State of Idaho
Department Of Environmental Quality
Technical Guidance Committee

Technical Guidance Committee Meeting

Agenda*

Thursday September 18, 2014

8:30 a.m. – 4:30 p.m.

Department of Environmental Quality
Conference Room C
1410 N. Hilton
Boise, Idaho

8:30 AM Call to Order/Roll Call
- Sign in sheet for attendees who wish to comment or present to the committee members
- Introduction of committee members, guests, and attendees

8:35 AM Open to Public Comment – ½ hour reserved for public to provide comments to the TGC on subjects not on the agenda, if no public comment is presented at start of comment period the agenda will move forward

9:05 AM June 5, 2014 Draft TGC Meeting Minutes: Review, Amend, or Approve (**Appendix A**)

9:10 AM 4.1 General Requirements (**Appendix B**)**
- Review for final approval

9:20 AM 1.5 Installer Registration Permit (**Appendix C**)
- Review for final approval

9:40 AM 4.17 Individual Lagoon (**Appendix D**)
- Review for final approval

9:50 AM 3.2.3.1 Conversion of a Septic Tank to a Lift Station (**Appendix E**)
- Review for final approval

10:00 AM Break – Ten Minutes

10:10 AM 4.22 Recirculating Gravel Filter (**Appendix F**)
- Review for final approval

10:50 AM 4.3 Existing and Approved System Rights, Abandoned and Undocumented Systems, and Nonconforming Uses (**Appendix G**)
- Review for preliminary approval

12:00 to 1:00 P.M. Lunch

1:00 PM 6 Septic Tank Pumpers' Manual (**Appendix H**)
- Review for preliminary approval

1:30 PM 4.11 Extra Drainrock Drainfield (**Appendix I**)
- Review for preliminary approval

2:00 PM 4.16 Incinerator Toilets (**Appendix J**)
- Review for preliminary approval

2:15 PM 4.23 Intermittent Sand Filter (**Appendix K**)
- Review for preliminary approval

2:45 PM 4.27 Steep Slope System (**Appendix L**)
- Review for preliminary approval

3:00 PM Break – Ten Minutes

3:10 PM 1.4.2.1.1 Initial Septic Tank Approvals and 1.4.2.1.2 Transfer of Septic Tank Approvals between Manufacturers (**Appendix M**)
- Review for preliminary approval

3:30 PM 3.2.3 Septic Tanks and Dosing Chambers (**Appendix N**)
- Review for preliminary approval

4:00 PM 4.1.3 Combination of Multiple Alternative Systems in One System Design (**Appendix O**)
- Review for preliminary approval

4:15 PM 4.10.3 Extended Treatment Package System Operation, Maintenance, and Monitoring **(Appendix P)**
- Review for preliminary approval

4:30 PM Adjourn
- Meeting may adjourn early dependent upon discussion, interest, and participation for each agenda item
- If needed meeting will run until 4:45 PM to resolve any lingering discussions or issues on the agenda items

*Begin and end time will be observed. Agenda items and their allotted times my vary dependent upon the amount of interest and participation for each item.

** Agenda appendices starting at Appendix B are color coded to track changes. Blue text indicates changes that were made in previous Technical Guidance Committee (TGC) meetings. Red text indicates changes that are newly proposed for this TGC meeting. All green text indicates text that was moved from one area of a section to the new area. ~~All text with strikeout markings regardless of color is either proposed to be deleted from the guidance or moved to another location within that section.~~

The call in number is (208) 373-0101 Bridge # 1

To Join a Conference Call

1) Auto-Attendant Transfer Option

Conference Call Auto-Attendant Number:

- Extension 0101: Inside DEQ phone system
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1) Visit the Website Below

- http://www.myroom.hp.com/attend/MEPUV9IL2K2
- Enter your first and last name in the area provided
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State of Idaho
Department Of Environmental Quality
Technical Guidance Committee

Appendix A

Technical Guidance Committee Meeting

Draft Minutes

Thursday, June 5, 2014

Department of Environmental Quality
Conference Room C
1410 N. Hilton
Boise, Idaho

TGC ATTENDEES:

Tyler Fortunati, REHS, On-Site Wastewater Coordinator, DEQ
Joe Canning, PE, B&A Engineers
Bob Erickson, REHS, Senior Environmental Health Specialist, South Central Public Health District
David Loper, REHS, Environmental Health Director, Southwest District Health Department
Michael Reno, REHS, Environmental Health Supervisor, Central District Health Department
George Miles, PE, Advanced Wastewater Engineering, Inc. (via telephone and HP rooms)

GUESTS:

Chas Ariss, PE, Wastewater Program Manager, DEQ
AJ Maupin, PE, Wastewater Program Lead Engineer, DEQ
Ryan Spiers, Alternative Wastewater Systems, LLC
Matt Gibbs, Infiltrator Systems, Inc.
PaRee Godsill, Everlasting Extended Treatment, LLC
David Lowe, ~~PE~~Licensed On-Site Sewage Designer, Lowridge On Site Technologies, LLC. (via telephone and HP rooms)
Jay Loveland, REHS, Senior Environmental Health Specialist, Panhandle Health District (via telephone and HP rooms)
Janette Young, Administrative Assistant, DEQ

CALL TO ORDER/ROLL CALL:

Meeting called to order at 8:33 a.m.
Committee members and guests introduced themselves.

OPEN PUBLIC COMMENT PERIOD:

This section of the meeting is open to the public to present information to the TGC that is not on the agenda. The TGC is not taking action on the information presented.

The following public comments were submitted from David Lowe, PE with Lowridge On Site Technologies, LLC. Information was presented on the *LOWeFLOW*™ (*LF*) system; a modified recirculating gravel filter (RGF). Mr. Lowe would like to see the TGC consider approval of proprietary system designs that are different from the public domain design guidance available through the Technical Guidance Manual as long as the proprietary system has successfully completed third party testing like NSF Standard 40. Mr. Lowe presented his system's design to the TGC for their consideration. There are three major modifications to his system that differ from the public domain design guidance. The three modifications that are unique to the *LF* system are the loading rate, the equipment for dosing the media, and the size of the gravel filter. The loading rate is 25 gal./ft^2/day. This is five times the loading rate for an RGF that follows the TGM design guidance. The second modification that impacts the equipment used for effluent distribution through the RGF is a coil of drip irrigation tubing. The coil is a five foot diameter network of sub-surface drip tubing: four-100 ft. laterals or length of tubing with an emitter spacing of 6". The layout of the coil provides an average emitter concentration of 40 emitters per square foot. The third modification is that the RGF is constructed within a pre-fabricated container that is roughly 5 feet in diameter.

The Committee asked questions regarding where the system was already in use, maintenance issues and NSF testing. The system is approved in Washington for up to 100,000 gallons/day and completed NSF Standard 40 testing in November 2013. Mr. Lowe also provided the TGC information on the system design and dosing components. It was stated that the system's tank configurations could be altered to meet the TGM design recommendations for septic tanks, dosing chambers, and recirculating chambers if necessary. The RGF container could also be combined with several basins or constructed of flexible membrane liner depending upon the system design needs.

Motion: Michael Reno moved to have the information submitted by Lowridge On Site Technologies' reviewed by the committee for the next TGC meeting and shall be discussed in conjunction with the proposed revisions to the recirculating gravel filter design recommendations in the TGM.

Second: Bob Erickson.

Voice Vote: Motion carried unanimously.

The following public comments were submitted by Matt Gibbs of Infiltrator Systems, Inc. Mr. Gibbs discussed his frustration regarding the length of time it has taken for the approval of recent septic tank design submittals by DEQ. Mr. Gibbs would like the TGC to consider providing the approvals for these products. Michael Reno clarified that this is not a TGC approval process, rather an engineering review by DEQ. The TGC clarified that they would not like to adjust the approval process from its current process. Tyler Fortunati provided clarification on the amount of time DEQ has to review a set of submitted plans and that DEQ does its best to complete the reviews prior to 42 days as allowed by Idaho Code. If something in the submittal is lacking and requires adjustment then the review clock starts over upon resubmittal. All submittals are addressed in the order they are submitted which impacts the review time.

The second issue Mr. Gibbs addressed was that once a tank is approved, it is approved indefinitely and there is no follow up or re-approval process. Mr. Gibbs feels like all the manufacturers should be performing annual construction and leak testing of the septic tanks they manufacture. Tyler Fortunati stated that there is nothing in the subsurface rules that requires re-approval or leak testing of a tank after initial approval. DEQ may require additional construction inspections and leak testing if it is determined that an approved septic tank is not being constructed properly by a manufacturer though. Mr. Gibbs would like to see an annual approval process put into place. Tyler Fortunati stated that this may require a rule making to take place which is not currently on DEQ's agenda and that a requirement like this would need to be supported by a large group of currently approved septic tank manufacturers for DEQ to consider it. Tyler stated that he would discuss this issue with DEQ's Water Quality Division Administrator. In the meantime Tyler suggested that Mr. Gibbs contact other septic tank manufacturers to determine their interest in this re-approval process. Mr. Gibbs agreed to this approach.

MEETING MINUTES:

February 6, 2013 Draft TGC Meeting Minutes: Review, Amend, or Approve

The minutes were reviewed and no amendments were proposed.

Motion: Bob Erickson moved to approve the minutes.

Second: Michael Reno.

Voice Vote: Motion carried unanimously.

Minutes will post as final. See DEQ website and **Appendix A**

OLD BUSINESS/ FINAL REVIEW:

4.10.3 Extended Treatment Package System Operation, Maintenance, and Monitoring

This TGM Section was posted for public comment. There were no public comments received on this section.

Motion: Michael Reno moved that the TGC recommend final approval to DEQ for Section 4.10.3 Extended Treatment Package System Operation, Maintenance, and Monitoring.

Second: Joe Canning.

Voice Vote: Motion carried unanimously.

Section will post to TGM as final. See DEQ website and **Appendix B.**

4.10.8 Extended Treatment Package System Construction

This TGM Section was posted for public comment. There were no public comments received on this section.

Discussion was held on the need for the manufacturer's serial number as well as the model number to make it easier to order replacement parts in the future. Tyler Fortunati stated that DEQ is specifically interested in tracking the ETPS model numbers since product approval is based on a specific model number, and thus any product disapproval would need to be based on a specific model as well. This allows DEQ and the health districts the ability to track ETPS system function by model number. David Loper would like to see the O&M entity or service provide include this information as part of the installation certification form they must submit to the health district. This requirement was added to the installation certification requirements for the property owner and O&M entity.

Motion: Bob Erickson moved that the TGC recommend final approval to DEQ for Section 4.10.8 Extended Treatment Package System Construction as amended.

Second: Joe Canning.

Voice Vote: Motion carried unanimously.

Section will post to TGM as final. See DEQ website and **Appendix C.**

4.9 Experimental System

This TGM Section was posted for public comment. There were no public comments received on this section.

David Loper requested to eliminate information on the hearing committee composition for variances. Additional grammatical changes were made.

***Action Item:** David Loper made a request for DEQ to develop a memorandum on variance hearings.

Motion: Michael Reno moved that the TGC recommend final approval to DEQ for Section 4.9 Experimental System as amended.

Second: Joe Canning.

Voice Vote: Motion carried unanimously.

Section will post to TGM as final. See DEQ website and **Appendix D.**

3.2.7 Drainfield Cover

This TGM Section was posted for public comment. There were no public comments received on this section.

There was discussion on straw and untreated building material as suitable cover material. The committee decided to allow straw and untreated building paper as cover over all basic alternative system drainfields. All complex alternative system drainfields must be covered by geotextile fabric.

Motion: Michael Reno moved that the TGC recommend final approval to DEQ for Section 3.2.7 Drainfield Cover as amended.

Second: David Loper.

Voice Vote: Motion carried unanimously.

Section will post to TGM as final. See DEQ website and **Appendix E.**

4.28 Two-Cell Infiltrative System

This TGM Section was posted for public comment. There were no public comments received on this section.

Discussion was held on the frequency of installation and location of this type of system in the state. Jay Loveland provided input that these systems are used in northern Idaho and he thought roughly 3 were permitted in the last 4 years.

Motion: Michael Reno moved that the TGC recommend final approval to DEQ for Section 4.28 Two-Cell Infiltrative System.

Second: Bob Erickson.

Voice Vote: Motion carried unanimously.

Section will post to TGM as final. See DEQ website and **Appendix F.**

4.5 Capping Fill System

This TGM Section was posted for public comment. There were no public comments received on this section.

The committee decided to change the term "trench" to "system" throughout this section so that capping fill designs could be used for absorption beds if necessary. Tyler Fortunati provided information that the research around system designs using scarification state that scarification should be done using a chisel plow or back hoe teeth so the soil structure is less disrupted and does not settle to the degree that plowed soil would. The committee also made the amendments to this section that allow the cap to be constructed prior to, or after, drainfield installation.

***Action Item:** Joe Canning would like a minor modification to Figure 4-1 to clarify that 12 inches of cap material is needed over the width of the drain field trench, not just at the center.

Motion: Joe Canning moved that the TGC recommend final approval to DEQ for Section 4.5 Capping Fill System as amended.

Second: Michael Reno.

Voice Vote: Motion carried unanimously.

Section will post to TGM as final. See DEQ website and **Appendix G.**

10:46 a.m. Break

10:56 a.m. Meeting Resumed

4.7 Drip Distribution System

This TGM Section was posted for public comment. There were no public comments received on this section.

Motion: Joe Canning moved that the TGC recommend final approval to DEQ for Section 4.7 Drip Distribution System.

Second: David Loper.

Voice Vote: Motion carried unanimously.

Section will post to TGM as final. See DEQ website and **Appendix H.**

3.2.8 Drainfield Excavation Backfilling Materials and Alternative System Construction

This TGM Section was posted for public comment. There were no public comments received on this section.

Under 3.2.8.2 Substantiating Drainfield Aggregate and Construction Media Installation the committee clarified that media receipts would only be needed for verification 'upon request' by the health district.

Motion: Michael Reno moved that the TGC recommend final approval to DEQ for Section. 3.2.8 Drainfield Excavation Backfilling Materials and Alternative System Construction as amended.

Second: George Miles.

Voice Vote: Motion carried unanimously.

Section will post to TGM as final. See DEQ website and **Appendix I.**

2.2 Separation Guidelines

This TGM Section was posted for public comment. There were no public comments received on this section.

Discussion was held on the hierarchy used to determine separation distances but no changes were made.

Motion: Michael Reno moved that the TGC recommend final approval to DEQ for Section. 2.2 Separation Guidelines.

Second: David Loper.

Voice Vote: Motion carried unanimously.

Section will post to TGM as final. See DEQ website and **Appendix J.**

4.25 Sand Mound

This TGM Section was posted for public comment. There were no public comments received on this section.

Motion: Joe Canning moved that the TGC recommend final approval to DEQ for Section 4.25 Sand Mound.

Second: Bob Erickson.

Voice Vote: Motion carried unanimously.

Section will post to TGM as final. See DEQ website and **Appendix K.**

4.20 Pressure Distribution System

This TGM Section was posted for public comment. There were no public comments received on this section.

Motion: Joe Canning moved that the TGC recommend final approval to DEQ for Section 4.20 Pressure Distribution System as amended.

Second: Bob Erickson.

Voice Vote: Motion carried unanimously.

Section will post to TGM as final. See DEQ website and **Appendix L.**

The meeting was adjourned for Lunch.
Lunch 12:02 p.m. – 1:06 p.m.

4.22 Recirculating Gravel Filter

This TGM Section was posted for public comment. There were no public comments received on this section.

Discussion was held on the changes made. The committee would like to see figures developed for the pressurized drainfield design. In addition, the committee would like to review the information submitted through public comments from David Lowe of Lowridge On Site Technologies. The committee decided to review data received from the company and postpone finalizing this section until further review is completed.

***Action Item:** Develop figures depicting pressurized distribution or transport to the drainfield.

Motion: David Loper moved to table the approval of Section 4.22 Recirculating Gravel Filter until the next TGC meeting.

Second: Bob Erickson.

Voice Vote: Motion carried unanimously.

Section will be tabled and reintroduced for final approval at the next TGC meeting. See DEQ website and **Appendix M.**

NEW BUSINESS/DRAFT REVIEW

4.1 General Requirements

The committee reviewed the proposed revision to this section of the TGM. Tyler Fortunati clarified that a two-cell infiltrative system does not need a PE licensed in Idaho as it doesn't have a liner, while an individual lagoon has a liner that needs to be designed by a PE.

Motion: Joe Canning moved that the TGC recommend preliminary approval to DEQ of Section 4.1 General Requirements.

Second: Bob Erickson.

Voice Vote: Motion carried unanimously.

See **Appendix N** and provide public comment to Tyler Fortunati at 208-373-0140 or by email at tyler.fortunati@deq.idaho.gov.

1.5 Installer's Registration Permit

The committee reviewed the proposed addition of this section to the TGM. There was discussion on refresher course substitution of a video to be watched if an in-person class is not attended by the installer for three straight years. Tyler Fortunati clarified that the video could be as simple as a recording of the last installer training course held by the health district.

The health district representation on the committee would like DEQ to develop a standardized statewide video for initial viewing prior to permit issuance. Reference to this video was added under section 1.5.1.

Under 1.5.3 Installer's Registration Permit Exemption the committee clarified that the property owner must perform all work related to the system excavation and must help and supervise all aspects related to the construction of their own system. The committee also removed item 3 under scenarios that the installer permit exemption doesn't apply to. The removed language stated "Subsurface sewage disposal systems installed on property that is under a leasing agreement or easement for the installation of the system."

Motion: Bob Erickson moved that the TGC recommend preliminary approval to DEQ of Section 1.5 Installer's Registration Permit as amended.

Second: Michael Reno.

Voice Vote: Motion carried unanimously.

See **Appendix O** and provide public comment to Tyler Fortunati at 208-373-0140 or by email at tyler.fortunati@deq.idaho.gov.

4.17 Individual Lagoon

The committee reviewed the proposed revision to this section of the TGM.

Motion: Joe Canning moved that the TGC recommend preliminary approval to DEQ of Section 4.17 Individual Lagoon.

Second: Michael Reno.

Voice Vote: Motion carried unanimously.

See **Appendix P** and provide public comment to Tyler Fortunati at 208-373-0140 or by email at tyler.fortunati@deq.idaho.gov.

2:45 p.m. Break

2:55 p.m. Meeting Resumed

4.3 Existing and Approved System Rights, Abandoned and Unapproved Systems, and Nonconforming Uses

The committee reviewed the proposed revision to this section of the TGM. Tyler Fortunati provided background on what used to be called 'vested rights' which the Attorney General's office recommended be changed to match existing rule definitions. Changes made on this section are based on the subsurface sewage disposal rules. The subsurface rules were officially implemented on August 18, 1971 but there was not widespread permitting across the state until 1974 so the Attorney General's office has agreed to use January 1, 1974 throughout this section as the defining date for an existing system that was installed prior to implementation of the rules.

Tyler Fortunati requested the committee's approval to move this section along with sections 4.2 and 4.4 to Section 1 of the TGM. The committee agreed that this would be acceptable upon final approval of section 4.3. There will be no content changes to section 4.2 and 4.4 associated with moving these sections to section 1 of the TGM.

The committee held discussion on the difference between illegal, existing, approved, and unapproved systems and whether unapproved systems need to be defined in the TGM. The committee also held discussion on the proposed process to approve unapproved systems. The committee had differing views on section 4.3.3 Unapproved Systems. David Loper offered to provide DEQ a proposed revision of section 4.3.3 Unapproved Systems prior to the next TGC meeting.

The committee also had differing views on section 4.3.5.1 Failed Systems. Specific issues were brought up with items 4.a and 4.b from this section. The committee discussed the benefits gained through the use of the types of systems listed in item 4.a in regards to surface water and ground water. The committee felt there was no benefit to using these systems when separation distances to surface water cannot be met so the surface water component was removed. Additional discussion revolved around when an alternative system listed in item 4.a should be required due to ground water separation issues for an existing system. David Loper stated that his research has shown three feet of separation distance to ground water is acceptable for all soil types and that alternative systems shouldn't be required on non-conforming permits until this distance is not met. David Loper proposed that all of item 4.a and 4.b be removed from this section. Tyler Fortunati made the request that the committee table this document instead of removing these requirements and that David Loper and DEQ bring research on this topic to the committee for their consideration regarding this topic.

***Action Item:** David Loper will provide DEQ a proposed rewrite of section 4.3.3 of the TGM at least one month prior to the next TGC meeting.

***Action Item:** DEQ and David Loper will bring EPA research and independent research on adequate separation distances to ground water regarding different soil types. DEQ will also revisit and provide the research that was obtained during the surface water setback subcommittee meetings.

Motion: Michael Reno moved to table preliminary approval of Section 4.3 Existing and Approved System Rights, Abandoned and Unapproved Systems, and Nonconforming

Uses until the next TGC meeting upon further review and discussion regarding the action items for this section.

Second: Bob Erickson.

Voice Vote: Motion carried unanimously.

See **Appendix Q** and provide public comment to Tyler Fortunati at 208-373-0140 or by email at tyler.fortunati@deq.idaho.gov.

3.2.3.1 Conversion of a Septic Tank to a Lift Station

The committee reviewed the proposed revision to this section of the TGM. The committee added the recommendation for an oversized riser pipe for access to deep septic tanks, dosing chambers, or lift stations.

Motion: Michael Reno moved that the TGC recommend preliminary approval to DEQ of Section 3.2.3.1 Conversion of a Septic Tank to a Lift Station as amended.

Second: Joe Canning.

Voice Vote: Motion carried unanimously.

See **Appendix R** and provide public comment to Tyler Fortunati at 208-373-0140 or by email at tyler.fortunati@deq.idaho.gov.

NEXT MEETING:

The next committee meeting is scheduled to be on September 18, 2014 at the DEQ State Office building.

Motion: Joe Canning moved to adjourn the meeting.

Second: Bob Erickson.

Voice Vote: Motion carried unanimously.

The meeting adjourned at 4:34 p.m.

Appendix B

4.1 General Requirements

Revision: ~~July 18~~September 18, ~~2013~~2014

All rules pertaining to standard subsurface sewage disposal systems shall be applicable, except as modified in this section for each alternative.

All alternative systems shall be approved for specific site use by the health districts in a manner consistent with the guidance provided within this manual for each alternative system.

Requirements for each site-specific alternative shall be contained in the permit.

The designer of alternative *public* systems must be a PE licensed in Idaho and experienced in the alternative system's design. The designer of alternative *private* systems, other than those listed below, may be required to be either a PE or an environmental health specialist. The PE must be licensed in Idaho and the environmental health specialist must be registered with the National Environmental Health Association, and both should be experienced in the alternative system's design. The designer of the following complex alternative *private* systems must be a PE licensed in Idaho unless otherwise allowed within the specific system's guidance:

- Drip Distribution System
- Evapotranspiration and Evapotranspiration/Infiltrative System
- Experimental System
- Grey Water System (if pressurized)
- Individual Lagoon
- Pressure Distribution System
- Recirculating Gravel Filter
- Intermittent Sand Filter
- Sand Mound
- ~~Two-Cell Infiltrative System~~

4.1.1 Engineering Requirements

Engineered designs and design or responsible charge engineers shall meet the following minimum requirements of this section.

4.1.1.1 Responsible Charge of Engineered Systems and Plans

All new and repair or replacement systems that require engineered design shall have a new set of plans that have been stamped (sealed) by the design engineer unless the original design plan accounted for and included the design of the replacement system. If the original design plan included the design of the replacement system and that system design is in conformance with IDAPA 58.01.03 and the current applicable TGM alternative system design requirements then the existing plans may be used as long as those plans are stamped (sealed) by a responsible charge engineer (does not need to be the original design engineer) as required by Idaho Code 54-1223(5). A responsible charge engineer stamping (sealing) an existing set of plans for a replacement system should review the original work to ensure that:

- Correct field parameters were evaluated
- The existing design meets the requirements of IDAPA 58.01.03 and the current applicable TGM alternative system design requirements
- The system as designed is capable of being installed in the designated area without any design plan modification.

