5 **NPDES permit.** "NPDES permit" means a national pollutant discharge elimination system permit issued by the agency

Subp 6 **Other establishment.** "Other establishment" means any public or private structure other than a dwelling that generates sewage that discharges to an MSTS

Subp 7 **SDS permit.** "SDS permit" means a state disposal system permit issued by the agency.

Subp. 8 **Well capture zone.** "Well capture zone" means the surface and subsurface area that supplies water to a water supply well

Statutory Authority: *MS s 115 03, 115 55*

History: *32 SR 1400*

7081.0040 STATE REGULATION.

Subpart 1 **Agency regulation.**

A All MSTS must be designed and operated according to this chapter, except as modified through an ordinance in compliance with chapter 7082 and Minnesota Statutes, section 115 55 All MSTS must be designed, installed, inspected, pumped, and operated by licensed businesses meeting the qualifications in chapter 7083. All MSTS must conform to applicable state statutes and rules

B When a single SSTS, or group of SSTS under single ownership within one-half mile of each other, are designed to treat a design flow greater than 10,000 gallons per day, the owner or owners shall make application for and obtain an SDS permit from the agency in accordance with chapter 7001 If the measured daily flows for a consecutive seven-day period exceed 10,000 gallons per day, an SDS permit is required

C An SDS permit is required for any subsurface sewage treatment system or group of subsurface sewage treatment systems that the commissioner determines has the

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potential or an increased potential to cause adverse public health or environmental impacts if not regulated under a state permit Conditions for these permits include systems in environmentally sensitive areas, unsubstantiated or unexpected flow volumes, and systems requiring exceptional operation, monitoring, and management

D Flow amounts to calculate whether an SDS permit is required must be determined according to part 7081 0110 The highest calculated value of the various methods in Table I under part 7081 0130, subpart 1, must be used to make this determination, with no reduction allowed An SDS permit is not required if a factor of safety is added to the design flow that results in a design flow that is in excess of the SDS permit threshold.

Subp 2. **Other state regulations.**

A. MSTS must conform to all applicable state statutes and rules

B MSTS serving establishments licensed or regulated by the state of Minnesota, or MSTS owned by the state of Minnesota, must conform to this chapter

Statutory Authority: *MS s 115 03, 115 55*

History: *32 SR 1400*

7081.0050 FEDERAL REGULATION.

A All subsurface sewage treatment systems serving two-family dwellings or larger and systems serving other sewage generating establishments that serve more than 20 people are regulated by the United States Environmental Protection Agency as Class V injection wells under Code of Federal Regulations, title 40, parts 144 and 146 Code of Federal Regulations, title 40, parts 144 and 146, prescribe additional design regulations applicable to certain systems designed under this chapter In addition, single-family dwellings systems that receive nonsewage wastewater are regulated by these federal regulations All systems that receive hazardous wastes are regulated by the United States Environmental Protection Agency as Class IV injection wells Disposal of hazardous waste must be according to state and federal regulations

B The owner or owner's agent of a system classified as a Class V injection well shall submit to the commissioner of the Pollution Control Agency and the United States Environmental Protection Agency the inventory information specified in Code of Federal Regulations, title 40, section 144 26

C All septage generated from MSTS must be treated and dispersed according to applicable standards for septage in Code of Federal Regulations, title 40, part 503, and any local requirements

Statutory Authority: *MS s 115 03, 115 55*

History: *32 SR 1400*

7081.0060 LOCAL REGULATION.

MSTS must be regulated under local ordinances in compliance with this chapter as described in Minnesota Statutes, section 115 55 Local administrative requirements for design review, construction permit issuance, construction inspections, variance procedures, enforcement, operational requirements, and other administrative processes must be according to chapter 7082

Statutory Authority: *MS s 115 03; 115 55*

History: *32 SR 1400*

7081.0070 VARIANCE PROCEDURES.

Parts 7081 0080 to 7081 0300 are provided to be incorporated into a local ordinance accordmg to chapter 7082 and Minnesota Statutes, section 115 55 Variance requests to these design standards as adopted into local ordinances made by an owner or owner's agent must be issued or denied by the local unit of government. Variances must not be issued by the local unit of government for the minimal environmental protection outcomes in part

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7081.0080, subparts 2 to 5 Variances may be granted to part 7081 0080, subpart 4, item D, subitem (1), for replacement MSTS serving existing dwellings or other establishments.

Statutory Authority: *MS s 115.03; 115 55*

History: *32 SR 1400*

7081.0080 PERFORMANCE AND COMPLIANCE CRITERIA.

Subpart 1 **General.** New construction, replacement, or existing MSTS designed under this chapter are considered conforming if they meet the requirements of this part Existing MSTS constructed before February 4, 2008, are considered conforming if they meet the requirements of this part, except for subpart 4, items D and E.

