State of Idaho
Department of Environmental Quality
Technical Guidance Committee

Technical Guidance Committee Meeting

Final Minutes

Thursday, August 18, 2016

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

TGC ATTENDEES:

Tyler Fortunati, REHS, Compliance, Inspection, and Enforcement Lead, DEQ
Clark Weaver, On-Site Wastewater Coordinator, DEQ
Joe Canning, PE, B&A Engineers
Bob Erickson, REHS, Senior Environmental Health Specialist, SCPHD (via telephone)
Dale Peck, PE, Environmental & Health Protection Division Administrator, PHD
Michael Reno, REHS, Environmental Health Supervisor, CDHD
Jason Holm, J.T. Holm Construction, LLC

GUESTS:

Janelle Larson, Administrative Assistant, DEQ
Allen Worst, R.C. Worst & Company, Inc.
PaRee Godsill, Everlasting Extended Treatment (via telephone)
Sheryl Ervin, Bio-Microbics, Inc. (via telephone)
Fred Vengrouskie, Presby Plastics, Inc. (via telephone)

CALL TO ORDER/ROLL CALL:

Meeting called to order at 8:30 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.

Public comment was provided by Fred Vengrouskie of Presby Plastics, Inc. Mr. Vengrouskie asked that his company affiliation on the May 18, 2016 TGC minutes be adjusted to Presby Plastics, Inc. from Presby Environmental, Inc. Mr. Vengrouskie also asked that the record on page 7 of the minutes be adjusted to reflect that Dick Bachelder of Infiltrator Systems, Inc. be amended to include his statement that their ATL product tested with 6 inches of sand below the pipe and loaded at 2.1 gallons/linear foot exceeded NSF Standard 40 performance requirements

but that Mr. Bachelder couldn't tell how long their product would perform at that loading rate. Tyler Fortunati made the requested amendments to the minutes.

Mr. Vengrouski also submitted written comments to Tyler Fortunati prior to the August 18, 2016 TGC meeting on various TGM sections (see **Appendix A**). Mr. Vengrouskie commented on the following TGM sections:

- Section 1.4.2.4 Proprietary Wastewater Treatment Product Approval Policy – Mr. Vengrouski believes the current language is confusing and can be misinterpreted regarding the NSF-tested products. The recommendation is that the section be reworded to reflect that an NSF 40 report is necessary to obtain separation reductions to limiting layers and a NSF 245 report is required to obtain the same TN reduction as the recirculating gravel filter.
- Section 2.2.4.2.2 Drainfield Design Requirements for a Reduced Separation Distance to Surface Water – Mr. Vengrouski takes issue with drainfields being required to be pressurized to receive the reduced separation distance to surface water and feels this should be based on the quality of effluent discharging to the system and not the method of disposal. Mr. Vengrouski would like to see this changed to secondary treatment standards instead of pressurization.
- 3.2.4 Drainfields - Mr. Vengrouski feels the term pressure-dosed restricts innovative approaches to wastewater disposal for systems larger than 1,500 square feet. Mr. Vengrouski would like to see a broader allowance for wastewater distribution in these systems.
- 4.19.2 Approval Conditions - Mr. Vengrouski believes the term pressure distribution is again restrictive of methods to distribute wastewater and would like to see this replaced with a broader allowance.

Dale Peck asked what Mr. Vengrouski's alternative to pressure distribution would be. Mr. Vengrouski stated that they would recommend uniform distribution using different technologies but could not specify a specific manufacturer due to a conflict of interest. The committee held discussion on Mr. Vengrouski's comments. The committee decided that they needed more information from Mr. Vengrouski before acting on his comments.

MEETING MINUTES:

May 18, 2016 Draft TGC Meeting Minutes: Review, Amend, or Approve

The only public comments received were from Fred Vengrouski during the public comment period of this meeting and were addressed at that time. The minutes were reviewed by the committee.

Motion: Bob Erickson moved to approve the minutes as amended.

Second: Mike Reno.

Voice Vote: Motion carried unanimously.

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

OLD BUSINESS/FINAL REVIEW

4.23.1 In-Trench Sand Filter Description

No public comment was received on this section. The committee had no questions or comments.

Motion: Dale Peck moved that the TGC recommend final approval of Section 4.23.1 In-Trench Sand Filter Description to DEQ as presented.

Second: Joe Canning.

Voice Vote: Motion carried unanimously.

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

4.24.2 Sand Mound Approval Conditions

No public comment was received on this section. The committee had no questions or comments.

Motion: Joe Canning moved that the TGC recommend final approval to DEQ for Section 4.24.2 Sand Mound Approval Conditions as presented.

Second: Dale Peck.

Voice Vote: Motion carried unanimously.

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

3.3.1 Letter of Intended Use and 3.3.2 Empirical Wastewater Flow Data

No public comment was received on this section. Dale Peck requested that the sub-bullets for each list be consistent so users understand those are sub-bullets of the previous bullet point. Tyler Fortunati made those changes.

Motion: Dale Peck moved that the TGC recommend final approval to DEQ for Section 3.3.1 Letter of Intended Use and 3.3.2 Empirical Wastewater Flow Data as amended.

Second: Mike Reno.

Voice Vote: Motion carried unanimously.

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

4.15 Incinerator Toilets

No public comment was received on this section. Tyler Fortunati reminded the committee that these changes were made to address the EcoJohn product approval made at the last meeting. Bob Erickson questioned the note contained in the design requirements section

and whether it is just a notification or a requirement. Tyler Fortunati clarified that it is just a notification and contained no requirements. The committee decided to leave the note in that location.

Motion: Mike Reno moved that the TGC recommend final approval to DEQ for Section 4.15 Incinerator Toilets as proposed.

Second: Joe Canning.

Voice Vote: Motion carried unanimously.

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

1.9 Managed Operation, Maintenance, and Monitoring

Written public comment was received from the Idaho Conservation League (ICL) on this section (see **Appendix G**). ICL believes that operation, maintenance, and monitoring should be at the discretion of the permitting entity and not the DEQ Director as stated in the guidance. ICL also requested that proposed stricken language from section 4.8.3 regarding protection of public health and the environment be left in the new guidance. ICL also requested that the language in section 1.9.2 item 6 be changed from may to shall regarding total nitrogen testing to protect sensitive areas.

The committee agreed to add the language concerning protection of public health and the environment back into the new guidance. The committee did not feel the other changes recommended by ICL warranted any changes to the proposed guidance.

Motion: Dale Peck moved that the TGC recommend final approval to DEQ for Section 1.9 Managed Operation, Maintenance, and Monitoring as amended.

Second: Jason Holm.

Voice Vote: Motion carried unanimously.

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

4.8 Extended Treatment Package System

No public comment was received on this section. Bob Erickson asked for clarification as to whether the flow charts would remain in this section or be moved to section 1.9. Tyler Fortunati stated that they were moved to section 1.9.

Motion: Dale Peck moved that the TGC recommend final approval to DEQ for Section 4.8 Extended Treatment Package System as proposed.

Second: Mike Reno.

Voice Vote: Motion carried unanimously.

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

4.5 Drip Distribution System

Written public comment was received from the Idaho Conservation League (ICL) on this section (see **Appendix G**). ICL requested that section 4.5.3.1 item 3.d be amended to require that drip tubing and emitter spacing be reduced in lower permeability soils instead of making it optional. The committee held discussion on tubing spacing in low permeability soils and decided to leave the guidance as a recommendation. ICL also questioned section 4.5.3.1 item 5 regarding flushable and nonflushable filters and if the stipulation in the guidance is necessary since both filter types are acceptable. The committee held discussion on this topic and decided to leave the guidance as proposed by DEQ.

The committee also held discussion on the tubing network for noncontinuous flush systems. Dale Peck requested that some interval for flushing be specified for review purposes. The committee decided to require that flushing on noncontinuous flush drip distribution systems occur every two weeks.

Bob Erickson made a minor editing suggestion to amend the word grey to gray in section 4.5.1 for consistency. Tyler Fortunati made the requested edit.

Motion: Dale Peck moved that the TGC recommend final approval to DEQ for Section 4.5 Drip Distribution System as amended.

Second: Bob Erickson.

Voice Vote: Motion carried unanimously.

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

9:35 a.m. Break

9:50 a.m. Meeting Resumed

NEW BUSINESS/DRAFT REVIEW

4.4.2 Composting Toilet Approval Conditions

The committee had no comments on the proposed guidance changes.

Motion: Mike Reno moved that the TGC recommend preliminary approval to DEQ for Section 4.4.2 Composting Toilet Approval Conditions as proposed.

Second: Dale Peck.

Voice Vote: Motion carried unanimously, section will be posted for public comment.

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

4.13 Grey Water System

Dale Peck inquired as to whether there was a way to not require a full-sized drainfield for vacation homes that install a gray water system. Tyler Fortunati expressed concern about making an exception in sizing for this type of systems but not other subsurface systems. The committee discussed this proposition but decided not to make any changes.
The committee discussed whether or not they could potentially reduce the separation distance to surface water due to the limited sources of gray water in the revised guidance.

Action Item: DEQ will examine research to evaluate if the separation distance to surface water could be reduced due to lower bacteria/virus and nutrient concentrations in the gray water when compared to typical septic tank effluent. DEQ will deliver a research summary on this request at a future TGC meeting.

Motion: Mike Reno moved that the TGC recommend preliminary approval to DEQ for Section 4.13 Gray Water System as proposed.

Second: Jason Holm.

Voice Vote: Motion carried unanimously, section will be posted for public comment.

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

Lower Boise Watershed Septic Implementation Plan Update

Graham Freeman, Watershed Coordinator, from DEQ's Boise Regional Office provided the committee an update on the Lower Boise Watershed's draft Septic Implementation Plan (see **Appendix M**). The committee held discussion on the presentation and draft proposal to determine how to address a portion of the Lower Boise TMDL phosphorous issue with nonpoint source control or credits/trading.

2.1.2 Soil Design Groups and Subgroups

The committee had no comments on the proposed guidance changes.

Motion: Mike Reno moved that the TGC recommend preliminary approval to DEQ for section 2.1.2 Soil Design Groups and Subgroups as proposed.

Second: Bob Erickson.

Voice Vote: Motion carried unanimously, section will be posted for public comment.

See **Appendix N** 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 November 3, 2016 at the Idaho Department of Environmental Quality's state office.

Motion: Mike Reno moved to adjourn the meeting.

Second: Joe Canning.

Voice Vote: Motion carried unanimously.

The meeting adjourned at 11:00 a.m.

TGC Parking Lot.
This is a running list of issues requested to be prepared and presented at a future TGC meeting.

- Add individual section and title callouts into TGM header on each page.
- Research summary on reduced separation to surface water for the gray water system.

List of Appendices from the February 4, 2016 Meeting

Appendix A:
Copy of written public comments submitted by Fred Vengrouskie on behalf of Presby Plastics, Inc.

Appendix B:
May 18, 2016 TGC Meeting Minutes
Status: Final

Appendix C:
4.23.1 In-Trench Sand Filter Description
Status: Final

Appendix D:
4.24.2 Sand Mound Approval Conditions
Status: Final

Appendix E:
3.3.1 Letter of Intended Use and 3.3.2 Empirical Wastewater Flow Data
Status: Final

Appendix F:
4.15 Incinerator Toilets
Status: Final

Appendix G:
Copy of written public comments submitted by Austin Hopkins on behalf of the Idaho Conservation League

Appendix H:
1.9 Managed Operation, Maintenance, and Monitoring
Status: Final

Appendix I:
4.8 Extended Treatment Package System
Status: Final

Appendix J:
4.5 Drip Distribution System
Status: Final

Appendix K:
4.4.2 Composting Toilet Approval Conditions
Status: Preliminary, out for public comment

Appendix L:
4.13 Grey Water System
Status: Preliminary, out for public comment

Appendix M:
Copy of presentation by Graham Freeman on the Lower Boise Watershed Septic Implementation Plan

Appendix N:
2.1.2 Soil Design Groups and Subgroups
Status: Preliminary, out for public comment

Appendix A

Copy of written public comments
submitted by
Fred Vengrouskie on behalf of Presby Plastics, Inc.

Rule: 1.4.2.4 Proprietary Wastewater Treatment Product Approval Policy

Response: Clarify the policy language. Otherwise if you're not reading closely, the way the sentence is written one could interpret it as the NSF-tested product must, in its NSF report, obtain the reduction and separation distances. It appears that the intent is that by showing your NSF report, your product is now given the benefit of those reductions/separation distances that the intermittent sand/recirculating gravel filters get. The policy could be reworded by switching the order of ideas in the sentence, so "For the product to obtain the same drainfield sizing reduction and separation distance reduction to limiting layers as intermittent sand or recirculating gravel filters, the NSF/ANSI Standard 40 report is required" and "For the product to obtain the same TN reduction as the recirculating gravel filter, the NSF/ANSI Standard 245 report is required."

Rule: 2.2.4.2.2 Drainfield Design Requirements for a Reduced Separation Distance to Surface Water

A drainfield proposed with a reduced separation distance to surface water as allowed under this variance procedure must meet the following minimum design requirements:
The drainfield shall be pressurized and designed based on section 4.19 of this manual.
Response: Separation distance reductions from surface waters and restrictive layers should be based on the quality of effluent entering the ground not the method of disposal. We suggest replacing the "shall be pressurized" language with "shall be treated to secondary standards".

3.2.4 Drainfields

Drainfields larger than 1,500 ft2 trench area bottom are prohibited from being constructed as a standard (gravity) drainfield. Drainfields exceeding 1,500 ft2 in total trench bottom area must be pressure-dosed (section 4.19).
Response: The term "pressure-dosed" is being used to restrict innovative approaches to wastewater disposal. Remove the "pressure-dosed" reference and replace with broader language that does not restrict the use of emerging and innovative methods of wastewater distribution. The language used should allow for other options beside just pressure-dosed disposal.

4.19.2 Approval Conditions

Pressure distribution shall be used in drainfields that exceed 1,500 ft2 in total trench bottom and large soil absorption systems.

Response: The term "pressure-distribution" is being used to restrict innovative approaches to wastewater disposal. Remove the "pressure-distribution" reference and replace with broader language that does not restrict the use of emerging and innovative methods of wastewater distribution. The language used should allow for other options beside just pressure-distribution.

Appendix B

Technical Guidance Committee Meeting

Draft Minutes

Wednesday, May 18, 2016

Conference Room B
Department of Environmental Quality
1410 North 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, SCPHD
Dale Peck, PE, Environmental & Health Protection Division Administrator, PHD
Michael Reno, REHS, Environmental Health Supervisor, CDHD

GUESTS:

Larry Waters, PE, Lead Wastewater Program Engineer, DEQ
Janelle Larson, Administrative Assistant, DEQ
Ryan Spiers, Alternative Wastewater Systems, LLC
Dick Bachelder, Infiltrator Systems, Inc.
Allen Worst, R.C. Worst & Company, Inc.
PaRee Godsill, Everlasting Extended Treatment
Rob Howarth, Environmental Health Director, CDHD
Sheryl Ervin, Bio-Microbics, Inc. (via telephone)
Bill Evans, Presby Environmental, Inc. (via telephone)
Kevin Sherman, Presby Environmental, Inc. (via telephone)
Don Prince, Presby Environmental, Inc. (via telephone)
Christina Connor-Cerezo, Presby Environmental, Inc. (via telephone)
Dennis Fogg, Presby Environmental, Inc. (via telephone)
Lee Rashkin, Presby Environmental, Inc. (via telephone)
Fred Vengrouskie, Presby Plastics, Inc. (via telephone)
Stefan Johansson, EcoJohn (via telephone)

CALL TO ORDER/ROLL CALL:

Meeting called to order at 8:34 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.

No public comments were submitted during the allotted agenda timeframe.

MEETING MINUTES:

February 4, 2016 Draft TGC Meeting Minutes: Review, Amend, or Approve

No public comment was received on the draft minutes. The minutes were reviewed by the committee.

Motion: Dale Peck moved to approve the minutes as presented.

Second: Bob Erickson.

Voice Vote: Motion carried unanimously.

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

OLD BUSINESS/FINAL REVIEW

4.19.3.1 Piping

No public comment was received on this section. The committee had no questions or comments.

Motion: Bob Erickson moved that the TGC recommend final approval of Section 4.19.3.1 Piping to DEQ as presented.

Second: Mike Reno.

Voice Vote: Motion carried unanimously.

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

2.3 Standard Percolation Test

No public comment was received on this section. The committee had no questions or comments.

Motion: Mike Reno moved that the TGC recommend final approval to DEQ for Section 2.3 Standard Percolation Test as presented.

Second: Bob Erickson.