4.1.1.2 Operation and Maintenance of Engineered Systems

All subsurface sewage disposal systems require some level of system operation and maintenance. Engineered systems typically require system operation and maintenance that is far more extensive than operation and maintenance required for standard systems. Per IDAPA 58.01.03.005.04.k, the design engineer shall provide an operation and maintenance manual as part of the subsurface sewage disposal permit application upon submission of the engineered design plans prior to permit issuance. The operation and maintenance manual should include information on the following areas at a minimum:

- Manufacturer recommended operation and maintenance for any commercially manufactured component used in a system's design.
- Operation and maintenance of the system necessary based on the system design.
- Operation and maintenance of the system as specified within the alternative system's guidance in the TGM.
- A description of any monitoring procedures related to system function, failure detection, or system sampling.
- Corrective actions for system component malfunctions, alarms, or failure.
- Any other operation and maintenance as recommended by the system's design engineer.

4.1.1.3 As-Built Plans and Specifications of Engineered Systems

As a condition of issuing a subsurface sewage disposal permit the health district may require that complete and accurate drawings and specifications that depict the actual construction be submitted to the health district within 30 days after the completion of system construction (IDAPA 58.01.03.005.15). This requirement should be fulfilled by the system's responsible charge engineer for all systems that require engineered designs. As-built plans and specifications may be required when there are any deviations in construction from the permitted construction plans. If construction is completed in conformance with the permitted construction plans without deviation then the responsible charge engineer shall provide the health district a written statement that the system was constructed and functions in compliance with the approved plans and specifications. It is recommended that the responsible charge engineer perform as many inspections of the system construction as necessary in order to provide the above documentation.

4.1.2 Plumbing and Electrical Permits

Subsurface sewage disposal permits only cover the installation of a subsurface sewage disposal system (IDAPA 58.01.03.005.10) and provide documentation that the system is in compliance with IDAPA 58.01.03 and applicable alternative system requirements of the TGM (IDAPA

58.01.03.005.07). Subsurface sewage disposal systems begin at the septic tank and terminate at the end of the drainfield. Subsurface sewage disposal system permits do not include approval for installation of any plumbing preceding the septic tank or electrical components of a subsurface sewage disposal system. Requirements for these components are discussed in the following sections.

4.1.2.1 Plumbing Permits and Inspections

Any wastewater plumbing preceding a septic tank is under the jurisdiction of the Idaho Division of Building Safety Plumbing Program. All requirements related to this section of wastewater plumbing are governed by the Idaho State Plumbing Code. A permit for the installation of this plumbing and any necessary inspections of this plumbing must be obtained through the Idaho Division of Building Safety Plumbing Program. Health districts only have jurisdiction, including permitting and inspection authority, over the subsurface sewage disposal system. Health districts are not responsible for determining that any permit has been obtained for plumbing preceding the septic tank or that the plumbing preceding the septic tank is in compliance with the Idaho State Plumbing Code. A subsurface sewage disposal installer's registration permit issued under IDAPA 58.01.03.006 is not a substitute for a plumbing contractor license.

4.1.2.2 Electrical Permits and Inspections

Some alternative subsurface sewage disposal systems contain components that require an electrical connection. All electrical connections are under the jurisdiction of the Idaho Division of Building Safety Electrical Program. A permit for the electrical work necessary to connect these components to an electrical supply and any necessary inspections of the electrical work must be obtained through the Idaho Division of Building Safety Electrical Program. Health districts are not responsible for determining that any permit has been obtained for electrical work related to a subsurface sewage disposal system or that the electrical work is in compliance with the National Electrical Code. A subsurface sewage disposal installer's registration permit issued under IDAPA 58.01.03.006 is not a substitute for an electrical contractor license. Permitted subsurface sewage disposal system installers that do not hold a current electrical contractor license should not perform any electrical work related to a subsurface sewage disposal system. *It is highly recommended that health districts verify that a proper electrical inspection has been performed by the Idaho Division of Building Safety Electrical Program on any subsurface sewage disposal system component requiring electrical connection prior to coming into contact with the component, or any liquid that may be in contact with that component.*

Appendix C

1.5 Installer's Registration Permit

An installer is considered any person, corporation, or firm engaged in the business of excavation for, or the construction of subsurface sewage disposal systems (IDAPA 58.01.03.003.19). Per IDAPA 58.01.03.006.01 all installers must obtain either a standard/basic or complex installer's registration permit. These permits may be obtained from any health district in the state and may be used for the installation of subsurface sewage disposal systems throughout the entire state regardless of the health district that the registration permit was obtained through. Standard/basic installer's registration permit holders are limited in the type of subsurface sewage disposal systems that may be installed. Complex alternative installer's registration permit holders may install all systems that are allowed by the standard/basic registration permit and all of the following complex alternative systems:

- Drip distribution systems
- Evapotranspiration and Evapotranspiration/Infiltrative systems
- Experimental systems
- Extended treatment package systems
- Pressurized grey water systems
- Individual lagoons
- Pressure distribution or transport systems
- Recirculating gravel filters
- Intermittent sand filters
- Enveloped in-trench sand filters
- Pressurized in-trench sand filters
- Sand mound
- Two-cell infiltrative systems
- Drainfield remediation components
- Large soil absorption systems

1.5.1 Initial Installer's Registration Permit Issuance

To obtain an initial installer's registration permit the prospective installer shall:

1. Submit an installer registration permit application to one of the health districts (IDAPA 58.01.03.006.04).
2. Submit a bond to the health district in a form approved by DEQ and in the sum applicable to the permit type sought as specified in IDAPA 58.01.03.006.05.
3. Pay the applicable permit application fee as set by the individual health district's Board of Health (fees may vary from district to district based on program costs).

4. The applicant shall view the statewide installer video prior to taking the required installer examination.
5. Pass the installer examination administered by the health district with a score of 70% or higher (IDAPA 58.01.03.006.02).

1.5.2 Installer's Registration Permit Renewal

All installer registration permits shall be renewed annually (IDAPA 58.01.03.006.03). In order to renew an installer registration permit the following items must be met:

1. The health district issuing the registration permit must receive items 1 through 3 as described in section 1.5.1.
    a. A bond continuation form may be substituted in lieu of a new bond upon registration permit renewal.
    b. If the installer registration permit is to be upgraded from a basic/standard registration permit to a complex alternative system registration permit at the time of renewal then the complex installer examination shall also be taken.
2. The applicant must attend a refresher course at least every third year meeting the requirements as described in section 1.5.2.1.

1.5.2.1 Refresher Course Requirements

Installer refresher (continuing education) courses must be attended every three years in order to renew an installer registration permit per IDAPA 58.01.03.006.03. All refresher courses used to fulfill the refresher course requirements for an installer's registration permit must be approved by DEQ. Installer refresher courses delivered by the health districts or DEQ are approved courses. All other courses proposed to be held by non-DEQ or health district organizations to fulfill the refresher course requirements must submit an agenda and curriculum to DEQ's On-Site Wastewater Coordinator for review prior to holding the course. Courses held for the purpose of fulfilling the refresher course requirements of IDAPA 58.01.03.006.03 must:

- Be based on the most recent version of IDAPA 58.01.03 and the TGM.
- Contain information on recent updates to the TGM as approved by the TGC.
- Not contain manufacturer specific information.
- Have an agenda capable of filling a minimum of a four hour course.

Refresher courses may also contain:

- Health district information specific to the subsurface sewage disposal program.
- Discussion on issues related to the subsurface sewage disposal program identified by the health districts that need to be addressed with the installers.
- Presentations by non-health district or DEQ personnel as long as the presentations are not manufacturer specific.
- Other information as approved by DEQ.

Sign-in sheets should be maintained for all courses and should be filled out at the start and near the end of the course. Upon completion of the course the course provider should provide the installer a certificate of completion that includes the course date, time attended, and course holder. Health districts should maintain a copy of the most current certificate in each installer's file. For courses attended by an installer, that are not held by the district which they are licensed through, it is the installer's responsibility to provide the health district a copy of their course completion certificate. If an installer is not able to attend a refresher course they may meet this requirement of permit issuance by completing the process described in section 1.5.2.2.

1.5.2.2 Refresher Course Substitution

If an installer is not able to attend an approved refresher course in order to renew their registration permit they may:

1. Schedule a time with their permitting health district to watch a health district approved video that meets the requirements of section 1.5.2.1.
2. If the installer is not able to attend an in-person class for three straight years then to renew their installer registration permit the installer must watch the video referred to above and retake the installer exam that is applicable to the permit type sought for renewal.

1.5.3 Installer's Registration Permit Exemption

An installer's registration permit is not required for (IDAPA 58.01.03.006.06):

1. Any person, corporation, or firm constructing a central or municipal subsurface sewage disposal system if that person, corporation, or firm is a licensed public works contractor, is experienced in the type of system to be installed, and is under the direction of a professional engineer licensed in the state of Idaho.
2. Any property owner installing their own standard or basic alternative system.
    a. Property owners installing a subsurface sewage disposal system on their property under the property owner exemption must perform all work related to the excavation and must help and supervise all aspects of construction for the system.
    b. Commercial and industrial property owners and government entities are also allowed the exemption from an installer's registration permit for work performed on standard or basic alternative systems installed on land owned by the entity. The entity may utilize their staff and must own or rent the equipment to install the system.

The installer's registration permit exemption does not apply under the following scenarios:

1. The excavation and construction of the system are performed by an outside contractor or individual that is not the property owner.
2. The installer is installing a complex alternative system and is not a licensed public works contractor under the direction of a professional engineer.

1.5.4 Installer's Registration Permit Revocation

All permitted subsurface sewage disposal installers must comply with IDAPA 58.01.03 (IDAPA 58.01.03.002.04). Failure to comply with these rules may result in the revocation of an installer's registration permit. Permit revocation may be initiated by any health district regardless of where an installer obtained their registration permit.

Appendix D

4.17 Individual Lagoon

Revision: ~~July 18, 2013~~September 18, 2014

4.17.1 Description

An individual lagoon is a pond sealed with a natural or synthetic liner into which sewage from a household or small business is discharged. Bacteria digest the solids in the presence of oxygen, and the liquid is evaporated into the atmosphere.

4.17.2 Approval Conditions

1. Lagoons are applicable only in areas of Idaho where the annual evaporation exceeds the annual precipitation.
2. The lagoon may not be placed within ~~100~~ 200 feet of the owner's property line ~~and may not be placed within 300 feet from a neighboring dwelling~~ as measured from the toe of the exterior slope.
3. Bottom of the finished lagoon must not be constructed within:
   a. 6 inches of the ~~maximum~~ seasonal high ground water.
   b. 2 feet of the normal high ground water level.
   c. 2 feet of bedrock.
4. Site must be located in an area of maximum exposure to the sun and wind.
5. Slope must not be greater than 12%.
6. Lagoons are restricted from use in areas where such systems may have an ice cover for more than 3 months.
7. A source of makeup water with a backflow prevention system between the source and the lagoon must be readily available.
8. Lot size should be at least 10 acres but in no case should be less than 5 acres. If the lot is less than 10 acres, a variance must be required.
9. This design is for individual residential dwellings or small commercial businesses that only discharge domestic wastewater. Facilities discharging non-domestic wastewater do not qualify for an individual lagoon under this guidance.
10. System designs that meet the definition of a central system (IDAPA 58.01.03.003.08) do not qualify for an individual lagoon under this guidance.
11. The system shall be designed by a PE licensed in Idaho.

4.17.3 Design

1. Area of the lagoon at the 2-foot minimum depth is first determined by the net evaporation of the area. Equation 4-13 gives the calculation for horizontal area.

$$A = \frac{1.2 \times \text{yearly flow (in cubic feet)}}{\text{Annual net moisture (in feet)}}$$

Equation 4-13. Lagoon horizontal area (square feet).

where:

Yearly flow in cubic feet = (GPD x 365 days) x (7.48 gallons/ft^3).

Annual net moisture as determined from a water mass balance beginning in October.

~~2. For commercial establishments with organic loadings higher than domestic sewage, check the area required based on biological oxygen demand (BOD) loading. This is an important check in areas with high evaporation rates and low precipitation. Equation 4-14 shows the calculation for horizontal area factoring in BODs.~~

$$A = \frac{(GPD)(BOD[mg/L])(8.35 \times 10^{-6})}{(20 lb/acre/day)} \times (43{,}560\ ft^2/acre)$$

~~Equation 4-14. Horizontal area factoring in BOD.~~

~~where:~~

~~A = surface area in square feet.~~

~~3. Use the area calculation that gives the largest area.~~

~~4~~2. Total liquid depth:

2 foot minimum depth + 2 foot freeboard + annual net moisture as determined by a water mass balance.

3. The lagoon shall be lined with material that is watertight and demonstrates at least a 20-year service life. The following requirements must be met for flexible membrane liners:

   a. Have properties equivalent to or greater than 30-mil PVC.

   b. Have field repair instructions and materials provided to the purchaser of the liner.

   c. Have factory fabricated boots for waterproof field bonding of piping to the liner.

   d. Liner must be placed against smooth, regular surfaces free of sharp edges, nails, wire, splinters, or other objects that may puncture the liner. A 4-inch layer of clean sand should provide liner protection.

4. The lagoon shall be designed for a maximum leakage rate of 500 gallons per acre per day.

5. Minimum dike and embankment details:

   a. Inner and outer slope–3 horizontal to1 vertical (3:1)

   b. Inner slopes should not be flatter than 4 horizontal to 1 vertical (4:1)

   c. Embankment width– 4 feet minimum

5. The effluent discharge inlet to the lagoon must be placed near its center with a concrete splash-pad constructed around the inlet.

6. A water depth gauge clearly visible from the edge of the lagoon should be ~~installed at~~located near the concrete splash pad.
7. A cleanout must be placed on the ~~gravity~~ influent lines~~ at a point above the lagoon's maximum liquid elevation.
8. If the sewage is pumped to the lagoon, a valve must be installed in the line that will permit repairs without draining the lagoon and will prevent backflow of effluent to the pumping chamber.
9. The lagoon must be fenced to exclude children, pets, and livestock. A sign indicating Danger—Human Sewage is recommended.

4.17.4 Construction

~~1. The effluent discharge inlet to the lagoon must be placed near its center.~~

~~2. A concrete splash pad must be constructed around the inlet.~~

~~3. A water depth gauge clearly visible from the edge of the lagoon should be installed at the concrete splash pad.~~

~~4. A cleanout must be placed on the gravity influent lines at a point above the lagoon's maximum liquid elevation.~~

~~5. If the sewage is pumped to the lagoon, a valve must be installed in the line that will permit repairs without draining the lagoon and will prevent backflow of effluent to the pumping chamber.~~

~~6. Excavation must provide the following dike and embankment details:~~

~~a. Inner slope 3:1~~

~~b. Outer slope 2:1 or flatter~~

~~c. Embankment width 4 feet minimum~~

~~7~~1. All fill must be compacted to at least 95% Standard Proctor Density.

2. All soil used in constructing the pond bottom and dike cores shall be relatively impervious, incompressible and tight, and compacted to at least 95% Standard Proctor Density.
3. Lagoons shall be sealed such that the seepage loss through the seal is no more than 0.125 inches (1/8 inch) per day.

~~8. The lagoon must be fenced to exclude children, pets, and livestock. A sign indicating Danger—Human Sewage is recommended.~~

4.17.5 Inspections

1. A preconstruction conference should be held between the health district, installer, and responsible charge engineer.
2. The site must be inspected when the cells are excavated and compaction test results for all fill material, dikes, and the lagoon bottom shall be provided at this time.

3. The site must be inspected ~~at~~ after the ~~time the~~ impervious liner is placed and prior to filling the lagoon.

~~2. Inspections may be required during embankment construction to ensure adequacy of fill compaction and after completion.~~

~~3~~4. Individual lagoons ~~will~~ shall be seepage tested by a PE licensed in Idaho, an Idaho licensed professional geologist, or by individuals under their supervision. ~~using the appropriate pond/lagoon seepage test procedure.~~

a. Seepage testing procedures, to demonstrate seepage rate compliance, must be submitted to DEQ for review and approval prior to conducting required seepage testing (see http://www.deq.idaho.gov/water-quality/wastewater/lagoon-seepage-testing.aspx for more information).

b. This is a one-time seepage test that must be performed prior to the lagoon being placed into service.

b. The leakage rate for the lagoon shall be no more than 0.125 inches per day.

5. The responsible charge engineer should conduct as many inspections as necessary for verification of system and component compliance with the engineered plans.

6. The responsible charge engineer shall provide the health district a written statement that the system was constructed and function in compliance with the approved plans and specifications. Additionally, the responsible charge engineer shall provide as-built plans to the health district if any construction deviations occur from the permitted construction plans. (IDAPA 58.01.03.005.15)

4.17.6 Operation and Maintenance

1. The lagoon design engineer shall provide a copy of the system's operation, maintenance, and monitoring procedures to the health district as part of the permit application and prior to subsurface sewage disposal permit issuance (IDAPA 58.01.03.005.04.k).

2. The lagoon must be kept filled with at least 2 feet of liquid.

~~2~~3. ~~A supply of makeup water shall be available~~Annual maintenance and testing of the backflow prevention device installed on the makeup water supply line shall be performed and be done according to the manufacturer's recommendations.

~~3. If the water comes from a well or domestic water supply, an approved backflow prevention device must be installed between the water source and the discharge to the lagoon.~~

4. Embankments must be stable and maintained to avoid breech, overflow, aesthetic nuisance, or disturbance to the lagoon operation.

5. Permanent vegetation shall be maintained on the top and outer slopes of the embankment except where a foot or vehicle path is in use. ~~Grasses should be mowed.~~

6. Woody vegetation should be removed from the embankments, grasses should be mowed, and other vegetation should be maintained regularly.

~~6~~7. Weeds and other vegetation must not be allowed to grow in the lagoon.

~~7~~8. ~~Duckweed or other f~~Floating aquatic weeds must be physically removed ~~when the vegetation obscures the surface of the liquid~~on a regular basis.

~~8~~9. The fence and all gates must be maintained to exclude animals, children, and other unwanted intrusion.

10. Directions for repair of the impervious liner should be included.

11. Directions on how to address potential odor issues from the lagoon should be described.

Appendix E

3.2.3.1 Conversion of a Septic Tank to a Lift Station

In some circumstances an existing subsurface sewage disposal system may have been installed deeper than the current maximum installation depth for a subsurface sewage disposal system. Upon repair or replacement of the existing system it may be necessary to raise the discharge point elevation of the effluent to meet the current installation depth standards for the drainfield. The following recommendations should be met when choosing a method to accomplish this action:

1. Lifting effluent prior to the drainfield may be done in one of two ways:
   a. Installation of a septic tank or dosing chamber after the existing septic tank.
      i. The septic tank or dosing chamber must have an approved bury depth meeting the depth of the existing septic tank.
      ii. A pump must be installed, meeting the requirements in section 4.20, in the new septic tank or dosing chamber to lift the effluent to the maximum drainfield installation depth.
   b. Conversion of the existing septic tank into a lift station to raise the effluent into a newly installed septic tank that is capable of gravity flow to the maximum drainfield installation depth.
2. Either of the~~se~~ methods listed in item 1 ~~is~~are allowable, but the recommended method is the installation of a septic tank or dosing chamber after the existing septic tank (oversized risers are recommended for access to these tanks). This is due to the following reasons:
   a. The wastewater undergoes primary treatment (clarification in the septic tank) prior to passing through a pump.
   b. Wastewater that has not undergone primary treatment prior to pumping does not settle out in the septic tank as well once it has passed through a pump.
   c. Less solids, fats, oils, and greases associated with wastewater are passed to the drainfield if the wastewater undergoes primary treatment prior to passing through a pump.
3. If an applicant or installer elects to convert an existing septic tank into a lift station, instead of installing a septic tank or dosing chamber after the existing septic tank, the following should be taken into consideration:
   a. The conversion of the septic tank into a lift station must be done under a permit from the Idaho Division of Building Safety Plumbing Program and Electrical Program.
      i. The Plumbing Program inspects everything from the converted lift station up to the newly installed septic tank.
      ii. The Electrical Program inspects all electrical connections and installation associated with the lift station pump.
      iii. A subsurface sewage disposal installer's registration permit is not a substitute for a proper plumbing or electrical license.

b. The Idaho State Plumbing Code allows a lift station to discharge the entire volume of the lift station when the pump turns on.

   i. This will cause the entire volume of the lift station to discharge to the new septic tank with each pump cycle if the pump control floats are not adjusted.

   ii. It is recommended that lift station pump control floats be adjusted to discharge 25% of the daily design flow of the subsurface sewage disposal system with each pump cycle.

4. It is also important that the applicant and installer protect the drainfield to the best of their ability if a lift station is installed prior to a septic tank. The following minimum recommendations may help achieve this goal:

   a. An effluent filter should be installed in the outlet baffle of the new septic tank and the outlet manhole brought to grade through the installation of a lid riser to aid in effluent filter maintenance.

   b. The septic tank should be oversized to increase retention and settling time of the wastewater in the septic tank prior to discharge to the drainfield.

   c. A two-compartment septic tank should be installed to aid in settling of the wastewater in the septic tank prior to discharge to the drainfield.

   d. The pump used in the lift station should be capable of passing larger solids (not larger than the transport piping from the lift station to the septic tank) and grinder-type pumps should be avoided.

Appendix F

4.22 Recirculating Gravel Filter

Revision: ~~October 13, 2004~~September 18, 2014

4.22.1 Description

A recirculating gravel filter is a bed of ~~coarse sand~~filter media in a container that filters and biologically treats septic tank effluent. The filter effluent is returned to the recirculation tank for blending with untreated septic tank effluent and recirculated back to the filter. The treated effluent is distributed to a disposal trench of reduced dimension. System components include a septic tank, recirculating tank with float valve and low-pressure distribution system, free access filters, and a drainfield.

4.22.2 Approval Conditions

1. Nondomestic wastewater with BOD or TSS exceeding normal domestic wastewater strengths (section 3.2.1, Table 3-1) is required to be pretreated to these levels before discharge into the recirculating gravel filter system.
2. The bottom of the filter must not come within 12 inches of seasonal high ground water.
3. All pressurized distribution components and design elements of the recirculating gravel filter system that are not specified within section 4.22 must be designed and installed according to the guidance for pressure distribution systems in section 4.20.
4. The recirculating gravel filter container shall meet the same separation distance requirements as a septic tank.
5. System must be designed by a PE licensed in Idaho.

4.22.3 Design

Minimum design requirements for the recirculating gravel filter components are provided in the sections below.

4.22.3.1 Septic and Recirculating Tank

1. The septic tank shall be sized according to IDAPA 58.01.03.007.07.
2. Minimum recirculating tank volume shall be capable of maintaining 2 times the daily design flow of the structure above the pump low level off switch and the tank inlet (see Figure 4-24).
3. The recirculating tank may be a modified septic tank or dosing chamber selected from section 5.2 or section 5.3.
    a. Alternatively, the recirculation tank may be designed by the system's design engineer to meet the minimum necessary requirements of this section and IDAPA 58.01.03.007.
    b. Subsections .07, .08, .10, .11, and .13 of IDAPA 58.01.03.007 are exempt from the recirculating tank design requirements.