Subp 2. **Treatment required.** All sewage discharged from a dwelling or other establishment not served by a system issued a permit containing effluent and discharge limits or specific monitoring requirements by the agency must be treated according to local ordinances that comply with this chapter, chapter 7082, and Minnesota Statutes, section 115.55

Subp. 3 **Public health and safety; imminent threat.**

A To be in compliance, all MSTS must

(1) have treatment processes and devices that do not allow sewage or sewage effluent contact with humans, insects, or vermin,

(2) disperse sewage effluent into soil or sand below final grade, with the effluent remaining below final grade;

(3) not discharge to drainage tile, the ground surface, or surface water or back up sewage into dwellings or other establishments,

(4) treat and disperse sewage effluent in a safe manner, including protection from physical injury and harm, and

(5) not have received hazardous material

B MSTS must be deemed an imminent threat to public health or safety for noncompliance with item A and any other condition that poses an imminent threat as determined by a qualified employee MSTS inspector or licensed MSTS inspection business.

Subp 4 **Groundwater protection.** To be in compliance, all MSTS must

A maintain a zone of unsaturated soil between the bottom of the soil treatment and dispersal system and the periodically saturated soil or bedrock during loading of effluent, as described in part 7081.0270, subpart 8,

B not be seepage pits, cesspools, drywells, leaching pits, sewage tanks, and treatment vessels that observably leak below the designated operating depth,

C not allow viable fecal organisms to contaminate underground waters or zones of seasonal saturation,

D employ nitrogen reduction processes that reduce nitrogen contribution to groundwater as determined in subitem (1) or (2)

(1) if the discharge from an MSTS will impact water quality of an aquifer, as defined in part 4725 0100, subpart 21, the effluent from an MSTS, in combination with the effective recharge to the groundwater, must not exceed a concentration of total nitrogen greater than 10 mg/l at the property boundary or nearest receptor, whichever is closest, and

(2) if the discharge from an MSTS will not impact water quahty of an aquifer, as defined in part 4725 0100, subpart 21, best management practices developed by the commissioner to mitigate water quality impacts to groundwater must be employed, and

E. not exceed a groundwater discharge of phosphorus to a surface water that exceeds the phosphorus standard to the receiving water

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Subp 5 **Other conformance.** To be in compliance, MSTS must meet the requirements of items A and B

A All methods and devices used to treat and disperse sewage must be designed to conform to all applicable federal, state, and local regulations.

B Systems no longer in use must be abandoned according to part 7080.2500

Subp 6 **System operation.** To be in compliance, an MSTS must meet performance standards and be operated and managed accordmg to its operating permit and management plan, as described in part 7081 0290. To be in compliance, an MSTS designed before February 4, 2008, must be operated according to applicable requirements of part 7080 2450.

Subp 7. **Compliance criteria for systems receiving replacement components.** Components of existmg MSTS that cause noncompliance must be repaired or replaced. The repaired or replacement components must meet technical standards and criteria in parts 7081 0110 to 7081.0280. The remaining components of the existing system must comply with subparts 2 to 5, including subpart 4, item D, if constructed after February 4, 2008

Subp 8. **Upgrade requirements.**

A MSTS in comphance with this part shall be issued a certificate of compliance Systems found not in compliance shall be issued a notice of noncompliance

B MSTS issued a notice of noncompliance based on criteria in subpart 3 shall be repaired or replaced within ten months or as directed by Minnesota Statutes, chapter 145A, whichever is most restrictive

C MSTS issued a notice of noncompliance based on criteria in subpart 4 or 5 shall be repaired or replaced according to local ordinance requirements.

D Systems issued a notice of noncompliance based on criteria in subpart 6 must immediately be maintained, monitored, or managed according to the operating permit

Statutory Authority: *MS s 115.03, 115 55*

History: *32 SR 1400*

7081.0100 PROFESSIONAL REQUIREMENTS.

Systems must be designed, installed, inspected, operated, and maintained by appropriately licensed businesses and certified individuals according to chapter 7083 and other requirements

Statutory Authority: *MS s 115.03, 115 55*

History: *32 SR 1400*

7081.0110 SEWAGE FLOW DETERMINATION.

The design flow is the combmed values determined in parts 7081 0120, 7081 0130, and 7081.0140

Statutory Authority: *MS s 115 03, 115.55*

History: *32 SR 1400*

7081.0120 DESIGN FLOW DETERMINATION FOR DWELLINGS.

Subpart 1 **Sum of design flow for existing dwellings.** The design flow for MSTS serving existing dwellings is determined by the following calculation in conjunction with part 7080.1850

the total flow from the ten highest flow dwellings + (total flow from the remaining dwelhngs * 0.45)

Subp 2 **New housing developments.** For new housmg developments, the developer shall determine and restrict the total number of bedrooms for the development and determine the design flow by multiplying the total number of bedrooms by 110 gallons per