Voice Vote: Motion carried unanimously.

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

2.1 Soils Texture and Group Determinations

No public comment was received on this section. The committee had no questions or comments.

Motion: Joe Canning moved that the TGC recommend final approval to DEQ for Section 2.1 Soils Texture and Group Determinations as presented.

Second: Bob Erickson.

Voice Vote: Motion carried unanimously.

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

2.2.4.2 Reduction in Separation Distance to Surface Water with a Variance

Tyler Fortunati presented written public comment received from Austin Hopkins on behalf of the Idaho Conservation League. Mr. Hopkins referenced a stricken portion of the guidance that read "…a variance supported by models…" from section 2.2.4.2 and was proposed to be replaced with terms such as "assessment" and "evaluation". Mr. Hopkins expressed concern that these terms could be interpreted subjectively and lead applicants to not understand the full extent of work necessary to receive a reduced separation distance variance. Mr. Hopkins requested that the last sentence of section 2.2.4.2 include the term "…and supported by model outputs…". Mr. Hopkins also requested that a fourth bullet point be added to section 2.2.4.2.2 that stipulates reservation of a full-size replacement area is required.

Tyler Fortunati explained to the committee that DEQ had addressed Mr. Hopkins' requests in the draft version of the document presented to them today and included in the meeting agenda.

Dale Peck expressed concern regarding the criteria that the health district must evaluate to approve or disapprove a variance request and interpretation of the associated models. Mr. Peck stated that any challenge to the variance approval/disapproval would be filed with the health districts and he wasn't comfortable with defending model interpretations. Tyler Fortunati clarified that the intent is for DEQ to perform the review of the nutrient pathogen evaluations and phosphorous models, not the health districts. Mr. Peck requested that clarification be added to the guidance that DEQ would issue a recommendation to approved/disapprove based on model outcomes. Clarification was included in the guidance that DEQ would issue a written recommendation for approval if model outputs are acceptable.

Motion: Mike Reno moved that the TGC recommend final approval to DEQ for Section 2.2.4.2 Reduction in Separation Distance to Surface Water with a Variance as amended.

Second: Joe Canning.

Voice Vote: Motion carried unanimously.

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

4.21 Recirculating Gravel Filter

No public comment was received on this section.

The committee had discussions on monitoring gravel filters. Mike Reno stated that gravel filters weren't intended to undergo monitoring since they do not get reductions <27 mg/L of total nitrogen. Tyler Fortunati amended the guidance to reflect this intent and verify that only operation and maintenance is required for these systems moving forward.

Motion: Joe Canning moved that the TGC recommend final approval to DEQ for Section 4.21 Recirculating Gravel Filter as amended.

Second: Bob Erickson.

Voice Vote: Motion carried unanimously.

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

NEW BUSINESS/DRAFT REVIEW

4.23.1 In-Trench Sand Filter Description

The committee discussed the fact that the additions are to provide clarification on permitting allowances for in-trench sand filters. Joe Canning requested the addition be its own paragraph.

Motion: Dale Peck moved that the TGC recommend preliminary approval to DEQ for Section 4.23.1 In-Trench Sand Filter Description as amended.

Second: Mike Reno.

Voice Vote: Motion carried unanimously, section will be posted for public comment.

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

4.5 Drip Distribution

Tyler Fortunati read public comment received from Allen Worst regarding various portions of the drip distribution guidance. Mr. Worst questioned the need for a maximum lateral length. The committee amended the guidance to recommend that equal discharge volumes be achieved across lateral emitters. Mr. Worst also had several concerns regarding the requirement for filters and flushing. The committee made disposable filters acceptable and clarified that flushing of filters is recommended for flushing type filters. Mr. Worst questioned the removal of non-pressure compensating emitters. The committee feels the use of non-pressure compensating emitters should be restricted to ensure a more reliable system operation and discharge with variable pressures throughout a drip distribution system. Mr. Worst requested that basket screens not be required in a

dosing chamber for flush return purposes. The committee agreed and removed this requirement. Mr. Worst also had concerns that the emitter rate limit of 1.0 gallon per hour would eliminate certain manufacturer's products from use. The committee increased the rate to 1.1 gallon per hour to ensure more products are available for use. Mr. Worst felt it would be beneficial to add a pressure gauge on the return manifold for use with pressure compensating emitters and that flexible PVC piping should be recommended for use in connecting drip laterals to supply and return manifolds. The committee agreed and made these revisions.

The committee requested the Tyler Fortunati have a pressure gauge added to the portion of Figure 4-9 labeled "to drip field".

9:52 a.m. Break

10:02 a.m. Meeting Resumed

Motion: Joe Canning moved that the TGC recommend preliminary approval to DEQ for Section 4.5 Drip Distribution as amended.

Second: Dale Peck.

Voice Vote: Motion carried unanimously, section will be posted for public comment.

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

4.8 Extended Treatment Package System

Tyler Fortunati provided the committee an update on the negotiated rulemaking status for service provider certifications being added to IDAPA 58.01.03. Mr. Fortunati informed the committee that DEQ's Board did vote to adopt the rule with a minor revision related that allows manufacturers to train a reasonable number of service providers for their product. Mr. Fortunati informed the committee that the reasonable number would be determined by DEQ on a case-by-case basis. Mr. Fortunati told the committee the next step is for the rule to be presented to the 2017 legislature for their approval.

The committee questioned the need to move the operation and maintenance requirements out of the extended treatment package system guidance at this time. Mr. Fortunati stated that he is setting up the guidance for the upcoming changes related to extended treatment package system product approval tiers, the potential service provider changes, and the inclusion of recirculating gravel filters into the managed operation and maintenance program. Mr. Fortunati stated that he felt it would be best to begin those changes now.

Motion: Joe Canning moved that the TGC recommend preliminary approval to DEQ for section 4.8 Extended Treatment Package System as presented.

Second: Bob Erickson.

Voice Vote: Motion carried unanimously, section will be posted for public comment.

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

1.9 Managed Operation, Maintenance, and Monitoring

The committee requested that the document be edited to show the text that was moved from section 4.8 Extended Treatment Package System to this proposed section in green and new additions in red for easier review. Tyler Fortunati stated that he would provide this format in the meeting minutes and for public comment.

Dale Peck stated that for applicability to the recirculating gravel filters the term service provider needed to be added after operation and maintenance entity throughout the section. Mr. Peck also stated that upon approval of the service provider rules then the committee only has to remove the operation and maintenance term in the future. Tyler Fortunati stated that this would be included in the meeting minutes and for public comment.

Motion: Mike Reno moved that the TGC recommend preliminary approval to DEQ for section 1.9 Managed Operation, Maintenance, and Monitoring as proposed to be amended.

Second: Joe Canning.

Voice Vote: Motion carried unanimously, section will be posted for public comment.

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

4.24.2 Sand Mound Approval Conditions

Joe Canning requested that the words daily and design be changed for one-another in the edited design item.

Motion: Joe Canning moved that the TGC recommend preliminary approval to DEQ for section 4.24.2 Sand Mound Approval Conditions as amended.

Second: Dale Peck.

Voice Vote: Motion carried unanimously, section will be posted for public comment.

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

3.3.1 Letter of Intended Use and 3.3.2 Empirical Wastewater Flow Data

The committee reviewed the proposed amendments and had no comments or revisions.

Motion: Joe Canning moved that the TGC recommend preliminary approval to DEQ for section 3.3.1 Letter of Intended Use and 3.3.2 Empirical Wastewater Flow Data as proposed.

Second: Dale Peck.

Voice Vote: Motion carried unanimously, section will be posted for public comment.

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

4.15 Incinerator Toilets

The committee held general discussion on the proposed changes to this guidance. The committee discussed that the water source would be restricted to storage tanks that are not automatically filled by use demand within the dwelling. The owner would have to physically refill the tank using a hose or other mechanism. The committee also discussed holding tank requirements for the incinerator. There were no revisions made by the committee.

Motion: Bob Erickson moved that the TGC recommend preliminary approval to DEQ for section 4.15 Incinerator Toilets as proposed.

Second: Mike Reno.

Voice Vote: Motion carried unanimously, section will be posted for public comment.

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

11:30 a.m. Lunch

1:00 p.m. Meeting Resumed

Presby Environmental, Inc. Advanced Enviro-Septic Treatment System

Tyler Fortunati informed the committee that written public comment was received from Dick Bachelder of Infiltrator Systems, Inc. Tyler Fortunati informed the committee that Mr. Bachelder would like to speak to the committee in-person in lieu of Mr. Fortunati reading his letter into the public comment record on the Presby product submittal and that after Mr. Bachelder's public comment the committee may ask him questions and then the Presby representatives would have a chance to respond (see **Appendix N** for Mr. Bachelder's written comments).

Mr. Bachelder stated that he was speaking to the committee on behalf of Infiltrator Systems, Inc., Bio-Microbics, Inc., and Orenco Systems, Inc. (companies). Mr. Bachelder stated that the companies would like to caution the committee in their review and approval of new technologies. The companies would like the committee to not only consider treatment performance of new technologies but also the long term hydraulic acceptance of those technologies. Mr. Bachelder informed the committee that Infiltrator

Systems, Inc. makes a similar pre-treatment product as Presby that is also certified to NSF/ANSI Standard 40. Mr. Bachelder cautioned the committee on their use of NSF/ANSI Standard 40 when considering the hydraulic dispersal of the product. Mr. Bachelder stated that when their ATL product was tested with 6 inches of sand beneath the piping and loaded at 2.1 gallons per linear foot the product exceeded NSF 40 performance standards but that Mr. Bachelder could not verify how long their ATL product would perform at that loading rate. Mr. Bachelder referenced a research paper that was included in his written letter to DEQ titled *Lateral Movement of Water in the Capillary Fringe Under Drainfields* by Amoozegar, Niewoehner, and Lindbo. Mr. Bachelder also stated that the companies were concerned with the proposed minimum piping lengths of 30 lineal feet per bedroom that have been recommended by Presby Environmental, Inc. Mr. Bachelder encouraged the committee to look for field performance evaluation at that piping length. Mr. Bachelder would like to see the Advanced Enviro-Septic piping required across the entire infiltrative surface to ensure that there is distribution across the infiltrative surface. Mr. Bachelder provided the committee a description of pipe spacing and effluent movement as currently proposed with six foot on center separation and questioned how long that design will last in the field. The committee had no questions for Mr. Bachelder.

Lee Rashkin from Presby Environmental, Inc. responded to Mr. Bachelder's comments and stated that he feels the majority of the companies' concerns and questions had been addressed in the most recent submittal of the Presby design manual. Mr. Rashkin stated that Presby is willing to install their product at 50 lineal feet per bedroom and stated as much in a letter provided to Idaho DEQ. Mr. Rashkin stated to the committee that Mr. Bachelder represents their competitors and they are trying to keep their product out of the Idaho market and the comments provided are disingenuous. Mr. Rashkin stated that the Presby products have been on the market for 20 years and have a good track record of performance and experience to know how the product will function.

Mr. Bachelder commented to the committee that his presentation would be disingenuous if Infiltrator Systems, Inc. was asking the committee to approve their similar product at 3 gallons per linear foot of piping.

Mr. Rashkin stated that the Presby Environmental, Inc. product is different than the Infiltrator Systems, Inc. products and that the Presby product had been tested at 3 gallons per linear foot.

Mike Reno stated that the minimum sizing for gravelless system components in Idaho is based on the size of the reduced trench. Mr. Reno stated that he felt the committee needed to be consistent with other products.

Lee Rashkin stated that the loading rate of 3 gallons per linear foot was for the treatment component of their system and that Idaho's secondary application rate is used to determine the dispersal system of their product.

Mike Reno stated that a 1,000 square foot drainfield may end up with one pipe throughout it regardless of the minimum piping requirement proposed by Presby.

Tyler Fortunati stated that between the last meeting and the current meeting he had reviewed Presby's current design and installation manual and provided the company a letter outlining his concerns regarding minimum pipe sizing for effluent treatment and maximum spacing between pipes based on effluent dispersal concerns and effluent storage concerns. Mr. Fortunati stated that while the Presby product contains similarities to other product categories in Idaho that their submittal didn't need to fit neatly into the gravelless system design or intermittent sand filter design since this is a proprietary product. Mr. Fortunati stated that the product should have to meet some minimum requirements compared to other standard and alternative systems though and that he felt one of those requirements were effluent storage comparable to a standard rock and pipe system. Mr. Fortunati stated that his recommendation of a maximum pipe spacing of three foot on-center provided effluent storage that exceeds the storage capacity of a similar sized gravel and pipe trench and was comparable to gravelless chamber and piping product storage capacities that have been previously approved by the committee. Mr. Fortunati also stated that he recommended a minimum piping length of 50 feet per bedroom to be comparable to the other sizing requirements across the nation. Mr. Fortunati stated that regardless he felt the minimum disposal area and maximum pipe spacing would more often than not required the minimum pipe length to be exceeded. Mr. Fortunati also stated that the pipe is required to be installed from the front to back of the bed so distribution occurred along the entire length of the distribution area.

Mr. Reno stated that he would like to keep things simple and consistent when it comes to system design with pipe across the entire system side to side and front to back.

Lee Rashkin stated that when the committee considers other packaged treatment system technologies that they don't dictate the media or membrane sizing within that package and he felt Presby's product should be treated similarly.

Mr. Fortunati stated that while he didn't feel the Presby product needed to meet all of the minimum requirements of other alternative treatment system design requirements he felt the product did need to be evaluated for protection of public health and the environment as well as long-term performance for the consumer. Mr. Fortunati also stated that this product is different than other package treatment plants where the treatment system is also providing the effluent dispersal across the infiltrative surface. Based on this fact Mr. Fortunati felt that it is important for the committee to consider pipe sizing and dispersal layout.

Dale Peck stated that he felt the system design parameters had been answered and he would like to discuss the field testing information. Presby Environmental, Inc. representatives provided a summary of treatment system performance under the BNQ testing protocols in Canada and that they exceeded the treatment standards for NSF/ANSI Standard 40. Mr. Peck inquired how much sand was used in the BNQ testing. Presby

Environmental, Inc. representatives stated there was 12 inches of sand used in the class II certification tests and 24 inches in the class III certification tests. Mr. Fortunati asked Presby to clarify that the sand depths in the BNQ testing was used to address total coliforms. Presby representatives verified the BNQ testing requires minimum coliform levels be met and that TSS and BOD are adequately addressed by the 6 inches of sand used in the NSF/ANSI testing.

The committee discussed their concern with only utilizing 6 inches of sand under the treatment/dispersal pipe. The committee came to a consensus that they were more comfortable utilizing 12 inches of sand under the entire system for long-term performance.
Tyler Fortunati provided the committee a summary of the system design elements they would like to see met which included:

- 50 lineal feet of Advanced Enviro-Septic piping per bedroom on residential installations or 2 gallons per linear foot for commercial installations. Pipe must be installed along entire length of distribution area for each pipe row.
- Pipe spacing minimum of 1.5 feet on-center and a maximum of 3 feet on-center.
- Sand installation depths of 12 inches below the piping and between outside piping and excavation sidewall, 6-24 inches between piping dependent upon pipe spacing, and 3 inches above the piping.
- Separation distances of 12 inches ground water and other fractured or porous limiting layers and 24 inches to impermeable limiting layers from the sand-soil interface.
- Minimum dispersal area requirements based on secondary treatment application rates.
- No required field testing or managed maintenance.

Motion: Dale Peck moved that the TGC recommend approval to DEQ for the Presby Environmental, Inc. Advanced Enviro-Septic Product upon DEQ receipt of a revised design and installation manual meeting the minimum requirements outlined by Tyler Fortunati.

Second: Bob Erickson.

Voice Vote: Motion carried unanimously.

Tyler Fortunati will provide Presby Environmental, Inc. a letter outlining the revisions that must be made to the design and installation manual prior to approval from DEQ.

2:22 p.m. Break

2:27 p.m. Meeting Resumed

ECOJOHN Waste Combustion System

Tyler Fortunati stated that the committee had reviewed the submitted ECOJOHN Waste Combustion product materials that were submitted prior to the meeting. The committee

had also already reviewed and provided preliminary approval to revisions on the Incinerator Toilet guidance to allow this type of product to be approved. Mr. Fortunati outlined the restrictions for water supply to structures with this type of system installed and associated minimum holding tank sizes.

Dale Peck asked Stefan Johansson of ECOJOHN to describe a typical installation to the committee. Mr. Johansson provided a basic description of how the system can be installed and associated combustion capabilities of each unit.

