



To Protect Iowa's water resources, support our members, encourage professionalism, and promote consistent application of onsite wastewater service through continuing education.

## GENERAL COMMENTS

- Text recommended to be DELETED are in **red and strikethrough** through them
- Text recommended to be ADDED are in **blue and underlined**.
- Original text from document are in black. All general comments, questions, opinions, etc. are in **purple** and may be intertwined in the document text.

Recommend that anywhere a regulation or standard is referenced in the text, the electronic version posted on the DNR website should be hyperlinked to that reg or standard.

### 567—69.1(455B) General.

#### 69.1(2) Definitions.

**“Effluent”** Need a definition for effluent for how it is being used throughout the text. There is an entire section for it 69.4 Effluent distribution but it is never defined. also See 69.1(9) - There is a definition for pretreated effluent. Suggestion for Effluent definition - Discharge that has been partially treated from a septic tank or other primary treatment units. This definition is consistent with language used in primary treatment unit. **There is no definition for effluent in the Iowa Code section 455B.171 so it needs to be defined here or referenced to wherever the definition is.**

**“Disturbed Soil”** in Section 69.5(1)h(6) it talks about fill soils and disturbed soils. Fill soil is defined in this section. Possible definition. “Disturbed soil” means clean soil that has been compacted, excavated or moved around on the same site that has been in place for less than one year.

**“Gravel aggregate system”** means a soil absorption system utilizing gravel as the distribution component. ~~media-~~ Media is the component that provides the treatment or a place for the microbes to adhere to in order to treat the wastewater.

**“Mound system”** means an aboveground pressurized soil absorption system used to disperse effluent from septic tanks in cases in which a seasonally high water table, high bedrock conditions, slowly permeable soils, or limited land areas prevent conventional soil absorption systems. Adding pressurized to the definition could reduce some language in the Appendix C.

**“Professional soil analysis”** means an alternative to the percolation test which depends upon a knowledgeable person evaluating the soil characteristics, such as color, texture, and structure, in order to determine any confining layers and an equivalent percolation or loading rate. The soils analysis should include a confining layer determination. A soil with little to no structure or a very platy structure could be a confining layer and said person should know how to evaluate that.

**“Septage”** Need a definition for septage if it is going to be used in the text ((69.1(9) Discharge restriction section letter “c”) IF not then reference where the definition can be found Iowa Code Section 455B.171

**Iowa Onsite Waste Water Association (IOWWA)**

16027 Northpark Dr., Urbandale IA 50323

Ph: 515-225-1051(message only) | Fax: 480-802-6643 | Email: info@iowwa.com



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“Soil absorption system” means a conventional, at-grade, mound, or soil absorption bed system that uses a system of perforated conduits connected to a distribution system, forming a series of subsurface, water-carrying channels into which ~~the treated~~ [septic tank](#) effluent or pretreated effluent is discharged for direct absorption into the soil (referred to as part of the open portion of the treatment system). [What is treated effluent? Is it different than pretreated effluent? Defining Effluent will eliminate any confusion see “effluent” definition above. Or define treated effluent. At least be consistent with the text throughout the document. Footnote 1 for PSDS in Table 1 Wastewater Separation Distance in Chapter 60.2\(2\)c uses effluent and pretreated effluent. This should use the same language](#)

Effluent in how it is being used already indicates some treatment form a septic tank so to say treated effluent is redundant.

“Wastewater” If you are going to use the term wastewater then there needs to be a definition for wastewater or a reference to the definition if it is elsewhere.

### **69.1(3) General PSDS regulations.**

c. Abandonment. PSDSs shall be abandoned in the following manner:

(1) Concrete tanks shall be pumped, the tank lid crushed into the tank, and the tank filled with sand or soil. [Doesn't the bottom also need to be broken up so that water can move through it?](#)

### **69.1(6) Equivalent of 16 individuals.**

c. For purposes of this subrule, “property” includes contiguous properties which are under common ownership. [This feels like a new rule or being more strict than the current regs. Is this in the Iowa Code or laws anywhere?](#)

### **69.1(7) Site Analysis.**

b. *Soil characteristics and permeability.* The soil characteristics and permeability of a specific site shall be determined by performing a percolation test or a soil analysis. The local administrative authority shall determine who is a trained and qualified [soils professional](#) ~~professional soil scientist~~ and who may conduct percolation tests. All percolation tests shall be conducted in accordance with Appendix B of this chapter. [The term professional soil scientist can be misconstrued for required a certified professional soil scientist \(CPSS\) which requires a Bachelor's Degree with 5 years of soils experience and having at least 15.0 semester credits of soils specific coursework and 45.0 semester credits of supporting coursework and a certification exam. This is overkill when many people have knowledge and training in identifying soils. The term soils professional says the same thing without the confusion. Even when there is a soils certification program for PSDS's, those certified will not be “Professional Soil Scientist” but they would be a soils professional.](#)

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**69.1(8) Separation distances.** All PSDSs shall be located in accordance with the minimum separation distances in Table A in 567—paragraph 43.3(7)“d.” -PLEASE PUT THE SEPARATION DISTANCE TABLE BACK IN!!!!.