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bedroom. If the ultimate development of phased or segmented growth meets or exceeds the thresholds in part 7081 0040, subpart 1, item B, the initial system or systems and all subsequent systems require a state disposal system permit

Subp. 3 **Additional capacity.** If construction of additional dwellings or bedrooms, installation of additional water-using devices, or other factors likely to increase the flow volumes can be reasonably anticipated, the MSTS must be designed to accommodate the additional capacity as determined by the local unit of government

Statutory Authority: *MS s 115 03, 115.55*

History: *32 SR 1400*

7081.0130 FLOW AND WASTE CONCENTRATION DETERMINATION FOR OTHER ESTABLISHMENTS.

Subpart 1 **Method.** Design flows for other establishments are determined by methods in item A or B

A The design flow of sewage for MSTS serving other establishments is estimated using Table I

TABLE I

ESTIMATED DESIGN SEWAGE FLOW FROM OTHER ESTABLISHMENTS

Dwelling units (also see outdoor recreation)	Unit	Design flow (gal/ day/unit)
Hotel or luxury hotel	guest	55
	square foot	0 28
Motel	guest	38
	square foot	0 33
Rooming house	resident	45
	add for each nonresident meal	3 3
Daycare (no meals)	child	19
Daycare (with meals)	child	23
Dormitory	person	43
Labor camp	person	18
Labor camp, semipermanent	employee	50
Commercial/Industrial		
Retail store	square foot	0.13
	customer	3 8
	toilet	590
Shopping center	employee	11.5
	square foot	0.15
	parking space	2 5
Office	employee/8-hour shift	18
	square foot	0.18

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Medical office*	square foot	1 1
	practitioner	275
	patient	8
Industrial buildmg*	employee/8-hour shift	17.5
	employee/8-hour shift with showers	25
Laundromat	machine	635
	load	52 5
	square foot	2.6
Barber shop*	chair	68
Beauty salon*	station	285
Flea market	nonfood vendor/space	15
	limited food vendor/space	25
	with food vendor/space	50
Eating and drinking establishments		
Restaurant (does not include bar or lounge)	meal without alcoholic drinks	3 5
	meal with alcoholic drinks	8
	seat (open 16 hours or less)	30
	seat (open more than 16 hours)	50
	seat (open 16 hours or less, single service articles)	20
	seat (open more than 16 hours, single service articles)	35
Restaurant (short order)	customer	7
Restaurant (drive-in)	car space	30
Restaurant (carry out, mcluding caterers)	square foot	0 5
Institutional meals	meal	5 0
Food outlet	square foot	0 2
Dining hall	meal	8 5
Coffee shop	customer	7
Cafeteria	customer	2 5
Bar or lounge (no meals)	customer	4 5
	seat	36
Entertainment establishments		
Drive-in theater	car stall	5
Theater/auditorium	seat	4 5

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Bowling alley	alley	185
Country club	member (no meals)	22
	member (with meals and showers)	118
	member (resident)	86
Fairground and other similar gatherings	visitor	1 5
Stadium	seat	5
Dance hall	person	6
Health club/gym	member	35
Outdoor recreation and related lodging facilities		
Campground	person with hook-up	36
	site with hook-up	100
	site without hook-up, with central bath	62
	site to be served by dump station	14 5
Permanent mobile home	mobile home	225
Camp, day without meals	person	20
Camp, day with meals	person	25
Camp, day and night with meals	person	45
Resort/lodge hotel	person	62
Cabin, resort	person	50
Retail resort store	customer	4
Park or swimming pool	guest	10
Visitor center	visitor	13
Transportation		
Gas station/convenience store	customer	3.5
Service station*	customer	11
	service bay	50
	toilet	250
	square foot	0 25
Car wash* (does not include car wash water)	square foot	5
Airport, bus station, rail depot	passenger	5
	square foot	5
	restroom	565
Institutional		
Hospital*	bed	220

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Mental health hospital*	bed	147
Prison or jail	inmate	140
Nursing home, other adult congregate living	resident	125
Other public institution	person	105
School (no gym, no cafeteria, and no showers)	student	14
School (with cafeteria, no gym and no showers)	student	18
School (with cafeteria, gym, and showers)	student	27.5
School (boarding)	student	95
Church	seat	4
	add for each meal prepared	5
Assembly hall	seat	4
Miscellaneous		
Public lavatory	user	5
Public shower	shower taken	11

* Waste other than sewage is only allowed to be discharged into the system if the waste is suitable to be discharged to groundwater.