Based on Mr. Johansson's description of incineration rates the committee opted to remove the sizing requirement for bedrooms and allow the property owner to select a unit based on incineration rates that met their needs. The incineration rate does not need to meet or exceed the standard daily design flow of the structure, but adequate storage capacity must be available to account for daily flows in excess of the maximum incineration rate.

Motion: Mike Reno moved that the TGC recommend approval to DEQ for the ECOJOHN Waste Combustion Series product as amended.

Second: Joe Canning.

Voice Vote: Motion carried unanimously.

See **Appendix O**. Tyler Fortunati will provide ECOJOHN an approval letter outlining the products design and installation allowances.

NEXT MEETING:

The next committee meeting is scheduled to be on August 18, 2016 at the Idaho Department of Environmental Quality's state office.

Motion: Mike Reno moved to adjourn the meeting.

Second: Bob Erickson.

Voice Vote: Motion carried unanimously.

The meeting adjourned at 3:02 p.m.

TGC Parking Lot.
This is a running list of issues requested to be prepared and presented at a future TGC meeting.

- Add individual section and title callouts into TGM header on each page.

List of Appendices from the February 4, 2016 Meeting

Appendix A:
February 4, 2016 TGC Meeting Minutes
Status: Final

Appendix B:
4.19.3.1
Status: Final

Appendix C:
2.3 Standard Percolation Test
Status: Final

Appendix D:
2.1 Soil Texture and Group Determinations
Status: Final

Appendix E:
2.2.4.2 Reduction in Separation Distance to Surface Water with a Variance
Status: Final

Appendix F:
4.21 Recirculating Gravel Filter
Status: Final

Appendix G:
4.23.1 In-Trench Sand Filter Description
Status: Preliminary, out for public comment

Appendix H:
4.5 Drip Distribution
Status: Preliminary, out for public comment

Appendix I:
4.8 Extended Treatment Package System
Status: Preliminary, out for public comment

Appendix J:
1.9 Managed Operation, Maintenance, and Monitoring
Status: Preliminary, out for public comment

Appendix K:
4.24.2 Sand Mound Approval Conditions
Status: Preliminary, out for public comment

Appendix L:
3.3.1 Letter of Intended Use and 3.3.2 Empirical Wastewater Flow Data
Status: Preliminary, out for public comment

Appendix M:
4.15 Incinerator Toilets
Status: Preliminary, out for public comment

Appendix N:
Written Public Comments from Infiltrator Systems, Inc, Bio-Microbics, Inc., and Orenco Systems, Inc. Regarding the Presby Environmental, Inc. Advanced Enviro-Septic Product Submittal

Appendix O:
5.6 Individual Wastewater Incinerator

Appendix C

4.23.1 Description

An in-trench sand filter is a standard trench or bed system receiving effluent by either gravity or low-pressure flow, under which is placed a filter of medium sand meeting the definitions provided in section 3.2.8.1.2. There are two classifications of an in-trench sand filter:

- Standard in-trench sand filter
- Enveloped in-trench sand filter

The standard design is typically used to excavate through impermeable or unsuitable soil layers down to suitable permeable soils. The standard design may also have clean pit run sand and gravel placed between the medium sand and the suitable permeable soils or ground water as long as minimum medium sand depths are used. A basic installer's permit may be used to install gravity flow in-trench sand filters that are not preceded by any complex alternative system components.

Standard in-trench sand filter drainfields may be installed at depths where the sidewalls of the drainfield are located in impermeable or unsuitable soil to address sites that cannot meet the requirements of IDAPA 58.01.03.008.02.b. Unsuitable soils must have application rates <0.2 GPD/ft^2 (Table 2-4). Unsuitable soils with application rates >1.2 GPD/ft^2 (Table 2-4) must utilize an enveloped in-trench sand filter design.

A modified design to the standard in-trench sand filter is known as the enveloped in-trench sand filter. Enveloped in-trench sand filters consist of a disposal trench with medium sand placed below and to the sides of the drainfield and are used for sites with native soils consisting of coarse to very coarse sand or gravel. The enveloped in-trench sand filter has three subcategories based on effluent distribution and treatment (section 4.23.3.2).
The term drainfield only applies to the aggregate as defined in IDAPA 58.01.03.008.08 or the gravelless trench components approved in section 5.7 of this manual. Medium sand and pit run may be installed deeper than 48 inches below grade as long as the drainfield maintains a maximum installation depth of 48 inches below grade in compliance with IDAPA 58.01.03.008.04. Minimum installation depths must meet the capping fill trench requirements as outlined in section 4.3.

Appendix D

4.24.2 Approval Conditions

1. Effective soil depth to limiting layers may vary depending upon thickness of filter sand beneath the absorption bed:
   a. If 12 inches of filter sand is placed beneath the absorption bed, then Table 4-24 lists the minimum depth of natural soil to the limiting layer.
   b. If 24 inches of filter sand is placed beneath the absorption bed, then Table 4-22 in Section 4.22 "Intermittent Sand Filter," identifies the effective soil depth to limiting layers.
2. The soil application rate used in the sand mound design is based on the most restrictive soil layer within the soil profile's effective soil depth as determined by approval condition 1 except that the effective sizing depth shall not be less than 18 inches.
3. Table 4-25 shows the maximum slope of natural ground, listed by soil design group.
4. Sand mound must not be installed in flood ways, areas with large trees and boulders, in concave slopes, at slope bases, or in depressions.
5. Minimum pretreatment of sewage before disposal to the mound must be a septic tank sized according to IDAPA 58.01.03.007.07.
6. The maximum daily wastewater flow to any mound or absorption bed cell must be equal to or less than 1,500 GPD.
7. Multiple mounds, or absorption bed cells, may be used to satisfy design requirements for systems larger than 1,500 GPD.
   a. Appropriate valving should be used in the design to ensure that flows are evenly divided between all of the mounds or absorption bed cells.
   b. Valving should be accessible from grade and insulated from freezing.
8. Design flow rate for the sand mound must be 1.5 times the wastewater daily flow required by IDAPA 58.01.03.007.08 or as determined in accordance with section 3.3 of this manual and is only used in designing the absorption bed cell and medium sand fill.
9. Pressure distribution system and associated component design shall conform to section 4.19 of this manual.

Appendix E

3.3.1 Letter of Intended Use

As part of the permit application, the applicant must provide information regarding the type of establishment served (IDAPA 58.01.03.005.04.c), nature and quantity of wastewater the system will receive (IDAPA 58.01.03.005.04.j), and documentation that substantiates that the proposed system will comply with IDAPA 58.01.03 (IDAPA 58.01.03.005.04.o). This information should be included in a Letter of Intended Use that contains the following minimum elements:

- Description of the commercial/industrial processes that are occurring within the facility.
  - Type of business that will be discharging to the subsurface sewage disposal system and the processes involved in its operations.
  - Maximum number of employees and customers within the facility at any given time now or in the future if expansion is to occur later.
  - Estimated daily wastewater flow that may be produced by the domestic, commercial, and industrial uses occurring within the facility. Estimated daily wastewater flow projections must either be supported by IDAPA 58.01.03.007.08 or follow the guidance regarding empirical wastewater flow data as provided in section 3.3.2.
- Completed copy of the ~~nondomestic wastewater application checklist~~subsurface sewage disposal permit application supplement for nondomestic wastewater. Characteristics of the nondomestic wastewater should be supported with adequate documentation.

3.3.2 Empirical Wastewater Flow Data

Empirical wastewater flow data is collected from facilities similar to the one proposed in the subsurface sewage disposal permit application. Wastewater flow data is typically collected from facilities connected to a public water system or other water source that can provide water meter data for daily, weekly, or monthly water use by the facility. The daily wastewater flow is estimated based upon the potable water used by the facility as determined by water meter data. The data obtained often needs to be converted into GPD as most utilities and public water systems do not meter water by the gallon. The volume of water provided in a water usage history should be verified for the correct meter units.

Evaluated facilities should be located within Idaho if possible and may be from any region within the state. Unique facilities that may not be found elsewhere in the state may use similar facilities from other states. Facilities should be able to be compared to the proposed facility and capable of assigning a daily wastewater flow estimate on a per unit basis. Units may include employees, meals, visitors, or any other quantifiable unit applicable to the proposed facility. If the proposed facility will produce nondomestic wastewater (i.e., wastewater from sources other than hand sinks, toilets, showers/bathtubs, noncommercial kitchens, and washing machines), the wastewater data must also include characterization of the proposed commercial or industrial wastewater to be discharged to the subsurface sewage disposal system in addition to the daily wastewater flow data.

The time of year that water usage data is collected and evaluated should represent the proposed facility's peak usage time frame. If possible, DEQ recommends that water consumption data devoid of irrigation flows be provided. To accomplish this, locate facilities that do not have landscaping to irrigate or eliminate the irrigation season from the evaluation. Eliminating the irrigation season from the water data evaluation should only be used for facilities that do not have peak facility use occur over this time frame. Water usage data that does not include the irrigation season typically occurs from November through February.

Adequate documentation of daily wastewater flows may vary on a case-by-case basis. The following list of water usage data will be considered adequate for most circumstances:

- Water usage data from a minimum of three facilities of similar operation should be provided for review.
    - Facilities should be connected to a public or private water system for which monthly water use records are kept that can be readily converted to average GPD flows. Water usage data should be provided in writing by the water system operator.
    - Statistics should be provided on each facility's operation that are pertinent to the wastewater flow estimation (e.g., number of employees, number of children attending a childcare, number of meals served per day for restaurants, and occupancy per day of a hotel or RV park). Statistical data for each facility should be provided in writing by the facility providing the data.
- Water usage data should occur over an adequate time frame to provide data that is applicable to the design flows for subsurface sewage disposal permit issuance.
- Wastewater characterization for nondomestic wastewater sources (including the ~~nondomestic wastewater application checklist~~subsurface sewage disposal permit application supplement for nondomestic wastewater found on DEQ's website).
- Other facility specific data the Director feels is reasonable and necessary for daily wastewater flow estimation evaluation.

The Director shall evaluate the data provided to determine an acceptable flow. If the Director determines that any data provided is inadequate for assessment, the facility that the data applies to will not be included in the evaluation process. The provision of empirical wastewater flow data in lieu of using the wastewater flows provided in IDAPA 58.01.03.007.08 does not guarantee that the daily wastewater flow projection will be less than what is provided by IDAPA 58.01.03.007.08.

Appendix F

4.15 Individual Wastewater Incinerator ~~Toilets~~

Revision: ~~December 10, 2014~~August 18, 2016
Installer registration permit: Property owner or standard and basic
Licensed professional engineer required: No

4.15.1 Description

Housed within a dwelling or other structure, individual wastewater incinerators ~~toilets~~ store and incinerate ~~nonwater-carried human urine and feces~~wastewater and/or blackwaste. Incineration is facilitated by petroleum fuels or electricity.

4.15.2 Approval Conditions

1. Water under pressure shall not serve the dwelling unless:
   a. A public sewer connection is ~~available~~provided to the dwelling, or
   b. A full-size subsurface sewage disposal system is installed, or~~.~~
   c. An incinerator capable of combusting the daily design flow for the dwelling's sewage blackwater and grey water is installed.
      i. Water under pressure for dwellings served by an incinerator is limited to storage tanks that are not continuously or automatically filled by natural sources (e.g., springs) or mechanical sources (e.g., pumped wells, surface water).
      ii. Daily design flow shall be per IDAPA 58.01.03.007.08, and
      iii. Low flow water fixtures shall be installed throughout the dwelling, and
      iv. The installation permit shall include a statement that: *"Incinerator must be maintained and operable at all times the dwelling is occupied until such time that the dwelling is connected to an approved wastewater disposal system. The wastewater holding tank is only approved for temporary storage of wastewater prior to discharge to the incinerator and shall not be used as a permanent pump-and-haul holding tank."*
2. Non-water carried ~~I~~incinerator ~~toilets~~:
   a. May be located in structures other than a dwelling if the structure is constructed to meet the requirements of a pit privy building (section 4.17.4).
   b. Units are restricted to disposal of human feces and urine and shall be installed and operated according to the manufacturer's recommendations.
3. Water carried incinerator:
   a. Wastewater holding tanks shall have a volume two times the capacity of the water supply tank and shall not be less than two times the maximum incineration volume of the installed unit.
   b. Wastewater holding tank shall not be used as a permanent holding tank that necessitates pumping and hauling of the wastewater by a pumper truck.

4. Individual wastewater ~~I~~incinerator ~~toilet~~ models must be approved by DEQ before installation (section 5.6).
5. Incinerators shall be installed according to the manufacturer's specifications.

~~5~~6. Proper electrical, plumbing, and gas line permits must be obtained through the Idaho Division of Building Safety or any other applicable regulatory agency for the area the ~~toilet~~ incinerator is installed within.

4.15.3 Design Requirements

1. All materials used in construction of an incinerator toilet must be durable and easily cleaned. Styrene rubber, PVC, and fiberglass are examples of acceptable materials for toilet components.
2. The combustion area and flue must be constructed of heat-resistant, noncorrosive metals.
3. The design must demonstrate adequate resistance to internal and external stresses.
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.
5. For standard dwellings, the incinerator or toilet unit must be capable of accommodating full-time use based on two people in the first bedroom and one person in every other bedroom. Full-time use for other structures or dwellings will be determined on actual capacity and projected visitors per day.
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 structure ventilation systems.
   b. Venting connections must not be made to room vents or to chimneys.
   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, Plumbing Program. Current plumbing code prohibits using incinerator toilets without the permission of the health district. Proof of permission will be provided through a permit issued by the health district. Some incinerators may require significant volumes of fuel and long operation times to operate at peak capacity.

4.15.4 Operation and Maintenance

1. The toilet~~s~~ and/or incinerator should be inspected regularly to check the quantity of incinerated waste for removal needs.
2. The toilet and/or incinerator components should be inspected and maintained according to the manufacturer's recommendations.

Appendix G

See subsequent pages.

Appendix H

1.9 Managed Operation, Maintenance, and Monitoring

Revision: August 18, 2016

Operation, maintenance, and monitoring (OMM) may be required for any system specified by the Director. The Director may specify OMM as a condition of a product's design approval (IDAPA 58.01.03.009.03) or as a condition of issuing a subsurface sewage disposal permit (IDAPA 58.01.03.005.14) to ensure protection of public health and the environment. This section lists out the Director specified OMM requirements. Managed OMM is performed by an Operation and Maintenance Entity (section 1.6) or a certified service provider.

1.9.1 Managed Operation and Maintenance

Operation and maintenance (O&M) refers to the direct access to a subsurface sewage disposal system to provide planned or reactive activities that are necessary to ensure efficiency, effectiveness, and sustainability of the system. Managed O&M is required for systems the Director has determined necessitate professional oversight to ensure the systems operate according to the rules (IDAPA 58.01.03) and system specific recommendations provided by the Technical Guidance Committee (IDAPA 58.01.03.004.10). When managed O&M is specified for a system the following requirements shall be met (IDAPA 58.01.03.005.14 and 58.01.03.009.03):

1. Annual maintenance shall be performed on the system as described in the manufacturer's or design engineer's O&M manual submitted under section 1.4, or 1.6, or the specific alternative system's guidance section.
    a. Manufactured sSystems that are incorporated into an engineered design shall also follow the minimum O&M requirements set by the design engineer.
    b. Additional maintenance not specified in an O&M manual may be required to ensure the system functions properly.
2. Records for each O&M visit shall be kept and should include the following information for the primary maintenance visit:
    a. Date and time.
    b. Observation for objectionable odors.
    c. Observation for surfacing of effluent from the system or drainfield.
    d. Notation as to whether the system was pumped since the last O&M visit including the portions of the system pumped, pumping date, and volume.
    e. Sludge depth and scum layer thickness in the system's tanks and/or treatment unit.
    f. If responding to an alarm event, provide the cause of the alarm and any maintenance necessary to address the alarm situation.

g. Field testing results for any system effluent quality indicators included in the system's approved sampling plan (if required) or as recommended in section 1.9.2(2).

h. Record of any cleaning and lubrication.

i. Notation of any adjustments to control settings or equipment.

j. Test results for pumps, switches, alarms, and blowers.

k. Notation of any equipment or component failures.

l. Equipment or component replacement including the reason for replacement.

m. Recommendations for future service or maintenance and the reason for the recommendations.