Taking it out of Ch 69 is a major inconvenience. Most people permitting, installing, designing septic systems carry Ch69 rules with them for reference.

It is one thing to reduce and minimize regulations but there should also be a point where things are left alone for the ease of the people utilizing those regs especially when the table is already in the current regs.

**69.1(9) Discharge restrictions.** It is prohibited to discharge any wastewater from PSDSs (except as permitted in this chapter) to any ditch, stream, pond, lake, natural or artificial waterway, county drain tile, surface water drain tile, or land drain tile, to the groundwater, or to the surface of the ground. Under no conditions shall **effluent** from PSDSs be discharged to any abandoned well, agricultural drainage well, or sinkhole. Existing discharges to any of the above-listed locations or structures shall be eliminated by the construction of a system in compliance with this chapter. – Is this supposed to be effluent or pretreated effluent or both?

a. *Requirements when **effluent is PSDSs** discharged into surface water.* All discharges from PSDSs which are discharged into any designated waters of the state or subsurface drainage tile shall conform with the requirements..... Does effluent in this case include pretreated effluent? Since there is a definition for pretreated effluent and it is not part of the language in this section does it not follow the same requirements? Suggest just removing effluent and replacing with PSDSs to avoid any confusion or misinterpretations

b. *Requirements when **effluent is PSDSs** discharged above the ground surface.* All discharges from PSDSs which are discharged to the surface of the ground and that require a maintenance contract shall be installed, operated, and maintained by a manufacturer-certified technician in accordance with the manufacturer's instructions and the requirements of the local administrative authority. – Is this supposed to be effluent or pretreated effluent? Really need to define effluent and keep the language consistent throughout the document to avoid confusion or misinterpretations.

c. *Requirements when **effluent is PSDSs** discharged into the soil.* No **septage** (Defined Iowa Code Section 455B.171) or wastewater shall be discharged into the soil except in compliance with this chapter. Need to define septage and effluent see comments above. I feel septage as defined Iowa Code Section 455B.171 is only if it is pumped from a septic tank and not intended to be treated in PSDS.

**Also nowhere in the this document is disinfection discussed. IF pretreated effluent is disinfected, either via UV light or through chlorination/dichlorination processes, does it have to meet the same depth separation requirements as non-disinfected pretreated effluent?**

IF The DNRs stance that discharge from a PSDS can go the surface and not into the ground unless it meets all the requirement as stated in this chapter, because it the natural UV light helps with the

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disinfection processes before reaching a waters of the state then there should be some mention of alternative options where discharge can be put back into the ground and not going potentially across any neighboring properties when in rural neighborhoods.

**69.1(10) Maximum flow rates.**

b. Wastewater design flow rates for a non-residential use not listed in Appendix A may be determined by a professional engineer licensed in the State of Iowa, or a trained professional as determined by the department or regulatory authority, prior to issuance of a construction permit by a local administrative authority. What kind of professional engineer? An electrical engineer? Structural engineer? Mechanical engineer? Civil Engineer?

**- Requiring a professional engineer licensed in the state of Iowa is more restrictive than the current regulations.**

**- additional costs also come along when an Professional Engineer needs to be hired.**

**69.1(11) Flow equalization.** Flow equalization may be used at the discretion of a professional engineer licensed in the State of Iowa or a trained professional as determined by the department or regulatory authority. The determination to use flow equalization shall be made prior to issuance of a construction permit by a local administrative authority. If used, flow equalization shall meet all of the following criteria: What kind of professional engineer? An electrical engineer? Structural engineer? Mechanical engineer? Civil Engineer?

**- Requiring a professional engineer licensed in the state of Iowa is more restrictive than the current regulations.**

**69.2(2) Cleanouts.**

a. *Spacing.* A cleanout shall be provided where the building sewer leaves the structure and at least every 100 feet downstream. – Recommend adding – A cleanout may be extended to 200ft if a two way cleanout is used.

Also should clarify “where the building sewer leaves the structure” Can it be outside? Inside? Also Is there a certain amount of footage that it has to be from leaving the structure 10’, 50’, 100’?

**69.2(6) Holding tanks.**

a. *General.* Holding tanks may only be used when site characteristics or restrictions do not allow for the installation of a system that consists of both primary and secondary treatment or when the use will be seasonal or sporadic, or high waste strength. – A good example could be a restaurant, brewery, winery etc. That has super high strength waste and it is cheaper to pump and properly dispose of instead of trying to treat with an on-site system.

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e. *Construction.* Holding tanks shall be constructed and installed using the materials and processes allowed for septic tanks in 69.3(8). All holding tanks shall be equipped with a high-water alarm [or warning device](#). There are other indicators out there than just alarms. Some which are preferred in certain areas such as floodplains when a tank may be under water it eliminates the electricity from that area.

f. Wastewater disposal. Wastewater from holding tanks shall be disposed of at a POTW or other department permitted wastewater **DS**. [Need to either write this out or define what DS is?](#)

#### **567—69.3(455B) Primary treatment unit.**

##### **69.3(2) Capacity.**

b. Approval of septic tank capacity..... Minimum septic tank liquid-holding capacity shall either be 1,250 gallons or two times the [maximum](#) daily sewage flow as estimated from Appendix A, whichever is greater. – [This may already be implied but I feel it should be stated to eliminate any confusion. Especially when you have a site that has varying daily flows such as a restaurant.](#)