Unless otherwise noted in Table I, the flow values do not include flows generated by employees A flow value of 15 gallons per employee per eight-hour shift must be added to the flow amount Design flow determination for establishments not listed in Table I shall be determined by the best available information and approved by the local unit of government

B The measured design flow of sewage for MSTS serving other establishments is determined by averaging the measured daily flows for a consecutive seven-day period in which the establishment is at maximum capacity or use

Subp 2 **Waste concentration.** If concentrations of biochemical oxygen demands, total suspended solids, and oil and grease from the sewage are expected to be higher than 175 mg/l, 65 mg/l, or 25 mg/l respectively, an estimated or measured average concentration must be determined and be acceptable to the local unit of government. System design must account for concentrations of these constituents so as not to cause internal system malfunction, such as, but not limited to, clogging of pipes, orifices, treatment devices, or media

Statutory Authority: *MS s 115 03; 115 55*

History: *32 SR 1400*

7081.0140 INFILTRATION.

The design flow must also include 200 gallons of infiltration and inflow per inch of collection pipe diameter per mile per day with a minimum pipe diameter of two inches to be used for the calculation. Flow values are allowed to be further increased if the system employs treatment devices that are exposed to atmospheric conditions that will infiltrate

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precipitation. Flow estimates as calculated in this chapter shall not be relied upon for the design of collection systems

Statutory Authority: *MS s 115.03, 115 55*

History: *32 SR 1400*

7081.0150 NECESSITY OF SOIL AND SITE EVALUATIONS.

Soil and site evaluations must be conducted for MSTS design The evaluations must be conducted according to parts 7081 0160 and 7081 0200 Evaluations must identify and delineate an initial and replacement soil treatment and dispersal area with appropriate system site boundaries

Statutory Authority: *MS s 115 03; 115 55*

History: *32 SR 1400*

7081.0160 PRELIMINARY EVALUATION.

A preliminary evaluation consists of determining·

A the design flow and anticipated effluent concentrations of biochemical oxygen demand, total suspended solids, and fats, oils, and grease,

B. whether the location of water supply wells impacts the location of the system due to the setback constraints,

C. whether buildings or improvements will be within 50 feet of the proposed soil dispersal area,

D whether buried water supply pipes will be within 50 feet of the proposed system,

E whether easements will be within 50 feet of the proposed system,

F whether the ordinary high water level of public waters will be within 500 feet of the proposed soil treatment and dispersal area and if so, a preliminary assessment of phosphorus impacts to the surface water;

G. whether the system will be located in a floodplain and the system location in relation to the 100-year flooding elevation from published data if available or data that is acceptable to the local unit of government,

H the required setbacks from the proposed soil treatment and dispersal system,

I the soil survey information on the proposed soil dispersal area, including the soil map, map units, landscape position, parent material, flooding potential, slope range, periodically saturated soil level, depth to bedrock, texture, color, and structure of soil horizons, and permeability of soil horizons,

J the township, range, section number, and other unique property identifiers, as required by the local unit of government, dimensions, and size of the proposed soil treatment area,

K the names of property owners, and

L the location of the system on a United States Geological Survey quadrangle map of the proposed soil treatment and dispersal area and the area within one mile

Statutory Authority: *MS s 115 03, 115 55*

History: *32 SR 1400*

7081.0170 FIELD EVALUATION.

Subpart 1 **Generally.** Before conducting a field evaluation, the designer shall confer with the local unit of government to determine the requirements and scope of the evaluation, dependent upon system size, soil conditions, and other applicable factors At a minimum, the requirements in this part must be met

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Subp 2 **Property marks.** Property lines must be identified as acceptable to the owner. Site improvements, required setbacks, and easements must be identified, located, and marked.

Subp 3 **Site area.** A general evaluation and description of the proposed soil dispersal area, including a general geomorphic description, current land use, and past land use, if known, must be provided

Subp 4 **Surface features.** The following surface features must be identified and described

A the dominant vegetation,

B evidence of disturbed or compacted soil or flooding or run-on potential, and

C. landscape position, includmg landform, slope gradient, slope direction, and surface morphometry as described in the Field Book for Describing and Samphng Soils Version 2.0, September 2002, developed by the National Soil Survey Center and Natural Resources Conservation Service of the United States Department of Agriculture The field book is mcorporated by reference, is not subject to frequent change, and is available through the Minitex mterlibrary loan system

Subp. 5 **Soil pits.**

A. The required number of soil pits must be determined by the professional judgment of the designer as based on the size of the area, consistency of the soil, and approved by the local unit of government

B The qualifying soil pits or borings to be used for the MSTS design must be located on or near the borders of the proposed soil treatment and dispersal area. Soil pits must be dug outside the soil dispersal area if possible The soil must be observed and described to a depth of at least three feet below the proposed depth of the system Other soil observations are allowed to be made to supplement the required soil pit information.

C Underground utilities must be located before soil observations are undertaken Required safety precautions must be taken before entering soil pits

Subp 6 **Soil description.**

A The soil properties and features in subitems (1) to (13) must be described according to Field Book for Describing and Sampling Soil, version 2, Natural Resources Conservation Service, United States Department of Agriculture (September 2002), for each soil horizon at each qualifying soil pit The field book is incorporated by reference under subpart 4, item C

(1) Matrix soil color

(2) Soil features that have different colors from the matrix color, mcludmg but not limited to clay films, organic stams, silt coats, nodules, and concretions.