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

1.9.2 Managed Monitoring

Monitoring refers to the requirement for effluent sampling and analysis of wastewater discharged from a treatment system prior to the effluent entering the drainfield. Managed monitoring is required for systems that the Director has determined necessitate field verification of the system's performance to ensure effluent quality limits are being met. When managed monitoring is specified for a system the following requirements shall be met (IDAPA 58.01.03.005.14 and 58.01.03.009.03):

1. Effluent quality shall be monitored annually ~~for all systems specified by the Director~~.

2. Annual monitoring included in the annual report must occur within the reporting period (Figure 1-1).

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

   a. Annual O&M is performed and documented as described in section 1.9.1 for each individual treatment system, and O&M records are submitted for each individual treatment system as described in section 1.9.3.

   b. All of the treatment systems connected to the common dosing chamber are from the same manufacturer or are the same engineered alternative treatment system design.

      i. If there are multiple manufacturers' units or multiple engineered alternative treatment system designs connected to the common dosing chamber, then each system must be monitored individually.

      ii. If there are multiple common dosing chambers discharging to a single drainfield, then each common dosing chamber must be monitored.

      iii. If there are any individual manufacturers' units or engineered alternative treatment system designs discharging to the same system independently of a common dosing chamber, then those individual units must also be monitored.

c. 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 treatment system connected to the common dosing chamber must be sampled independently for the failing constituent to determine ~~what~~ which individual systems do not meet the effluent monitoring requirements.

i. Individual systems that do not meet the effluent constituent levels upon individual sampling must follow the O&M and retesting requirements described in item 10~~1~~ below.

ii. Individual systems that do meet the effluent constituent levels upon individual sampling do not need to continue with the O&M and retesting requirements.

4. DEQ recommends that prior to collecting effluent samples from a treatment system for laboratory analysis that effluent quality indicators be field tested as described in the system's approved sampling plan. Recommendations included in this section are recommendations only and should be verified with the treatment technology manufacturer or design engineer 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:

a. Visual examination for wastewater color, odor, and effluent solids.

b. Constituents shown in Table 1-1.

Table 1-1. 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)

5. Monitoring samples provided to a laboratory will analytically quantify that the treatment system is operating in compliance if samples do not exceed:

a. 40 mg/L (40 ppm) for $CBOD_5$

b. 45 mg/L (45 ppm) for TSS

c. Permit specific levels stipulated on the installation permit for nitrogen as described in item 6.

d. Permit specific levels stipulated on the installation permit for other constituents of concern that may be determined on a case-by-case basis

e. Effluent specific constituents that must be monitored for a treatment system ~~will~~ may be specified in the treatment system specific guidance in section 4 or determined on a case-by-case basis.

6. For those systems installed in areas of concern, including nitrogen sensitive areas, or are used to fulfill NP evaluation results and requirements, the following total nitrogen related constituents may be monitored to determine total nitrogen concentration:
   a. Total Kjeldahl nitrogen (TKN)
   b. Nitrate-nitrite nitrogen (NO3+NO2-N)
   c. Results for total nitrogen (TN = TKN + [NO3+NO2-N])
7. Results for monitoring samples that exceed the stipulated levels on the installation permit indicate the treatment system is not achieving the required reduction levels.
8. Monitoring 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:
   a. 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.
   b. Chain-of-custody form should also specify the laboratory analyses to be performed on the sample.
   c. Sample storage and transport will take place in appropriate containers under appropriate temperature control.
9. Sample analysis will be performed by a laboratory capable of analyzing wastewater according to the acceptable standards identified in Table 1-2, and the monitoring results will be submitted as part of the annual report to the local health district.
   a. Effluent analysis shall be performed using the standards in Table 1-2 from the *Standard Methods for the Examination of Water and Wastewater* (Rice et al. 2012) or the equivalent standards from EPA.
   b. Annual reports submitted with laboratory analysis results differing from these standard methods will be rejected.

Table 1-2. 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.

10. ~~Samples~~ Treatment systems failing to achieve the required effluent constituent levels shall require the following:

a. Additional O&M within 15 days of the failed sample results as determined by the date provided on the laboratory form.

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

b. Additional sampling to demonstrate the O&M performed successfully restored the treatment system to proper operation.

c. Sample extraction and analysis needs to occur within 30 days after servicing the system (as determined in item 10~~1~~.a above).

   The 30-day time frame for sample extraction will begin based on the last documented O&M visit required under item 10~~1~~.a above.

d. A maximum of three sampling events, within 90 days (as determined from the last documented O&M visit from item 10~~1~~.a 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 (section 1.9.4.1, Figure 1-2).

e. If an annual report, as described in section 1.9.3, for a system identifies that an effluent sample fails to meet the limits stipulated on the installation permit, and the required resampling of the system did not occur, then the regulatory authority will issue the "Failure to Resample" letter provided in the DEQ program instruction "Extended Treatment Package System Program Letters."

   If resampling as described in this section does not occur by the date provided in the Failure to Resample letter, then the actions will be considered a refusal of service as described in section 1.9.5, and the enforcement procedures provided in section 1.9.5 shall be followed by the regulatory authority.

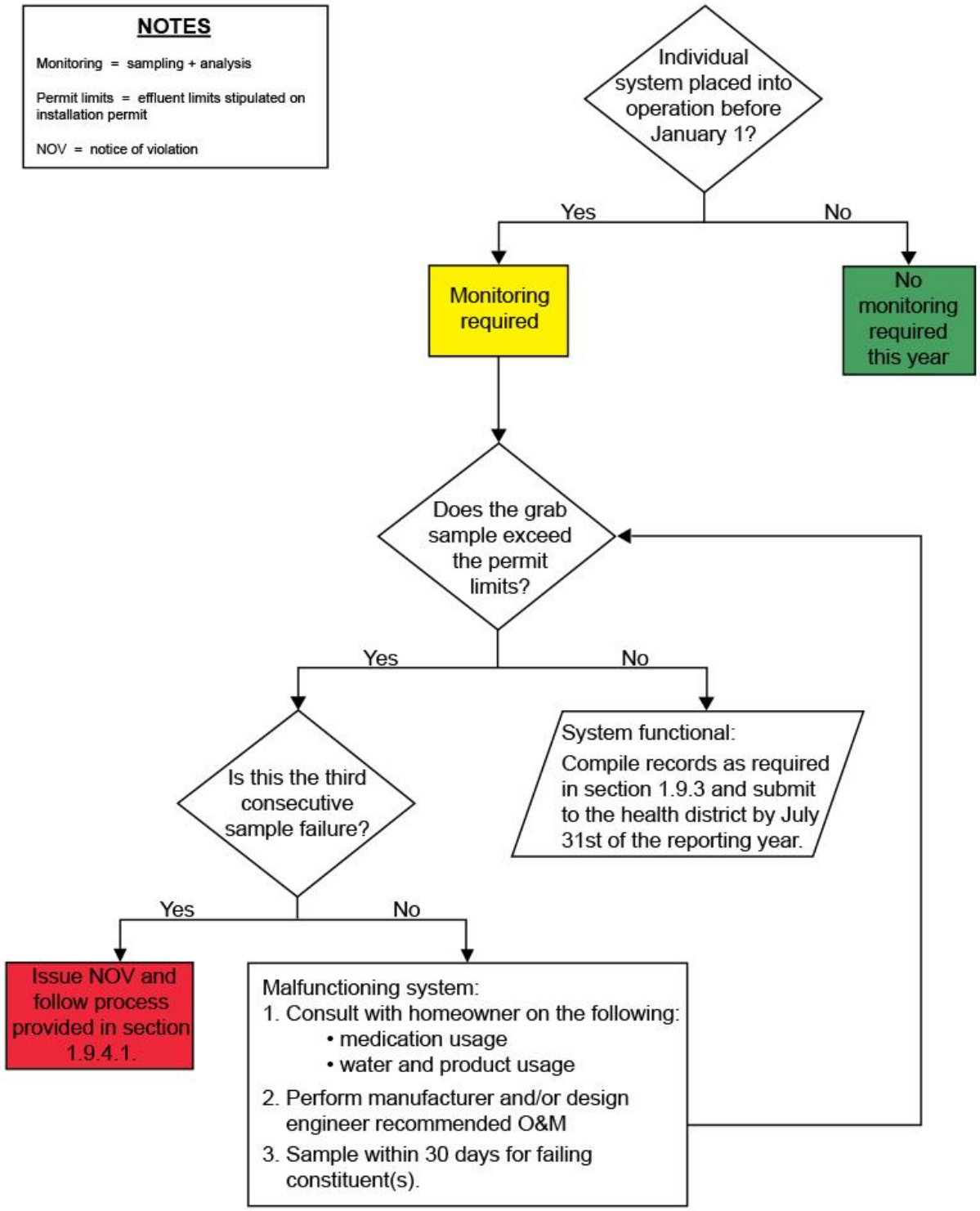


Figure 1-1. Individual treatment system sampling process.

1.9.3 Annual Reporting of Managed Operation, Maintenance, and Monitoring

The annual reporting period is from July 1 of the preceding year through June 30 of the reporting year. Annual reporting is the responsibility of the property owner, and DEQ recommends that ~~the~~ property owners have their O&M entity or service provider compile and submit their annual report. The property owner responsible for the treatment system under IDAPA 58.01.03 shall ensure the following annual reporting requirements are met:

1. Annual report for each property owner shall include these items:
   a. A copy of the maintenance records for the reporting period as required under section 1.9.1.
   b. A copy of all laboratory records for effluent sampling as described in section 1.9.2 (if required).
   c. A copy of each chain-of-custody form associated with each effluent sample as described in section 1.9.2 (if required).
2. If an O&M entity or service provider is fulfilling annual reporting requirements for their property owners, then DEQ recommends that the following additional information be included within the annual report:
   a. A current list of all O&M entity or service provider contracted property owners within the health district to which the annual report was submitted.
   b. The property owner list should clearly identify which property owners the O&M entity or service provider is contracted with for annual reporting requirements and the status of each property owner in regards to completing the annual reporting requirements.
   c. If annual reporting requirements are not complete for any property owner who the O&M entity or service provider is responsible for providing the annual report, then an explanation should be included with that property owner's records within the annual report.
3. Annual report exemptions
   a. A property owner may be exempt from effluent testing based upon extreme medical conditions.

      Annual O&M on the property owner's treatment system shall not be exempt due to medical conditions, and record of annual O&M shall still be submitted with the member's annual report.
   b. An O&M entity or service provider contracted by a property owner to fulfill annual reporting requirements may be exempt from reporting annual OMM for an individual property owner if that owner's activities fall within the guidelines of section 1.9.5.

      The O&M entity or service provider should still report the activities described in section 1.9.5 for each property owner exempt from annual reporting based on the guidelines in section 1.9.5.

4. Annual reporting process

   a. The annual report shall be submitted to the local health district by the property owner, O&M entity, or service provider on behalf of the property owner no later than July 31 of each year for the preceding 12-month period.

      The annual report shall be submitted to the local health district that issued the subsurface sewage disposal permit for the treatment system.

   b. The local health district shall provide ~~the O&M entity or service provider~~ whoever submitted the annual report a written response within 45 days of receipt of the ~~annual~~ report detailing compliance or noncompliance with septic permit requirements.

      i. The O&M entity or service provider should inform individual property owners of their compliance status.

      ii. All correspondence from the health district regarding a noncompliant annual report shall be copied to DEQ.

5. Delinquent annual reports

   a. If the property owner, O&M entity, or service provider contracted to submit the property owner's annual report does not submit the annual report by July 31 of the reporting year, then the local health district shall send the property owner, O&M entity, or service provider contracted to submit the property owner's annual report, a reminder letter providing a secondary deadline of August 31 of the reporting year for the annual report submission. The reminder letter shall detail the report requirements and that failure to submit the annual report by the secondary deadline will result in the health district forwarding a notice of nonreport to DEQ. DEQ may seek any remedy available under IDAPA 58.01.03 including, without limitation, requiring the property owner to replace the treatment system with another system, as outlined in section 1.9.4.

   b. All correspondence from the health district regarding delinquent annual reports shall be copied to DEQ.

1.9.4 Treatment System Failure, Disapproval, and Reinstatement

Commercially manufactured and alternative wastewater treatment systems must be approved by DEQ (IDAPA 58.01.03.004.10 and 58.01.03.009.01). Installation of a commercially manufactured or alternative wastewater treatment system requires a subsurface sewage disposal permit pursuant to IDAPA 58.01.03.005. ~~In addition, commercially manufactured wastewater treatment systems are alternative systems that must be approved by the director pursuant to IDAPA 58.01.03.004.10.~~ As part of the alternative system approvals for commercially manufactured or alternative wastewater treatment systems, DEQ defines the specific circumstances under which the treatment systems may be installed, used, operated, and maintained within the alternative treatment system guidance (IDAPA 58.01.03.009.03 and 58.01.03.005.14).

If a commercially manufactured or alternative wastewater treatment system product is not shown to be installed, used, operated, or maintained in accordance with DEQ requirements, then DEQ may pursue enforcement against a property owner and seek those remedies available under IDAPA 58.01.03. Enforcement and remedies against the property owner may include a determination that the treatment system has failed and the requirement that the property owner replace the treatment system with a different system authorized by DEQ. Replacement may include installing another commercially manufactured wastewater treatment system approved by DEQ, or engineering and installing another alternative system that is capable of meeting the requirements of the property owner's subsurface sewage disposal permit. If a commercially manufactured or alternative wastewater treatment system is not shown to comply or consistently function in compliance with IDAPA 58.01.03 and specified OMM requirements, DEQ may disapprove the commercially manufactured wastewater treatment product or classify the alternative wastewater treatment system as a failing system for failure to meet the intent of the rules related to wastewater treatment (IDAPA 58.01.03.003.13.a). Reasons for DEQ enforcement, which may include seeking remedies against a property owner or disapproval/failure classification of a commercially manufactured or alternative wastewater treatment product as outlined herein, include, but are not limited to, the following:

1. Failure to submit an annual report by the secondary deadline of August 31.
2. Annual reports for a particular commercially manufactured wastewater treatment product or alternative treatment system identify a malfunctioning system rate of 10% or more.

   Malfunctioning systems are defined as any system that fails to receive annual O&M or exceeds the effluent reduction levels for any constituent specified in the subsurface sewage disposal permit (i.e., TSS, $CBOD_5$, or TN).
3. Property owner's commercially manufactured wastewater treatment product or alternative treatment system has been determined to be a failing system. Failing commercially manufactured wastewater treatment systems are defined in section 1.9.2.

1.9.4.1 Failing System Enforcements

The regulatory authority shall follow the procedures below upon determination that a wastewater treatment system has been determined to be a failing system (Figure 1-2):

1. When the regulatory authority is notified that a system is failing, a notice of violation (NOV) shall be issued to the property owner. The property owner shall have the opportunity to hold a compliance conference with the regulatory authority to enter into a consent order.
2. Consent orders should allow a property owner a 12-month period to return the system to proper operation or replace the failing system.
   a. Over this 12-month period, the property owner should have their O&M entity or service provider service the wastewater treatment system at least monthly.
   b. Monthly effluent samples should be taken by the O&M entity or service provider until the wastewater treatment system passes 3 consecutive monthly samples.

Three consecutive passing monthly samples taken 1 month apart would be cause for the regulatory authority to terminate the consent order and NOV, and reclassify the system as compliant.

c. OMM records as described in section 1.9.1 and 1.9.2 should be submitted to the regulatory authority on a monthly basis as part of the consent order.

d. If the commercially manufactured wastewater treatment system cannot produce 3 consecutive monthly samples over the 12-month period, then the system may be replaced with another alternative system that meets the effluent quality requirements based upon applicable site conditions.

e. Replacement systems must meet the treatment requirements of the original septic permit. Appropriate replacement systems will be determined on a case-by-case basis.