##### **69.3(6) Installation.**

b. Any septic tank placed in fill soil shall be placed upon a level base that is stabilized through compaction or other manufacturer allowed practices. – [What are suitable compaction requirements? A contractor compacting the soils with their backhoe bucket? Driving over it? Is there a minimum compaction rate that should be met?](#)

#### **567—69.4(455B) Effluent Distribution.**

##### **69.4(1) Pump systems.**

c. *Pump setting.* Pumps shall be installed in the pump pit or tank in a manner that ensures ease of service and protection from frost and settled sludge. Pumps shall be set to provide a dosing frequency [of a minimum of approximately](#) four times a day based on the maximum design flow. [Most of the proprietary treatment systems and sand filters prefer smaller more regular dosing than 4 times a day. The way it reads is that it shall be 4 times a day or something near that.](#)

e. *Pressure line size.* The diameter of the pressure line from the pump to the point of discharge shall not be smaller than the outlet of the pump it serves. - [What is considered the point of discharge? The orifice? The distribution manifold? In Mounds, at-grade and sand filters the suggestion is that the distribution pipes are 1" when most pump discharges are 1.5 or 2".](#)

##### **69.4(2) Gravity distribution.**

a. General design and use. Gravity distribution boxes shall: - [can it at least be recommended that the distribution boxes have surface access?](#)

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## 567—69.5(455B) Secondary treatment - soil absorption systems.

### *e. Location.*

(1) Soil absorption systems shall be located in accordance with the SDs in Table I in 567—paragraph 60.2(2)“c.”

Please spell out Separation Distances. Too many acronyms that aren't typical within the industry gets confusing. Also PLEASE put the Separation Distances table back in Ch69. Same comments for #2 below as well. IF the reason is to reduce the amount of text in the regulations then why not eliminate most of the vowels in wrds, ppl will still know what is being conveyed.

(2) All soil absorption systems shall be located to maximize the vertical SD from the bottom of the absorption trench to the confining layer, but under no circumstances shall this vertical separation be less than three feet.

### *h. Construction details for all soil absorption trenches.*

(1) Depth. A trench bottom depth of 18 to 24 inches is recommended. Soil absorption trenches shall not exceed 36 inches in depth. Not less than six inches of porous soil shall be provided over the laterals. The minimum separation between the trench bottom and any confining layer shall be 36 inches.

The use of pretreated effluent and putting it back into the ground should not require the 36" depth separation requirement. If the soils can treat regular effluent in 36" then pretreated effluent should have a lesser separation requirement as the waste strength is less and the amount of bugs required to treat the lower strength waste is a lot less.

Excerpts from The USEPA On-site Wastewater Manual are provided and the back of this document to support the need for less depth separation requirement for putting pretreated effluent back into the ground.

IOWWA met with DNR to discuss this topic among others. Comments to provide the science was mentioned. IOWWA invited DNR personnel to conference where some of the science was going to be presented. Then comment was made that if any neighboring states have it in their regs would be the best opportunity for a change. Both Wisconsin and Minnesota have shallower separation restrictions from a limiting layer for pretreated effluent.

Also – If a site can meet the proper depth separation requirement for soil absorption but may not have the space why can't a smaller amount of trench be used for pretreated effluent with an overflow that surfaces discharges? If it is okay to surface discharge the pretreated effluent to the surface then why can some of it at least be put back into ground for proper treatment and discharge the remaining? Any system with a discharge pipe should be required to follow the NPDES GP4 if necessary.

(3) Trench SD. At least six feet of undisturbed soil shall be left between each trench edge on level sites. Two feet of SD should shall be added for each five percent increase in slope from level. If the language is going to say should then why even put it in there.

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AGAIN why can't separation distances be spelled out. IF the reason is to reduce the amount of text in the regulations then why not eliminate most of the vowels in wrds, ppl will still know what is being conveyed.

(6) Soils. Soil absorption systems shall not be installed in fill soil. Disturbed soils which have stabilized for at least one year shall require a recent percolation test or professional soil analysis. What is the definition of a disturbed soil? And is it different than a fill soil? Should probably read as.

(6) Soils.

a. Soil absorption systems shall not be installed in fill soil.

b. Disturbed soils which have settled for at least one year shall require a recent percolation test or professional soil analysis.

Currently the way this can be interpreted is, that fill or disturbed soils can be brought into a site or an area planned for soil absorption and it can be used as long as it has set for 1 year and has a perc test or soils analysis done. Is that the intent of this statement?

Also then why can we not use area between existing absorption trenches. If an existing system is no longer being used then is it still considered a PSDS and the soils in that area have set for more than a year.

(7) Soil smearing. Soils ~~with significant clay content~~ should not be worked when wet. If soil moisture causes trench bottom or sidewall smearing, the installation should be discontinued until conditions improve. – Soils without significant clay content can smear. I would keep it general so that way it doesn't come back on anyone.

**69.5(3) Chamber systems.** The following provisions apply to chamber systems.

Add a letter e Synthetic drainage fabric or other material approved by the manufacturer or administrative authority shall be laid so as to separate the chamber from the soil backfill.