4. The recirculating tank shall be accessible from grade and the return line, flow splitter, pump, pump screen, and pump components shall be accessible from these access points.
5. A flow splitter capable of simultaneously returning effluent to the recirculating tank and discharging effluent to the drainfield shall be located prior to, or within, the recirculating tank. The flow splitter shall meet the following minimum requirements: ~~Float valves or equivalent bypass alternatives are required in the recirculation tank.~~
   a. The flow splitter must be capable of returning effluent to the recirculating tank and discharging to the drainfield in a volume ratio equivalent to the designed recirculation ratio (e.g., if a recirculation ratio of 5:1 is used then 80% of the filtered effluent by volume shall be returned to the recirculating tank and 20% shall be discharged to the drainfield).
   b. Float valves that do not allow for continual splitting of filtered effluent prior to discharge to the drainfield shall not be used.
6. The recirculating filter effluent return point shall be located at the inlet of the recirculating chamber.
7. Discharge to the drainfield must occur after filtration and flow splitting.
8. The recirculating tank shall meet all other minimum design and equipment requirements of section 4.20.3.4.

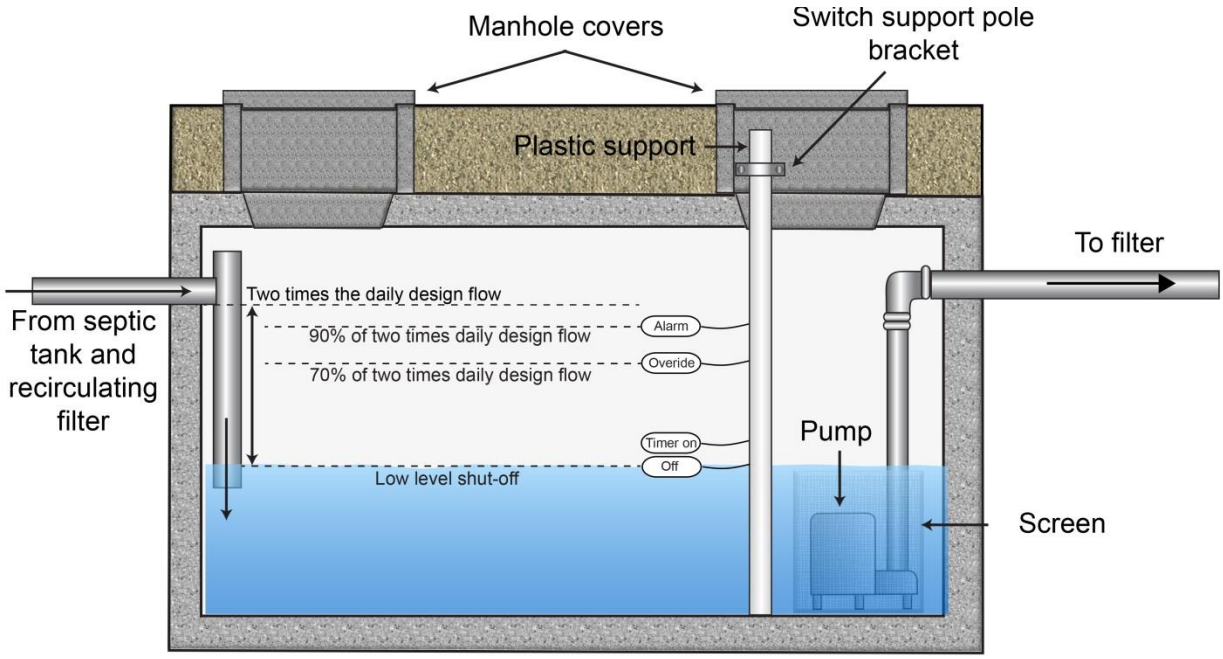

Figure 4-24. Recirculating tank.

4.22.3.2 Recirculating Filter

1. Filter container shall be constructed of reinforced concrete or other materials where equivalent function, workmanship, watertightness and at least a 20-year service life can be documented. The following requirements must be met for flexible membrane liners:
   a. Have properties equivalent to or greater than 30-mil PVC.
   b. Have field repair instructions and materials provided to the purchaser of the liner.
   c. Have factory fabricated boots for waterproof field bonding of piping to the liner.
   d. Liner must be placed against smooth, regular surfaces free of sharp edges, nails, wire, splinters, or other objects that may puncture the liner. A 4-inch layer of clean sand should provide liner protection.
2. The filter surface area is sized at a maximum of 5 gallons/ft²/day forward flow (forward flow is equivalent to the daily design flow from the structure).
3. Filter construction media shall meet the specification in section 3.2.8.1.3.
4. Minimum filter construction media depth shall be 24 inches (see Figure 4-25).
5. The pressure distribution laterals shall be located in aggregate meeting the specifications in section 3.2.8.1.1 with a minimum depth of 6 inches below the laterals and 2 inches above the laterals. Gravelless domes or chambers may be substituted for aggregate as long as the lateral orifices are oriented up.
6. Drainrock meeting the specification in section 3.2.8.1.1 shall be placed below the filter construction media ensuring a minimum depth that places 2 inches of drainrock cover over the underdrain.
7. The bottom of the filter should be sloped at least 1% to the underdrain pipe.
8. An underdrain must be located at the bottom of the filter to return filtered effluent to the recirculation tank meeting the following requirements:
   a. May be placed directly on the bottom of the filter.
   b. Minimum diameter of 4 inches.
   c. Placed level throughout the bottom of the filter.
   d. Constructed of slotted drain pipe with 1/4 inch slots 2.5 inches deep and spaced 4 inches apart located vertically on the pipe, or perforated sewer drain pipe with holes located at 5 and 7 o'clock.
   e. One underdrain should be installed for each filter cell zone.
   f. The distal end is vented to the atmosphere to allow entry of air flow into the bottom of the filter and access for cleaning.
   g. Connected to solid pipe meeting the construction requirements of IDAPA 58.01.03.007.21 that extends through the filter and is sealed so the joint between the filter wall and pipe is watertight.
   h. If gravity flow is not achievable from the underdrain to achieve flow splitting, return of effluent to the recirculating tank, and discharge of effluent to the drainfield then

the underdrain must connect to an approved dosing chamber (section 5.3) or modified septic tank (section 5.2) that is separate from the recirculating filter and sized and constructed as described in section 4.20.3.4. Upon discharge from the dosing chamber flow splitting requirements of every dose must still be met if splitting cannot be met prior to the dosing chamber.

9. Three 4 inch diameter observation tubes should be placed in the recirculating filter to monitor for ponding and clogging formation. The first should extend to the filter construction media/underdrain aggregate interface. The second should extend to the pressure distribution aggregate/filter construction media interface. The third should extend to the bottom of the underdrain aggregate and may be substituted by a properly designed vent from the underdrain that may be accessed.

    a. The monitoring tubes must be secured and perforated near the bottom.

    b. The monitoring tubes must extend through the recirculating filter cover and have a removable cap.

10. ~~No soil cover is required~~The surface of the recirculating filter must be left open to facilitate oxygenation of the filter. No soil cover is to be placed above the upper layer of drainrock in the recirculating gravel filter. However, the filter must be designed to prevent accidental contact with effluent from the surface. The following minimum cover requirements must be followed:~~.~~

    a. ~~Media and pipe shall be covered to prevent accidental contact and to provide access to the filter surface for filter maintenance~~Geotextile filter fabric shall be placed over the aggregate covering the pressurized distribution laterals.

    b. ~~Extreme climates may require insulation of the recirculating sand filter lid or cover to prevent freezing of the media~~A minimum of 12 inches of drainfield aggregate or decorative landscape stone shall be placed over the geotextile filter fabric.

    c. The filter and aggregate or stone cover shall be constructed to divert any surface waters away from the recirculating filter.

    d. Fencing around the recirculating gravel filter is recommended for all central systems.

    e. The design engineer should account for potential freezing conditions in the design of the recirculating filter and pressure distribution system.

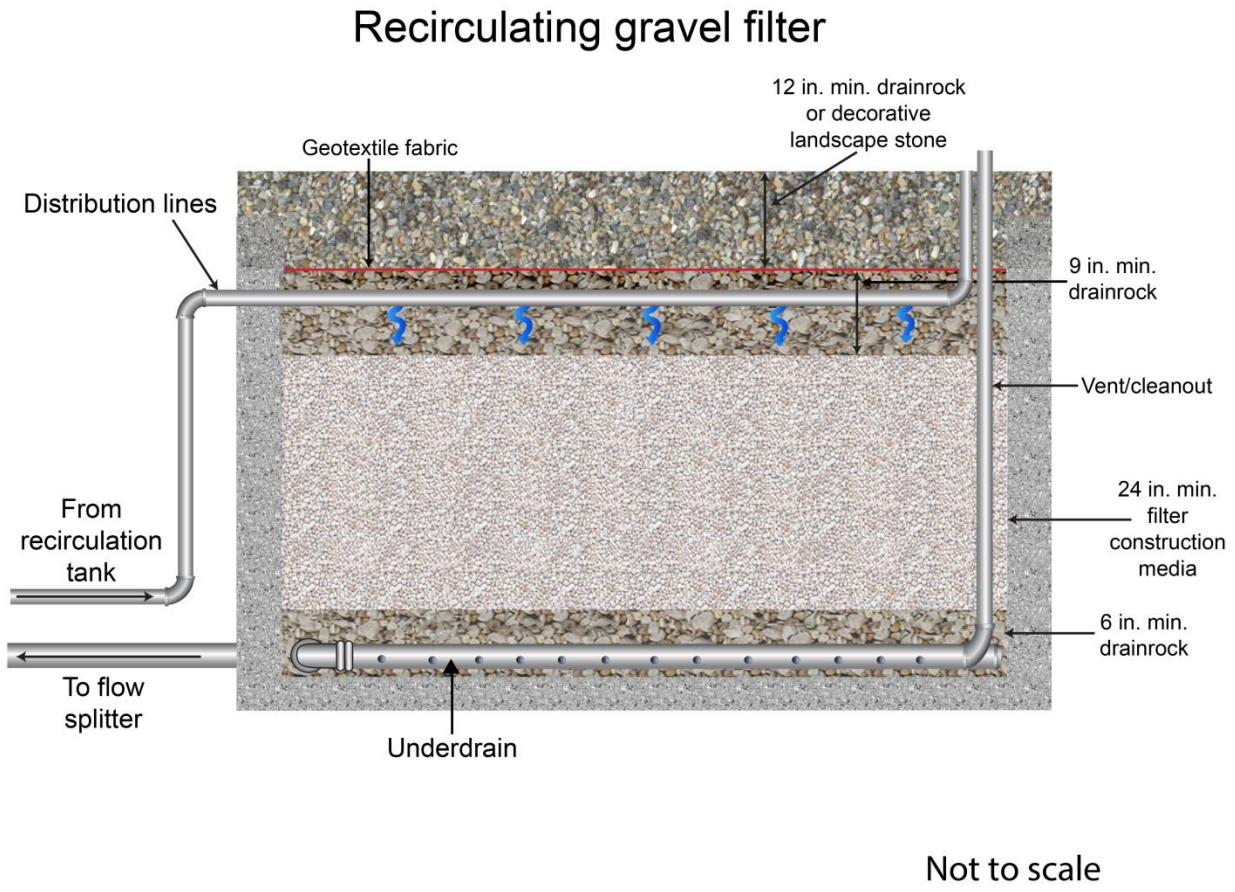

Figure 4-25. Recirculating filter.

4.22.3.2.1 Recirculating Filter Cells

Depending on the volume of effluent and the type of structure utilizing a recirculating gravel filter, the recirculating filter may need to be split into cells that contain dosing zones. A filter cell is the total filter area that can be served by a single dosing pump or set of pumps. A filter zone is the area of a cell that can be dosed by a single dosing pump at any one time. Zone sizing is dependent upon pump size, lateral length, perforation size, and perforation spacing. The minimum filter design requirements for cells, zones, and pumps include:

1. Single family homes: one cell, one zone, and one pump.
2. Central systems or systems connected to anything other than a single family home (flows up to 2,500 GPD): one cell, two zones, and one pump per zone.
3. Large soil absorption systems (flows of 2,500 to 5,000 GPD): one cell, three zones, and one pump per zone.
4. Large soil absorption systems (flows over 5,000 GPD): two cells, two zones per cell, and one pump per zone.
5. An alternative to installing one pump per zone is to install duplex pumps connected to sequencing valves that alternate zones for each pressurization cycle. For systems with

multiple cells, each cell must have a dedicated set of duplex pumps. Pumps should alternate between each cycle.

6. Filter cells are hydraulically isolated from one another and shall be constructed according to the minimum requirements in section 4.22.3.2.
7. Each cell shall be equivalent in surface area and volume and have the same number of zones.
8. Each zone shall have the same number of laterals and perforations.

4.22.3.3 Recirculating Filter Dosing

1. The minimum recirculation ratio of the filter is 5:1 and the maximum recirculation ratio is 7:1 (the daily flow moves through the filter a minimum of 5 times or a maximum of 7 times prior to discharge to the drainfield).
2. Timed dosing is required and the filter dosing cycle should meet the following minimum recommendations:
   a. Pumps are set ~~by timer~~ to dose each zone approximately ~~5–10 minutes per 30 minutes~~2 times per hour.
   b. Dose volume delivered to the filter surface for each cycle should be 10.4% of the daily flow from the structure (forward flow).
   c. A pump on override float should be set at a point that equates to 70% of the recirculating tank's two times the daily design flow above the low level off switch. This override float should only result in one additional pump cycle, or a shorter time off interval, each time it is activated. Once the effluent level returns to 60% of the recirculating tank's two times the daily design flow above the low level off switch the control will resume operating at its normal setting.
   d. A high level audio and visual alarm float should be set at 90% of the recirculating tank's two times the daily design flow above the low level off switch.
   e. A low level off float should be placed to ensure that the pump remains fully submerged at all times.
3. The pump controls should:
   a. Be capable of recording low and high level events so that timer settings can be adjusted accordingly.
   b. Have event counters and run time meters to be able to monitor daily flows.

~~Orifices are recommended to be oriented up with an orifice shield used to minimize orifice blockage from the filter construction media.~~

~~Longer dosing cycles may be desirable for larger installations, e.g., 20 minutes every 2–3 hours. Hydraulic loading is 5 gallons/ft²/day (forward flow).~~

~~Filter media is very fine washed gravel (pea gravel), with 100% passing the three-eighths inch sieve, an effective size of 3–5 mm, a uniformity coefficient (C_u) < 2, and < 1% passing a #50 sieve.~~

~~Minimum recirculating chamber size is one-half the volume of the septic tank.~~

~~Gravel filter container, piping, gravel, and gravel cover should meet the minimum requirements as shown herein.~~ ~~No soil cover is required.~~

~~5. Filter container shall be constructed of reinforced concrete or other materials where equivalent function, workmanship, watertightness and at least a 20-year service life can be documented. The following requirements must be met for flexible membrane liners:~~

~~a. Have properties equivalent to or greater than 30-mil PVC.~~

~~b. Have field repair instructions and materials provided to the purchaser of the liner.~~

~~c. Have factory fabricated *boots* for waterproof field bonding of piping to the liner.~~

~~d. Liner must be placed against smooth, regular surfaces free of sharp edges, nails, wire, splinters, or other objects that may puncture the liner. A 4-inch layer of clean sand should provide liner protection.~~

6. ~~Float valves or equivalent bypass alternatives are required in the recirculation tank. Discharge to the drainfield must occur after filtration.~~

7. ~~Media and pipe shall be covered to prevent accidental contact and to provide access to the filter surface for filter maintenance.~~

8. ~~Extreme climates may require insulation of the recirculating sand filter lid or cover to prevent freezing of the media.~~

4.22.4 Filter Construction

1. All materials must be structurally sound, durable, and capable of withstanding normal installation and operation stresses.
2. Components that may be subject to excessive wear must be readily accessible for repair or replacement.
3. All filter containers must be placed over a stable level base.
4. ~~Pressure system must be designed and installed according to the guidance given for pressure distribution systems in section~~Geotextile filter fabric shall ~~not~~ only be ~~used in the recirculating gravel filter~~placed over the top of the filter and must not be used in-between the filter construction media and underdrain aggregate.
5. Access to the filter surface must be provided to facilitate maintenance.

4.22.5 ~~Gravity Disposal~~Drainfield Trenches

1. Except as noted herein, the final disposal trenches must meet the requirements of a standard trench system.
2. Distances shown in Table 4-19 must be maintained between the trench bottom and limiting layer.

3. Capping fill may be used to obtain adequate separation from limiting layers but must be designed and constructed according to the guidance for capping fill trenches in section 4.5.

~~3.~~4. Pressure distribution may be used with the following design considerations:

a. The pressure distribution system related to the drainfield is designed in accordance with section 4.20.

b. The recirculation chamber and recirculating filter may not be used as the dosing chamber for the drainfield.

5. The minimum area, in square feet of bottom trench surface, shall be calculated from the maximum daily flow of effluent divided by the hydraulic application rate for the applicable soil design subgroup listed in Table 4-20.

Table 4-19. Recirculating gravel filter vertical setback to limiting layers (feet).

Limiting Layer	Flow <2,500 GPD	Flow ≥2,500 GPD
	All Soil Types	All Soil Types
Impermeable layer	2	4
Fractured rock or very porous layer	1	2
Normal high ground water	1	2
Seasonal high ground water	1	2

Note: gallons per day (GPD)

Table 4-20. Secondary biological treatment system hydraulic application rates.

Soil Design Subgroup	Application Rate (gallons/square foot/day)
A-1	1.7
A-2	1.2
B-1	0.8
B-2	0.6
C-1	0.4
C-2	0.3

4.22.6 Inspection

1. A preconstruction meeting between the health district, responsible charge engineer, and installer should occur prior to commencing any construction activities.

2. The health district should inspect all system components prior to backfilling and perform inspections of the filter container construction prior to filling with drainrock and filter construction media.
3. The responsible charge engineer should conduct as many inspections as necessary for verification of system and component compliance with the engineered plans.
4. The responsible charge engineer shall provide the health district a written statement that the system was constructed and functions in compliance with the approved plans and specifications. Additionally, the responsible charge engineer shall provide as-built plans to the health district if any construction deviations occur from the permitted construction plans. (IDAPA 58.01.03.005.15)

4.22.6 Operation and Maintenance

1. The recirculating gravel filter design engineer shall provide a copy of the system's operation, maintenance, and monitoring procedures to the health district as part of the permit application and prior to subsurface sewage disposal permit issuance (IDAPA 58.01.03.005.04.k).
2. Minimum operation, maintenance, and monitoring requirements should follow each system component manufacturer's recommendations.
3. Instructions on how to trouble shoot the pump control panel should be included to allow the adjustment of pump cycle timing if the low level off or high level alarm switch are frequently tripped in order to maintain the minimum 5:1 recirculation ratio.
4. Operation and maintenance directions should be included regarding the replacement of the filter construction media and the direction to the system owner that a permit must be obtained from the health district for this activity.
5. Maintenance of the septic tank should be included in the O&M manual.
6. All pressure distribution system components should be maintained as described in section 4.20.5.
7. Check for ponding at the filter construction media/underdrain aggregate interface through the observation tube in the recirculating filter.
8. Clean the surface of the filter regularly to remove leaves and other organic matter that may accumulate in the aggregate or rock cover.
9. Check the recirculating filter for surface odors regularly. Odors should not be present and are an indicator that something is wrong. Odors are likely evidence that the dissolved oxygen in the filter is being depleted and that BOD and ammonia removal are being impacted.

Figure 4-~~24~~ 26 shows two examples of recirculating flow splitters. ~~Figure 4-25 is a diagram of a recirculating/dose tank.~~ Figure 4-~~26~~ 27 shows an example of a distribution box flow splitter constructed out of piping. Figure 4-28 shows a cross section of a recirculating gravel filter system with gravity distribution to the drainfield. Figure 4-29 shows a cross section of a recirculating gravel filter system with pressure transport to, and/or distribution within, the drainfield.

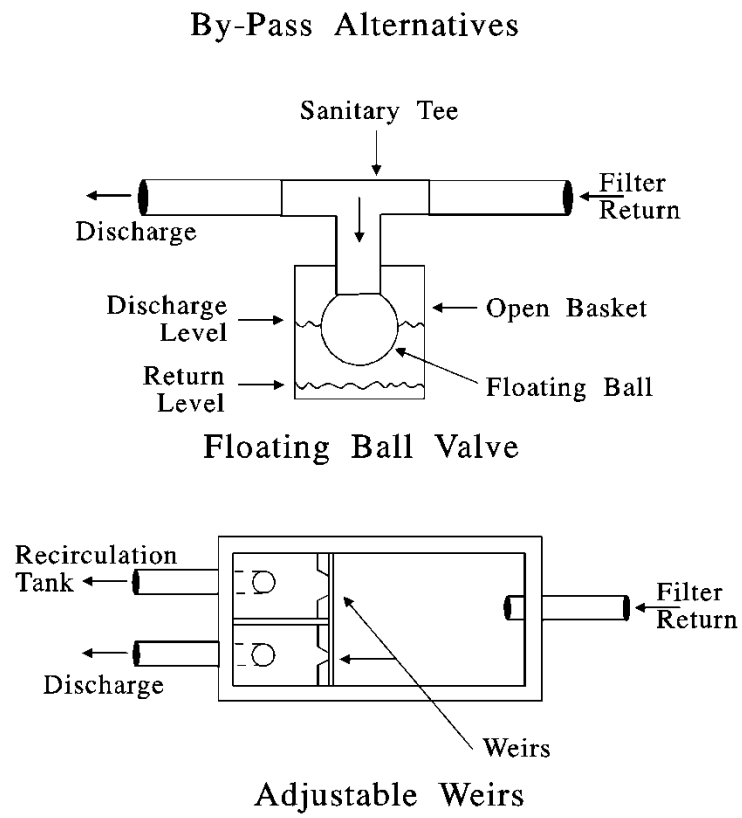

Figure 4-~~24~~26. Two examples of recirculating flow splitters.

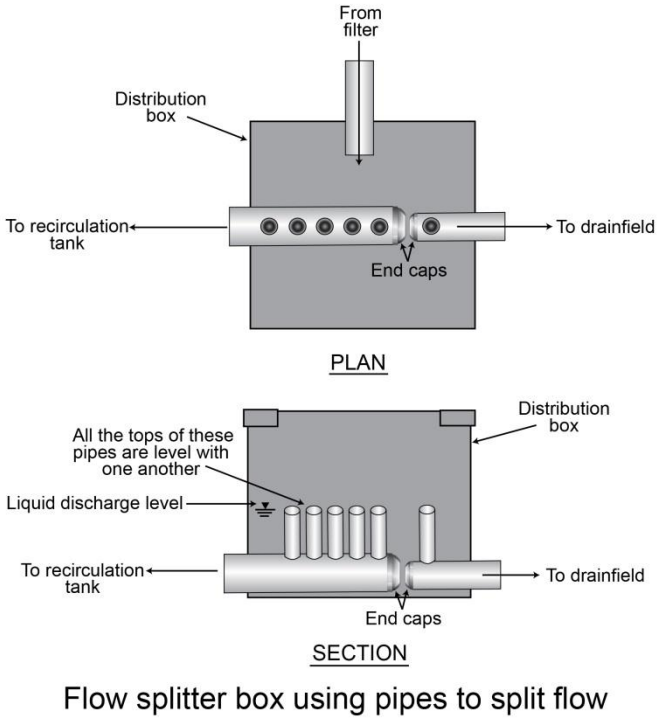

Figure 4-27. Distribution box flow splitter using piping.