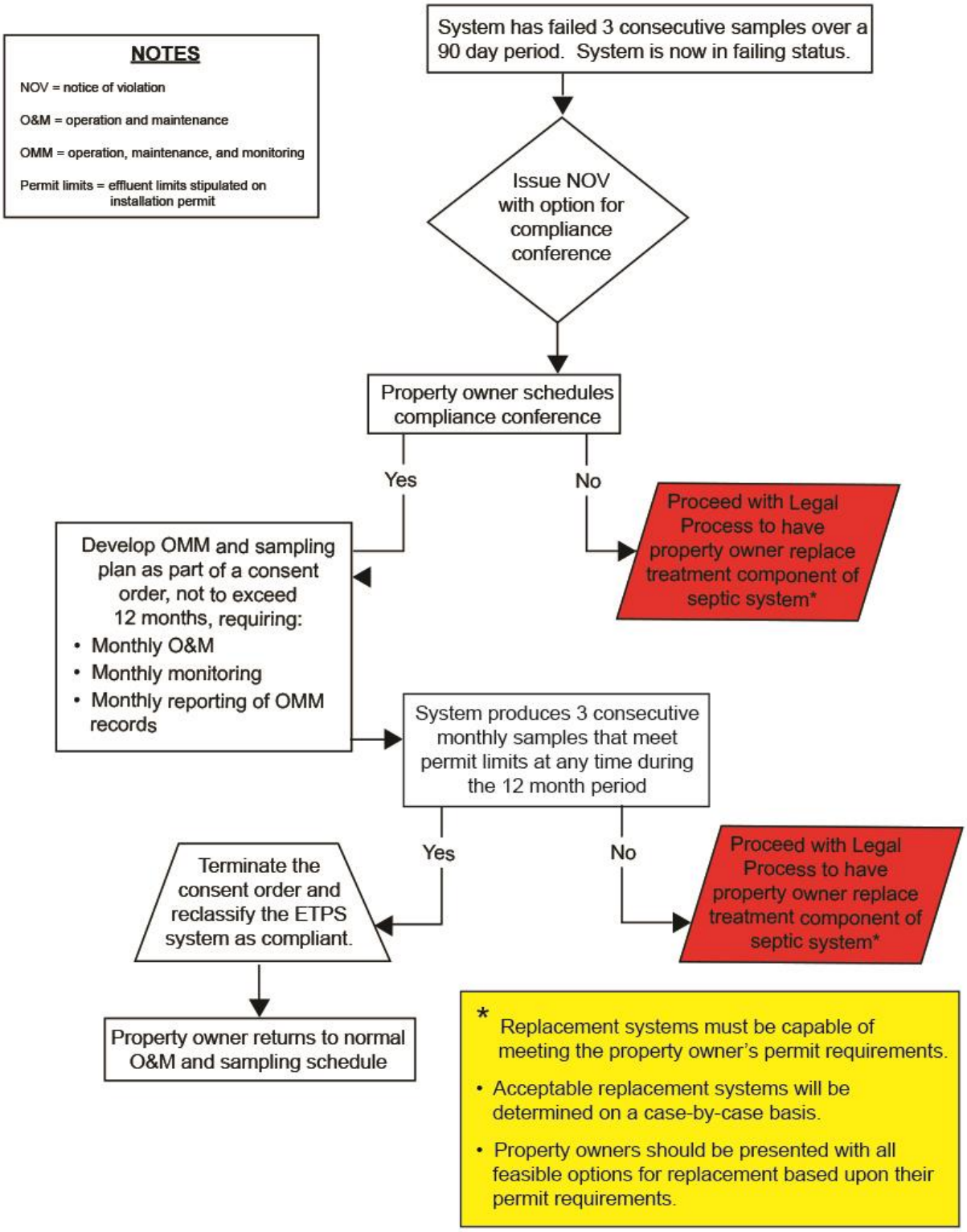


Figure 1-2. Failing wastewater treatment system enforcement flowchart.

1.9.4.2 Commercially Manufactured Wastewater Treatment System Disapproval

In addition to determining a particular system is a failing system as set forth in section 1.9.4.1, if DEQ determines that a commercially manufactured wastewater treatment system cannot consistently function in compliance with IDAPA 58.01.03, then DEQ may disapprove the product (IDAPA 58.01.03.009.04). A written notice of DEQ's intent to disapprove the commercially manufactured wastewater treatment system will be provided following Idaho Code §67-52 and sent to the wastewater treatment system manufacturer, O&M entity or service provider, and health districts. The commercially manufactured wastewater treatment system manufacturer will be allowed an opportunity to respond prior to product disapproval. Upon disapproval of a manufacturer's wastewater treatment system product line, the health districts shall not issue a septic permit on new applications for the commercially manufactured wastewater treatment system product line from the disapproved manufacturer. OMM requirements for existing installations of the commercially manufactured wastewater treatment system product line will not be affected by the product disapproval (Figure 1-3).

1.9.4.3 Commercially Manufactured Wastewater Treatment System Reinstatement

Upon commercially manufactured wastewater treatment system product disapproval, DEQ will provide the manufacturer the opportunity to enter into a corrective action plan (CAP) for product reinstatement. The CAP should establish the time frame to return the noncomplying or failing systems to proper operation. The product disapproval will remain in effect until the malfunctioning and failing system rate for the manufacturer's technology is below 10%.

1.9.5 Property Owner Refusal of Operation, Maintenance, or Monitoring Requirements

Individual property owners are responsible for ensuring their O&M entity or service provider can meet the annual OMM requirements for their wastewater treatment system. Failure of an individual property owner to permit the O&M entity or service provider from carrying out the required OMM services is considered a violation of IDAPA 58.01.03.012.01. Actions engaged in by a property owner toward the O&M entity or service provider that may be considered a refusal of service action by a property owner, include, but are not limited to, the following:

1. Refusal to allow annual operation, maintenance, or monitoring (e.g., refusal to pay annual dues preventing the financial capability of service or denial of property access).
2. Refusal to maintain the wastewater treatment system in operating condition (e.g., refusal to replace broken components or refusal to provide electricity to the unit).
3. If the refusal of service continues through the annual reporting period, then the O&M entity or service provider should substitute and submit the following documents in the annual report for property owners refusing service that the O&M is contracted with:
    a. Copies of all correspondence and associated certified mail receipts documenting the property owner's receipt of the correspondence regarding the refusal of service.

b. Refusal of service by a property owner through nonpayment should include documentation of a lien being placed on the individual's property.

c. If the documentation is not included within the annual report, there will be insufficient documentation of the property owner's refusal to allow OMM, and therefore, the lack of OMM may count against the malfunctioning rate for the wastewater treatment system product.

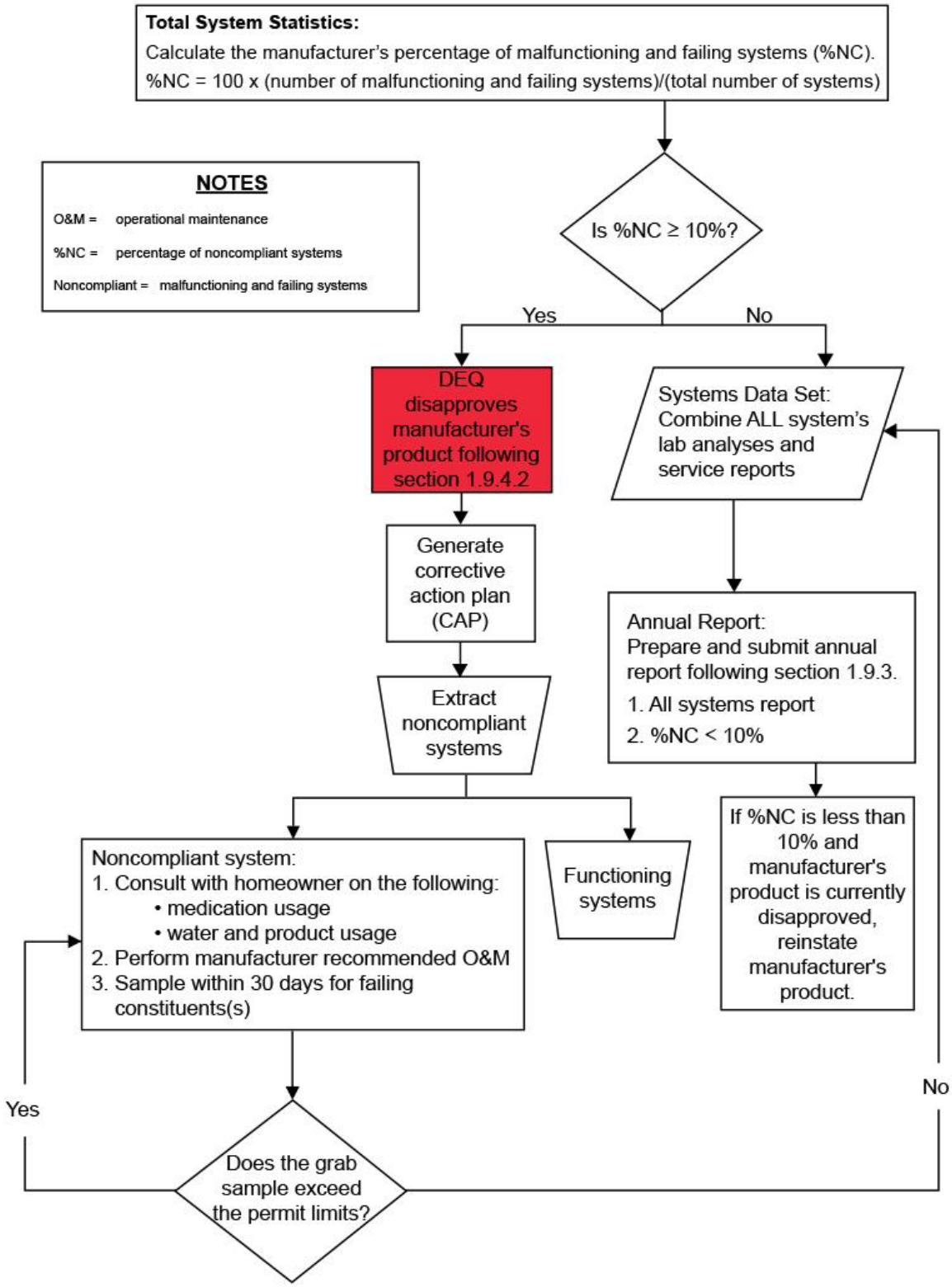


Figure 1-3. ETPS product disapproval process based upon annual reports.

Refusal of Service Enforcement Procedures

Upon receipt of an annual report showing that an individual property owner~~s~~ ha~~ve~~s refused to allow maintenance and monitoring as described in section 1.9.5, the following guidelines apply:

1. The regulatory authority shall issue Letter 1 with the associated enclosure provided in the DEQ program instruction, "Extended Treatment Package System Education and Enforcement Letters."
   a. Letter 1 shall be sent to the property owner by certified mail and copied to the associated O&M entity or service provider.
   b. The property owner is responsible for working with the regulatory authority and the O&M entity or service provider to address their delinquent responsibilities. The O&M entity or service provider should contact the regulatory authority and associated property owner 30 days after receiving Letter 1 to inform the regulatory authority of the property owner's voluntary compliance status.
2. If the property owner fails to voluntarily comply with the 30-day time frame, then the regulatory authority shall issue Letter 2 provided in the DEQ program directive, "Extended Treatment Package System Education and Enforcement Letters."
   a. Letter 2 shall be sent to the property owner by certified mail and copied to the associated O&M entity or service provider.
   b. The property owner is responsible for working with the regulatory authority and their O&M entity or service provider to address their delinquent responsibilities. The O&M entity or service provider should contact the regulatory authority and associated property owner by the voluntary compliance date provided in Letter 2 to inform the regulatory authority of the property owner's voluntary compliance status.
3. If the property owner fails to voluntarily comply by the date provided in Letter 2, then the regulatory authority may issue an NOV to the property owner to ensure compliance with the property owner's subsurface sewage disposal permit requirements ~~for the ETPS unit~~.

Appendix I

4.8 Extended Treatment Package System

Revision: ~~December 10, 2014~~August 18, 2016
Installer registration permit: Complex
Licensed professional engineer required: No

4.8.1 Description

Manufactured and *packaged* mechanical treatment devices that provide additional biological treatment to septic tank effluent. Such units may use extended aeration, contact stabilization, rotating biological contact, trickling filters, or other approved methods to achieve enhanced treatment after primary clarification occurs in an appropriately sized septic tank. These systems provide secondary wastewater treatment capable of yielding high-quality effluent suitable for discharge in environmentally sensitive areas.

~~ETPS are required to have annual maintenance and effluent quality testing performed and reported to the Director as described in section 4.8 (IDAPA 58.01.03.005.14). This maintenance is to be performed by an approved O&M entity (IDAPA 58.01.03.009.03).~~ Property owners that install an ETPS unit must choose an operation and maintenance (O&M) entity capable of meeting their operation, maintenance, and monitoring (OMM)~~effluent testing needs~~ requirements. Verification of the chosen O&M entity shall be submitted with the subsurface sewage disposal permit application ensuring that the OMM~~operation, maintenance, and monitoring (effluent quality testing)~~ will occur (IDAPA 58.01.03.005.04.k). Property owners that do not want to meet the~~se operation and maintenance~~ OMM requirements must meet the requirements of section 4.8.2(2) or choose another alternative system that will meet the conditions required for subsurface sewage disposal permit issuance.

4.8.2 Approval Conditions

1. A maintenance entity will be available to provide ~~continued~~ managed system~~device~~ OMM as described in section 1.9.1 and 1.9.2 (IDAPA 58.01.03.005.14). The OMM is to be performed by an approved O&M entity (IDAPA 58.01.03.009.03). Approval of the O&M entity will be made by the Director prior to permit issuance. Approvable entities may include, but are not limited to, the following:

   a. Municipal wastewater treatment departments

   b. Water or sewer districts

   c. Nonprofit corporations (section 1.6)

   An O&M entity membership agreement and an accompanying general access easement should be entered into between the property owner and the O&M entity, as a necessary condition for issuing an installation permit (IDAPA 58.01.03.005.04.k). This agreement and the easement will be recorded with the county as a condition for issuing an installation permit.

2. ETPSs may be used for properties without an approved O&M entity **only under all of the following conditions**:
   a. The site is acceptable for a standard system. All separation distances from ground water, surface water, and limiting layers shall be met.
   b. Enough land is available, and suitable, for two full-size drainfields. One complete full-size drainfield shall be installed.
3. Final effluent disposal through subsurface discharge will meet the following criteria:
   a. If an 85% reduction or better in $CBOD_5$ and TSS can be achieved, the effluent may be discharged to a drainfield satisfying Section 4.21.5 "Drainfield Trenches" application rate criteria and vertical setback requirements.
      1) Otherwise, the effluent must be discharged to a standard drainfield, sized as directed in IDAPA 58.01.03.008 (section 8.1), and meet the required effective soil depth for standard drainfields as directed in IDAPA 58.01.03.008.02.
      2) Additional drainfield-sizing reduction granted for use of gravelless trench products is not allowed.
   b. The 85% reduction will be accepted as being met if the effluent exhibits a quantitative value obtained from laboratory analysis not to exceed 40 milligrams per liter (mg/L) (40 parts per million [ppm]) $CBOD_5$ and 45 mg/L (45 ppm) TSS.
   c. TN reduction may be required for ETPS units located in an area of concern as determined through a NP evaluation. Permit-specific TN reduction levels will be determined through the NP evaluation. Results for TN are determined through the addition of TKN and nitrate-nitrite nitrogen (TN = TKN + [NO_3+NO_2-N]). TN reduction will be accepted as being met if the effluent exhibits a quantitative value obtained from laboratory analysis not to exceed the TN level stipulated on the subsurface sewage disposal permit.
4. Annual effluent monitoring and reporting is 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). Monitoring shall meet the requirements of section 1.9.2. Reporting shall meet the requirements of section 1.9.3.
5. The ~~system's aerobic treatment section~~ETPS will be preceded by an appropriately sized septic tank.
   a. The septic tank may be either a separate septic tank, a volume integral with the system's package, or a combination of internal clarifier volume coupled with an external tank.
   b. The septic tank shall provide the minimum tank capacity for residential facilities as specified in IDAPA 58.01.03.007.07.a, or for nonresidential facilities, a minimum of 2 days of hydraulic residence time (HRT) as stipulated in IDAPA 58.01.03.007.07.b.

c. Timed dosing from the clarifier to the aerobic treatment unit is preferred and highly recommended to maintain a constant source of nutrients for the system's aerobic microbes.