**69.5(4) Expanded polystyrene (EPS) aggregate systems.** The following provisions apply to EPS aggregate systems.

Add a letter e Synthetic drainage fabric or other material approved by the manufacturer or administrative authority shall be laid so as to separate the EPS aggregate from the soil backfill.

**69.5(5) Mound systems.** The following provisions apply to mound systems.

(3) Be located in accordance with the SDs in Table I in 567—paragraph 60.2(2)“c” as measured from the outer edge of the sand in the mound. AGAIN Please put the separation distances table back in and why can't separation distances be spelled out. IF the reason is to reduce the amount of text in the regulations then why not eliminate most of the vowels in wrds, ppl will still know what is being conveyed.

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**69.5(6) At-grade systems.** The following provisions apply to at-grade systems

(2) At-grade systems shall be located in accordance with the separation distances in Table A in 567— paragraph 43.3(7)“d” as measured from the outer edge of the distribution bed in the system. – AGAIN Please put the separation distances table back in and why can’t separation distances be spelled out. IF the reason is to reduce the amount of text in the regulations then why not eliminate most of the vowels in wrds, ppl will stll knw what is being conveyed.

**69.5(7) Soil absorption bed systems.**

*b. Sizing.* Soil absorption bed capacity shall be sized using Table III. This table is confusing and needs to be explained better. A 0.375 soil loading rate equates to approx. 50-55 MPI perc rate which is greater than 30mpi. Does a soil loading rate determined by a soils analysis first have to be converted to a perc rate then sized according to the table? This table below is probably more accurate of what is trying to be construed.

Perc Rate	Soil Loading rate	Absorption Area/bdrm sf
1 - 5	0.9 – 1.6	300
6 – 15	0.6 – 0.9	400
15 - 30	0.5 – 0.6	600

OR just do away with the table and use some of the following recommendations for absorption beds to better explain the absorption bed criteria.

1. Eliminating gravity fed absorption beds. OR
2. if keeping gravity absorption beds then surface area should be 50% larger than surface area required for trenches. See Minnesota design manual excerpt at the back of the of this document. OR
3. Use the following sizing rates along with actual soil loading or perc rate. Pump dosed 150gal per bedroom Dosing siphon 180gal per bedroom; Gravity 240gal per bedroom.  
**Example:** 4 bedroom house: Soil Loading rate of 0.5gal/sf/day (perc rat of 30mpi).  
 A) Pumped = 4bdrm x 150gal = 600gal / 0.5gal/sf/day = 1200sf.  
 B) Siphon = 4bdrm x 180gal = 720gal / 0.5gal/sf/day = 1440sf.  
 C) Gravity = 4bdrm x 240gal = 960gal / 0.5gal/sf/day = 1920sf.
4. Width no larger than 24ft.

**69.6(1) Intermittent subsurface sand filters (ISSF).** The following provisions apply to ISSF systems.

(2) ISSFs shall be located in accordance with the separation distances in Table I in 567—paragraph 60.2(2)“c.”– Again please put the Separation distance table back in Ch 69.



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(5) ISSFs may be constructed...

1. If needed, a [one piece](#) plastic liner shall use a minimum of 30-millimeter plastic or product of equivalent thickness as determined by the local administrative authority. [Does the liner have to be 1 piece? Can it be folded over itself or glued/fused together?](#)

#### **69.6(2) Proprietary Treatment System (PTS)**

##### *a. General.*

(2) PTS manufacturers shall submit to the department, by February 1 of each year, their current installation and maintenance manual, including the applicable third-party certification. – [What happens if the manufacturers don't submit the manuals to the Department by Feb1st? Does it mean that particular system can't be used until they do? THE DNR SHALL PUT THESE MANUALS OR a LINK TO THEM ON THE DNR WEBSITE SO EVERYONE HAS ACCESS TO THEM.](#)

##### *b. Design, installation, and operation.*

(1) A PTS ~~other than an aerobic treatment unit~~ shall be preceded by a septic tank with a minimum capacity in accordance with 69.3(2), or shall have an incorporated component that is, or performs the same function as, a septic tank. A pretank or chamber that is part of the design, that is intended to serve the same function as a septic tank, and that was approved by third-party certification shall satisfy this requirement.

**WHY IS THIS STATEMENT IN HERE IF IT IS FOLLOWED BY #2 BELOW? #2 below contradicts this statement.**

**WHAT IF A PTS other than an aerobic treatment unit gets tested and passes the third party testing using a trash tank. This statement is not treating all PTS equally as what we were told the intent of putting all of these units under 1 category.**

(2) An aerobic treatment unit PTS that does not have an incorporated component that is, or performs the same function as, a septic tank as part of the approved design shall be preceded by a pretreatment tank with a minimum capacity of 500 gallons. – **Why is this different than other PTS's. If the system wasn't approved with the component as part of the treatment then it should require the same size tank as other PTS. Just because it is an ATU shouldn't give it special priority unless it was certified that way.**

(3) A PTS that utilizes a soil absorption system to disperse the treated effluent shall comply with rule 567— 69.5(455B). - **See Comments under 69.5 Secondary Treatment – Soil Absorption systems 69.5(1)h Construction details....**

**UNDER THE CURRENT REGS (69.14(5) Effluent treatment) Additional treatment from ATU units is required. Why is this still not required in the proposed changes? What research or evidence has been provided that it no longer requires the additional treatment?**

**OUR SUGGESTION IS TO KEEP THE ADDITIONAL TREATMENT REQUIREMENT. If the EO10 process is now a reoccurring process every 5 years, once the language is out of the regulations**

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it will be harder to put it back in. Information provided by the “Chapter 69 Coalition” presents concerns pertaining to the discharge and or burping of these systems.