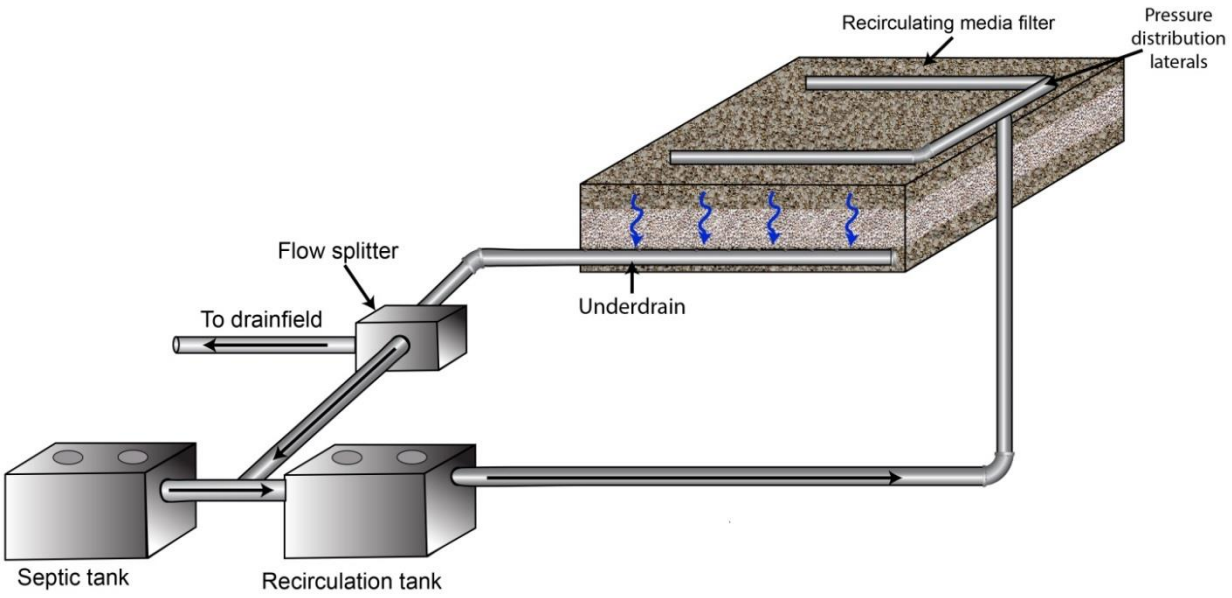

Figure 4-~~26~~28. Cross section of a recirculating gravel filter system with gravity discharge to the drainfield.

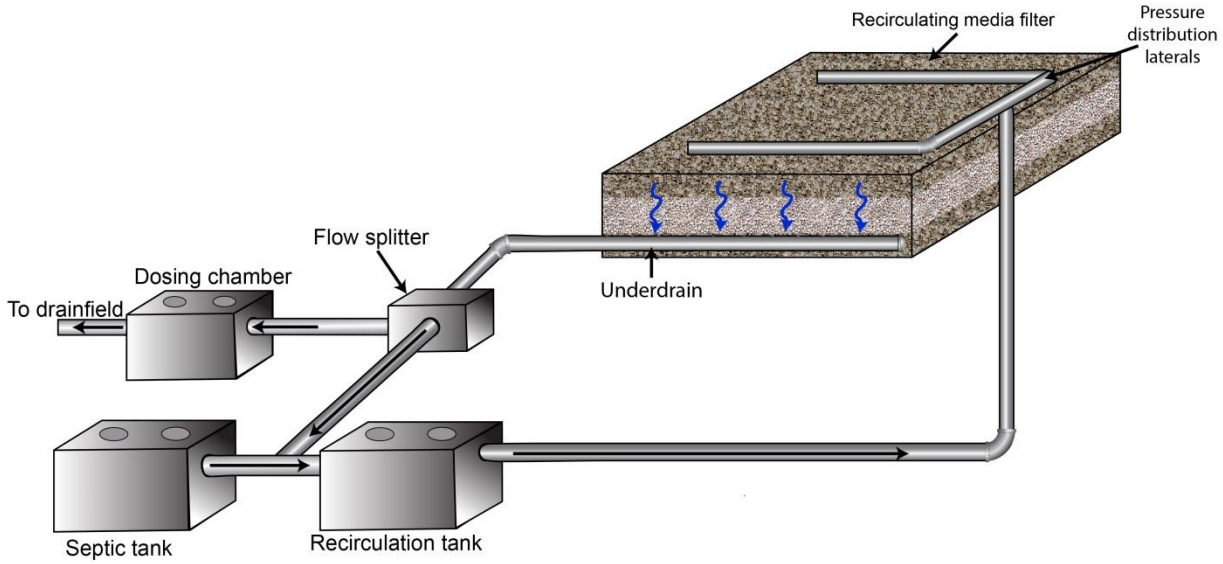

Figure 4-29. Cross section of a recirculating gravel filter system with pressure transport to, and/or distribution within the drainfield.

Appendix G

4.3 ~~Vested~~ Existing and Approved System Rights, Abandoned and ~~Unapproved~~Undocumented Systems, and Nonconforming Uses

Revision: ~~October 31, 2013~~September 18, 2014

4.3.1 Existing and Approved System Rights

Existing and approved system rights are commonly confused with the term *grandfathered/grandfathering*. Idaho Code and IDAPA 58.01.03 do not provide a definition or description of grandfathered or grandfathering in reference to property rights. For the purposes of subsurface sewage disposal, a property owner may have existing or approved system rights. There is no "grandfathering" when it comes to subsurface sewage disposal. Existing and approved system rights in a subsurface sewage disposal system (septic system) allow a property owner to only use, repair, or replace an existing or approved system. To maintain existing or approved system rights to use, repair, or replace a septic system, the system must be:

- Installed prior to January 1, 1974 if it was not permitted (IDAPA 58.01.03.003.11) ("existing"), or
- Permitted if it was installed after January 1, 1974 (IDAPA 58.01.03.003.03) ("approved"), and
- In use and not abandoned (IDAPA 58.01.03.003.01).

DEQ's subsurface sewage disposal rules (IDAPA 58.01.03) first went into effect in January 1, 1974. After the implementation of these rules, all subsurface sewage disposal systems were required to be permitted prior to installation. Thus, any system installed after this date that does not have a permit on record with the local health district is considered an ~~unapproved~~undocumented system (IDAPA 58.01.03.003.03). If a system was installed prior to January 1, 1974, then that system is an existing system (IDAPA 58.01.03.003.11) and is considered a legal system. Regardless of whether a system was installed prior to or after January 1, 1974, the system must not be abandoned for the property owner to retain the existing or approved system rights.

Any repair or replacement of an existing or approved system must meet the current requirements of IDAPA 58.01.03 or, if not possible, the intent of the rules (IDAPA 58.01.03.004.01). There is no right to repair or replace an existing or approved system with a system that does not meet the intent of the rules as described in IDAPA 58.01.03.004.01. Meeting the intent of IDAPA 58.01.03 may require that a property owner replace an existing or approved system, upon the system's failure, with an alternative system. Some alternative systems may require engineering or electrical components depending on the site conditions and alternative system requirements necessary to meet the intent of IDAPA 58.01.03.

4.3.2 Abandoned Systems

Any system that has ceased to receive blackwaste or wastewater due to the diversion of those wastes to another treatment system or due to the termination of waste flow is an abandoned system (IDAPA 58.01.03.003.01). The termination of blackwaste or wastewater discharge from the structures for more than one year is the typical timeframe used to determine system abandonment. Termination may result from the voluntary or involuntary removal of the

wastewater generating structure or its abandonment through lack of either use or maintenance of the structure. ~~Additionally, all structures connected to an existing subsurface sewage disposal system that were not constructed and connected to the system prior to January 1, 1974 must have a subsurface sewage disposal permit or other form of written health district approval on record with the local health district. If no such documentation exists, then those structures should not be considered in the determination of system abandonment because the connection to the system is not an authorized or approved connection (IDAPA 58.01.03.003.03).~~ Structure construction dates are based on county records. The permitting health district makes determinations of abandonment on a case-by-case basis at its discretion.

Abandoned systems may be:

- Authorized or approved as documented through a previous subsurface sewage disposal permit (IDAPA 58.01.03.003.03), or
- ~~Unapproved~~Undocumented systems for which there is no documentation of approval by a health district (including the lack of an approved final inspection of a subsurface sewage disposal permit by the health district).

An abandoned system may be subsequently used if:

1. The system was originally permitted and approved, and
2. Current ~~W~~wastewater flows and blackwaste characteristics are similar to the system's original permit requirements for waste strength and flow rate received by the system, and
3. The system is not a failing system, and
4. The site is inspected and approved by the permitting health district and the district issues written approval to the applicant that the system may be placed back into use.

4.3.3 ~~Unapproved~~Undocumented Systems

Approval documentation is either an approval letter or a completed and signed final inspection form for a previously issued subsurface sewage disposal permit. An ~~unapproved~~undocumented system is any system for which there is no documentation of approval regardless of the installation date. ~~Unapproved~~Undocumented systems may be existing systems that were installed before January 1, 1974. Existing (as described in Section 4.3.1) ~~unapproved~~undocumented systems have existing system rights that allow the property owner to use the existing system and to repair the system as the site best fits meeting the rules. An ~~unapproved~~undocumented and abandoned system may not be repaired, expanded, or placed into use unless it is first approved. An ~~unapproved~~undocumented system may be replaced with a new system that meets the requirements of IDAPA 58.01.03 at any time, but the ~~unapproved~~undocumented system must be abandoned once construction of the replacement system is completed unless the ~~unapproved~~undocumented system is inspected and approved as described below. ~~Unapproved~~Undocumented systems with existing or approved system rights as described in section 4.3.1 may be replaced with a nonconforming system as an option of last resort as described in section 4.3.4. To turn an ~~unapproved~~undocumented system into an approved system, the property owner must:

1. Submit an application to the health district of jurisdiction.

2. Have the system ~~U~~uncovered by a permitted installer or the property owner (IDAPA 58.01.03.011.02). "Uncovered"~~ed~~ing means exposure~~ure~~ing ~~of~~ the septic tank, effluent piping, and the front and back ends of each subsurface sewage disposal trench.

   a. Septic tanks may be required to be leak tested over a 24-hour period to ensure structural integrity.

   b. At least one test hole should be excavated at the time the system is uncovered within 10 feet of the existing drainfield to ensure sizing of the drainfield is adequate for the design flow and that all vertical separation distances to limiting layers are met as required by IDAPA 58.01.03.008.02.c.

3. Have the septic tank ~~P~~pumped by a permitted septic tank pumper prior to leak testing.

4. Have the uncovered system ~~I~~inspected by the health district ~~while uncovered~~ including evaluation of the test hole (IDAPA 58.01.03.011.02).

~~3.~~5. Ensure ~~T~~the system ~~must~~ meets all current requirements, including permit issuance (IDAPA 58.01.03.005.01).

   a. If the system does not meet all current requirements, it must be brought into compliance with the current requirements prior to use according to the issued permit requirements.

   b. If the system, or any portion thereof, cannot be brought into compliance with the current requirements, the system or portion of the system not in compliance must be abandoned and replaced in compliance with the current requirements and in accordance with the issued permit.

   c. The permitting health district will provide the property owner written approval of the system after inspection in the form of a completed and signed final inspection form for the installation permit. Written approval will be provided regardless of whether any construction needs to occur on the system to bring it into an approved state.

4.3.4 Nonconforming Uses

The term *nonconforming uses* refers to a subsurface sewage disposal system that does not fully comply with all of the requirements of IDAPA 58.01.03. Nonconforming systems are typically existing systems (installed prior to January 1, 1974). There may be subsurface sewage disposal systems that were permitted and installed after January 1, 1974 that are also considered nonconforming systems due to changes in IDAPA 58.01.03 since the permitting of the system. For property owners to retain their existing or approved system rights in nonconforming systems, the systems cannot be considered abandoned as described in section 4.3.2.

All nonconforming systems must be brought into compliance with the intent of IDAPA 58.01.03 upon the repair, replacement, or enlargement of the system (IDAPA 58.01.03.004). The intent of the rules is best met by fully complying with the current requirements of IDAPA 58.01.03 at the time of permit issuance (IDAPA 58.01.03.004.02). Some systems installed prior to January 1, 1974 are located on properties where meeting the current requirements of IDAPA 58.01.03 is not feasible. Additionally, some systems that were permitted and installed prior to January 1, 1974 are located on properties that no longer meet all of the requirements of IDAPA 58.01.03 due to changes in the rule requirements over time. If the property owners have maintained existing or

approved system rights for the use, repair, or replacement of the system, then they have the right to obtain a repair or replacement subsurface sewage disposal permit for their property.

If possible, the health district will only issue a subsurface sewage disposal permit for a system that meets all of the requirements of the then-current version of IDAPA 58.01.03. For some, this may require placing the system on the applicant's property or a neighboring property through the use of an easement as described in section 4.4. If it is not possible to permit a system on the applicant's property or on a neighboring property through the use of an easement, the health district may issue a nonconforming permit for the repair or replacement subsurface sewage disposal system only. New and expansion permits may not be issued for nonconforming systems as the property owner only holds existing or approved system rights in the repair or replacement of their system.

Even though property owners may repair or replace their existing system, the repaired or replaced systems must meet the current intent of the rules (IDAPA 58.01.03.004.01). This may require installing an alternative system. The type of alternative system required will be determined by the permitting health district on a case-by-case basis but will be selected to best meet the intent of the rules as described in IDAPA 58.01.03.004.01. Typically, alternative systems will be required upon replacement when a separation distance or effective soil depth cannot be met from the subsurface sewage disposal system to a feature of concern as provided in:

- IDAPA 58.01.03.007.17, or
- IDAPA 58.01.03.008.02.c-d, or
- As specified in section 2.2 of the TGM, or
- Per a specific alternative system's guidance in section 4 of the TGM.

Other scenarios may also require the installation of an alternative system but will be determined on a case-by-case basis by the permitting health district.

When issuing a nonconforming repair or replacement permit an emphasis shall be placed on meeting the intent of IDAPA 58.01.03.004.01.d, preserving the existing or potential beneficial uses of the waters of the State. This emphasis arises out of the direction of Idaho's legislative bodies as stated in Idaho's water quality policy (Idaho Code §39-3601) and policy on environmental protection (Idaho Code §39-102). Nonconforming permits must also take neighboring properties into consideration and those neighboring property owner's existing features of interest (e.g., wells and water lines). When issuing a nonconforming repair or replacement permit a neighboring property owner's well and water lines shall take priority in the separation distances required by the nonconforming repair or replacement permit being issued so the rules are met for these features of interest over neighboring surface water.

4.3.5 Permit Scenarios for Systems with Existing or Approved System Rights

Systems with existing or approved system rights will eventually require a determination on repair, replacement, or enlargement permitting requirements. If at all possible, the permitting health district will issue a repair or replacement subsurface sewage disposal permit in conformance with IDAPA 58.01.03. If this is not possible, a system with existing or approved system rights meeting the requirements described in section 4.3 may be issued a nonconforming

repair or replacement subsurface sewage disposal permit. All new and expansion subsurface sewage disposal permits must be issued in conformance with IDAPA 58.01.03. These scenarios are discussed in the following subsections. All final permitting determinations will be made by the permitting health district on a case-by-case basis pursuant to:

- IDAPA 58.01.03, and
- The information and processes contained within section 4.3 of the TGM, and
- The DEQ program directives described within the following subsections.

4.3.5.1 Failed Systems

All failed systems require the repair or replacement of the system if the existing structures cannot be connected to a municipal sewer system. A system is considered failed when it does not meet the intent of IDAPA 58.01.03.004.01, fails to accept blackwaste or wastewater, or discharges blackwaste or wastewater into the waters of the State or onto the ground surface (IDAPA 58.01.03.003.13). The following applies to the issuance of repair or replacement subsurface sewage disposal permits:

~~Failed system: Repair or replacement of an existing system.~~

1. ~~Dwelling or structure unit~~The structure(s) served by the system must not be altered, remodeled, or otherwise changed so as to result in increased wastewater flows that exceed the design flow of the system (IDAPA 58.01.03.004.04), otherwise a permit must be issued following the guidelines in section 4.3.5.2 of this manual.
2. ~~Reason~~ The reason for failure should be determined ~~if possible~~and addressed through the requirements of a repair or replacement subsurface sewage disposal permit if possible.
3. ~~If failure is due to age, t~~The system may be repaired or replaced with a similar system that shall be constructed ~~as close as possible~~according to the current dimensional and ~~setback~~ separation distance requirements ~~for standard systems~~of IDAPA 58.01.03.
4. ~~If failure has occurred in less than 10 years and is due to increased wastewater flows or poor site characteristics, an alternative or larger system must be constructed as close as possible to current dimensional and setback requirements for alternative systems~~If the system repair or replacement cannot meet the current dimensional and separation distance requirements of IDAPA 58.01.03, then a nonconforming permit may be issued based on the requirements of the subsurface program directive, "Failing Subsurface Sewage Disposal System," issued by DEQ on July 26, 1993 for the repair or replacement of the system that meets the intent of the rules through the use of an alternative system design (IDAPA 58.01.03.008.12).
    a. ~~Nonconforming permits issued due to the inability to meet the separation distance requirements to ground water or surface water shall require one of the following alternative systems:~~
        i. ~~Drip distribution system (section 4.7)~~
        ii. ~~Extended treatment package system (section 4.10)~~
        iii. ~~Recirculating gravel filter (section 4.22)~~

~~iv. Intermittent sand filter (section 4.23)~~

~~v. Sand mound (section 4.25)~~

~~vi. Capping fill system (section 4.5)~~

b. ~~All other nonconforming permits issued based on the requirements of this program directive shall best meet the intent of the rules through the use of alternative designs and their intended uses as described in the alternative system guidance in section 4 of this manual.~~

~~System replacement must follow the requirements of the subsurface program directive, "Failing Subsurface Sewage Disposal System," issued by DEQ on July 26, 1993.~~

4.3.5.2 Structure Additions or Alterations

A property owner may propose additions or alterations to an existing structure or the addition of a new structure to a system. No structure connected to a system shall be altered in any way, or alternatively no additional structures shall be connected to that system, that result in additional blackwaste or wastewater flows to the system without prior approval from the permitting health district documenting that the system will be in compliance with IDAPA 58.01.03 (IDAPA 58.01.03.004.02). Additionally, no permanent structures or expansion of existing structures shall be constructed on a property without prior approval from the permitting health district documenting that the replacement area is not impacted by these construction activities regardless of whether or not additional blackwaste or wastewater flows will be added to the system (IDAPA 58.01.03.004.06). Either activity described directly above may require abandonment, replacement, or expansion of the system, or any combination of these activities, and may require a subsurface sewage disposal permit for the repair, replacement, or expansion of the system.

Approval will be provided by the permitting health district in writing or through the issuance of a subsurface sewage disposal permit. Approval evaluation and, if necessary, permit issuance shall conform with the subsurface program directive, "Permit Requirements for Increased Flows at Single Family Dwellings," issued by DEQ on April 15, 2010. If property owners propose altering an existing structure or adding a new structure on their property, the health district shall evaluate the request to determine the necessity of a subsurface sewage disposal permit based on the following minimum criteria:

~~Additions or alterations: Changes to an existing structure or dwelling.~~

1. ~~Addition~~ Adding a new structure or alter~~at~~i~~o~~n~~g~~ the existing structure will not ~~cause~~ exceed the design flow of the ~~existing~~ system ~~to become unsafe or overloaded~~ (IDAPA 58.01.03.004.04).

~~4.~~2. If adding a new structure or altering the existing structure will exceed the design flow of the system or encroach on the required separation distance between the structure foundation and the system, a subsurface sewage disposal permit may be issued if the following requirements are met:

   a. The expanded system will otherwise meet the current requirements of IDAPA 58.01.03. Nonconforming expansion permits will not be issued (IDAPA 58.01.03.004.02), or

b. The replacement system will otherwise meet the current requirements of IDAPA 58.01.03. Nonconforming replacement permits will not be issued for additions or alterations of existing structures or the addition of an additional structure to a property (IDAPA 58.01.03.004.02), and

c. ~~Enough~~ Adequate ~~reserve~~ replacement area for ~~both~~ the ~~original and additional~~ permitted expansion or replacement system shall be ~~p~~reserved (IDAPA 58.01.03.004.06)~~.~~, and

d. Area reserved for system replacement cannot be used for the addition of a new structure or the alteration of the existing structure (IDAPA 58.01.03.004.06), and

e. If a permit is required due to the encroachment of the structure on the subsurface sewage disposal system, then the area of the system encroached upon must be abandoned and replaced so the entire system meets the separation distance requirements of IDAPA 58.01.03.007.17 and 58.01.03.008.02.d.

~~e. Wastewater flow will not be significantly increased (IDAPA 58.01.03.004.04). Significant increases shall be considered to be any increase in wastewater flow that exceeds the design flow of the system.~~

~~f. A~~rea reserved for system replacement cannot be used for the addition of a new structure or the alteration of the existing structure (IDAPA 58.01.03.004.06), and~~.~~

~~g.~~f. ~~If a permit is required due to the encroachment of the structure on the subsurface sewage disposal system, then the area of the system encroached upon must be abandoned and replaced so the entire system meets the separation distance requirements of IDAPA 58.01.03.007.17 and 58.01.03.008.02.d.~~

~~A subsurface sewage disposal permit may be required for system enlargement or adjustments based upon the addition or alteration plan.~~

~~A permit may be required due to possible impacts on separation distances from the addition or alteration to the existing subsurface sewage disposal system or due to additional wastewater flows from the addition or alteration that exceeds the original design flow of the system.~~

~~5.b. Permit issuance shall be required to conform with the subsurface program directive, "Permit Requirements for Increased Flows at Single Family Dwellings," issued by DEQ on April 15, 2010.~~

~~Abandoned system: An abandoned system is considered to be a system that has not received wastewater flows or blackwaste for 1 year or more due to the removal of a wastewater generating structure from the system.~~

~~An abandoned system may be used if the system was originally permitted and approved, and~~

~~Wastewater flows and blackwaste characteristics are similar to the system's original permit requirements for waste strength and flow rate received by the system, and~~

~~The site is inspected and approved.~~

~~If the system is not an approved system (i.e., no issuance of a previous subsurface sewage disposal permit regardless of the installation date), it must be~~

~~a. Uncovered by a permitted installer or the property owner (IDAPA 58.01.03.011.02). Uncovered means exposure of the septic tank, effluent piping, and the front and back ends of each subsurface sewage disposal trench.~~

~~b. Pumped by a permitted septic tank pumper, and~~

~~c. Inspected by the health district while uncovered (IDAPA 58.01.03.011.02).~~

~~d. The system must meet all current requirements, including permit issuance (IDAPA 58.01.03.005.01).~~

~~1) If the system does not meet all current requirements, it must be brought into compliance with the current requirements prior to use according to the issued permit requirements.~~

~~h.~~g. ~~2) If the system, or any portion thereof, cannot be brought into compliance with the current requirements, the system or portion of the system not in compliance must be abandoned and replaced in compliance with the current requirements and in accordance with the issued permit.~~

Appendix H

6 Septic Tank ~~Pumpers' Pumping Guidance Manual~~ and Septage Disposal

6.1 Introduction

Revision: ~~April 24, 2000~~September 18, 2014

A septic ~~tank~~ system requires periodic maintenance that includes pumping out the accumulated scum~~, and~~ sludge, and wastewater ~~, called~~ (cumulatively called septage) from the septic tank. Septage~~, because of its source, may give off~~ generates offensive odors and presents public health hazards~~, including several diseases~~. To prevent nuisance conditions and public health hazards septage must be collected (pumped), transported, stored, and disposed of in accordance with the following rules:

- IDAPA 58.01.15, Rules Governing the Cleaning of Septic Tanks (section 8.2), and
- IDAPA 58.01.16, Wastewater Rules, and
- 40 CFR Part 503, Standards for the Use or Disposal of Sewage Sludge.