4.8.3 ~~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 1.6.~~
   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 1.6.4 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 4-13).~~

~~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 4.8.4.~~

~~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.~~

~~a) 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.h below.~~

~~b) 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 4-9:~~

~~Table 4-9. 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 4-10, 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 4-10 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 4-10. 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.~~

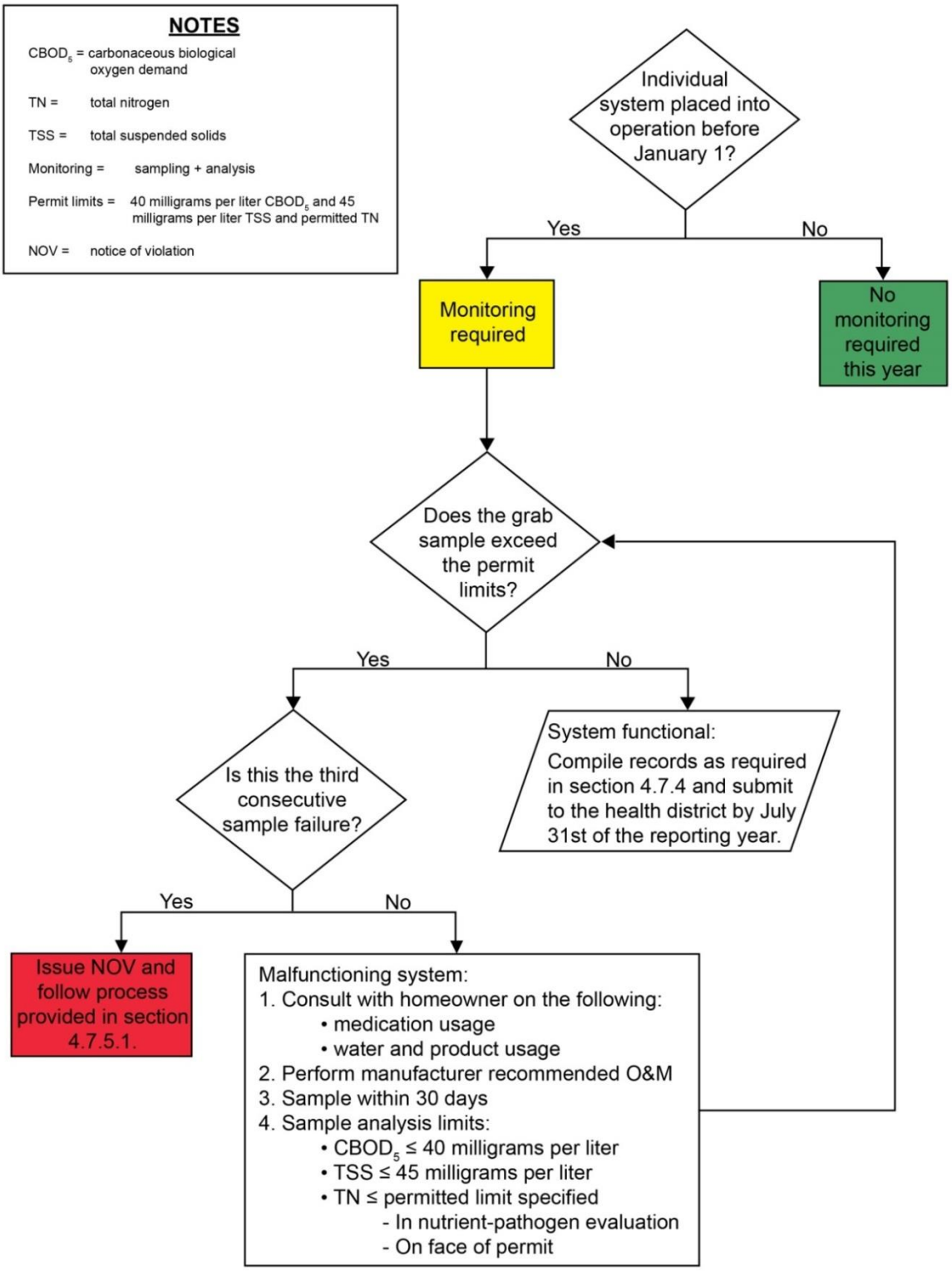
~~3) Sample extraction and analysis needs to occur within 30 days after servicing the system (as determined in item 1 above).~~

~~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* (section 4.8.5.1, Figure 4-14).~~

~~5) If an annual report, as described in section 4.8.4, 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 4.8.6, and the enforcement procedures provided in section 4.8.6 shall be followed by the regulatory authority.~~



~~Figure 4-13. ETPS unit individual sampling process.~~

4.8.4 ~~Annual Report~~

~~The reporting period is from July 1 of the preceding year through June 30 of the reporting year. Annual reporting is the responsibility of the property owner (member), and DEQ recommends that the property owner have their O&M entity compile and submit their annual report. The property owner responsible for the ETPS unit under IDAPA 58.01.03 shall ensure the following annual reporting requirements are met:~~

1. ~~Annual report for each property owner shall include these items:~~
   a. ~~A copy of all maintenance records for the reporting period as required under section 4.8.3(1)~~
   b. ~~A copy of all certified laboratory records for effluent sampling~~
   c. ~~A copy of each chain-of-custody form associated with each effluent sample~~
2. ~~If the O&M entity is fulfilling annual reporting requirements for their members, DEQ recommends that the following additional information be included within the annual report:~~
   a. ~~A current list of all O&M entity members within the health district to which the annual report was submitted.~~
   b. ~~The member list should clearly identify which members the O&M entity is contracted with for annual reporting requirements and the status of each member in regards to completing the annual reporting requirements.~~
   c. ~~If annual reporting requirements are not complete for any member who the O&M entity is responsible for providing the annual report, an explanation should be included with that member's records within the annual report.~~
3. ~~Annual report exemptions~~
   a. ~~A member may be exempt from effluent testing based upon extreme medical conditions.~~

      ~~Annual service and maintenance on the member's ETPS unit shall not be exempt due to medical conditions, and record of annual service and maintenance shall still be submitted with the member's annual report.~~

   b. ~~An O&M entity contracted by a member to fulfill annual reporting requirements may be exempt from reporting annual service and testing results for individual members if that member's activities fall within the guidelines in section 4.8.6.~~

      ~~The O&M entity should still report the activities described in section 4.8.6 for each member exempt from annual reporting based on the guidelines in section 4.8.6.~~
4. ~~Annual reporting process~~
   a. ~~The annual report shall be submitted to the local health district through mail by the property owner or the O&M entity on behalf of the member no later than July 31 of each year for the preceding 12-month period.~~

      ~~The annual report shall be submitted to the local health district that issued the subsurface sewage disposal permit for, and has jurisdiction over, the ETPS unit.~~

b. ~~The local health district shall provide the O&M entity a written response within 45 days of receipt of the annual report detailing compliance or noncompliance with septic permit requirements.~~

1) ~~The O&M entity should inform individual members of their compliance status.~~

2) ~~All correspondence from the health district regarding a noncompliant annual report shall be copied to DEQ.~~

5. ~~Delinquent annual reports~~

a. ~~If the property owner or O&M entity contracted to submit the member's annual report does not submit the annual report by July 31 of the reporting year, the local health district shall send the property owner, or O&M entity contracted to submit the member's annual report, a reminder letter providing a secondary deadline of August 31 of the reporting year for the annual report submission. The reminder letter shall detail the report requirements and that failure to submit the annual report by the secondary deadline will result in the health district forwarding a notice of nonreport to DEQ. DEQ may seek any remedy available under IDAPA 58.01.03 including, without limitation, requiring the property owner to replace the ETPS unit with another system, as outlined in section 4.8.5.~~

b. ~~All correspondence from the health district regarding delinquent annual reports shall be copied to DEQ.~~

4.8.5 ~~ETPS System Failure, Disapproval, and Reinstatement~~

~~Commercially manufactured wastewater treatment components must be approved by DEQ (IDAPA 58.01.03.009.01). Manufactured ETPS units are subject to this approval. In addition, the installation of an ETPS unit requires a subsurface sewage disposal permit pursuant to IDAPA 58.01.03.005. ETPS units are alternative systems that must be approved by the Director pursuant to IDAPA 58.01.03.004.10. As part of the alternative system approval for ETPS units, DEQ defines the specific circumstances under which the ETPS units may be installed, used, operated, and maintained within section 4.8 (IDAPA 58.01.03.009.03 and 58.01.03.005.14).~~

~~If an ETPS product is not shown to be installed, used, operated, or maintained as described in section 4.8, DEQ may pursue enforcement against a property owner and seek those remedies available under IDAPA 58.01.03. Enforcement and remedies against the property owner may include a determination that the ETPS system has failed and the requirement that the property owner replace the ETPS unit with a different system authorized by DEQ. Replacement may include installing another ETPS unit approved by DEQ, or engineering and installing another alternative system that is capable of meeting the requirements of the property owner's subsurface sewage disposal permit. If an ETPS product is not shown to comply or consistently function in compliance with IDAPA 58.01.03 and operation and maintenance requirements outlined in section 4.8, DEQ may disapprove the ETPS unit. Reasons for DEQ enforcement, which may include seeking remedies against a property owner or disapproval of an ETPS manufacturer's technology as outlined herein, include, but are not limited to, the following:~~

1. ~~Failure to submit an annual report by the secondary deadline of August 31.~~

2. ~~Annual reports for a particular ETPS technology identify a malfunctioning system rate of 10% or more.~~

   ~~Malfunctioning systems are defined as any system that fails to receive annual maintenance or exceeds the effluent reduction levels for any constituent required as part of the septic permit (i.e., TSS, $CBOD_5$, or TN).~~

3. ~~Property owner's ETPS unit has been determined to be a failing system. Failing ETPS units are defined in section 4.8.3(2)(h).~~

~~*4.8.5.1 Failing System Enforcements*~~

~~The regulatory authority shall follow the procedures below upon determination that an ETPS unit is a failing system (Figure 4-14):~~

1. ~~When the regulatory authority is notified that a system is failing, a notice of violation (NOV) shall be issued to the property owner. The property owner shall have the opportunity to hold a compliance conference with the regulatory authority to enter into a consent order.~~
2. ~~Consent orders should allow a property owner a 12-month period to return the system to proper operation or replace the failing system.~~
   a. ~~Over this 12-month period, the property owner should have their O&M entity service the ETPS unit at least monthly.~~
   b. ~~Monthly effluent samples should be taken by the O&M entity until the ETPS unit passes 3 consecutive monthly samples.~~

      ~~Three consecutive passing monthly samples taken 1 month apart would be cause for the regulatory authority to terminate the consent order and NOV, and reclassify the system as compliant.~~
   c. ~~Operation and maintenance records as described in section 4.8.3(1), certified laboratory records, and chain-of-custody forms for each sample should be submitted to the regulatory authority on a monthly basis as part of the consent order.~~
   d. ~~If the ETPS unit cannot produce 3 consecutive monthly samples over the 12-month period, the system shall be replaced with another alternative system that meets the effluent quality requirements based upon applicable site conditions.~~
   e. ~~Replacement systems must meet the treatment requirements of the original septic permit. Appropriate replacement systems may include a sand mound with 24 inches of sand beneath the absorption bed, intermittent sand filter, recirculating gravel filter, or a different ETPS unit that is approved and has an active O&M entity.~~

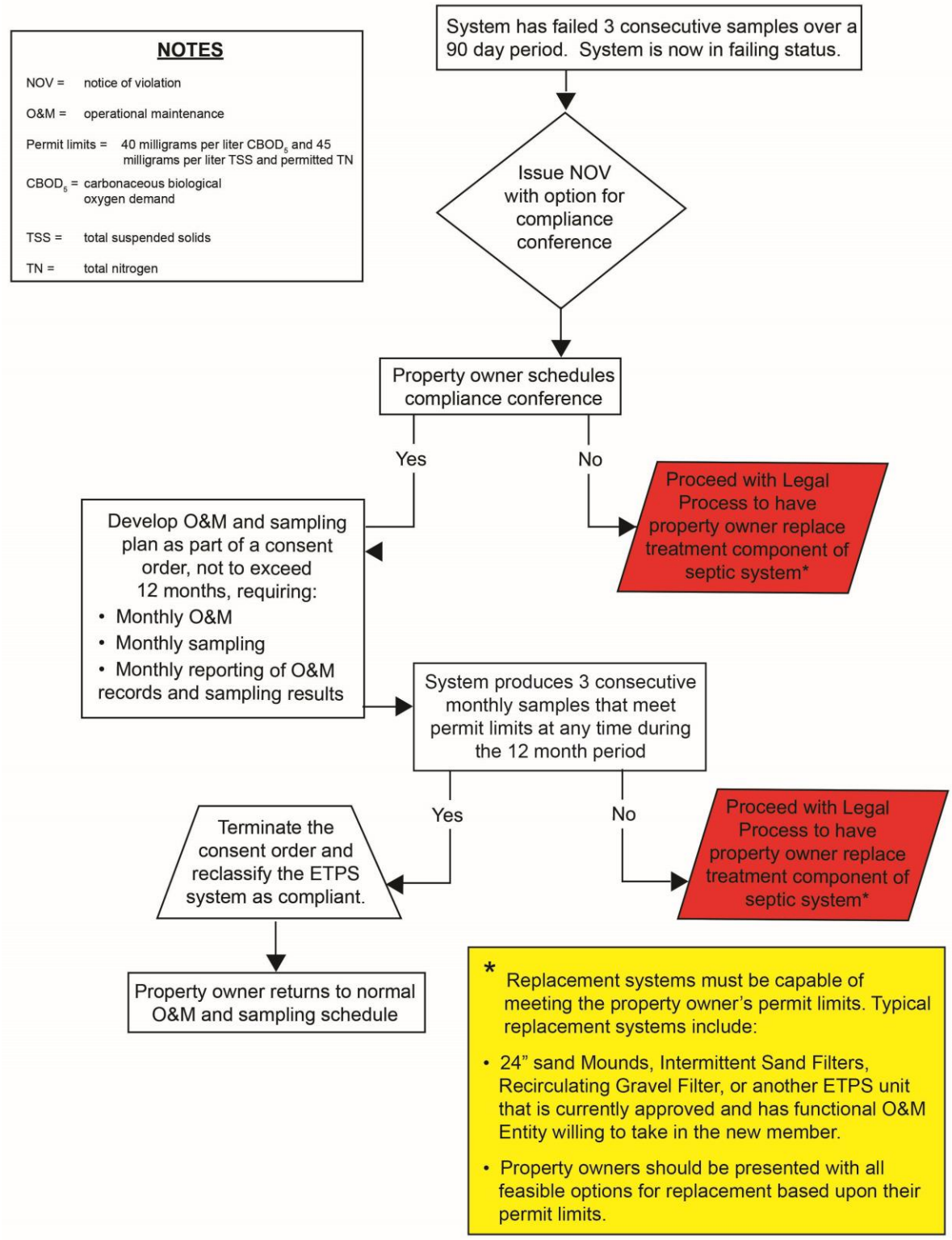


Figure 4-14. ETPS failing system enforcement flowchart.

~~*4.8.5.2 ETPS Product Disapproval*~~

~~In addition to determining a particular system is a failing system as set forth in section 4.8.5.1, if DEQ determines that an ETPS unit cannot consistently function in compliance with IDAPA 58.01.03, DEQ may disapprove the product (IDAPA 58.01.03.009.04). A written notice of DEQ's intent to disapprove the product will be provided following Idaho Code §67-52 and sent to the ETPS product manufacturer, O&M entity, and health districts. The ETPS manufacturer will be allowed an opportunity to respond prior to product disapproval. Upon disapproval of a manufacturer's ETPS product line, the health districts shall not issue septic permits on new applications for ETPSs from the disapproved product manufacturer. Monitoring, reporting, and servicing requirements of existing ETPS unit installations will not be affected by the product disapproval (Figure 4-15).~~

~~*ETPS Product Reinstatement*~~

~~Upon ETPS product disapproval, DEQ will provide the ETPS product manufacturer the opportunity to enter into a corrective action plan (CAP) for product reinstatement. The CAP should establish the time frame to return the noncomplying or failing systems to proper operation. The product disapproval will remain in effect until the malfunctioning and failing system rate for the ETPS manufacturer's technology is below 10%.~~

4.8.6 ~~Member Refusal of Maintenance or Testing Requirements~~

~~The individual nonprofit O&M entity members (property owners) are responsible for ensuring the O&M entity can perform the annual maintenance and effluent testing required for their ETPS unit. Failure of an individual member to permit the O&M entity from carrying out the required services is considered a violation of IDAPA 58.01.03.012.01. Activities engaged in by a property owner toward the O&M entity that may be considered a refusal of service action by a member, include, but are not limited to, the following:~~

1. ~~Refusal to allow annual maintenance or effluent quality testing (e.g., refusal to pay annual dues preventing the financial capability of service or denial of property access).~~
2. ~~Refusal to maintain the ETPS unit in operating condition (e.g., refusal to replace broken components or refusal to provide electricity to the unit).~~
3. ~~If the refusal of service continues through the annual reporting period, the nonprofit O&M entity should substitute and submit the following documents in the annual report for members refusing service that the O&M entity is contracted with:~~
   a. ~~Copies of all correspondence and associated certified mail receipts documenting the property owner's receipt of the correspondence regarding the refusal of service. Refusal of service by a member through nonpayment should include documentation of a lien being placed on the member's property.~~
   b. ~~If the documentation is not included within the annual report, there will be insufficient documentation of the property owner's refusal to allow maintenance and monitoring, and therefore, the lack of maintenance and monitoring may count against the malfunctioning rate for the ETPS technology.~~