(3) Abundance, size, color, and contrast of redoximorphic features

(4) Soil texture, with modifiers.

(5) Grade, size, and shape of soil structure

(6) Moist soil consistence

(7) Abundance and size of rock fragments

(8) Abundance and size of roots

(9) Horizon boundary conditions.

(10) Parent materials

(11) Pores, quantity and size

(12) Quantity of boulders and tree stumps affecting construction

(13) Any other characteristic or feature that affects permeability of the soil or treatment of sewage effluent

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B The depth of bedrock, if encountered, must be determined by requirements of part 7080.1100, subpart 8.

C The elevation of standing water evident in any soil pit must be identified

D The soil must not be described when frozen, at an improper moisture content, or under poor light conditions.

Subp. 7 **Method.** Hydraulic conductivity testing of the soil must be employed, along with a determination of the soil's texture, structure, and consistence, to determine the loading rate of effluent to the soil The frequency of the observations and measurements must be determined by the professional judgment of the designer, dependent on the variation in soil conditions and the system size, with the frequency of the observations and measurements approved by the local unit of government

Subp. 8. **Comparison with soil survey.** All field soil information gathered must be compared with soil survey information. Any discrepancies shall be identified

Statutory Authority: *MS s 115 03, 115 55*

History: *32 SR 1400*

7081.0180 SOIL INTERPRETATION FOR SYSTEM DESIGN.

Subpart 1 **Site and soil information.** Site and soil information gathered in parts 7081.0160 and 7081.0170 must be interpreted for suitability for MSTS siting, design, and construction, with consideration of the following

A. surface features impacts from precipitation, run-on, and interflow or any other item that could have potential to adversely impact the ability of the soil to accept water,

B cultural features impacts, including, but not limited to, setbacks and easements,

C site conditions affecting system layout, distribution system requirements, and constructability,

D layers of coarse soil textures that affect treatment,

E. disturbed, compacted, cut-filled, or other unnatural condition, if present;

F. the uniformity of the soil over the site;

G. future surrounding land use changes,

H soil sizing factor or loading rate, and

I an approximation of the rise in groundwater from system operation as determined by groundwater mounding calculations. A narrative evaluation of the accuracy of the approximation must be provided The approximation must be related to the requirements in part 7081 0270, subpart 6

Subp 2 **Flood fringes.** Systems proposed to be located in flood fringes must determine feasibility of relocating the system outside the floodplain

Subp 3. **Depth.** The limiting layer in the soil shall be determined based on the depth of bedrock or periodically saturated soil if encountered. The depth to the periodically saturated soil shall be determined according to part 7080 1720, subpart 5, item E, and the depth of bedrock shall be as defined under part 7080.1100, subpart 8

Statutory Authority: *MS s 115 03, 115.55*

History: *32 SR 1400*

7081.0190 SITE PROTECTION.

The proposed soil treatment and dispersal area must be protected from disturbance, compaction, or other damage by staking, fencing, posting, or other effective method

Statutory Authority: *MS s 115 03, 115.55*

History: *32 SR 1400*

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7081.0200 SOIL AND SITE REPORT.

All information required in parts 7081 0150 to 7081 0180 must be submitted for review and approval by the local unit of government prior to final design The submittal must also contain

A a map of the proposed soil dispersal area, drawn to scale, showing·

(1) features with a setback within 150 feet of the system,

(2) easements within 50 feet of the system;

(3) floodplains, wetlands, and surface waters, within 100 feet of the system;

(4) location and elevation of all soil pits, borings, and hydraulic tests; and

(5) two-foot contour lines,

B. dates and weather conditions during the field evaluation;

C. elevations of the periodically saturated soil or bedrock,

D. proposed depths of the system bottom,

E proposed soil loadmg rate,

F system site boundaries,

G anticipated construction-related issues,

H name, address, telephone number, and certified statement of the certified individual conducting the site evaluation; and

I a narrative explaining any difficulties encountered during the site evaluation, such as, but not limited to, identifying and interpreting soil and landform features, and how the difficulties were resolved

Statutory Authority: *MS s 115 03; 115 55*

History: *32 SR 1400*

7081.0210 GROUNDWATER INVESTIGATION.

Subpart 1 **Necessity of investigation.** A preliminary groundwater evaluation must be conducted for all proposed MSTS according to this part.