~~The s~~Septic tank pumpers ~~has~~ have the important task of not only helping the homeowner maintain the system by pumping the septic tank, but protecting the ~~homeowner~~property owner and public from the various health hazards associated with septage. To protect and help the ~~homeowner~~property owner, ~~the~~ a pumper needs to understand how the ~~sewage~~ septic system operates and proper procedures for pumping the septic tank and septage disposal.

6.2 Septage and Public Health

~~Many d~~Pathogens~~iseases, including any~~ that will pass in urine ~~and,~~ feces, or bodily fluids can be found in sewage. Septage may contain ~~some or all of them~~any number of these pathogens. The following list provides an example of the types of pathogens present in septage including, but not limited to:

- Bacterial ~~diseases~~ organisms ~~of diarrhea~~ such as ~~(~~*Salmonella, Shigella*, and *Clostridium*~~)~~ and typhoid (*Salmonella typhi*) ~~may be present.~~
- Parasites~~,~~ such as pinworm, roundworm, and hookworm ~~are often found in septage,~~ (especially in the scum layer)~~.~~
- Organisms that cause amoebic dysentery, polio, and hepatitis ~~can also exist in septage.~~

Proper management of septage upon its removal from the septic tank through its ultimate disposal or beneficial reuse is critical in ensuring the protection of public health from the pathogens present in septage.

6.2.1 Classifications of Septage

While all wastewater that enters a septic tank is septage the source of the wastewater prior to the septic tank determines the classification of the septage. All septage that comes from domestic or residential activities is classified as domestic septage. Examples of wastewater sources that result in domestic septage include, but are not limited to, single and multi-family residential housing, restrooms (including shower facilities), and break rooms. Domestic septage includes the contents removed from septic tanks, portable toilets, privy vaults, wastewater holding tanks, type III marine sanitation devices, recreational vehicle holding tanks, very small wastewater treatment plants, or semipublic facilities (e.g., schools, motels, mobile home parks, campgrounds, and small commercial endeavors) that receive wastewater from domestic sources.

Industrial or commercial process wastewater is classified as nondomestic septage. Any wastewater that is generated from an industrial or commercial process falls into the nondomestic classification. Nondomestic septage includes the contents removed from septic tanks or wastewater holding tanks that receive wastewater from industrial or commercial sources. Nondomestic septage also includes, but is not limited to, the contents removed from grease traps or sand oil separators. If industrial or commercial wastewater is mixed in any ratio with domestic wastewater the entire mixture is classified as industrial or commercial wastewater. If nondomestic septage is mixed in any ratio with domestic septage the entire mixture is classified as nondomestic septage.

The classification of septage can have an impact on the allowable disposal or beneficial reuse of the septage. Septic tank pumpers need to be aware of the septage classifications of the materials they pump and haul so the proper disposal of the septage can be achieved. Additionally, it is recommended that facilities that produce domestic and nondomestic wastewater isolate the wastewater plumbing and discharge these wastewater sources to separate septic tanks. This allows the domestic and nondomestic septage to be segregated so that the disposal and beneficial reuse options are maximized.

6.3 Parts ~~and Mechanics~~ of a Septic System

The most common septic ~~tank~~ system consists of ~~the~~ a septic tank~~, either rectangular or round and usually made out of concrete,~~ and a ~~disposal field~~drainfield. Septic tanks are commonly constructed of concrete, polyethylene, polypropylene, or fiberglass (see section 5.2 for approved products). Drainfields are installed at varying depths under the ground, usually in the form of trenches (up to six feet wide and 100 feet long) or an absorption bed (greater than six feet wide and up to 100 feet long) filled with gravel containing a perforated plastic pipe. Drainfields may also be filled with gravelless system components (see section 5.7 for approved products). Figure 6-1 shows the components of a standard ~~sewage~~ septic system.

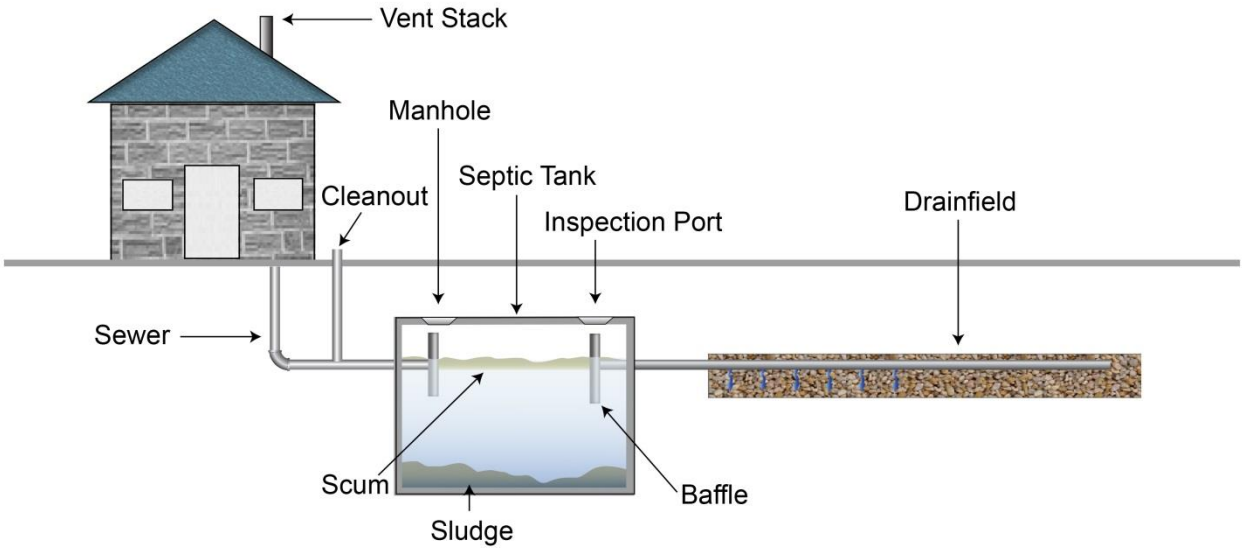

Figure 6-1. Components of a standard ~~sewage~~ septic system.

Several alternative system designs may have additional tanks referred to as dosing chambers, recirculating chambers, or extended treatment package systems (ETPS). These types of tanks typically contain less accumulation of scum and sludge but are recommended to be pumped to remove these accumulations whenever the septic tank is pumped. These types of tanks also contain mechanical components that must be considered prior to pumping of the tank's contents. It is highly recommended that the component manufacturer's recommendations be followed when these alternative tanks are pumped. In the case of ETPS the property owner's operation and maintenance entity should be contacted for approval prior to pumping the unit's tank.

6.4 Mechanics of a Septic System

Wastewater from ~~the~~ a home or business enters the septic tank where the ~~flow~~ velocity slows quickly. Because of the slowing, ~~(with a loss of energy)~~ material in the wastewater that is heavier than water~~,~~ such as feces and garbage~~,~~ settle to the bottom as sludge. Material in the wastewater that is ~~Lighter~~lighter ~~-~~than ~~-~~water ~~matter -~~, such as grease and plastics, float to the top as scum. The liquid in the center of the tank, now with the sludge and scum ~~removed~~settled out, is called effluent and is the liquid that flows from the septic tank to the drainfield. Upon being dispersed to the drainfield the effluent ~~for treatment~~is treated by the soil and organisms in the ~~ground~~soil. For a septic tank to function properly (scum and sludge settling and retention) the inlet and outlet baffles within the tank must be intact and in good condition. Proper baffle design is described in IDAPA 58.01.03.007.10 and 58.01.03.007.11 (section 8.1). Anytime a septic tank is pumped or a drainfield is repaired the inlet and outlet side of the septic tank should be uncovered and the baffles should be inspected to ensure the septic tank is in good working order.

The septic tank ~~and drainfield~~ will ~~work~~ function satisfactorily until the sludge fills over 40% of the volume of the tank (as measured from the bottom of the septic tank to the invert of the tank outlet) or the scum ~~fills the air space~~reaches the top of the inlet or outlet baffle in the tank. Before the tank reaches these levels it should be pumped by a permitted pumper. If the tank is not pumped~~,~~ it will be unable to perform its wastewater separation function ~~and will let~~which

will allow the solids and greases to be carried out into the drainfield. ~~There the~~If solids and greases reach the drainfield they will fill and clog the soil pores causing the drainfield to fail resulting in sewage ~~to~~ backing up into the ~~house~~ home or business, ~~or to even overflow~~ the tank to overflow, or effluent to reach the surface of the ground around the drainfield. Under regular use (two people in the first bedroom and one person in every other bedroom) it is recommended that the septic tank be pumped every 3-5 years.

6.45 Checking the Level of Scum and Sludge in a Septic Tank

The scum and sludge levels in the septic tank should be checked at least once every 3 years under regular use. ~~and, preferably, once a year, i~~If the ~~sewage~~ septic system receives ~~heavy~~ more than regular use the scum and sludge levels should be checked annually. ~~The~~ A ~~homeowner~~ property owner, ~~or a~~permitted septic tank pumper, or permitted septic system installer can check the scum and sludge levels in the septic tank.

The following outlines a procedure for ~~checking the scum and sludge~~locating a septic tank.

1. ~~First, locate the septic tank~~Review the final as-built drawing located on the final inspection form for the property owner's septic permit. If the ~~homeowner~~ property owner does not have a plot plan of the tank location, often the health district will have its location on file.

2. If no drawings can be found, a guess as to where the tank is located can be made by finding the 3- or 4-inch vent stack on the roof, or a cleanout near the foundation. The tank is often located directly out from ~~that~~the stack or cleanout.

3. ~~Also t~~If the previous methods do not work the building sewer can also be located ~~under~~ in the crawl space and the place where it exits under the house foundation can be noted.

~~1.~~4. With a steel rod, probe the ground to locate the tank. The tank, or the manhole cover on a riser, should be within 18 inches of the ground surface. Once located, excavate to the top of the tank and pull off the manhole cover.

The following outlines a procedure for checking the scum and sludge levels in the septic tank:

1. With a shovel, break through the scum layer, making a hole about 1 foot in diameter.

2. Wrap a strip of terry cloth toweling spirally around a pole and lower the pole into the tank. If the pole is fitted with a hinged flapper about 2 feet from its bottom, the flapper swings down and the scum level can be checked.

3. Lower the pole into the septic tank liquid until the flapper is about 1 foot below the scum. Pull the pole towards you a little to get the flapper under the scum, then raise the pole until the scum begins to move up, indicating that the flapper has made contact with the scum. Mark the pole at the top of the scum so that the depth of the scum can be measured from the pole after it is removed.

4. Continue to lower the pole into the septic tank until it meets the bottom. Tap the bottom of the tank two or three times with a sharp rap, which permits the sludge to enter into the

coarse weave of the terry cloth. Slowly remove the pole. The depth of the sludge will then be seen in the terry cloth.

~~1.~~5. Alternatively, manufactured products are available for obtaining a representative profile of the septic tank sludge, liquid, and scum depths in place of the tool described above. These manufactured products are recommended for septic tank pumping or septic system installing professionals due to the ability to clean and maintain the tool for repeated use.

Calculate the depth of the sludge as a percent of the liquid depth (measured from the bottom of the tank to the top of the liquid/bottom of the scum layer. Equation 6-1 can be used to determine if a septic tank needs pumping.

$$\text{Percent sludge depth} = \frac{\text{Depth of sludge, in inches}}{\text{Liquid depth of tank, in inches}} \times 100$$

Equation 6-1. Percent sludge depth.

When sludge is greater than 40% of the liquid volume, or the scum layer is at or above the top of the inlet or outlet baffle, the tank should be pumped.

Figure 6-2 illustrates methods used to check scum and sludge depths.

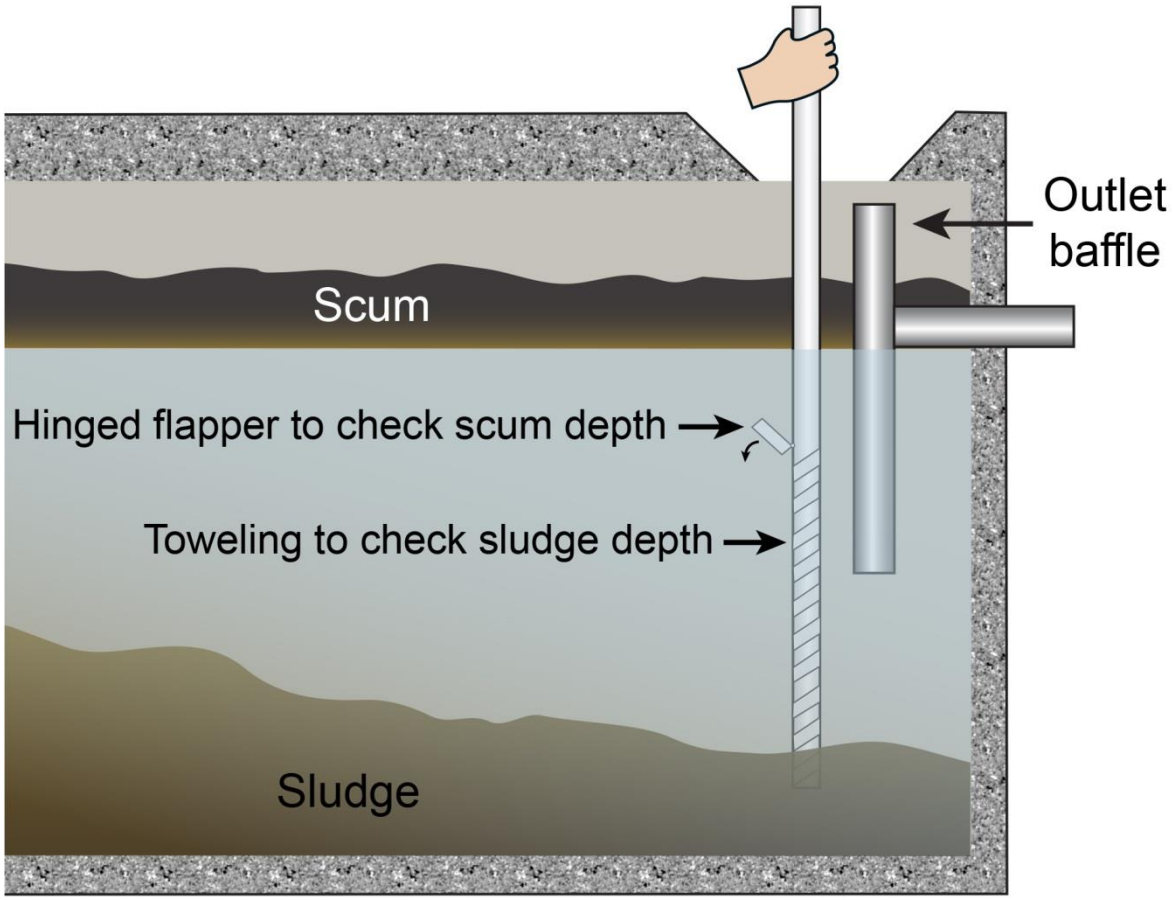

Figure 6-2. Methods used to check scum and sludge depths.

6.56 ~~Practices of the Septic Tank~~Septage Pumping~~er~~

All persons, firms, or corporations operating any tank truck, device, or equipment used or intended to be used for the purpose of pumping and transporting septage must comply with IDAPA 58.01.15, Rules Governing the Cleaning of Septic Tanks. The following subsections provide guidance and recommendations on septage pumping and transporting equipment and requirements.

6.~~5~~6.1 Equipment for Pumping and Transporting Septage

The major and most expensive piece of equipment necessary to pump septage is the pumper's truck. Capacity of a truck used to pump septic tanks, RV dump stations, or wastewater holding tanks should be at least 1,000 gallons. Capacity of a truck used to pump portable toilets or vault privies should be at least 500 gallons. The truck should also have:

- An access port for the periodic inspection, maintenance, and cleaning of its interior. The truck should also have a gauge to indicate the volume of liquid it contains.
- ~~The tank should also have a~~A gravity drainage valve that can be safely locked during transportation and storage. The discharge valve used to dispose of the septage should be at least 2.5 inches in diameter and equipped with a cam-lock quick couple or screw cap. The valve should be located so that the discharge stream is not blocked in any way, unless it is necessary for disposal.
- The pumping equipment on the truck should be sized to provide at least 15 feet of suction lift and should be able to reverse flow.
- There should be a water trap between the tank and pump to prevent liquid from entering the pump in case the pump pulls a vacuum on the tank.
- Several lengths of hoses capable of stretching from the pumping vehicle to a client's tank. The hoses from the tank and pump should be at least 3 inches in diameter.

All equipment used to pump or transport septage must be watertight and constructed so that spilling or leaking of septage during pumping, transportation, or unloading is prevented (IDAPA 58.01.15.003.01). Additionally, all equipment used to pump or transport septage must be constructed in a manner that allows every portion of the interior or exterior of the equipment to be cleaned and maintained in a clean condition when not in use (IDAPA 58.01.15.003.02). All permitted vehicles used to pump or transport septage must also have the permit number for each vehicle displayed at all times on the door of the vehicle in a manner that is easily legible (IDAPA 58.01.15.004.03). Easily legible is considered to be in letters at least 3 inches high on both sides of the truck. It is also recommended that the name of the firm, address, business phone number, and tank capacity be displayed on the side of the truck. ~~On the side of the truck, the name of the firm, address, business phone number, and tank capacity should be displayed. All the information should be in letters at least 3 inches high on both sides of the truck. The tank capacity should be at least 1,000 gallons. It should have an access port for the periodic inspection and maintenance of its interior and some sort of gauge to indicate the volume of liquid it is to contain. The tank should also have a gravity drainage valve that can be safely locked during~~

~~transportation and storage. The pumping equipment on the truck should be sized to provide at least 15 feet of suction lift and should be able to reverse flow.~~ ~~If the pump pulls a vacuum on the tank there should be a water trap between the tank and pump to prevent liquid from entering the pump.~~ ~~The hoses from the tank and pump should be at least 3 inches in diameter. The discharge valve used to dispose of the septage should be at least 2.5 inches in diameter and equipped with a cam-lock quick couple or screw cap. The valve should be located so that the discharge stream is not blocked in any way, unless it is necessary for disposal.~~

Septage pumpers may also want to consider the inclusion of several other pieces of equipment with their pumping and transportation vehicles. These recommended pieces of equipment will help a pumper complete their job and provide their clients with information regarding the condition of their septic tank. Other recommended equipment includes:~~An additional piece of equipment that should be included is a spray bar or splash plate for use in land spreading. There are also several other small pieces of equipment that should be included in the truck:~~

- Flashlight
- Steel lid probes
- Manhole sealer
- Bucket
- 50-foot garden hose
- Long-handled shovel
- Pry bar or pick
- Container of Quick Lime
- Pole, hoe, or rake for scum mixing
- A pole or equipment that allows the depth of scum and sludge to be determined
- Extension mirror used to inspect the tank's inlet and outlet baffles
- A spray bar or splash plate for use in domestic septage land application (if contracted with an approved site and approved by the health district)

6.~~5~~6.2 Permit~~s and Licenses~~ Requirements

A ~~Septic Tank Pumpers' Permit~~ permit is required throughout Idaho for the pumping, transportation, and disposal of septage (IDAPA 58.01.15.003 and 58.01.15.004). A permit can be obtained from any health district within Idaho and allows the permittee to pump, transport, and dispose of septage throughout the state. Permits must be renewed annually and applications for renewal must be submitted to the health district on or before March 1 of each year (IDAPA 58.01.15.004).~~The permit is good for 1 year and must be renewed at the end of the year. It can be obtained from the health district~~. An application must be submitted to obtain a permit from a health district for pumping, transportation, and disposal of septage (IDAPA 58.01.15.004.01). Permit applications must include the following information:

- Number of tank trucks operated

- Vehicle license number of each tank truck
- Name and address of the owner and/or operator of the tank trucks
- Name and address of the business
- Method of septage disposal to be used in all areas of the operation
- Location of all disposal sites used by the applicant (location information must be accompanied by a signed approval of the disposal site operator indicating that all the trucks included in the application are able to dispose of septage at that location)
- Payment of the permitting fee as set by each health district

Upon submission of a permit application to a health district ~~A~~an environmental health specialist ~~at the health district~~ will inspect the tank trucks and associated equipment prior to issuing the permit. A permit will not be issued until all the requirements of IDAPA 58.01.15 are met by the applicant.

6.~~5~~6.3 Pumping ~~the~~ a Septic Tank

Once ~~the~~ a septic tank has been located and the manhole cover exposed and removed the depth of scum and sludge should be determined. Next, draw down the liquid level 6 inches to 1 foot, then break the scum up using a pole, rake, or hoe and mix it and the rest of the tanks contents. Continue pumping the tank until most of the contents are removed. It may be necessary to force septage back into the tank to mix up and remove the sludge on the bottom of the tank. After the tank's contents have been mixed be sure not to let the septage come back up to the outlet as sludge may then run into the drainfield. Leave a few inches of sludge in the bottom of the tank as seed to restart bacterial action as the tank refills. Do not ~~clean or~~ disinfect the interior of the tank.

When pumping is completed, thoroughly inspect the tank and note the following on a pumping receipt for the client:

- The date
- The volume of septage removed from each tank
- The depth of scum and sludge in each tank
- The condition of the inlet and outlet baffle in each tank
- ~~Is the outlet baffle in good condition?~~
- ~~Is the inlet baffle in good condition?~~
- Is water running back into the tank from the drainfield? (Possible sign of high ground water in the drainfield or back pressure from a failing drainfield)
- Is water running in through the sides of the tank? (Sign of a leaking tank in high ground water)
- ~~How much septage was pumped out?~~
- Does the sewer line from the house appear to be free-flowing? (~~Flush a toilet~~Turn a fixture on inside the structure~~house~~ to ensure that there is no obstruction~~.~~)

NEVER enter ~~the~~ a tank as the methane gas produced by the septage can kill quickly! Entry into any tank requires a confined space entry permit through the Occupational Safety and Health Administration and proper personal protective equipment.

If ~~the~~ a manhole cover of ~~the~~ a tank ~~was~~ is found to be more than 18 inches belowground (as may be the case with older tanks or tanks serving basements), the ~~homeowner~~ property owner should be advised to add a concrete or plastic standpipe/riser that would place the manhole cover within 18 inches of the ground surface. This is recommended to be done for both the inlet and outlet side of a tank.

After the ~~lid~~ manhole cover is replaced, replace soil and sod if the manhole ~~was~~ is belowground. Put a little Quick Lime on any places where septage ~~has~~ may have spilled.

6.7 Septage Storage

Some septage pumpers, transporters, or land application site operators may find it necessary for their operation to store septage prior to disposal or beneficial reuse. If a pumper, transporter, or land application site operator desires to store septage, the facility they construct to accomplish this must meet the requirements of IDAPA 58.01.16.519, Septage Transfer Stations. Any proposed septage transfer station must be reviewed by the applicable DEQ Regional Office. A party proposing a septage transfer station must also meet the following Wastewater Rule (IDAPA 58.01.16) requirements and submit the associated documents to the DEQ Regional Office along with their septage transfer station plans:

- Review of plans for municipal wastewater treatment or disposal (IDAPA 58.01.16.400)
- Demonstration of technical, financial, and managerial capacity (IDAPA 58.01.16.409)
- Facility plans (IDAPA 58.01.06.410)
- Preliminary engineering reports (IDAPA 58.01.16.411)
- Submission of plans and support documents (IDAPA 58.01.16.420)
- Operation and maintenance manuals (IDAPA 58.01.16.425)
- If a screening facility is also to be constructed in association with a septage transfer station the designs for that component must also be included with the transfer station plans but is exempt from the requirements of IDAPA 58.01.16.460, Screening and Grit Removal.