**WE ALSO SUGGEST BEFORE REMOVING LANGUAGE THAT COULD HAVE A MAJOR EFFECT ON THE PUBLIC HEALTH A COMMITTEE CONSISTING OF STAKEHOLDERS (Contractors, Sanitarians, Engineers/designers, Manufacturers) AS WELL AS DNR PERSONNEL REVIEW ALL DATA AND SUGGESTIONS AND MAKE A RECOMMENDATIONS TO FUTURE CHANGES.**

*c. Monitoring and maintenance.*

(1) Prior to installation... A PTS **other than an aerobic treatment unit** shall be inspected, monitored, and maintained in accordance with the manufacturer's specifications and third-party certification, or at least once annually, whichever is more frequent. **An aerobic treatment unit shall be inspected for proper operation at least twice a year at six-month intervals.** The suggestion language above comes from the current regulations. What information or evidence was provided to the DNR that less maintenance for ATU units is ok? Current Ch69. 69.14(1) *Use.* States “because of the higher maintenance requirements of ATU units preference should be given to packed bed media filters, where conditions allow.” What information has been provided to the DNR that less maintenance is acceptable? **MORE TRANSPARENCY SHOULD BE PROVIDED ON HOW THE DECISIONS OF THE PROPOSED CHANGES HAVE BEEN DETERMINED.**

**OUR RECOMMENDATION AT THIS TIME IS THAT LANGUAGE FROM THE CURRENT 69.14(1) USE BE ADDED TO THE PROPOSED CHANGES.** For the reasons stated in the section above as it will be more difficult to add language back into future regulations and all information should be reviewed by a committee and suggestions for proposed changes are made. This will also provide more transparency for the decision making process.

#### **567—69.7(455B) Time of transfer (TOT) inspections.**

69.7(1) Inspection criteria. Pursuant to Iowa Code section 455B.172(11), if a building where a person resides, congregates, or is employed is served by a PSDS, the PSDS shall be inspected prior to any transfer of ownership of the building.

*a. Properly functioning system.* If a PSDS is properly treating wastewater and not creating an unsanitary condition in the environment at the time of inspection, the system is not required to meet the department's current construction standards. **However, the discharge restrictions in 69.1(9) shall always apply.**

What does this statement imply? Is it considered a failing system? Has to be altered to meet the code? Either remove this statement or further explanation is needed for this statement.

*f. Failure or improper function.* If a PSDS is failing to ensure effective wastewater treatment or is otherwise improperly functioning, the PSDS shall be **renovated** to meet the department's current construction standards. A PSDS is failing to ensure effective wastewater treatment or is otherwise

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improperly functioning when one or more of the following conditions exist: Is “renovated” the same as an alteration as defined 69.1(3)b?

(3) All fixtures on the property served by the PSDS that produce or transport domestic waste do not enter the PSDS; - if a utility sink or a new washing machine is in the basement and is tied to the sump pump. Then does the whole system needs to be brought up to code? Is changing the plumbing inside considered an alteration as stated in 69.1(3)b? Concerned that some inspectors or the administrative authority will tell people a whole new system is needed and it may not be necessary when there may be a simple fix that doesn't affect the treatment.

(4) More than 50 percent of the system's soil absorption area does not accept water pass the hydraulic load test; - Certified Inspectors are not the only people who read the regs. Homeowners, realtors, lawyers etc. also read the regs. By using the language “pass the hydraulic load test” indicates that there is a specific test the inspector needs to know about (which there is). The term accepts water is vague. OR at least define what “accepts water” means. Does it have to accept water the entire time or just accept water. Failed lines can “accept water” but will not pass the hydraulic load test.

#### **69.7(2) Certified TOT inspectors.**

(2) Renewal applications shall be submitted on a department form, available on the department's website at [www.iowadnr.gov](http://www.iowadnr.gov), and must be submitted 60 days before the expiration date of the current certificate. Renewal certificates will only be granted to inspectors that meet the CEU requirements of 69.7(2)“d,” that have paid the appropriate certification fee in 69.7(2)“e,” and that conduct inspections in accordance with 69.7(3). - Will DNR still send out renewal reminders like they do currently?

#### **69.7(3) Inspection procedures.**

##### *e. Secondary treatment.*

(5) ~~Probing any soil-based treatment systems to determine their condition;~~ “Determine the condition of any soil based treatment system; options include but not limited to, probing, sewer camera, etc.” and – Why is probing the only way to determine the condition of the system? Using a sewer camera should also be a viable option. Some examples of why include. What if the soil based system is unknowingly tied to a tile. Probing the system would not discover that. What If there is snow on the ground and the ground is not frozen but can be probed. A camera could help. Plus you can actually use it during the hydraulic load test and see how the lines are accepting water.