Subp 2 **Preliminary investigation.** The following information must be ascertained from the best available information

A. the size of the soil dispersal system, proposed loading rate, and system geometry,

B. the township, range, section number, and other unique property identifiers, as required by the local unit of government, of the parcel where the proposed soil dispersal area is to be located,

C any anticipated discharges from nondomestic sources to the proposed MSTS,

D. the location of the MSTS on a United States Geological Survey quadrangle topographic map, includmg the area within a one-mile radius of the proposed soil treatment system,

E a determination of the general geology, periodic soil saturation, regional groundwater setting, and aquifers used for water supply and a description of the general site hydrology characteristics, mcluding, but not hmited to, identification and estimated depth measurements to geologic units and aquifers, and identification of groundwater confining strata,

F a determination whether the proposed system is in a drinking water supply management area, inner wellhead management zone, source water protection area, or groundwater sensitive area,

G an assessment of all water supply wells within a 300-foot radius of the proposed soil treatment area with a minimum assessment of well locations and casing depths

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from well construction log records. If no records exist, the well locations and casing depths must be estimated,

H. a determination or estimation of groundwater flow direction, and

I an assessment of nitrogen impacts from the system.

Subp 3 **Field or further investigation.** The designer must consult with the local unit of government to determine whether the local unit of government will require a field or further groundwater investigation and, if so, the extent of the investigation The field or further investigation must be conducted if information gained in subpart 2 indicates that a proposed system is a potential contaminant threat to a regional water table, an aquifer, or water supply well(s) The threats of concern include, but are not limited to, fecal organism contamination, nitrate contamination, or phosphorus impacts to surface waters.

Subp 4 **Monitoring.** The designer must consult with the local unit of government to determine if the local unit of government will require effluent or groundwater monitoring and, if so, the extent of the monitoring Monitoring must be conducted if information gained in subpart 2 or 3 indicates that a proposed system is a potential contaminant threat to a regional water table, an aquifer, or a water supply well or impacts surface waters. The potential groundwater mound height must be monitored under all MSTS during operation

Subp 5 **Hydrological interpretations.** The information gathered in this part must be used to estimate or measure if the system adequately protects the groundwater and surface water as prescribed in part 7081 0080, subpart 4 The interpretation must include an evaluation of whether contaminant plumes will intersect water supply well capture zones

Subp 6. **Groundwater report.** All information required in this part must be submitted for review and approval of the local unit of government prior to final design, including all applicable information delineated on a map

Statutory Authority: *MS s 115 03; 115 55*

History: *32 SR 1400*

7081.0230 DESIGN STANDARDS.

A The design standards for new construction or replacement MSTS in parts 7081 0240 to 7081.0270 are provided to meet many of the public health and environmental outcomes in part 7081 0080 In some cases, specific engineered methods must be employed in addition to the standards provided in parts 7081 0240 to 7081 0270

B MSTS must not receive storm water or other sources of clean water.

C All structural components of the system and sealants must be designed to operate throughout the system's design life.

D. A flow measure device must be employed on all MSTS

E The system must be designed with sufficient access and ports to monitor the system as applicable

F MSTS must employ components registered under parts 7083.4000 to 7083.4110 or have sufficient regulatory oversight in the operating permit

Statutory Authority: *MS s 115 03; 115 55*

History: *32 SR 1400*

7081.0240 SEWAGE TANKS.

Subpart 1 **General.** All holding or treatment tanks or vessels, including lined vessels and grease interceptors serving MSTS, must conform to the applicable requirements of part 7080 1900 except as modified in this part or as designed by a professional engineer and approved by the local unit of government.

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Subp 2 **Tank capacity.**

A. Total septic tank capacity must be in accordance with this item

(1) Total septic tank liquid capacity for a common tank serving multiple dwellings under gravity flow to the common tank are determined by multiplying the design flow by 3 0

(2) Total septic tank liquid capacity for a common tank serving multiple dwelhngs under pressure flow to the common tank is determined by multiplying the design flow by 4 0

(3) Common multiple septic tanks must be connected in series Individual tanks connected m series or any compartment of a tank must have a capacity of more than one-fourth of the required total liquid capacity

B. For MSTS that have individual septic tanks at each dwelling, the individual tanks must meet the requirements of part 7080 1900 Stilling tanks must be installed between the individual tanks and the next system component as necessary to prevent damage from surging

C Total septic tank liquid capacity for other establishments with domestic strength waste is determined by multiplying the design flow by 3 0 if receiving sewage under gravity flow or multiplying the design flow by 4.0 if receiving sewage under pressure flow Additional septic tank capacities or equalization tanks with pretreatment may be necessary for high strength waste sources connected to the MSTS

D. Total septic tank liquid capacity prior to other treatment devices shall be accordmg to manufacturer's requirements or accepted standards

E Holding tanks serving other establishments must provide storage of at least five times the design flow

Subp 3 **Lint filters, effluent screens, and pressure filters.** Effluent screens must be used as the outlet baffle on the final septic tank or pressure filters must be used in the pump tank if common tanks are employed in series. Alarms must be employed on tanks equipped with effluent screens. Lint filters are recommended if the sewage contams laundry waste

Subp 4 **Tank geometry.**

A For common septic tanks, the maximum liquid depth of septic tanks to determine liquid capacity must be no greater than 84 inches The length-to-width ratio and the length-to-depth ratio must facilitate settling of solids.