The act of screening septage is defined as treatment (IDAPA 58.01.16.010.85). Based on the the designation of screening as treatment any facility with a septage transfer station must have a properly licensed wastewater operator in charge of the wastewater system and screening facility (IDAPA 58.01.16.203). DEQ exempts all stand-alone septage transfer stations and associated septage screening facilities from the licensed operator requirement as long as the septage transfer station is:

- Located at a permitted pumper's place of business, or

- Located at a permitted domestic septage land application site, and
- Is owned, operated, and maintained by the permitted pumper or land application site operator, and
- No additional wastewater treatment components or processes are included in the septage transfer station design.
- Septage transfer stations located at, or associated with, a wastewater treatment plant are not subject to these exemptions.

6.~~6~~8 ~~Septage~~ Disposal of Septage

~~One of the conditions for a license to pump septic tanks is the approval of all sites where septage is disposed. Therefore, the pumper must use only those methods approved by the health district or DEQ.~~Septage may only be disposed of in conformance with the methods allowed by IDAPA 58.01.15.003.03. Those methods include:

1. Discharging to a public sewer;
2. Discharging to a sewage treatment plant;
3. Burying under earth in a location and by a method approved by DEQ; or
4. Drying in a location and by a method approved by DEQ.

The first two methods of disposal require approval from a wastewater treatment plant or the owner/operator of the public sewer. It is important for a pumper to note that discharging to a public sewer without the proper approvals puts the pumper in violation of National Pollutant Discharge Elimination System pretreatment requirements and associated federal codes. Disposal at a wastewater treatment plant should be used whenever practical.

Disposal methods 3 and 4 are associated with one-time disposal or land application of domestic septage. Nondomestic septage may not be approved for one-time disposal or beneficial reuse (see section 6.9). Approval for one-time disposal of domestic septage must be obtained through the health district that the one-time disposal site is located within. Written approval from the property owner must be supplied to the health district along with the request for one-time domestic septage disposal.

One-time disposal accomplished through burial shall ensure that:

- Complete burial is accomplished within 6 hours of domestic septage disposal, and
- The disposal depth meets the separation distance requirements of IDAPA 58.01.03.008.02.c for ground water and IDAPA 58.01.03.008.02.d for surface water in soil design group C soils.

One-time disposal accomplished through drying shall ensure that:

- The domestic septage is pH adjusted to a pH of at least 12 for a full 30 minutes prior to domestic septage disposal, and

- The disposal depth meets the separation distance requirements of IDAPA 58.01.03.008.02.c for ground water and IDAPA 58.01.03.008.02.d for surface water in soil design group C soils.

~~Septage may be disposed of in several ways:~~

~~5.3.At a municipal wastewater treatment plant. Some plants have special facilities just for the disposal of septage. These should be used whenever practical.~~

6.9 Beneficial Reuse of Domestic Septage

DEQ recognizes the value of domestic septage as a soil amendment product and/or fertilizer supplement for agricultural operations. This beneficial reuse of domestic septage is referred to as Land Application of Domestic Septage. Only septage that is classified as domestic septage is allowed to be land applied. Land application occurs by repeatedly spreading domestic septage on agricultural land in accordance with IDAPA 58.01.15 and 40 CFR Part 503. Agricultural land used for the land application of domestic septage is subject to public access, grazing, and crop harvesting restrictions as described in 40 CRF Part 503. Prior to land application of domestic septage a pumper or land application site operator must obtain approval through the DEQ Regional Office that the land application site is located within. Approval is accomplished by submitting an acceptable Septage Management Plan for Land Application (SMPLA). To assist an interested party in developing a SMPLA DEQ has developed a document titled *Guidance for the Land Application of Domestic Septage* that is available through DEQ's website or any DEQ State or Regional Office. Refer to this document for further information and guidance on the land application of domestic septage.

~~2. By land spreading on private or public land in accordance with 40 CFR Part 503. If septage spreading is done on private land, the pumper should have written permission of the landowner and a permit from the health district. Check with the local health district on any restrictions. The following general rules should be observed:~~

~~a. Do not apply septage to any land used for root crops, such as potatoes, unless that land will not be used for growing those kinds of crops for 20–38 months depending on the method of land application.~~

~~b. Do not apply septage in a floodplain.~~

~~c. Do not apply septage on porous soils or where it can contaminate ground water or surface water.~~

~~d. Do not let animals, whose products (milk, meat) will be eaten, use land where septage has been applied for 1 month.~~

~~e. Populations of vectors, such as flies, should be minimized by rapidly drying the septage, adding lime, covering, or other appropriate techniques as per 40 CFR Part 503 Subpart D.~~

~~Be aware that the property owners next to the disposal site can cause enforcement action and have been successful in court when odors create a problem for them.~~

~~Public sites for septage disposal on land are preapproved by the health districts and DEQ. Such sites may be a municipal sludge management farm or farm areas leased or rented for sludge disposal.~~

~~After dumping the sludge, clean the truck inside and out. The wastewater from such cleaning should be considered the same as septage and handled accordingly.~~

Appendix I

4.11 Extra Drainrock ~~Drainfield~~Trench

Revision: ~~June 24, 2011~~September 18, 2014

4.11.1 Description

An extra drainrock ~~drainfield~~ trench is an ~~standard~~ aggregate-filled ~~drainfield~~ trench (1 to 6 feet wide) with more than 6 inches of aggregate under the perforated pipe. Figure 4-13 shows a typical cross section of a ~~standard~~ trench using extra drainrock. When more than 6 inches of aggregate is installed under the perforated pipe in a drainfield, the required drainfield length may be reduced. This section explains the conditions and calculations involved.

~~4.11.2 Purpose~~

~~When more than 6 inches of aggregate under the perforated pipe is included in a standard drainfield, the required drainfield length may be reduced. This section explains the conditions and calculations involved.~~

4.11.~~3~~2 Approval Conditions

1. ~~Site~~ The site must meet the requirements for ~~a standard system~~site suitability (IDAPA 58.01.03.008.02, section 8.1), ~~as defined in IDAPA 58.01.03.003 (section 8.1).~~except that:
   a. The site may have a slope between 21% and 46% if the system is constructed according to the steep slope system requirements (section 4.27) and more than 12 inches of aggregate is installed under the perforated pipe in the drainfield, 6 inches of which is not used in determining the multiplication factor.
   b. The site slope may not exceed 20% if the top of the drainfield is less than 24 inches below ground surface and 12% if the drainfield aggregate extends above the ground surface. The drainfield must be constructed according to the capping fill system requirements (section 4.5) except that the drainfield may not exceed 6 feet in width.

~~6.~~2. ~~Bottom~~ The bottom of the drainfield may be no deeper than 48 inches below the ground surface.

~~7.~~3. Multiplying factors cannot be used in addition to alternative soil application rates allowed by extended treatment package systems, recirculating gravel filters, or intermittent sand filters.

~~8.~~4. Extra drainrock trenches may not be used to reduce trench length in sand mounds.

~~9.~~5. Multiplication factors in excess of 0.50 are not allowed.

~~10.~~6. Gravelless drainfield components may not be substituted for aggregate.

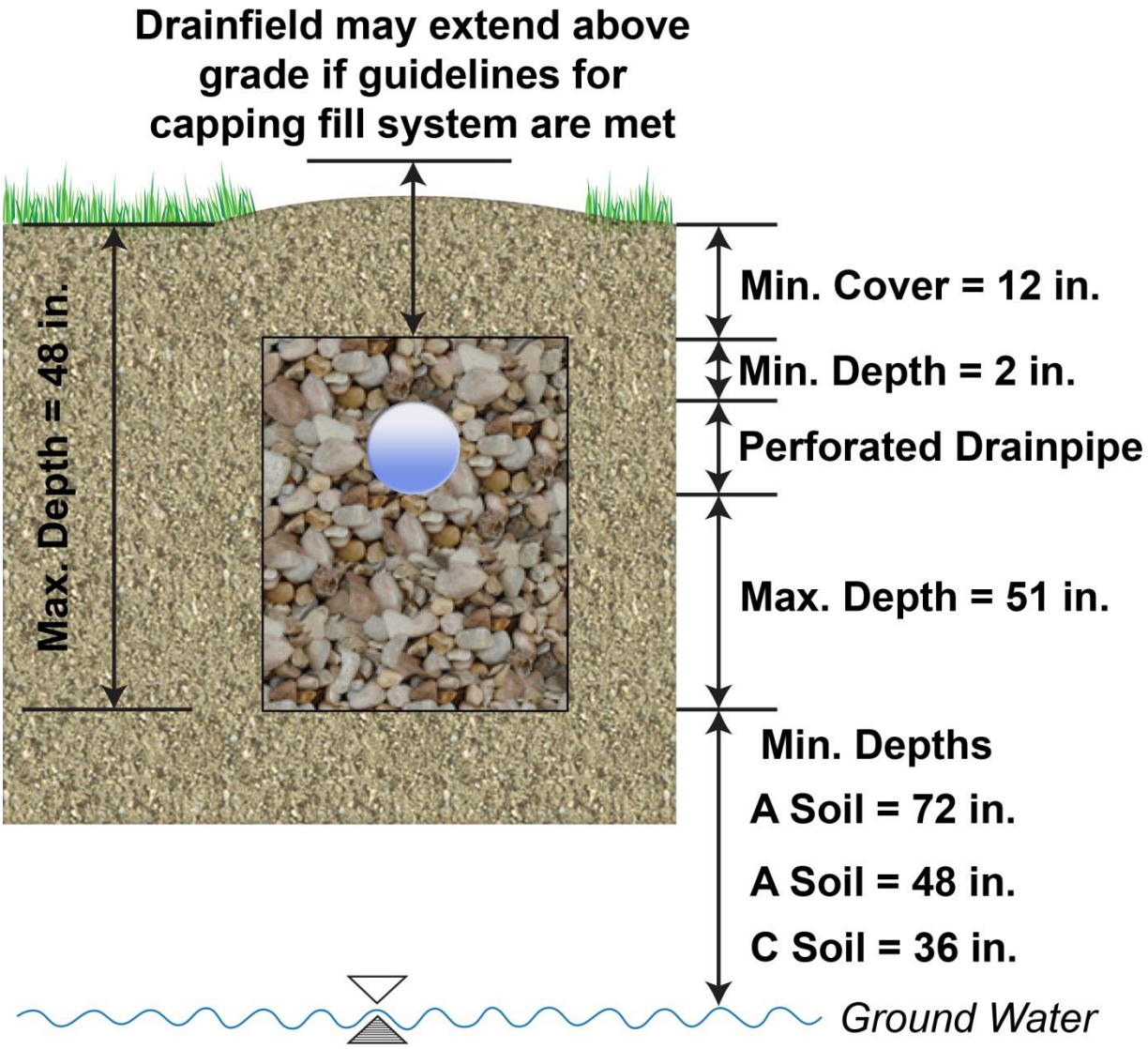

Figure 4-13. Cross section of standard trench with extra drainrock.

4.11.43 Calculations

To determine required drainfield length when extra drainrock is ~~included~~installed, use the appropriate multiplication factor to adjust the standard trench length. Standard length is indicated in Table 3-2 (section 3.2.4).

The appropriate multiplication factor depends on the trench width and depth of gravel below the ~~drainpipe~~perforated pipe in the drainfield. Determine the appropriate multiplication factor by:

- Locating the factor in Table 4-7 for the particular combination of trench width and gravel depth below the drainpipe, or
- If the particular combination of trench width and gravel depth is not given in Table 4-7, use Equation 4-10.

Table 4-7. Multiplication factors to adjust drainfield length for extra drainrock.

Gravel Depth Below ~~Drain~~ Perforated Pipe (inches)	Trench Width (inches)							
	12	18	24	30	36	48	60	72
12	0.75	0.78	0.80	0.82	0.83	0.86	0.87	0.89
18	0.60	0.64	0.66	0.69	0.71	0.75	0.78	0.80
24	0.50	0.54	0.57	0.60	0.62	0.66	0.70	0.73
30	~~0.43~~*	~~0.47~~*	0.50	0.53	0.55	0.60	0.64	0.67
36	*	*	*	*	0.50	0.54	0.58	0.61
42	*	*	*	*	*	0.50	0.54	0.57
48	*	*	*	*	*	*	0.50	0.53

* - Multiplication factor is less than 0.50, use 0.50 if this depth and width are desired.

$$\text{Multiplication Factor} = \frac{\text{Trench Width} + 2}{\text{Trench Width} + 1 + (2 \times \text{Gravel Depth})} = \frac{W + 2}{W + 1 + (2 \times D)}$$

Equation 4-10. Multiplication factor.

where:

W = trench width in feet
D = gravel depth in feet

Example 1:

$$\text{Multiplication Factor} = \frac{W + 2}{W + 1 + (2 \times D)} = \frac{3 + 2}{3 + 1 + 2(1)} = \frac{5}{6} = 0.83$$

where:

Trench width (W) = 36 inches or 3 feet.
Gravel depth (D) = 12 inches or 1 foot.

Example 2:

$$\text{Multiplication Factor} = \frac{W + 2}{W + 1 + (2 \times D)} = \frac{6 + 2}{6 + 1 + 2(3.5)} = \frac{8}{14} = 0.57$$

where:

Trench width (W) = 72 inches or 6 feet.
Gravel depth (D) = ~~12~~ 42 inches or ~~1~~ 3.5 foot.

Example 3:

A three-bedroom home is proposed to be located on a ~~small lot. The effective soil is~~site with ~~a~~ uniform silt loam soil (soil design subgroup B-2; section 2.1.2, Table 2-4) ~~with~~ and normal high ground water at 7 feet. Section 2.2.2, Table 2-5 shows the minimum distance from trench bottom

to normal high ground water as 3 feet for this soil design subgroup. Maximum depth of the trench is 4 feet. The total absorption area required for the home is 556 ft^2 ([250 gallons/dwelling]/[0.45 GPD/ft^2/day]), equivalent to trench dimensions of 3-feet wide and 185.5-feet in length (no trench may exceed 100 feet in total length for gravity distribution). With 30 inches of aggregate under the perforated pipe in the drainfield and a trench width of 36 inches, the trench length would be reduced to 55% of the 185.5-foot standard length (0.55 = 55%) or 102 feet, according to the appropriate multiplication factor (Table 4-7). This was calculated as follows:

1. Calculate the drainfield area required for a three-bedroom home.

$$Trench\ Bottom = \frac{daily\ flow}{application\ rate} = \frac{250\ GPD}{0.45\ GPD/square\ foot} = 556\ square\ feet$$

2. Calculate the length of trench required for ~~a standard~~the drainfield.

$$\text{Trench Length} = \frac{\text{trench bottom}}{\text{trench width}} = \frac{556\ \text{square feet}}{3\ \text{feet}} = 185.5\ \text{foot trench}$$

3. Using the appropriate factor from Table 4-7, calculate the reduced trench length for a ~~standard trench~~drainfield 185.5 feet long, 36 inches wide with 30 inches of gravel under the drain pipe.

Trench Reduction = (Trench length)(Multiplying Factor) = (185.5 ft. trench)(0.55) = 102 ft. total trench length

Example 4:

A three-bedroom home is proposed to be located on a site with uniform clay loam soil (soil design subgroup C-2; section 2.1.2, Table 2-4), normal high ground water at 5 feet, and a slope less than 6%. Section 2.2.2, Table 2-5 shows the minimum distance from trench bottom to normal high ground water as 2.5 feet for this soil design subgroup. Maximum depth of the trench is 2.5 feet. The total absorption area required for the home is 1250 ft^2 ([250 gallons/dwelling]/[0.2 GPD/ft^2/day]), equivalent to trench dimensions of 6-feet wide and 209-feet in length (no trench may exceed 100 feet in total length for gravity distribution). To maximize the multiplication factor the system is chosen to be constructed as an extreme capping fill-extra drainrock trench. This allows 33 inches of aggregate under the perforated pipe in the drainfield. With a trench width of 72 inches, the trench length would be reduced to 64% of the 209-foot standard length (0.64 = 64%) or 134 feet, according to the appropriate multiplication factor (Equation 4-10). This was calculated as follows:

4. Calculate the drainfield area required for a three-bedroom home.

$$Trench\ Bottom = \frac{daily\ flow}{application\ rate} = \frac{250\ GPD}{0.2\ GPD/square\ foot} = 1{,}250\ square\ feet$$

5. Calculate the length of trench required for a standard drainfield.

$$\text{Trench Length} = \frac{\text{trench bottom}}{\text{trench width}} = \frac{1{,}250 \text{ square feet}}{6 \text{ feet}} = 209 \text{ foot trench}$$

Using the appropriate multiplication factor calculated through Equation 4-10, the reduced trench length for a drainfield 209 feet long, 72 inches wide with 33 inches of gravel under the drain pipe.

Trench Reduction = (Trench length)(Multiplying Factor) = (209 ft. trench)(0.64) = 134 ft. total trench length

Appendix J

4.16 Incinerator Toilets

Revision: ~~April 21, 2000~~September 18, 2014

4.16.1 Description

Incinerator toilets are toilets, within a dwelling or other structure, that store and incinerate nonwater-carried human urine and feces. Incineration ~~may be~~ is facilitated by petroleum fuels or electricity.

4.16.2 Approval Conditions

1. Water under pressure shall not serve the dwelling unless ~~a~~ public sewer is available or a~~nother acceptable method of on-site disposal is available~~ full sized subsurface sewage disposal system is installed.
2. Incinerator toilets may be located ~~used wherever pit privies are applicable~~in structures other than the dwelling if the structure is constructed to meet the requirements of a pit privy building (section 4.18.4).
3. Units are restricted to disposal of human feces and urine and shall be installed and operated according to the manufacturer's recommendations.
4. Incinerating toilet models must be approved by DEQ prior to installation (section 5.6).

~~3.~~5. Proper electrical, plumbing, and gas line permits must be obtained through the Idaho Division of Building Safety or other applicable regulatory agency for the area the toilet is installed within.

4.16.3 Design

1. All materials used in ~~toilet~~ construction of the incinerator toilet must be durable and easily cleaned. ~~The combustion area and flue must be constructed of heat-resistant, noncorrosive metals.~~ Styrene rubber, PVC, and fiberglass are examples of acceptable materials for toilet components.

~~4.~~2. The combustion area and flue must be constructed of heat-resistant, noncorrosive metals.

~~5.~~3. The design must demonstrate adequate resistance to internal and external stresses.

~~6.~~4. All mechanical and electrical components should be designed to operate safely and be capable of providing continuous service under reasonably foreseen conditions such as extremes in temperature and humidity.

~~7.~~5. The toilet unit must be capable of accommodating full ~~or part~~ time use based on two people in the first bedroom and one person in every other bedroom for standard dwellings, full time use for other structures or dwelling uses will be determined on actual capacity and projected visitors per day.

~~8.~~6. Continuous positive ventilation of the storage or treatment chamber must be provided to the outside.

a. Ventilation components should be independent of the other ~~household~~ structure ventilation systems.

b. Venting connections must not be made to room vents or to chimneys.

~~a.~~c. All vents must be designed to prevent flies and other insects from entering the treatment chamber.

Note: Toilets, as plumbing fixtures, are under the regulation of the Idaho Division of Building Safety, ~~State Plumbing Board~~Plumbing Program. Current plumbing code prohibits using incinerator toilets without the permission of the health district. ~~Supply a copy of the approved permit application to the local plumbing authority~~Proof of permission will be provided through a permit issued by the health district.

4.16.4 Operation & Maintenance

1. The toilet should be inspected regularly to check the quantity of incinerated waste for removal needs.

~~1.~~2. The toilet components should be inspected and maintained according to the manufacturer's recommendations.

Appendix K

4.23 Intermittent Sand Filter

Revision: ~~July 18, 2013~~September 18, 2014

4.23.1 Description

An intermittent sand filter is a bed of medium sand in a container that filters and biologically treats septic tank effluent. Effluent is pressure dosed across the top of the medium sand in small doses and percolates through the filter media. The filter effluent is then collected by an underdrain at the bottom of the filter and is distributed to a disposal trench of reduced dimension. Components of the intermittent sand filter include a septic tank, dosing chamber, pump (or siphon) and controls, distribution network, sand filter, and drainfield.

4.23.2 Approval Conditions

1. The system must be designed by a PE licensed in Idaho.
2. All pressure distribution components shall be designed according to the pressure distribution system guidance (section 4.20).
3. The design engineer shall provide an O&M manual for the system to the health district prior to permit issuance.
4. The intermittent sand filter container shall meet the same separation distance requirements as a septic tank.

~~9. Slope must be 30% or less.~~

~~Maximum wastewater flow must be 600 GPD or less.~~

~~3~~5. Bottom of the filter must not come within 12 inches of seasonal high ground water.

6. Effluent shall not discharge to the drainfield without passing through the filter first.
7. Nondomestic wastewater must be treated to residential strength prior to discharge to the intermittent sand filter.

4.23.3 ~~Filter~~ Design

Minimum design requirements for the intermittent sand filter components are provided in the section below.

4.23.3.1 Intermittent Filter

1. Filter container shall be constructed of reinforced concrete or other materials where equivalent function, workmanship, watertightness, and at least a 20-year service life can be documented. The following requirements must be met for flexible membrane liners:
   a. Have properties equivalent to, or greater than, 30-mil PVC.
   b. Have field repair instructions and materials provided to the purchaser of the liner.
   c. Have factory-fabricated *boots* for waterproof field bonding of piping to the liner.

d. Liner must be placed against smooth, regular surfaces free of sharp edges, nails, wire, splinters, or other objects that may puncture the liner. Provide a 4-inch layer of clean sand for liner protection.

2. ~~Application rate of septic tank effluent to the filter must be 0.7~~The filter surface area is sized at a maximum of 1.0 gallons/ft^2/day.

3. ~~Filter sand must conform to ASTM C-33 with less than 2% passing the #200 sieve~~Filter construction media shall meet the specification in section 3.2.8.1.2.

   a. Filter construction media should be placed in 8 inch lifts.

   b. Each lift should be wetted prior to installation of the next lift to minimize settling.

4. Minimum filter construction media depth shall be 24 inches (see Figure 4-24).

5. The pressure distribution laterals shall be located in aggregate meeting the specifications in section 3.2.8.1.1 with a minimum depth of 6 inches below the laterals and 2 inches above the laterals. Gravelless domes or chambers may be substituted for aggregate as long as the lateral orifices are oriented up.

6. A 4 inch layer of pea gravel meeting the specification in section 3.2.8.1.3 shall be located between the filter construction media and drainrock that covers the underdrain.

7. Drainrock meeting the specification in section 3.2.8.1.1 shall be placed below the pea gravel and over the underdrain ensuring a minimum dpeht that places 2 inches of drainrock cover over the underdrain.

8. The bottom of the filter should be sloped at least 1% to the underdrain pipe.

9. An underdrain must be located at the bottom of the filter to drain the intermittent filter meeting the following requirements:

   a. May be placed directly on the bottom of the filter.

   b. Minimum diameter of 4 inches.

   c. Placed level throughout the filter.

   d. Constructed of slotted drain pipe with 1/4 inch slots 2.5 inches deep and spaced 4 inches apart located vertically on the pipe, or perforated sewer drain pipe with holes located at 5 and 7 o'clock.

   e. One underdrain should be installed for each filter cell zone.

   f. The distal end is vented to the atmosphere to allow entry of air flow into the bottom of the filter and access for cleaning.

   g. Connected to solid pipe meeting the construction requirements of IDAPA 58.01.03.007.21 that extends through the filter and is sealed so the joint between the filter wall and pipe is watertight.

   h. If gravity flow is not achievable from the underdrain to the drainfield then the underdrain must be connected to an approved dosing chamber (section 5.3) or approved septic tank (section 5.2) modified to a dosing chamber that is sized and

constructed as described in section 4.20.3.4 to deliver effluent to the drainfield by pressure transportation or distribution.