*f. Discharging systems.* During an inspection, a representative sample of effluent shall be collected for CBOD5 and TSS from all PSDSs, with the exception of soil absorption systems, and the test results shall be included in the inspection report. The effluent quality shall meet the requirements

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of NPDES General Permit No. 4 for CBOD5 and TSS. A certified inspector shall report the discharge location(s) for all discharging PSDSs. Why just CBOD5 and TSS and not E-coli? E-coli will make someone sick more than a total suspended solid.

### **Appendix A - Estimates of Non-residential Domestic Sewage Design Flow Rates**

Does event Centers for weddings and meetings fall under any of these categories? If not suggest using 4.5gal per person. This is similar to a bar or lounge which wedding events typically are like.

### **Appendix C - Mound System Construction Design Standards**

#### **Mound fill material.**

a. A mound shall be constructed using **clean**, medium-textured sand (a.k.a. concrete sand). The sand size shall be such that:

- ~~(1) At least 25 percent by weight shall have a diameter between 2.0 and 0.25 millimeter (mm);~~
- ~~(2) Less than 35 percent by weight, a diameter between 0.25 and 0.05 mm; and~~
- ~~(3) Less than five percent by weight, a diameter between 0.05 and 0.002 mm.~~

What does clean mean? Free of Debris? Washed?

Is "concrete sand" different than Iowa DOT standard for Concrete sand?

Seems confusing to have a different sand for mound than for sand filters. Especially if mound sand isn't required to be washed just clean.

- To save on language and the amount of words why not just reference IADOT standard 4110. All the sand quarries know DOT standard 4110. Below is the graph showing the ranges for mound sand, sand filter sand and dot 4110 sand.

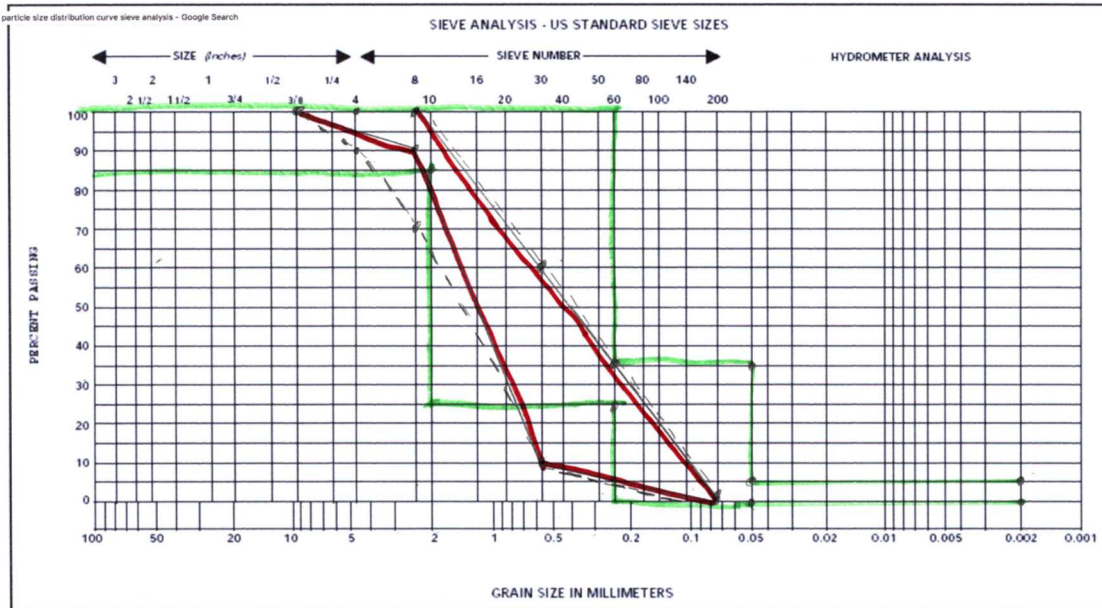
**Iowa Onsite Waste Water Association (IOWWA)**

16027 Northpark Dr., Urbandale IA 50323

Ph: 515-225-1051(message only) | Fax: 480-802-6643 | Email: info@iowwa.com



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### Distribution system.

a. The distribution pipe(s) for a mound system shall:

(1) ~~Have a minimum spacing between distribution pipes of 4 ft and~~ either be SCH 40 or 80 PVC pipe (SDR 26 or stronger), with a one-inch nominal diameter, or an equivalent design that ensures proper distribution. ~~The added wording is letter e from the construction details section of this appendix. Fits better in this section than the construction details section as it discusses the distribution pipes.~~