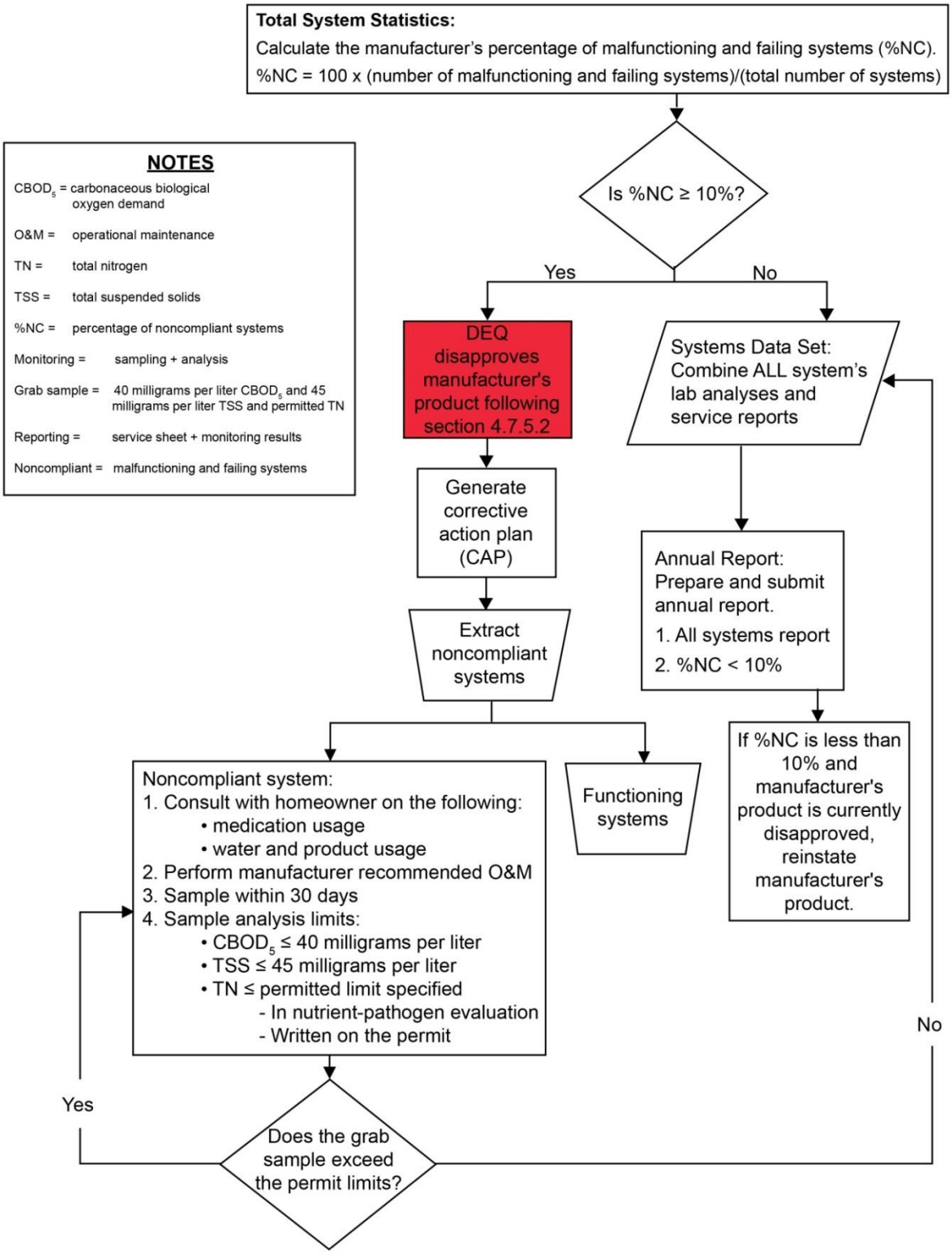


Figure 4-15. ETPS product disapproval process based upon annual reports.

~~Refusal of Service Enforcement Procedures~~

~~Upon receipt of an annual report showing that individual O&M entity members have refused to allow maintenance and monitoring as described in section 4.8.6, the following guidelines apply:~~

1. ~~The regulatory authority shall issue Letter 1 with the associated enclosure provided in the DEQ program directive, "Extended Treatment Package System Education and Enforcement Letters."~~
   a. ~~Letter 1 shall be sent to the property owner by certified mail and copied to the associated O&M entity.~~
   b. ~~The property owner is responsible for working with the regulatory authority and the O&M entity to address their delinquent responsibilities. The O&M entity should contact the regulatory authority and associated property owner 30 days after receiving Letter 1 to inform the regulatory authority of the property owner's voluntary compliance status.~~
2. ~~If the property owner fails to voluntarily comply within the 30-day time frame, the regulatory authority shall issue Letter 2 provided in the DEQ program directive, "Extended Treatment Package System Education and Enforcement Letters."~~
   a. ~~Letter 2 shall be sent to the property owner by certified mail and copied to the associated O&M entity.~~
   b. ~~The property owner is responsible for working with the regulatory authority and their O&M entity to address their delinquent responsibilities. The O&M entity should contact the regulatory authority and associated property owner by the voluntary compliance date provided in Letter 2 to inform the regulatory authority of the property owner's voluntary compliance status.~~
3. ~~If the property owner fails to voluntarily comply by the date provided in Letter 2, the regulatory authority may issue a NOV to the property owner to ensure compliance with the property owner's subsurface sewage disposal permit requirements for the ETPS unit.~~

4.8.3 ETPS Unit Design

Procedures relating to design are required by IDAPA 53.01.03 (section 8.1) or may be required as permit conditions, as appropriate, to ensure protection of public health and the environment.

1. All materials will be durable, corrosion resistant, and designed for the intended use.
2. All electrical connections completed on site shall comply with the National Fire Protection Association (NFPA) Standard NFPA 70, National Electrical Code, as required by the Idaho Division of Building Safety, Electrical Division.
3. Design for each specific application should be provided by a PE licensed in Idaho.
4. ~~The system's aerobic treatment section will be preceded by an appropriately sized septic tank. The septic tank may be either a separate septic tank, a volume integral with the system's package, or a combination of internal clarifier volume coupled with an external tank. The septic tank shall provide the minimum tank capacity for residential facilities as specified in IDAPA 58.01.03.007.07.a, or for nonresidential facilities, a minimum of 2 days of hydraulic residence time (HRT) as stipulated in IDAPA 58.01.03.007.07.b.~~

~~Timed dosing from the clarifier to the aerobic treatment unit is preferred and highly recommended to maintain a constant source of nutrients for the system's aerobic microbes.~~

5. Manufactured and *packaged* mechanical treatment devices will be required to prove that the specified equipment model meets the ETPS product approval policy outlined in section 1.4.2.2.

4.8.7 4.8.4 Construction

Procedures relating to construction are required by IDAPA 58.01.03 (section 8.1) or may be required as permit conditions, as appropriate, to ensure the protection of public health and the environment.

1. Installation
   a. A licensed complex system installer shall be required to install an ETPS unit and all other portions of the septic system connected to the ETPS unit or that the ETPS unit discharges to (IDAPA 58.01.03.006.01.b).
   b. A public works contractor may install an ETPS unit if they are under the direct supervision of a PE licensed in Idaho.
   c. Licensed plumbers and electricians will be required to install specific devices and components for proper system operation. If the device requires any on-site fabrication or component assembly, a public works contractor should be used.
   d. A sample port will be installed in the effluent line after the aerobic treatment unit. Figure 4-16 shows the placement of a sampling port after the ETPS unit, and Figure 4-17 shows the sample port and drainfield after the septic and treatment tank.

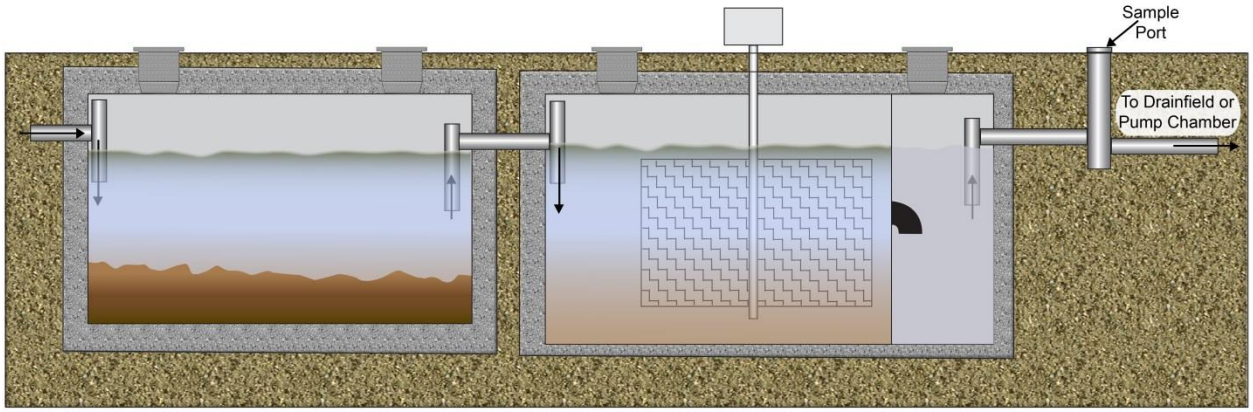


Figure 4-16. Sampling port example.

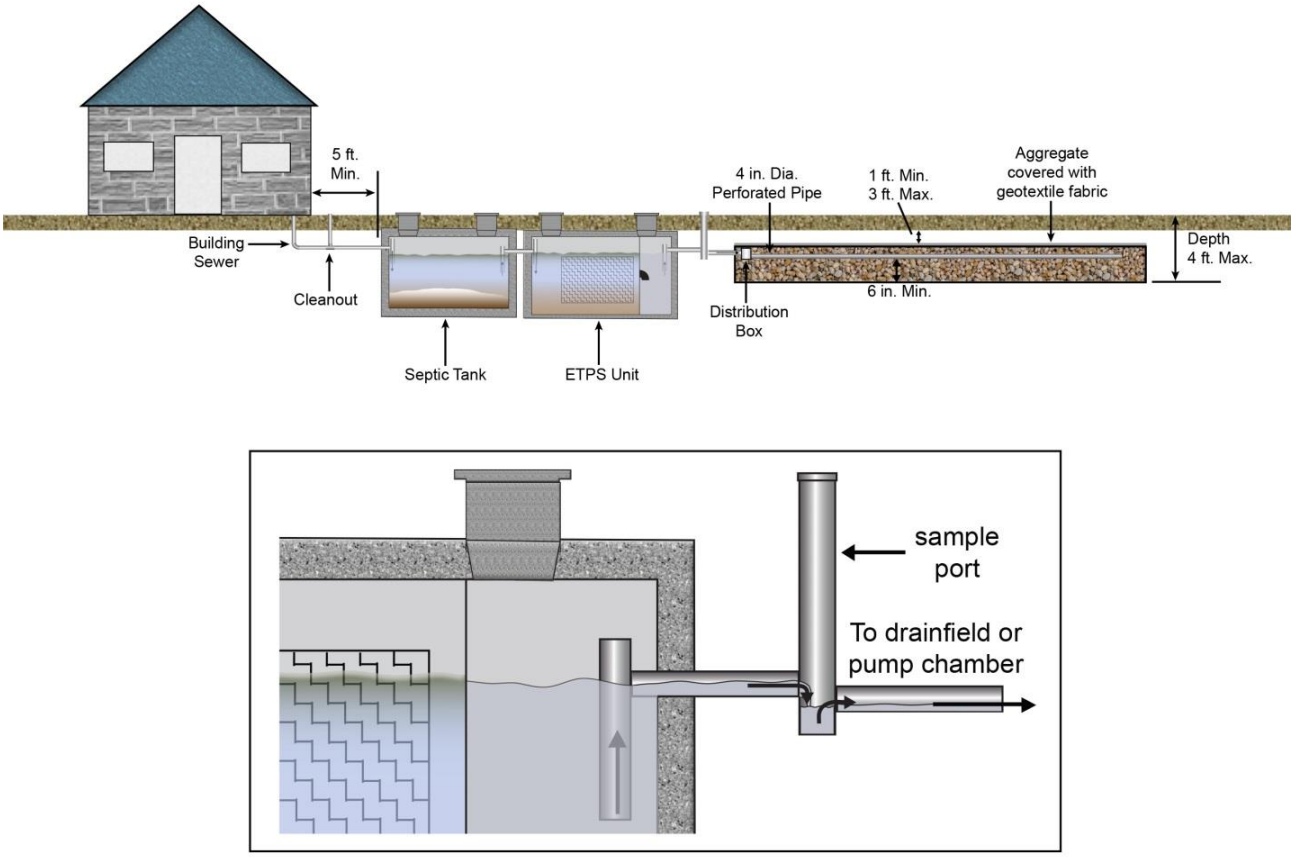


Figure 4-17. Sampling port and drainfield.

2. Within 30 days of completing the installation, the property owner shall provide certification to the regulatory authority, from their O&M entity, that the system has been installed and is operating in accordance with the manufacturer's recommendations (IDAPA 58.01.03.005.15).
   a. A statement requiring the submission of the installation verification form described above shall be written on the face of the subsurface sewage disposal permit.
   b. The regulatory authority shall not finalize the subsurface sewage disposal permit until the certification of proper installation and operation is received and includes information on the manufacturer, product, model number, and serial number of the ETPS unit installed.

Appendix J

4.5 Drip Distribution System

Revision: ~~September 18, 2014~~August 18, 2016

4.5.1 Description

Drip distribution systems are comprised of a shallow network of thin-walled, small-diameter, flexible tubing with self-cleaning emitters to discharge filtered septic tank effluent or pretreated effluent into the root zone of the receiving soils. The drip system is flushed either continuously or noncontinuously depending upon the system design. Minimum system components include, but are not limited to, the following:

1. Septic tank
2. Pretreatment system (not required in greay water system designs or septic tank effluent drip distribution designs):
   a. Intermittent sand filter
   b. Recirculating gravel filter
   c. Extended treatment package system
3. Filtering system (septic tank effluent systems only): spin filter (screen filter), cartridge or disk filters (flushable filter cartridge), and filter flush return line
4. Effluent dosing system: dosing chamber~~pump tank, and dose~~ pump, and timed dosing control
5. Process controller: programmable logic controller (PLC)
6. Flow meter
7. Drip tubing network, ~~and~~ associated valving, supply line and manifold, pressure regulators (non-pressure compensating emitters only), return manifold and line, and air/vacuum relief valves

4.5.2 Approval Conditions

1. ~~Drip distribution systems shall only be installed at locations that meet the criteria in the site suitability subsection of IDAPA 58.01.03.008.02 and 58.01.03.013 (section 8.1).~~ Site slope may not exceed 45%.
2. ~~The effective soil depths that are established for the alternative pretreatment systems listed in section 4.5.1(2) may be applied to drip distribution systems when they are used in the system design.~~ All components that are in contact with wastewater must be rated by the manufacturer for wastewater applications.
3. All pressurized distribution components and design elements of the drip distribution system that do not have design criteria specified within section 4.5 shall follow the design guidance provided in section 4.19.

~~4. Pretreatment system design, installation, operation, and maintenance will follow the specific pretreatment system guidance provided in this manual.~~

~~5~~4. System must be designed by a PE licensed in Idaho.

5. The design engineer shall provide an O&M manual for the system to the health district prior to permit issuance.

4.5.3 Design Requirements

Many considerations need to be made in the design of a drip distribution system based on site-, flow-, and effluent-specific characteristics. These characteristics will affect several system components depending on each specific design scenario. The design of a drip distribution system should be approached as an integrated system rather than individual components. System design should account for, but is not be limited to:

1. Tubing material and emitter type
2. Brand of drip tubing to be used and associated proprietary components
3. Level and type of pretreatment to be provided
4. System configuration based on site conditions and constraints
5. Extent of automation, monitoring, and timing of critical operation processes and procedures.

Design requirements vary dependent upon the allowable effluent quality and system flushing. Requirements based on these system parameters are included in the subsequent sections.

4.5.3.1 Basic Design Requirements

The following minimum design elements apply to both septic tank and pretreated effluent systems and continuous and noncontinuous flush drip distribution systems:

~~1. Application areas up to 2 square feet per foot (ft²/ft) of drip irrigation line may be used.~~

~~2. Drip tubes may be placed on a minimum of 2-foot centers.~~

~~3~~1. Drip distribution tubes are placed directly in native soil at a depth of 6–18 inches with a minimum final cover of 12 inches.

2. Drip distribution tubes should be placed on contour and slightly slope towards the manifold for proper drainage.
   a. Installations on slopes must account for depressurization flow and be designed to prevent movement of the wastewater to the bottom of the drip distribution zone during this time.
   b. Manifold design must allow for all the associated drip tubing to drain back to the manifold and prevent wastewater from drip tubing at higher elevations from draining into drip tubing at the lowest elevations.