B For common septic tanks, the space in the tank between the liquid surface and the top of the inlet and outlet baffles must not be less than 20 percent of the total required liquid capacity

Subp. 5 **Tank testing.** All tanks used for MSTS must be tested for watertightness according to part 7080 2010, subpart 3 The test shall be conducted to include the watertightness of all connections and risers

Subp 6 **Liners.** Liners used as watertight barriers for treatment devices must be designed and constructed according to liner requirements developed by the commissioner of the Pollution Control Agency If conflicts exist between this chapter and those requirements, this chapter applies Compacted soil liners must not be used as watertight barriers for treatment devices Lmers must be tested and must hold water without loss for 24 hours after being filled to the top of the liner.

Subp 7. **External grease interceptors.** A commercial or institutional food preparation facility such as, but not limited to, a restaurant, cafeteria, or institutional kitchen, served by a system regulated under this chapter, the system design for which was submitted to the local unit of government after February 4, 2008, shall install an external grease

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interceptor unless other grease control measures are taken and approved by the local unit of government This grease interceptor will be considered part of the SSTS system

Statutory Authority: *MS s 115 03, 115.55*

History: *32 SR 1400*

7081.0250 DISTRIBUTION OF EFFLUENT.

Distribution of effluent into a soil treatment and dispersal system must comply with part 7080 2050 or be designed by a registered professional engineer and approved by the local unit of government MSTS must employ pressure distribution. The distribution system must be designed to dose and rest zones in accordance with operational requirements

Statutory Authority: *MS s 115.03, 115 55*

History: *32 SR 1400*

7081.0260 DOSING OF EFFLUENT.

A Dosing of effluent into a soil treatment and dispersal system must comply with part 7080.2100 except as modified in this part.

B The dosing system must include an alternating two-pump system and have a minimum total capacity of 50 percent of the design flow

C The pump discharge capacity must be based on the perforation's discharge, with a minimum average head of two feet for 1/4 inch and 3/16 inch perforations and five feet for 1/8 inch perforations

Statutory Authority: *MS s 115 03; 115 55*

History: *32 SR 1400*

7081.0270 FINAL TREATMENT AND DISPERSAL.

Subpart 1 **General.** Final treatment and dispersal must be according to applicable design requirements in chapter 7080, except as modified in this part. Code of Federal Regulations, title 40, parts 144 and 146, prescribe additional design regulations applicable to certain systems designed under this chapter. At a minimum, flow amounts to be used for the purposes of this part must be derived from part 7081.0110.

Subp. 2 **Setbacks.** MSTS components must meet the setbacks in Table II

Table II

Minimum Setback Distances (feet)

Feature	Sewage Tank, Holding Tank, or Sealed Privy	Absorption Area or Sealed Privy	Building Sewer or Sewage Supply Pipes
Water supply wells	*	*	*
Buried water lines	*	*	*
Buildings**	10	20	
System site boundaries	10	10	
The ordinary high water level of public waters	***	***	

*Setbacks from buried water pipes and water supply wells are governed by chapters 4715 and 4725, respectively

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**If setbacks are reduced through local administrative processes, the system shall not be located under or within the structure

***Setbacks from lakes, rivers, and streams are governed by chapters 6105 and 6120

Subp. 3. **Minimal soil and site conditions.** The site proposed to support the soil treatment and dispersal system must

A. have the upper 12 inches of the absorption area.

(1) be original soil,

(2) have a soil loading rate of greater than zero as listed in Table IX or IXa, in part 7080 2150, subpart 3, item E, and

(3) be above the periodically saturated soil or bedrock;

B meet the area size requirements in subpart 5 and setbacks in subpart 2 and all easements;

C not be a wetland or floodway,

D not be in an area in which surface runoff from precipitation will concentrate (concave hillslope), and

E allow the system to be placed on contour.

Subp 4. **Inspection pipes.** Inspection pipes must be located to adequately assess the hydraulic performance of the entire soil dispersal system

Subp 5. **Soil absorption area sizing.**

A Effluent loading rates to the soil shall not exceed the soil's ability to infiltrate and transmit effluent as determined by the observations and measurements in part 7081 0170, subpart 7, and must be no greater than loading rates prescribed in

(1) part 7080.2150, subpart 3, item E, Table IX or IXa, if the absorption area receives treatment level C effluent as described in part 7083.4030, or

(2) part 7080 2350, subpart 3, Table XII or XIIa if the absorption area receives effluent meeting treatment levels A or B in part 7083 4030, or

(3) part 7080 2400, if allowed by the local unit of government

B If the absorption area receives effluent as described in item A, subitem (1), the absorption area shall be increased by 50 percent of the amount derived in item A, subitem (1), and zoned for dosing and resting.