(3) Be placed in the clean, washed gravel with holes downward. The gravel shall be a minimum of ~~nine six~~ inches in depth below the pipe and three inches in depth above the pipe. ~~– Both the Wisconsin and Minnesota design manuals allow for 6” of gravel under the distribution pipe. Plus this becomes less stringent than the current regs.~~

d. Construction should be..... the trenches to accommodate the ~~six nine~~ inches of washed gravel or crushed stone necessary for the distribution piping. ~~– Both the Wisconsin and Minnesota design manuals allow for 6” of gravel under the distribution pipe. Plus this becomes less stringent than the current regs.~~

f. ~~Six -Nine~~ inches of gravel shall be placed in the trench and leveled. After the distribution pipe is placed, the pipe shall be covered with three inches of gravel. ~~– Both the Wisconsin and Minnesota design manuals allow for 6” of gravel under the distribution pipe. Plus this becomes less stringent than the current regs.~~

g. The entire ~~sand and~~ gravel area shall be covered with synthetic drainage fabric or other material approved by the ~~manufacturer or~~ administrative authority.. ~~– Despite the first round of comments suggesting the entire sand and gravel area be covered with fabric, neither the Wisconsin or Minnesota design manuals require this. They only require it over the gravel portion. Don't recommend putting “manufacturer” in this context. Why couldn't a manufacturer that makes plastic sheets say it can be approved?~~

### Appendix D - At-Grade System Construction Design Standards

#### At-grade system construction details.

~~e. Minimum spacing between distribution pipes shall be four feet, and a minimum of one foot with more preferred three feet~~ shall be maintained between any trench and the sidewall of the at-grade. The first part of the sentence should be moved under the Distribution System portion of this Appendix. The second part of the sentence is more strict than the current regulations.

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j. The ~~gravel bed absorption bed area of the at-grade system~~ at-grade system bed area shall be calculated using the flow rate and the results of the percolation rate test or soil analysis, as indicated in Table IIa or IIb of 69.5(1) **"f"**(1).

Letter a of this section allows for chamber and eps aggregate as well as gravel.

The tables are in 69.5(1) **"g"**(1)

k. One foot of loamy cover material shall be installed over the rock bed. Cover shall extend at least five feet from the ends of the ~~rock~~ at-grade system bed and be sloped to divert surface water. Side slopes shall not be steeper than 3:1 slope; however, a 4:1 slope is preferred. The upper six inches of the loamy soil cover must be topsoil borrow. Topsoil borrow must be of a quality that provides a good vegetative cover on the at-grade system.

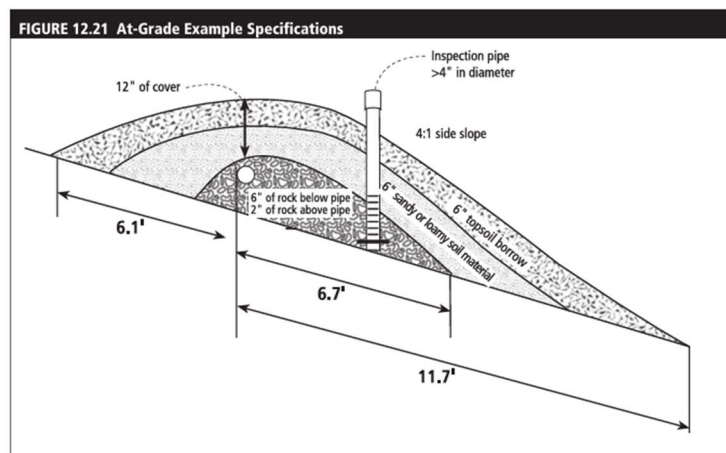
### Distribution system.

a. The distribution pipe(s) for a mound system shall:

(1) Have a minimum spacing between distribution pipes of 4 ft and either be SCH 40 or 80 PVC pipe (SDR 26 or stronger), with a one-inch nominal diameter, or an equivalent design that ensures proper distribution. The added wording is letter e from the construction details section of this appendix. Fits better in this section than the construction details section as it discusses the distribution pipes.

(3) Be placed in the clean, washed gravel (or crushed limestone as described in 69.5(3) **"a"**(3)), with holes downward or other bed material as listed in letter "a" of the At-grade System construction details section of this appendix. The gravel, chambers, or EPS Aggregate shall be a minimum of ~~six~~10 inches in depth below the pipe and two inches in depth above the pipe or in accordance with the manufacturers recommendation for pressurized systems. What is the advantage of requiring 10" of rock? Minnesota requires a minimum of 6". See schematic from the Minnesota design Manual below. Plus 6" of rock is similar to the other suitable material heights.

### 12-34 ■ SECTION 12: Soil Treatment Systems



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d. The top of the gravel, [chambers, or EPS aggregate](#) shall be covered with synthetic drainage fabric or other material approved by the ~~manufacturer or~~ administrative authority. ~~Don't recommend putting "manufacturer" in this context. Why couldn't a manufacturer that makes plastic sheets say it can be approved?~~

## **Appendix E - Intermittent Subsurface Sand Filter (ISSF) Construction Design Standards**

### **ISSF filter sizing.**

#### *a. Residential systems.*

(2) Siphon / [non-pump](#) dosed. Residential ISSFs dosed by a dosing siphon [or other non-pump dosing system](#) shall be sized at a rate of 180 ft<sup>2</sup> of surface area per bedroom. – ~~Technically, the Flout system is not a siphon. It is a dosing system. Plus by adding the suggested language allows for other dosing systems that may enter the market.~~

#### *b. Non-residential.*

(1) 1.0 gal/ft<sup>2</sup>/day.