10. Three 4 inch diameter observation tubes should be placed in the intermittent sand filter to monitor for ponding and clogging formation. The first should extend to the filter construction media/underdrain aggregate interface. The second should extend to the pressure distribution aggregate/filter construction media interface. The third should extend to the bottom of the underdrain aggregate and may be substituted by a properly designed vent from the underdrain that may be accessed.
    a. The monitoring tubes must be secured and perforated near the bottom.
    b. The monitoring tubes must extend through the intermittent filter cover and have a removable cap.
11. The surface of the intermittent sand filter shall be covered meeting the following recommendations:
    a. Geotextile filter fabric shall be placed over the aggregate covering the pressurized distribution laterals.
    b. A minimum of 6, but no more than 12 inches, of loam or sandy loam soil shall be placed over the geotextile filter fabric.
    c. The soil cover shall be graded to divert any surface waters away from the intermittent sand filter.
    d. Vegetation on top of the soil cover must be managed so that deep rooting vegetation does not plug the distribution system.
    e. Fencing around the intermittent sand filter is recommended for all central systems.
    ~~a.~~f. The design engineer should account for potential freezing conditions in the design of the intermittent sand filter and pressure distribution system.

~~3. Sand filter container, piping, gravel, gravel cover, and soil crown material should meet the minimum requirements as shown herein.~~

~~4. Filter container shall be constructed of reinforced concrete or other materials where equivalent function, workmanship, watertightness, and at least a 20-year service life can be documented. The following requirements must be met for flexible membrane liners:~~

~~a. Have properties equivalent to, or greater than, 30-mil PVC.~~

~~b. Have field repair instructions and materials provided to the purchaser of the liner.~~

~~c. Have factory-fabricated *boots* for waterproof field bonding of piping to the liner.~~

~~d. Liner must be placed against smooth, regular surfaces free of sharp edges, nails, wire, splinters, or other objects that may puncture the liner. Provide a 4-inch layer of clean sand for liner protection.~~

4.23.3.2 Intermittent Filter Cells

Depending on the volume of effluent and the type of structure utilizing an intermittent sand filter, the intermittent filter may need to be split into cells that contain dosing zones. A filter cell is the

total filter area that can be served by a single dosing pump or set of pumps. Cell sizing is limited to 600 GPD. The minimum filter design requirements for cells and pumps include:

1. Up to 600 GPD: one cell and one pump.
2. Each additional 600 GPD: one additional cell and one additional pump.
3. An alternative to installing one pump per cell is to install duplex pumps connected to sequencing valves that alternate cells for each pressurization cycle. Pumps should alternate between each cycle.
4. Filter cells are hydraulically isolated from one another and shall be constructed according to the minimum requirements in section 4.23.3.
5. Each cell shall be equivalent in surface area and volume.
6. Each cell shall have the same number of laterals and perforations.

4.23.3.3 Intermittent Filter Dosing

1. Timed dosing is required and the filter dosing cycle should meet the following minimum recommendations:
   a. Pumps are set to dose each cell once per hour.
   b. Dose volume delivered to the filter surface for each cycle should be 4% of the daily design flow.
   c. A pump on override float should be set at a point that equates to 70% of the dosing chamber's two times the daily design flow above the low level off switch. This override float should only result in one additional pump cycle, or a shorter time off interval, each time it is activated. Once the effluent level returns to 60% of the dosing chamber's two times the daily design flow above the low level off switch the control will resume operating at its normal setting.
   d. A high level audio and visual alarm float should be set at 90% of the dosing chamber's two times the daily design flow above the low level off switch.
   e. A low level off float should be placed to ensure that the pump remains fully submerged at all times.
2. The pump controls should:
   a. Be capable of recording low and high level events so that timer settings can be adjusted accordingly.
   ~~a.~~b. Have event counters and run time meters to be able to monitor daily flows.

Figure 4-24 provides a cross-sectional view of an intermittent sand filter cell.

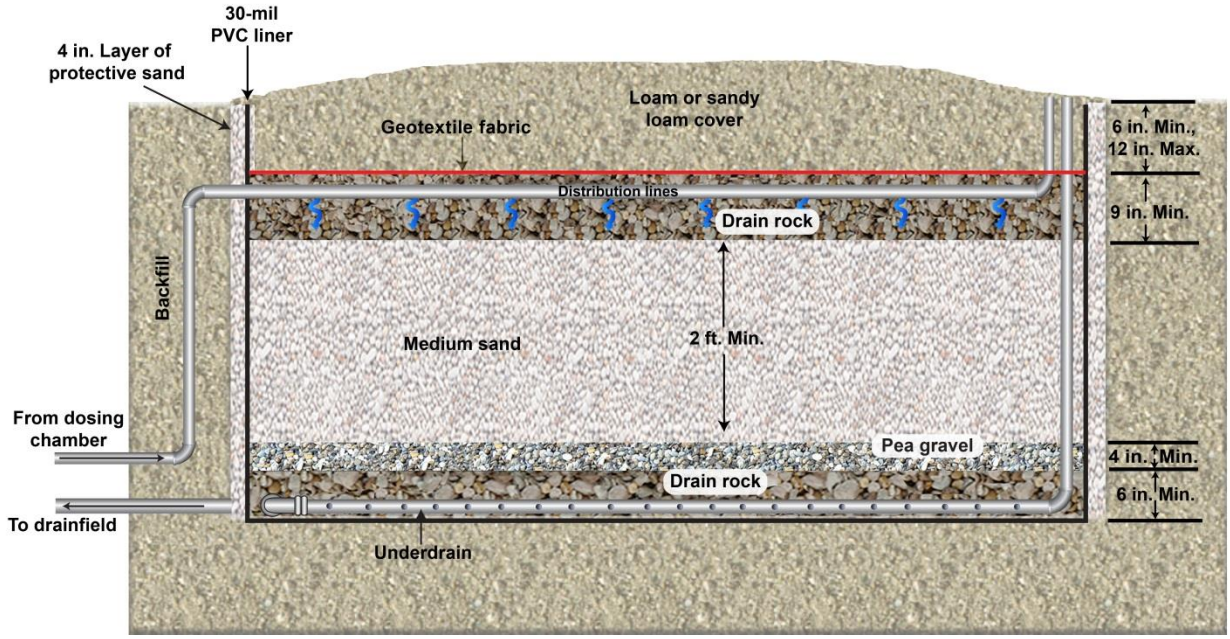

Figure 4-24. Cross section of intermittent sand filter cell.

4.23.4 Filter Construction

1. All materials must be structurally sound, durable, and capable of withstanding normal installation and operation stresses.
2. Components that may be subject to excessive wear must be readily accessible for repair or replacement.
3. All filter containers must be placed over a stable level base.
4. ~~Pressure system must be designed and installed according to the guidance given for pressure distribution systems in section 4.20.~~Access to the filter surface must be provided to facilitate maintenance.

4.23.5 ~~Gravity Disposal~~Drainfield Trenches

1. Except as noted herein, the final disposal trenches must meet the requirements of a standard trench system.
2. Distances shown in Table 4-17 must be maintained between the trench bottom and limiting layer.
3. Capping fill may be used to obtain adequate separation from limiting layers but must be designed and constructed according to the guidance for capping fill trenches in Section 4.5.
4. Pressure distribution may be used with the following design considerations:
   a. The pressure distribution system related to the drainfield is designed in accordance with Section 4.20.
   ~~a.~~b. The dosing chamber for the intermittent sand filter may not be used as the dosing chamber for the drainfield unless a hydraulically isolated two compartment tank is

used that meets the necessary dosing chamber volume requirements for both chambers.

5. ~~Minimum~~ The minimum area, in square feet of bottom trench surface, shall be calculated from the maximum daily flow of effluent divided by the hydraulic application rate for the applicable soil design subgroup listed in Table 4-18.

Table 4-17. Intermittent sand filter vertical setback to limiting layers (feet).

Limiting Layer	~~Soil Group A~~Flow <2,500 GPD	~~Soil Group B~~	~~Soil Group C~~	Flow ≥2,500 GPD
	All Soil Types			All Soil Types
Impermeable layer	2	~~2~~	~~2~~	4
Fractured rock or very porous layer	1	~~1~~	~~1~~	2
Normal high ground water	1	~~1~~	~~1~~	2
Seasonal high ground water	1	~~1~~	~~1~~	2

Note: gallons per day (GPD)

Table 4-18. Secondary biological treatment system hydraulic application rates.

Soil Design Subgroup	Application Rate (gallons/square foot/day)
A-1	1.7
A-2	1.2
B-1	0.8
B-2	0.6
C-1	0.4
C-2	0.3

4.23.6 Inspection

1. A preconstruction meeting between the health district, responsible charge engineer, and installer should occur prior to commencing any construction activitites.
2. The health district should inspect all system components prior to backfilling and perform inspections of the filter container construction prior to filling with drainrock and filter construction media.
3. The responsible charge engineer should conduct as many inspections as necessary for verification of system and component compliance with the engineered plans.
4. ~~6.~~The responsible charge engineer shall provide the health district with a written statement that the system was constructed and functions in compliance with the approved plans and

specifications. Additionally, the responsible charge engineer shall provide as-built plans to the health district if any construction deviations occur from the permitted construction plans. (IDAPA 58.01.03.005.15)

4.23.~~6~~7 Operation and Maintenance

1. The intermittent sand filter design engineer shall provide a copy of the system's operation, maintenance, and monitoring procedures to the health district as part of the permit application and prior to subsurface sewage disposal permit issuance (IDAPA 58.01.03.005.04.k).
2. Minimum operation, maintenance, and monitoring requirements should follow each system component manufacturer's recommendations.
3. Instructions on how to trouble shoot the pump control panel should be included to allow the adjustment of pump cycle timing if the low level off or high level alarm switch are frequently tripped in order to maintain the hourly dosing cycle timing.
4. Operation and maintenance directions should be included regarding the replacement of the filter construction media and the direction to the system owner that a permit must be obtained from the health district for this activity.
5. Maintenance of the septic tank should be included in the O&M manual.
6. All pressure distribution system components should be maintained as described in section 4.20.5.
7. Check for ponding in the intermittent sand filter observation ports.
8. Vegetation over the intermittent sand filter should be maintained regularly.
7. ~~Operation and maintenance tasks for sand filters should be specified in an operation and maintenance manual referred to on the permit.~~
8. ~~Conventional sand filters, or sand filters of comparable operation and maintenance, are the responsibility of the system owner.~~
9. ~~Permits may not be issued for a sand filter that, in the judgment of the Director, would require operation and maintenance significantly greater than conventional sand filters, unless operation and maintenance arrangements for system O&M meeting the Director's approval are secured.~~
10. ~~Filters with special approvals should be inspected every 12 months and checked for necessary corrective maintenance.~~
9. Sludge depth in the septic tank should be checked annually and the tank shall be pumped when sludge exceeds 40% of the liquid depth.

Figure 4-25 shows a cross section of an intermittent sand filter system with gravity distribution to the drainfield. Figure 4-26 shows a cross section of an intermittent sand filter system with pressure transport to, and/or distribution within, the drainfield.

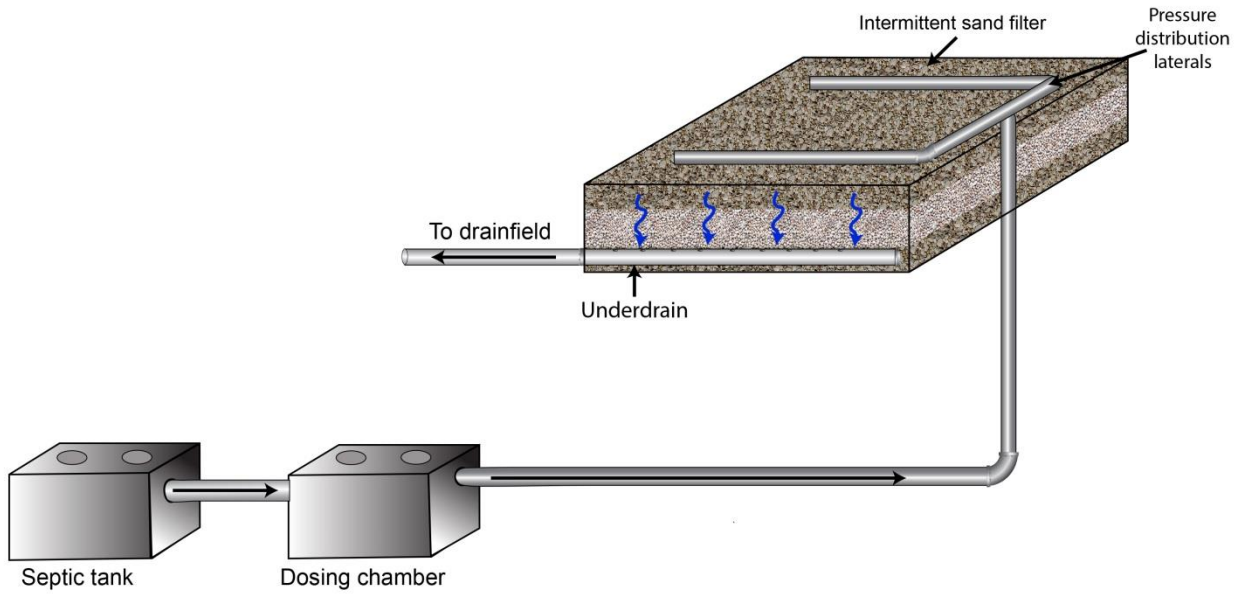

Figure 4-25. Cross section of an intermittent sand filter system with gravity discharge to the drainfield.

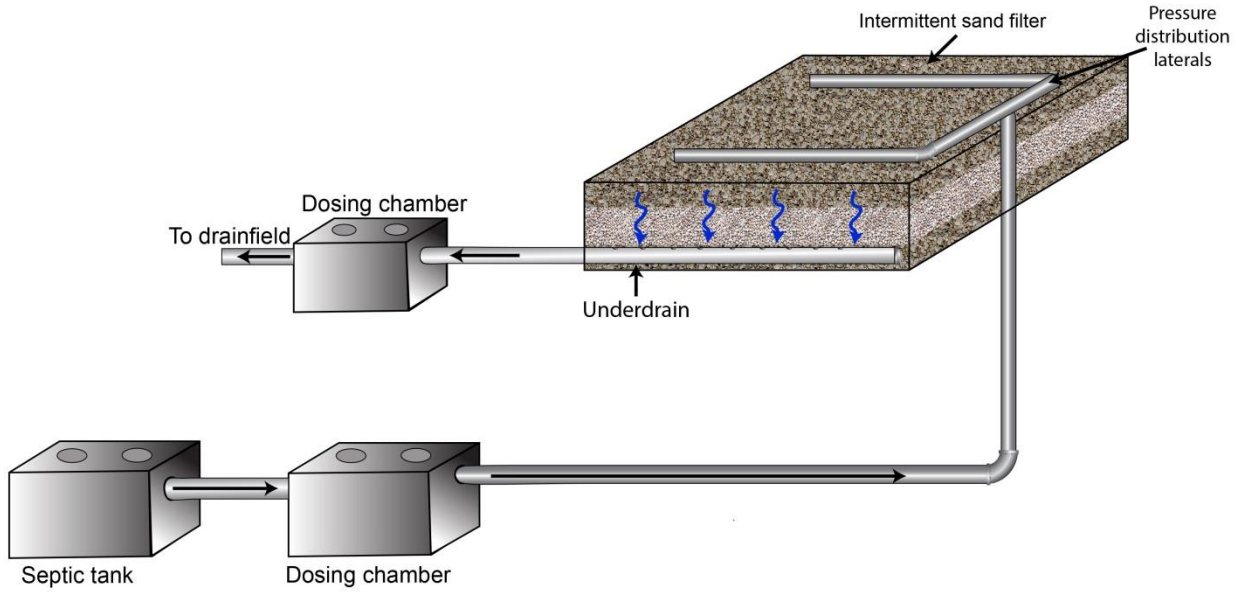

Figure 4-26. Cross section of an intermittent sand filter system with pressure transport and/or distribution within the drainfield.

Appendix L

4.27 Steep Slope System

Revision: ~~April 21, 2000~~September 18, 2014

4.27.1 Description

A steep slope system is a trench system for slopes greater than 20%.

4.27.2 Approval Conditions

1. ~~Steep slope systems may be considered where the slope at t~~The site ~~is~~ may not have slopes greater than ~~20% but less than~~ 46%.
2. Soil must be well-drained, with no evidence of saturation and of soil design group A or B without any evidence of textural change in the effective depth.
3. Except as listed in this section, all regulations applicable to a standard system will apply.
4. Trenches must be separated by at least 8 feet of undisturbed soil.
5. Trenches may not exceed 36 inches in width.
6. The drainfield bottom must be installed at a minimum depth of 30 inches below the natural soil surface on the downhill side of the trench, and:
   a. The drainfield bottom may not exceed 48 inches below the natural soil surface on the downhill side of the trench, and
   b. The required separation distances from the bottom of the drainfield to features of interest (IDAPA 58.01.03.008.02) must be capable of being met from the uphill side of the drainfield trench.
7. The drainfield must:
   a. Contain a minimum of 18 inches of drainrock, 12 inches of which must be installed below the perforated distribution pipe, and
   b. Restriction on the credit for the installation of extra drainrock below the drainfield in the steep slope system shall follow Section 4.11, or
   c. Be constructed with an approved gravelless trench component (Section 4.12) configuration, and
   ~~a.~~d. No reduction in drainfield disposal area shall be credited for the installation of the gravelless trench component in the steep slope system.

4.27.3 Construction

~~Parallel trenches must be separated by at least 8 feet of undisturbed soil.~~

1. If more than one trench is used, serial distribution will be requiredTrenches may be constructed using serial or equal distribution.
   ~~b.~~a. Pressure distribution is recommended but not required.

b. If serial distribution is utilized it is recommended that the system is constructed using drop boxes (Section 3.2.6.2).

c. If equal distribution is utilized it is highly recommended that a distribution box (Section 3.2.5.2) be utilized, access to the distribution box from grade be made available, and that equal flow to each trench be verified prior to backfilling the system.

~~3.~~2. Regardless of the distribution method used the drainfield trenches should follow the natural contour of the land surface.

~~Trenches must be installed at a minimum depth of 30 inches below the natural soil surface on the downhill side of the trench and contain a minimum of 18 inches of drainrock and 12 inches of soil backfill or be constructed to gravelless trench specifications with a 30 inch minimum depth.~~

3. In consideration of safety and plumb trench sidewalls, hand excavation of trenches ~~paralleling the contour of the land surface~~ may be necessary.

4. Figure 4-33 illustrates the relationship between the site's vertical drop and horizontal run.

Equation 4-17 shows the calculation for determining a site's percent slope.

$$\frac{\text{Elevation Difference from Uphill Point to Downhill Point (Rise)}}{\text{Length Between Uphill and Downhill Point (Run)}} \text{ X } 100$$

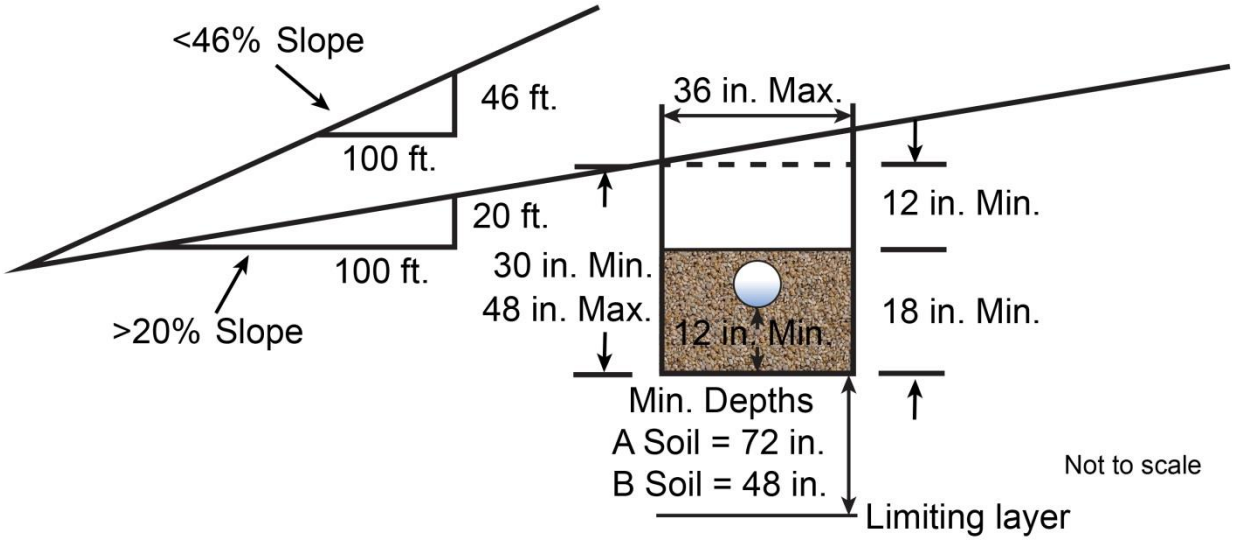

Figure 4-33. Illustration of a steep slope trench with an example of ~~rise over run~~maximum and minimum slope.

Appendix M

1.4.2.1.1 Initial Septic Tank Approvals

To obtain initial approval of a septic tank a manufacturer must submit the following information for each individual septic tank model and variations of that model to DEQ. The documentation must be stamped, dated and signed by a PE licensed in Idaho (IDAPA 58.01.03.009.02):

1. Detailed construction drawings
2. Structural design plans, specifications, and calculations
3. Capacity calculations
4. List of construction materials, and
5. The manufacturer's installation and operation and maintenance instructions.

DEQ's Lead Wastewater Program Engineer will review the septic tank submission and any other relevant information deemed necessary for approval. Minimum design standards considered suitable include the following General Tank Specifications, listed below, and assume a minimum bury depth of 3 feet. If the tank is designed for a deeper bury depth, the engineering calculations must identify and incorporate the specified depth throughout the calculations.

General Tank Specifications

1. The tank shall meet all of the design and construction standards described in IDAPA 58.01.03.007 (Section 8.1).
2. The tank lid should be capable of supporting a minimum of 375 pounds per square foot.
3. Walls shall be designed to withstand an inside hydrostatic water pressure to the level of the outlet and for an outside earth pressure equivalent to the pressure exerted by a fluid weighing 30 pounds per cubic foot, in accordance with accepted engineering practice. Alternatively, tanks may be designed to anticipated earth and hydrostatic pressures when the tank is either full or empty, if the load is anticipated to exceed the 30 pounds per cubic foot.
4. The tank shall be structurally designed to withstand all anticipated earth or other loads based on the specified bury depth.
5. The tank shall be capable of being filled with water above ground for 24 hours without leaking or a major deflection in shape occurring.
6. The tank's inlet and outlet baffle system shall be included in the design and if constructed of pipe shall meet or exceed the rating of ASTM D3034.

Concrete Tank Specifications

1. The walls and bottom slab shall be poured monolithically or be constructed with water stops if monolithic pours are not used in the tank construction.
2. Reinforcing steel shall be ASTM A615 Grade 60, yield strength (f_y) = 60,000 pounds per square inch (psi).

a. Details and placement shall be in accordance with American Concrete Institute (ACI) 315 and ACI 318 or equivalent.

b. The certifying engineer shall be experienced in the use of structural reinforcement fibers.

3. Concrete shall be ready-mix with cement conforming to ASTM ~~C150~~C1227-13~~, Type II~~.

a. The concrete shall have a cement content of not less than 5 sacks per cubic yard with a maximum aggregate size of 3/4 inch.

b. The water and cement ratio shall be kept low (0.45±).

c. The concrete shall achieve a minimum compressive strength of ~~3~~4,000 psi in 28 days.

4. The form release fluid used on the tank mold shall be compatible with the water-seal method used.

5. Tanks shall not be moved from the manufacturing site to a job site until the tank has cured for 7 days or has reached 2/3 of the design strength.