Subp. 6 **System geometry, lawn area sizing, and groundwater mounding.** The system geometry and lawn area sizing shall be sized to prevent groundwater mounding from violating the unsaturated zone beneath the soil system according to subpart 7, for proper hydraulic functioning, and for concentration reduction of nitrogen and phosphorus, if applicable

Subp. 7 **Reserve land area.** Additional set-aside land area of 100 percent of the size determined in subpart 6 is required for systems whose absorption area receives effluent meeting treatment level A or B in part 7083.4030 or designed in accordance with part 7080 2400. Additional land area of 50 percent of the size determined in subpart 6 is required for systems whose absorption area receives treatment level C in part 7083 4030 The reserve land area must be identified and protected for future use if necessary Replacement MSTS proposed on sites that cannot meet this requirement are allowed to be exempted by the local unit of government

Subp 8 **Soil treatment zone.** For treatment of effluent by soil to meet the performance criteria in part 7081 0080, subpart 4, item C, the soil treatment and dispersal systems must meet the requirements of item A, B, or C

A For soil treatment and dispersal systems that receive treatment level C effluent as described in part 7083 4030, the soil treatment zone requirements must meet or exceed

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the requirements of part 7080 2150, subpart 3, item C. The required three-foot vertical separation must be maintained during operation after accounting for groundwater mounding

B For soil treatment and dispersal systems that receive treatment level A or B effluent as described in part 7083 4030, the soil treatment requirements must meet or exceed the requirements of subitems (1) to (4).

(1) a minimum vertical depth of the soil treatment and dispersal zone below the distribution media shall be determined according to part 7080 2350, subpart 2, Table XI, with a minimum vertical separation of two feet This zone shall meet criteria in units (a) to (c)

(a) the zone must be above the periodically saturated soil and bedrock The zone must be continuous and not be interrupted by seasonal zones of saturation;

(b) any soil layers with a sizing texture group of 1 or 4 in Table IX in part 7080 2150, subpart 3, item E, must not be credited as part of the necessary treatment zone, and

(c) the entire treatment zone depth must be within seven feet from final grade,

(2) the distribution system or media must not place a hydraulic head greater than 30 inches above the bottom of the absorption area,

(3) the system's absorption area must be original soil, and

(4) the system's absorption area must be sized accordmg to subpart 6

C. The minimum vertical separation can be determined by the method described in part 7080 2400 to meet provisions of part 7081 0080, subpart 4, item C, if allowed by the local unit of government.

D. An observation well to measure the height of the periodically saturated soil beneath the operating system must be installed and monitored according to the operating permit

Subp 9 **Nitrogen reduction.** Systems must employ nitrogen mitigation methods to achieve compliance with part 7081.0080, subpart 4, item D, and must be monitored in accordance with part 7081.0210, subpart 4

Subp. 10 **Phosphorus reduction.** Phosphorus mitigation inethods must be employed to achieve comphance with part 7081 0080, subpart 4, item E, if natural processes are found inadequate

Subp. 11 **Design report.** All information required in this part shall be submitted for review and approval by the local unit of government prior to system construction, including all applicable information delineated on a map

Statutory Authority: *MS s 115.03, 115.55*

History: *32 SR 1400*

7081.0280 CONSTRUCTION REQUIREMENTS.

A MSTS construction must be according to applicable construction requirements of chapter 7080.

B. The MSTS designer must observe critical periods of system construction The designer shall prepare a report of observed construction activities and submit the report to the local unit of governinent prior to final inspection

Statutory Authority: *MS s 115 03; 115 55*

History: *32 SR 1400*

7081.0290 OPERATION AND MAINTENANCE.

A New and existing systems must be maintained according to part 7080 2450 except as modified in this part.

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B All external grease interceptors must be routinely inspected to determine the volume of grease present. All external grease interceptors must be properly maintained to prevent clogging of downstream piping and system components

C For all systems constructed after February 4, 2008, the designer must complete an operation and maintenance manual and the manual must be submitted to the local unit of government before system operation The manual shall include a copy of the plans and specifications, as-built drawings of the system, and information to properly operate the system.

D. All new systems shall be operated under a local operating permit submitted and approved with the design

E All groundwater shall be monitored in accordance with part 7081 0210, subpart 4

F Any operational noncomphance must be immediately corrected and reported by the owner or service provider to the local unit of government.

Statutory Authority: *MS s 115.03, 115 55*

History: *32 SR 1400*

7081.0300 SYSTEM ABANDONMENT.

MSTS no longer in use must be abandoned according to part 7080.2500

Statutory Authority: *MS s 115 03, 115 55*

History: *32 SR 1400*

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