(2) The total surface area for any non-residential ISSF shall not be less than 200 ft<sup>2</sup>. - ~~Not sure why we have a minimum surface area that is two times the treatment rate used for sand (1.0 gal/sf/day)? Recommend reducing to 100sf or 150sf (which is similar to 1 bedroom house at least.) Another point is that most small flow businesses that may require this aren't putting the amount of waste strength into the system as a 1 bedroom house. Typically there is not a full kitchen where meals are prepared on a regular basis.~~

### **Collection pipelines.**

a. Each ~~bed of an~~ ISSF shall contain a horizontal set of collector lines. ~~The term bed is confusing in this context. Even though it is technically a packed bed media filter you are no longer referencing it as such. There is also a distribution bed in a sand filter. Does that require a collection pipe as it say "each bed of an ISSF" Eliminating "bed of an" eliminates possible confusion. Another possibility would be to add Each "collection" bed of an.~~

b. The collector lines shall be either equivalent to SDR 35 PVC [perforated](#) pipe, 10-inch-diameter gravelless drainage technology, EPS aggregate, chamber, or other suitable materials [approved by the department or administrative authority](#). ~~Add "perforated" when talking about the SDR35 pipe for collection. While it makes sense to most, someone may not assume it is suppose to be perforated.~~

~~All the other items throughout this document that have other materials listed include as "approved by the administrative authority" why would this not be the same. I included the department in here as there may be new technology that comes out and the department should say whether it is approved or not before the administrative authority starts approving things.~~



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d. Collector lines shall [have a six-foot separation between collection pipes and](#) be laid to a grade of one inch in ten feet (or 0.5 percent to 1.0 percent). [This is wording from letter "g" below. It should apply to all collector lines.](#)

g. EPS aggregate may be used for the collection system as an alternative to gravel and rigid PVC pipe. If used, EPS aggregate shall meet requirements equivalent to 69.5(5), follow the manufacturer's specifications and installation procedures, and cover the bottom of the sand filter. ~~A six-foot separation between collection pipes shall be maintained.~~ Fabric filter meeting the requirements of "h"(2) below shall be used instead of washed pea gravel. [Should be placed in letter d above.](#)

~~j. i.~~ The discharge pipe that extends from the collection system shall be solid SDR 35 PVC pipe at a minimum.

[Formatting issue - this item should be moved as it gets lost in with the table for sand. Maybe switch letters l and j or provide an extra space OR line between the sand requirement and letter j.](#)

~~i. j.~~ A minimum of 24 inches of coarse washed sand meeting Iowa DOT Standard 4110 for concrete sand shall be placed over the pea gravel or above the gravelless drainfield pipe. ~~The sand shall meet the Iowa DOT standards for concrete sand, as follows:~~

- ~~(1) — 100 percent of the sand shall pass a 9.5-mm screen;~~
- ~~(2) — 90 to 100 percent shall pass a 4.75 mm screen;~~
- ~~(3) — 70 to 100 percent shall pass a 2.36 mm screen;~~
- ~~(4) — 10 to 60 percent shall pass a 600TM screen, and~~
- ~~(5) — 0 to 1.5 percent shall pass a 75-TM Screen.~~

[To save on language and the amount of words why not just reference IADOT standard 4110. All the sand quarries know DOT standard 4110.](#)

[Also see comments presented in Appendix C for Mounds regarding sand. A graph is presented showing the range for mounds, sand filters, and the DOT standard 4110. The DOT 4110 standard falls within the majority of the requirements for each sand.](#)

#### **Distribution system and cover.**

a. Six inches of gravel  $\frac{3}{4}$  inch to  $2\frac{1}{2}$  inches in size or other material as discussed in this section shall be placed upon the sand in the [ISSF bed](#). [The term bed is confusing in this context. Even though it is technically a packed bed media filter you are no longer are referencing it as such.](#)

h. EPS aggregate ~~or chamber~~ may be used for the distribution system as an alternative to gravel and rigid PVC pipe. If used, EPS aggregate or chamber shall meet requirements equivalent to 69.5(5), follow the manufacturer's specifications and installation procedures, and cover the top of the sand ~~filter~~. A three-foot separation between distribution pipes shall be maintained. [Chambers should not be used as part of the distribution portion of a sand filter. A lot of system have been replaced prematurely when chambers have been used in sandy soils because eventually fills the chambers and plugs them up.](#)

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*Distribution line specifications.*

Suggest eliminating the table and put the recommended hole size in the numbers 1-4 above the table. Example:

(1) The distribution pipe for a pressure-dosed system shall either be SCH 40 or 80 PVC pipe (SDR 26 or stronger), one-inch nominal diameter, [with a hole size as recommended by manufacturer](#) and or an equivalent design that ensures proper distribution. **Also what manufacturer is designing sand filters? Would that be the contractor? The pipe manufacturer? The pump manufacturer?**

(2) The distribution pipe for a siphon-dosed or other manufactured non-pump pressured device shall be either SCH 40 or 80 PVC pipe (SDR 26 or stronger), with a 1½-inch nominal diameter, [hole size 1/4 - 5/16inch](#), or an equivalent design that ensures proper distribution.

**Not sure why you are adding a table here and eliminating other tables (Separation Distances Table) that are more useful for other things than just sand filters.**

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