Polyethylene and Fiberglass Tanks

1. The tank shall meet or exceed Canadian Standard CAN/CSA~~3~~-B66-M~~85~~90.

2. Verification of compliance with this standard shall be submitted through a report from an independent testing company certifying that the tank meets this standard.

Plan Submission

1. Upon submission of plans and specifications described above for approval of a septic tank DEQ shall complete a review of those plans within 42 calendar days from the date of submittal.

2. If the plans and specification are acceptable and complete, DEQ shall issue a preliminary approval letter to the manufacturer. This preliminary approval letter will specify the tank/model, volume, number of compartments, number of pieces, any special applications for the tank and include any minor deficiencies that must be corrected prior to the test tank construction. This preliminary approval letter will also notify the manufacturer to complete construction of a test tank which will be subjected to a dimensional inspection and leak test prior to receiving final approval.

Construction and Leak Testing

1. Upon preliminary approval the manufacturer shall complete construction and leak test either through a PE licensed in Idaho or an Environmental Health Specialist (EHS) from one of Idaho's health districts.

2. The PE or EHS shall completely fill out DEQ's septic tank inspection form available through the DEQ website, and submit the signed document to DEQ's On-Site Wastewater Coordinator.

a. Prior to filling the tank to perform the leak test the PE or EHS shall inspect the dimensional elements of the tank listed on the inspection form and note the date and time the tank is filled with water to the bottom of the tank's outlet.

b. 24 hours after the tank is filled with water the PE or EHS shall inspect the tank for the presence of any leaks, seeps, and note the difference in elevation of water in the tank.

c. Alternatively, a PE licensed in Idaho may witness a vacuum test, performed as specified in section 9.2.1 of ASTM C1227-13, in place of the water pressure leak test. The tank must be evacuated to 4 inches of mercury vacuum. To pass the test the tank must retain at least 90% of this vacuum (3.6 inches of mercury) after 2 minutes.

3. If the construction and leak test documentation are consistent with the plans used for preliminary approval DEQ will issue a final approval letter for the septic tank, place the septic tank on DEQ's approved septic tank list (Section 5.2), and notify the manufacturer and health districts of the approval.

1.4.2.1.2 Transfer of Septic Tank Approvals between Manufacturers

If a manufacturer purchases or obtains another septic tank manufacturer they must obtain approval for the other manufacturer's septic tank configurations from DEQ prior to any installation of the new septic tank models occur. If the manufacturer or any of the septic tank models purchased are not listed on DEQ's approved septic tank list (Section 5.2) the manufacturer seeking approval must submit the information listed in Section 1.4.2.1.1 to obtain approval from DEQ. If the manufacturer and all of the septic tank models purchased are listed on DEQ's approved septic tank list (Section 5.2) then the purchasing manufacturer must submit the following information to DEQ in order to transfer the previous manufacturer's septic tank approvals:

1. A written and signed notification regarding the buyout of the manufacturer and the specific septic tank models that the purchasing manufacturer is seeking approval for. The written notification shall also include:

   a. Information on which construction plans will be used for each septic tank model.

   b. A statement regarding whether any of the purchased septic tank models will no longer be manufactured and that they may be removed from the approved septic tank list (Section 5.2).

2. Upon notification DEQ shall review the request and inform the manufacturer if the request is acceptable or if additional information is necessary.

   a. If the request is acceptable the manufacturer must have a PE or EHS complete the construction and leak test requirements listed in Section 1.4.2.1.1 and the information must be submitted to DEQ for review.

   b. If the construction and leak test information is acceptable DEQ will issue a transfer approval for each septic tank model, place each septic tank model on DEQ's approved septic tank list (Section 5.2) under the new manufacturer's name, remove the model from the purchased manufacturer, and notify the purchasing manufacturer and health districts of the transfer approval.

Appendix N

3.2.3 Septic Tanks and Dosing Chambers

~~Both concrete s~~Septic tanks and dosing chambers shall be installed level and should be placed on undisturbed original soil if possible. Some fill is often needed to make a smooth bearing surface in the bottom of the excavation that will receive the tank or chamber. ~~They~~ A tank or chamber should not be ~~placed~~ installed on unconsolidated or un-compacted fill greater than 6 inches deep. If fill material greater than 6 inches in depth is necessary to level the installation surface it should be compacted to 95% proctor to mitigate potential settling issues. ~~Some fill is often needed to make a smooth bearing surface in the bottom of the excavation that will receive the tank or chamber.~~ All plastic, polyethylene, and fiberglass tanks must be installed according to the manufacturers' recommendations including required bedding material for the tank excavation (IDAPA 58.01.03.007.18).

Concrete tanks or chambers ~~often~~ may leak if they are not coated with a bituminous coating or other sealer. Such sealing is recommended in all dosing chambers and septic tanks placed in or near ground water or in porous soils. The sealant should cover all of the tank walls and the tank bottom. The sealant may be placed on the inside or outside of the septic tank. If located on the inside of the tank the sealant should be compatible with sewage. If located on the outside of the tank the required manufacturer labeling must still be legible for the inlet and outlet, manufacturer's name or trademark, or the liquid capacity of the tank somewhere on the tank body or tank lid.

If a septic tank or dosing chamber is installed in ground water a vertical separation distance of 2 feet shall be met from the joint between the tank body and the tank lid (IDAPA 58.01.03.007.17). Monolithically constructed tanks (one piece tanks) are highly recommended to be used if the tank is to be installed in ground water. Multi-piece tanks should be avoided for ground water installations if possible. If a multi-piece tank is installed in ground water the vertical separation distance shall be to the top of the tank if a lid-body joint is absent.

~~All plastic, polyethylene, and fiberglass tanks must be installed according to the manufacturers' recommendations (IDAPA 58.01.03.007.18).~~

All septic tanks must have a riser if the manhole opening of the tank is deeper than 24 inches below the ground surface. The riser must ~~come~~ bring the access lid within 18 inches of the ground surface (IDAPA 58.01.03.007.19). It is highly recommended that all tank access lids be brought to grade with a riser and fitted with a secured lid regardless of the tank's installation depth. ~~Dosing~~ All dosing chambers must have the access manholes extended to the ground surface regardless of the chamber's installation depth.

ABS Schedule 40 or equivalent is recommended to span the tank excavation, or connect septic tanks to dosing chambers or other septic tanks in series (IDAPA 58.01.03.007.21). ~~It is also recommended as t~~The pipe used to span ~~the~~ septic tank and dosing chamber excavations ~~and~~must also extend at least 3 feet beyond the excavation (IDAPA 58.01.03.007.21). Thinner-walled ASTM D3034 plastic pipe may be used for these applications if the excavation void at the tank's sides is compacted with fill material (IDAPA 58.01.03.007.21.b). The material must be granular, clean, and compacted to 90% proctor density. The ASTM D3034 grade of plastic pipe is also suitable if it is placed on undisturbed earth~~., used as the house sewer, and used as the distribution~~

~~line to the drainfield and within the drainfield. There should not be less than 12 inches of cover over thin-walled plastic pipe. ASTM D2729 pipe is acceptable for use as the effluent pipe. ASTM D2729 is not a suitable class of pipe to span the septic tank or dosing chamber excavation. ASTM D2729 must be laid on a stable base and not driven over by excavation equipment.~~ See IDAPA 58.01.03.007.21 for inlet and outlet piping requirements.

~~Specifications~~

~~4.5.~~ ~~General~~

~~a. The manufacturer shall provide structural design and certification by an engineer licensed in Idaho.~~

~~b. The tank shall be designed for the following minimum loading conditions assuming a maximum coverage of 3 feet:~~

~~Top: 375 pounds per square feet~~

~~Walls shall be designed for an inside hydrostatic water pressure to the level of the outlet and for an outside earth pressure equivalent to that exerted by a fluid weighing 30 pounds per cubic foot, in accordance with accepted engineering practice.~~

~~Each tank shall be structurally designed to withstand all anticipated earth or other loads. If the tank is to be stable with greater than 3 feet of cover, the loading requirements should be increased accordingly and the maximum cover depth marked on the tank.~~

~~c. All tanks shall be capable of being filled with water above ground for 24 hours without leaking or a major deflection in shape.~~

~~d. All tanks shall be installed in strict accordance with the manufacturer's recommended installation instructions.~~

~~e. If pipe is used as the tank baffle system, it shall meet or exceed the rating of ASTM D3034.~~

~~2. Concrete Tanks~~

~~a. The walls and bottom slab shall be poured monolithically; alternatively, water stops may be provided.~~

~~b. Reinforcing steel shall be ASTM A615 Grade 60, yield strength (f_y) = 60,000 pounds per square inch (psi). Details and placement shall be in accordance with American Concrete Institute (ACI) 315 and ACI 318 or equivalent as certified by a licensed professional engineer experienced in the use of structural reinforcement fibers.~~

~~c. Concrete shall be ready-mix with cement conforming to ASTM C150, Type II. It shall have a cement content of not less than 5 sacks per cubic yard and a maximum aggregate size of three-quarter inch. Water and cement ratio shall be kept low (0.45±), and concrete shall achieve a minimum compressive strength of 3,000 psi in 28 days.~~

~~d. Form release used on tank molds shall be compatible with the water-seal method used.~~

~~e. Tanks shall not be moved from the manufacturing site to the job site until the tank has cured for 7 days or has reached two-thirds of the design strength.~~

~~f. To demonstrate watertightness, tanks shall be tested before acceptance. The tank shall be tested by filling with water to the soffit and letting stand. After 24 hours, the tank shall be refilled to the soffit and examined for visible leaks.~~

~~3. Polyethylene and Fiberglass Tanks~~

~~a. Polyethylene and fiberglass tanks shall meet or exceed Canadian Standard CAN 3-B66-M85. A report from an independent testing company certifying that the tank meets the Canadian Standard is required.~~

~~b. Installation instructions, prepared by the manufacturer, shall accompany each tank. Strict conformance with the backfill instructions will be required.~~

~~c. On-site hydrostatic testing is suggested before installation. The tank should be filled with water for 1 hour. Any leakage or dimensional change greater than one-half inch shall be cause for rejection.~~

After installation septic tanks and dosing chambers require periodic maintenance. Maintenance of these tanks is easier if the manhole access lids are brought to grade as described above. Minimum maintenance includes periodic pumping of the tank as described in Section 6. Other maintenance may include cleaning of a septic tank effluent filter (Section 5.9) or cleaning of a pump screen in a dosing chamber. All materials washed from either of these filters should be discharged into the inlet side of the septic tank. It may also be necessary to perform periodic maintenance of the inlet and outlet baffle of the septic tank.

On occasion it may be necessary to abandon a septic tank due to age, condition, or replacement. ~~Septic Tank Abandonment. I~~Septic tank abandonment may also be necessary if in the opinion of the Director (see IDAPA 58.01.03.003.10 for definition), a septic system is abandoned (IDAPA 58.01.03.003.01), and it is necessary to protect the public's health and safety from the eventual collapse of the septic tank or its misuse, the Director shall require the septic tank to be abandoned. If a septic tank or dosing chamber must be abandoned it must be done in accordance with the following requirements ~~by~~ (IDAPA 58.01.03.007.23):

a. Disconnecting the inlet and outlet piping, and

b. Pumping the scum and septage by a permitted pumper with an approved disposal location, and

c. Filling the septic tank with earthen materials, or

d. Physically destroying or removing the septic tank from the ground.

Appendix O

4.1.3 Combination of Multiple Alternative Systems in One System Design

An alternative system is any system that DEQ has issued design guidelines for (IDAPA 58.01.03.003.02), which are contained within Section 4 of this manual. Alternatively, a standard system is any system that DEQ's Board of Environmental Quality has recognized through the adoption of design and construction regulations in IDAPA 58.01.03. Standard systems include a septic tank and aggregate filled drainfield or absorption bed. All modifications of a standard system other system designs are considered alternative systems. Alternative systems may either be classified as a basic alternative system or a complex alternative system. All complex alternative systems are listed in Section 1.5. Any system not considered a standard system or listed as a complex alternative system in Section 1.5 is considered a basic alternative system.

Alternative systems are allowed to be used to address difficult sites that are not capable of supporting a standard system. Alternative systems have helped to provide property owners more options to meet their subsurface sewage disposal needs. Even though alternative systems have helped to create subsurface sewage disposal solutions for difficult sites they do not always provide a solution for all sites. Some sites are not suitable for subsurface sewage disposal due to limiting site conditions (e.g., shallow soils, high ground water, surface water, steep slopes) or size. To help reduce the number of sites that are not considered suitable for subsurface sewage disposal the Technical Guidance Committee and DEQ encourage the use of multiple alternative system designs in a single system's design. The following restrictions are in place for the combination of multiple alternative system designs:

1. The bottom of a drainfield may not be installed deeper than 48 inches below native grade.
2. Systems requiring the use of pressurization for any component may not substitute gravity flow for the pressurization of that component.
3. The most restrictive site slope requirements for any one alternative used in a system's design shall be adhered to.
4. The design guidance for all alternative systems used in a system's design shall be followed.
5. Only one allowance for the reduction of trench length, total disposal area, or alternative hydraulic application rate shall be used in a system's design regardless of the number of alternative designs combined that provide these types of reduction allowances.
6. Only one allowance for the reduction of separation distance to limiting layers or features of interest shall be used in a system's design regardless of the number of alternative designs combined that provide these types of reduction allowances.

Systems that are considered united alternative systems may always be permitted in conjunction with a standard or basic/complex alternative system. A united alternative system is an alternative that must be permitted in conjunction with some other form of standard or basic/complex alternative system. The only united alternative system is the grey water sump.

Systems that are considered a stand-alone alternative system may be permitted independently of any other system. Some stand-alone alternative systems may also be permitted in conjunction

with another standard or basic/complex alternative system. Stand-alone systems that may be permitted in conjunction with another alternative system are identified with an astrix (*). Stand-alone alternative systems include:

- Composting Toilet*
- Evapotranspiration and Evapotranspiration/Infiltrative System
- Grey Water System*
- Emergency Holding Tank
- Incinerator Toilet*
- Individual Lagoon
- Pit Privy*
- Recreational Vehicle Dump Station*
- Two-Cell Infiltrative System
- Vault Privy*

Table 4-1 provides a matrix of compatible alternative systems that may be used in combination for a single system's design but does not include united or stand-alone alternative systems.

Alternative System	4.5	4.7	4.9	4.10	4.11	4.12	4.20	4.22	4.23	4.24	4.25	4.26	4.27	4.30
Capping Fill System	S	X	X	X	X	X	X	X	X	X	-	-	-	X
Drip Distribution System	X	S	X	X	X*	-	X	X**	X**	X*	X*	-	X*	X
Experimental System	X	X	S	X	X	X	X	X	X	X	X	-	X	X
Extended Treatment Package System	X	X	X	S	X	X	X	X	X	X	X	X	X	X
Extra Drainrock Trench	X	X*	X	X	S	-	X	X	X	X	-	-	X	X
Gravelless Trench System	X	-	X	X	-	S	X	X	X	X	X	-	X	X
Pressure Distribution System	X	X	X	X	X	X	S	X	X	X	X	-	X	X
Recirculating Gravel Filter	X	X**	X	X	X	X	X	S	X	X	X	X	X	X
Intermittent Sand Filter	X	X**	X	X	X	X	X	X	S	X	X	X	X	X
In-Trench Sand Filter	X	X*	X	X	X	X	X	X	X	S	-	-	X	X
Sand Mound	-	X*	X	X	-	X	X	X	X	-	S	-	-	X
Seepage Pit/Bed	-	-	X	X	-	-	-	X	X	-	-	S	-	X
Steep Slope System	-	X*	X	X	X	X	X	X	X	X	-	-	S	X
Drainfield Remediation Component	X	X	X	X	X	X	X	X	X	X	X	X	X	S

X- Allowed to be used in conjunction with this alternative system type; S- Same alternative system type; *- May be used as the distribution method within drainfield aggregate; **- May be used as distribution method within filter and as the drainfield.

Table 4-1. Matrix of compatible alternative systems that may be used in combination for a single system's design.

Appendix P

4.10.3 Operation, Maintenance, and Monitoring

Procedures relating to operation, maintenance, and monitoring are required by IDAPA 58.01.03 (section 8.1) or may be required as a condition of issuing a permit, per IDAPA 58.01.03.005.14 (section 8.1) to ensure protection of public health and the environment.

1. Operation and maintenance

   a. Annual maintenance shall be performed on the ETPS unit as described in the ETPS manufacturer's O&M manual for the ETPS model as submitted under section 4.2.

   b. Additional maintenance not specified in the O&M manual may be required to ensure the ETPS functions properly.

   c. Records of each maintenance visit shall be kept and should include the following information for the primary maintenance visit:

      1) Date and time.

      2) Observations for objectionable odors.

      3) Observation for surfacing of effluent from the treatment unit or drainfield.

      4) Notation as to whether the system was pumped since the last maintenance visit including the portions of the system pumped, pumping date, and volume.

      5) Sludge depth and scum layer thickness in the primary septic tank and treatment unit.

      6) If responding to an alarm event, provide the cause of the alarm and any maintenance necessary to address the alarm situation.

      7) Field testing results for any system effluent quality indicators included in the approved sampling plan as submitted under section 4.2.4 or as recommended in item 2(b) below.

      8) Record of any cleaning and lubrication.

      9) Notation of any adjustments to control settings or equipment.

      10) Test results for pumpers, switches, alarms, and blowers.

      11) Notation of any equipment or component failures.

      12) Equipment or component replacement including the reason for replacement.

      13) Recommendations for future service or maintenance and the reason for the recommendations.

      14) Any maintenance occurring after the primary annual maintenance visit should only record and address the reason for the visit and the associated activities that occur.

2. Monitoring

a. Annual effluent monitoring will be required for all ETPS units that discharge to a reduced size drainfield, to a drainfield with a reduced separation distance to limiting layers, and/or to a drainfield located in an environmentally sensitive area (area of concern).

Annual monitoring included in the annual report must occur within the reporting period (Figure 4-8).

b. Effluent monitoring may be done for a group of ETPS units from a common dosing chamber resulting in the sample from the common dosing chamber being applied to all of the associated ETPS units if:

1) Annual operation and maintenance is performed as described in item 1 above for each individual ETPS unit and operation and maintenance records are submitted for each individual unit as described in Section 4.10.4.

2) All of the ETPS units connected to the common dosing chamber are from the same manufacturer. If there are multiple manufacturers' ETPS units connected to the common dosing chamber each ETPS unit must be monitored individually. Additionally, if there are multiple common dosing chambers discharging to a single drainfield each common dosing chamber must be monitored and if there are any individual ETPS units discharging to the same system independently of the common dosing chamber those individual units must also be monitored.

3) If the effluent sample from the common dosing chamber does not meet any one of the required effluent constituent levels for the system then each individual ETPS unit connected to the common dosing chamber must be sampled independently for the failing constituent to determine what individual units do not meet the effluent monitoring requirements.

i. Individual units that do not meet the effluent constituent levels upon individual sampling must follow the operation, maintenance, and retesting requirements described in item 2.g below.

ii. Individual units that do meet the effluent constituent levels upon individual sampling do not need to continue with the operation, maintenance, and retesting requirements.

c. DEQ recommends prior to collecting effluent samples from the treatment unit for laboratory analysis that effluent quality indicators be field tested as described in the approved sampling plan for the O&M entity. Recommendations included in this section are recommendations only and should be verified with the treatment technology manufacturer as acceptable with their field sampling plan and as suitable effluent quality indicators. Field testing is recommended to include, but may not be limited to the following:

1) Visual examination for wastewater color, odor, and effluent solids

2) Constituents shown in Table 4-5:

Table 4-5. Recommended field testing constituents for effluent quality indication.

Constituent	Acceptable Range
pH	6 to 9
Dissolved oxygen	≥2 mg/L
Turbidity	≤40 NTU

Notes: milligram per liter (mg/L); nephelometric turbidity unit (NTU)

d. Monitoring samples provided to a laboratory will analytically quantify that the units are operating in compliance if samples do not exceed 40 mg/L (40 ppm) for $CBOD_5$ and 45 mg/L (45 ppm) for TSS.

   Results for $CBOD_5$ and TSS that exceed these levels indicate the ETPS unit is not achieving the required reduction levels.

e. For those systems installed in areas of concern, including nitrogen sensitive areas, or are used to fulfill NP evaluation results and requirements, the following additional constituents may be monitored as stipulated on the permit:

   1) Total Kjeldahl nitrogen (TKN)

   2) Nitrate-nitrite nitrogen (NO3+NO2-N)

   3) Results for total nitrogen (TN = TKN + [NO3+NO2-N]) that exceed the levels stipulated on the installation permit, in the subdivision approval for sanitary restrictions release, or the approved NP evaluation, indicate that the device is failing to achieve the required reductions

f. Samples will be collected, stored, transported, and analyzed according to the latest version of *Standard Methods for the Examination of Water and Wastewater* (Rice et al. 2012) and other acceptable procedures.

   1) Each sample will have a chain-of-custody form, identifying, at a minimum, the sample's source (street address or installation permit number), date and time of collection, and the person who extracted the sample.

   2) Chain-of-custody form should also specify the laboratory analyses to be performed on the sample.

   3) Sample storage and transport will take place in appropriate containers under appropriate temperature control.

g. Sample analysis will be performed by a laboratory capable of analyzing wastewater according to the acceptable standards identified in Table 4-6, and the monitoring results will be submitted as part of the annual report to the local health district.

   1) ETPS effluent analysis shall be performed using the standards in Table 4-6 from the *Standard Methods for the Examination of Water and Wastewater* (Rice et al. 2012) or the equivalent standards from EPA. NSF uses the same standards in their Standard 40 and 245 evaluations.

2) Annual reports submitted with laboratory analysis results differing from these standard methods will be rejected.

Table 4-6. Standard methods required for the analysis of ETPS effluent in annual testing.

Analysis	Standard Method Number	EPA Method Equivalent to Standard Method
Total suspended solids (TSS)	SM 2540 D	—
Carbonaceous biological oxygen demand ($CBOD_5$)[a]	SM 5210 B	—
Total Kjeldahl nitrogen (TKN)	SM 4500-N_{org} B	351.2
Nitrate-nitrite nitrogen (NO_3 + NO_2-N)	SM 4500-NO_3^- F	353.2

a. Person requesting the analysis from the laboratory must specify the $CBOD_5$ on the chain-of-custody form.

h. Samples failing to achieve the required effluent constituent levels shall require the following:

1) Additional operation and maintenance within 15 days of the failed sample results as determined by the date provided on the laboratory form.

   If additional operation and maintenance or component replacement is necessary as determined from this service, the reason, maintenance necessary, and dates must be provided as part of the service record.

2) Additional sampling to demonstrate the operation and maintenance performed successfully restored the treatment system to proper operation.

3) Sample extraction and analysis needs to occur within 30 days after servicing the system (as determined in item 1 above).

   The 30-day time frame for sample extraction will begin based on the last documented operation and maintenance visit required under item 1 above.

4) A maximum of three sampling events, within 90 days (as determined from the last documented operation and maintenance visit from item 1 above), will be allowed to return the system to proper operation. Failure to correct the system within this time frame will result in the system being classified as a *failing system* (Figure 4-9).

5) If an annual report, as described in section 4.10.4, for a system identifies that an effluent sample fails to meet the limits provided in item 2.c and d above, and the required resampling of the system did not occur, the regulatory authority will issue the Failure to Resample letter provided in the DEQ program directive, "Extended Treatment Package System Education and Enforcement Letters."

   If resampling as described in this section does not occur by the date provided in the Failure to Resample letter, the actions will be considered a refusal of service as described in section 4.10.6, and the enforcement procedures provided in section 4.10.6 shall be followed by the regulatory authority.