3. A minimum of two zones are recommended, but not required, regardless of system size and zones should be kept as small as is reasonable.
   a. Individual lateral lengths should be designed to provide equal discharge volumes across the lateral emitters (lateral length is calculated from the connection point on the supply line to the connection point on the return line).
   b. Lateral lengths may differ within a zone as long as the minimum flushing velocity can be maintained at the terminal end of each lateral.
   c. Zones within a system should be close to equal in size to achieve efficient and consistent application of wastewater.
   d. In lower permeability soils (i.e. clayey soils) it is recommended that drip tubing and emitter spacing be reduced while maintaining the minimum square footage to increase the emission points and maintaining the dosing volume to decrease wastewater travel distance through the soil.
4. The design application rate is based on the most restrictive soil type encountered within ~~2 feet of the drip tubes~~ the minimum effective depth of soil below the drip distribution tubing required to meet the necessary separation distance to limiting layers.

~~5. The effective soil depth to limiting layers below the drip tubes should meet the depths specified in section 4.21.5, Table 4-20.~~

~~6~~5. Septic tank effluent drip distribution systems ~~is~~ are required to be adequately filtered with a 100-115 micron or smaller ~~disc or flushable filter cartridge~~ spin/screen filters or disk filters that are flushable or nonflushable ~~before~~ prior to discharge into the drip distribution tubing network. Filters are not required for pretreated effluent drip distribution systems, but are recommended.

6. When installed, effluent filters are required to:
   a. Be automatically backflushed to flush the solids off the filter surface and return them to the inlet pipe of the septic tank, or
   b. Be inspected periodically and hand cleaned if necessary.
7. A minimum of two vacuum relief valves are required per zone.
   a. The valves are located at the highest points on both the distribution and return manifolds.
   b. Vacuum relief valves are located in a valve box that is adequately drained and insulated to prevent freezing.
8. ~~Pressure regulators and p~~Pressure compensating emitters ~~should~~shall be used ~~on~~in ~~sloped~~all drip distribution-installations.

~~9. Pressure should be between 25 and 40 psi unless pressure compensating emitters are used.~~

9. The hydraulic design of the drip distribution system should achieve discharge rates and volumes that vary no more than ±10% between all the emitters within a zone during a complete dosing event.
    a. Consideration should be given to the unequal distribution during flow pressurizing and depressurizing periods.
    b. The designer must be able to mathematically support the design for equal distribution.

10. ~~Timed dosing is required~~Dosing requirements in all drip distribution systems~~.~~ include:
    a. Timed dosing is required.
    b. Dosing will only occur when there is sufficient volume in the dosing chamber to deliver a full design dose to the drip distribution system.
    c. Sufficient rest time shall be programmed to provide time for effluent to distribute away from the drip lines.
    d. Shall include a flow meter or run time/event counter.
    e. The capability to monitor flow rates both during dosing and flushing events.
    f. Small, frequent doses should be avoided and dose volumes should be several times the total supply and return manifold and drip tubing volumes within the dosing zone.

11. Dosing chambers shall provide sufficient storage for equalization of peak flows and meet the requirement of section 4.19.3.3.2 and 4.19.3.4.

~~11~~12. Each valve, filter, pressure regulator, and any other nondrip tube or piping component is required to be accessible from grade and should be insulated to prevent freezing.

~~4.5.3.2~~ Additional Design Requirements for Septic Tank Effluent Drip Distribution Systems

Septic tank effluent drip distribution systems are systems that discharge filtered effluent that has only passed through an appropriately sized septic tank, dosing chamber, and 100-115 micron filters prior to entering the drip distribution tubing. The following additional minimum design elements apply only to septic tank effluent drip distribution systems:

1. Effective soil depth to limiting layers below the drip tubes shall meet the minimum depths specified in IDAPA 58.01.03.008.02.c (Section 8.1) for daily design flows < 2,500 gallons per day (GPD) or IDAPA 58.01.03.013.04.c (Section 8.1) for daily design flows ≥ 2,500 GPD.
2. Total drip distribution area shall be determined by dividing the daily design flow by the soil application rates in Table 2-4.
3. Minimum drip tubing length that must be installed shall be determined by dividing the total drip distribution area by 2.

a. The minimum tubing length and drip tube spacing must create a system layout that equals or exceeds the total drip distribution area calculated in 2.

b. It is recommended that extra tubing be included in the system design for systems being placed in soil design group C soils.

4. Drip distribution tubes may be placed on a minimum of 2-foot centers.

5. Emitter spacing may be a maximum of 12 inches.

6. Emitter flow rate shall be ≤ 0.6 gallons per hour (GPH).

7. Filters shall be back flushed at the start of each dosing cycle and zones should be flushed every 20-50 dosing cycles with a minimum fluid velocity of 2 feet per second designed at the distal end of the lateral connection.

4.5.3.3 Additional Design Requirements for Pretreated Effluent Drip Distribution Systems

Pretreated effluent drip distribution systems are systems that discharge effluent that has passed through an appropriately sized septic tank, pretreatment system, and dosing chamber prior to entering the drip tubing. The following additional minimum design elements apply only to pretreated effluent drip distribution systems:

1. Effective soil depth to limiting layers below the drip tubes shall meet the minimum depths specified in section 4.21.5, Table 4-20.

2. Total drip distribution area shall be determined by dividing the daily design flow by the soil application rates in Table 4-21.

3. Minimum drip tubing length that must be installed shall be determined by dividing the total drip distribution area by 2.

   a. The minimum tubing length and drip tube spacing must equal or exceed the total drip distribution area calculated in 2.

   b. It is recommended that extra tubing be included in the system design for systems being placed in soil design group C soils.

4. Drip distribution tubes may be placed on a minimum of 2-foot centers.

5. Emitter spacing may be a maximum of 24 inches.

6. Emitter flow rate shall be ≤ 1.1 GPH.

7. If filters are flushed it is recommended that frequency be once per week.

8. Drip distribution zones should be flushed every two weeks.

4.5.3.4 Additional Design ~~Elements~~Requirements for Noncontinuous Flush Drip Distribution Systems

The following additional minimum design elements apply only to noncontinuous flush drip distribution systems:

1. In noncontinuous flush systems, drip distribution laterals are flushed ~~at least once every 2 weeks~~ at regular intervals, but at least every two weeks, to prevent biofilm and solids buildup in the tubing network.
   a. Minimum flushing velocity is based on the tubing manufacturer's recommendations for the return ends of the distribution lines and in the drip ~~irrigation~~ distribution tubing during field flush cycles, must be high enough to scour the drip distribution tubing, and is recommended to exceed the manufacturer's recommended velocity.
   b. The minimum flushing duration is long enough to fill all lines and achieve several pipe volume changes in each lateral.
2. In noncontinuous flush systems, the return manifold is required to drain back to the ~~septic tank~~dosing chamber.
3. In noncontinuous flush systems, timed or event-counted backflushing of the filters is required when filters are installed.
4. In noncontinuous flush systems, filters (when installed), flush valves, and a pressure gauge ~~may~~shall be placed in a head works (between the dose pump and drip field) and on the return manifold.

4.5.3.5 Additional Design ~~Elements~~Requirements for Continuous Flush Drip Distribution Systems

The following additional minimum design elements apply only to continuous flush drip distribution systems:

1. If flushing filters ~~must be a flushing type. a. The filteris~~ are installed then they shall ~~required to~~ be backwashed according to the manufacturer's recommendations and the process must be automated ~~unless the automated backwashing requirement has been waived~~.

   ~~b. The automated backwashing requirement may be waived if the filter is configured with an alarm to indicate when velocity is reduced below the manufacturer's minimum recommended flow velocity.~~
2. Drip distribution laterals are flushed during the dosing cycle.
   a. The continuous flush system must be designed to the manufacturer's minimum recommended flow velocity, must be high enough to scour the drip distribution tubing, and is recommended to exceed the manufacturer's recommended velocity.
   b. The dose duration must be long enough to achieve several pipe volume changes in each drip tubing e lateral to adequately accomplish flushing the drip tubing lines.
3. Filters (when utilized) and pressure gauges may be placed in a head works (between the dose tank and drip distribution ~~field~~tubing).
4. Supply and return pressure gauges are needed to ensure that the field pressurization is within the required range specified by the drip tube manufacturer.

5. In continuous flush systems, both supply and return manifolds are required to drain back to the ~~dose tank~~dosing chamber.
6. Due to the nature of the continuous flush process, the filter shall be examined after initial start-up and cleaned if necessary to prevent incorrect rate of low readings for the controller.
7. The drip distribution system will operate to the manufacturer's minimum recommended flow velocity for the duration of each cycle, and the total flow minus the emitter uptake flow would be the return and flushing flow.

4.5.4 Construction

1. No wet weather installation is allowed.
2. Excavation and grading must be completed before installing the subsurface drip distribution system.
3. Drip distribution tubing may be installed using a trencher, static plow, or vibratory plow.
   a. Care must be taken when using a trencher to ensure the tubing is in contact with the trench bottom and does not have many high and low points in the line.
   b. Trenchers may limit the potential for smearing in clay soils.
   c. When using a static or vibratory plow care must be taken to ensure the drip distribution tubing does not snag and stretch when unrolling.
   d. Use of a gage wheel with a static plow will assist in installing tubing to grade on level sites.
   e. Vibratory plows allow for minimal site disturbance and may be best for cutting through roots in the soil.
4. Drip distribution systems may not be installed in unsettled fill material.

~~4~~5. No construction activity or heavy equipment may be operated on the ~~drainfield~~ drip distribution area other than the minimum to install the drip distribution system.

~~5~~6. Do not park or store materials on the ~~drainfield~~ drip distribution area.

~~6~~7. For freezing conditions, the bottom drip ~~tube~~ distribution line must be higher than the supply and return line elevation at the dosing ~~tank~~ chamber.

~~7~~8. All PVC pipe and fittings shall be PVC schedule 40 type 1 or higher rated for pressure applications**.**

9. Flexible PVC pipe should be used for connecting individual drip lines together when making turns in laterals and may be used for connecting drip laterals to supply and return manifolds.

~~8~~10. All glued joints shall be cleaned and primed with purple (dyed) PVC primer before being glued.

~~9~~11. All cutting of PVC pipe, flexible PVC, or drip tubing should be completed using pipe cutters.

~~10~~12. Sawing PVC, flexible PVC, or drip distribution tubing is allowed only if followed by cleaning off any residual burs from the tubing or pipe and removing all shavings retained in the tubing or pipe.

~~11~~13. All open PVC pipes, flexible PVC, or drip distribution tubing in the work area shall have the ends covered during storage and construction to prevent construction debris and insects from entering the tubing or pipe.

~~12~~14. Prior to gluing, all glue joints and tube or pipe interior shall be inspected and cleared of construction or foreign debris.

~~13~~15. Dig the return manifold ~~ditch~~ trench along a line marked on the ground and back to the dosing ~~tank~~ chamber.

a. The return manifold ~~ditch~~ trench should start at the farthest end of the manifold from the dosing ~~tank~~ chamber.

b. The return manifold must slope back to the dosing ~~tank~~ chamber.

~~14~~16. Prior to start-up of the drip distribution system, the air release valves shall be removed and each zone in the system shall be flushed as follows:

a. System flushing is accomplished by the manufacturer or engineer using the control panel's manual override.

b. Use ~~ing~~ an appropriate length of flexible PVC pipe with a male fitting and attach it to the air release connection to direct the flush~~ing~~ water away from the construction and drip distribution system area.

c. Flush ~~the~~ each zone with a volume of clean water ~~(clean water to be provided by contractor) equal to~~ at least two times the volume of ~~the~~ all piping ~~es~~ and tubing from the ~~central unit~~ dosing chamber to the air release valve within the zone being flushed ~~or the equivalent of 5 minutes of flushing~~.

~~d. Repeat this procedure for each zone.~~

Note: filters are not backflushed during start-up as any clogging could cause incorrect rate of flow readings for the controller.

~~15~~17. If existing septic tanks or dosing chambers are to be used, they shall be pumped out by a permitted septic tank pumper, checked for structural or component problems, and repaired or replaced if necessary.

a. After ~~the~~ a tank is emptied, the tank shall be rinsed with clean water, pumped again, refilled with clean water, and leak tested.

b. Debris in ~~the septic~~ any tank should be kept to a minimum because it ~~could~~ may clog the filters during start-up.

~~16~~18. Once completed, cap ~~drainfield~~ the drip distribution areas for shallow installations (less than 12 inches) with 6–8 inches of clean soil and suitably vegetate.

a. Cap fill material shall be the same as or one soil group finer than that of the site material, except that no fill material finer than clay loam may be used.

b. Cap fill shall be free of debris, stones, frozen clods, or ice.

c. The cap should be crowned to promote drainage of rainfall or runoff away from the drip ~~field~~area.

~~c~~d. Suitable vegetation should consist of typical lawn grasses or other appropriate low-profile vegetation that will provide thermal insulation in cold climates.

~~d~~e. Trees, shrubs, and any other vegetation that aggressively seeks water should not be planted within 50 feet of the drip tubing network.

19. Development of a diversion berm around the drip distribution ~~field site~~area will aid in the diversion of runoff around the system.

4.5.5 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 shall inspect all components and fill material used in constructing the drip distribution system prior to backfilling or cap fill placement.
3. The responsible charge engineer should conduct as many inspections as necessary to verify system and component compliance with the engineered plans.
4. 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)

4.5.6 Operation and Maintenance

1. The drip distribution system 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.

   a. Monitoring should be based on the most limiting process in the system design.

   b. Regular monitoring of flow rates and pressures should be specified to diagnose possible overuse.

3. Additional operation, maintenance, and monitoring may be required for the pretreatment component of the drip distribution system.

a. The minimum operation, maintenance, and monitoring of the pretreatment component will be based on the manufacturer's recommendations and the minimum requirements specified within this manual for the specific pretreatment system.

b. Additional operation, maintenance, and monitoring may be based on specific site conditions or pretreatment component type.

4.5.7 Suggested Design Example

1. Determine square feet needed for the septic tank effluent drip distribution system, as follows.

   a. Wastewater flow in GPD is divided by the soil application rate (based on the soil classification from an on-site evaluation).

   b. Result is the square feet (ft^2) needed for the system.

   Example conditions: three-bedroom home discharging pretreated effluent in subgroup C-2 soils.

   Example calculation: (250 GPD)/(0.2 gallons/ft^2) = 1,250 ft^2

2. System design will use an application area of 2 ft^2/ft of drip distribution tube. Divide the required square feet by the drip distribution tube application area (2 ft^2/ft). This will determine the minimum length of drip distribution tube needed for the system.

   Example: (1,250 ft^2)/(2 ft^2/ft) = 625 feet of drip tube

3. Determine pumping rate by finding the total number of emitters and multiplying by the flow rate per emitter (~~1.32~~ 0.9 gallons/hour/emitter at 20 psi). Adjust output to GPM and add 1.5 GPM per connection for flushing to achieve, for example, a 2 feet/second flushing velocity.

   Note: For continuous flush systems, the number of emitters will vary depending on the product selected.

   Example: (625 feet)/(2 feet/emitter) = 312.5, use 313 emitters

   (313 emitters) x (~~1.32~~ 0.9 gallons/hour/emitter) = ~~413.2~~ 281.7 gallons/hour

   (~~413.2~~ 281.7 gallons/hour)/(60 minutes/hour) = ~~6.89~~ 4.695 GPM, or ~~7~~ 5 GPM

   10 connections at 1.5 GPM per connection = 15 GPM

   Pumping rate: ~~7~~ 5 GPM + 15 GPM = 2~~2~~0 GPM

4. Determine feet of head. Multiply the system design pressure (20 psi for this example ~~is standard~~, ~~but~~ values can vary depending on the drip distribution tube used) by 2.31 feet/psi to get the head required to pump against.

   Example: (20 psi) x (2.31 feet/psi) = 46.2 feet of head

   Add in the frictional head loss from the drip distribution tubing and piping.

5. Select a pump. Determine the size of the pump based on gallons per minute (step 3 of suggested design example) and total head (step 4 of suggested design example) needed to deliver a dose to the system. The pump selected for this example must achieve a minimum of ~~22~~20 GPM plus the flush volume at 46.2 feet of head.

Figure 4-7 shows an overhead view of a typical drip distribution system. Figure 4-8 shows a potential layout of a filter, valve, and meter assembly, and Figure 4-9 illustrates a cross-sectional view of the filter, valve, and meter assembly. Figure 4-10 provides a view of the continuous flush system filter and meter assembly.

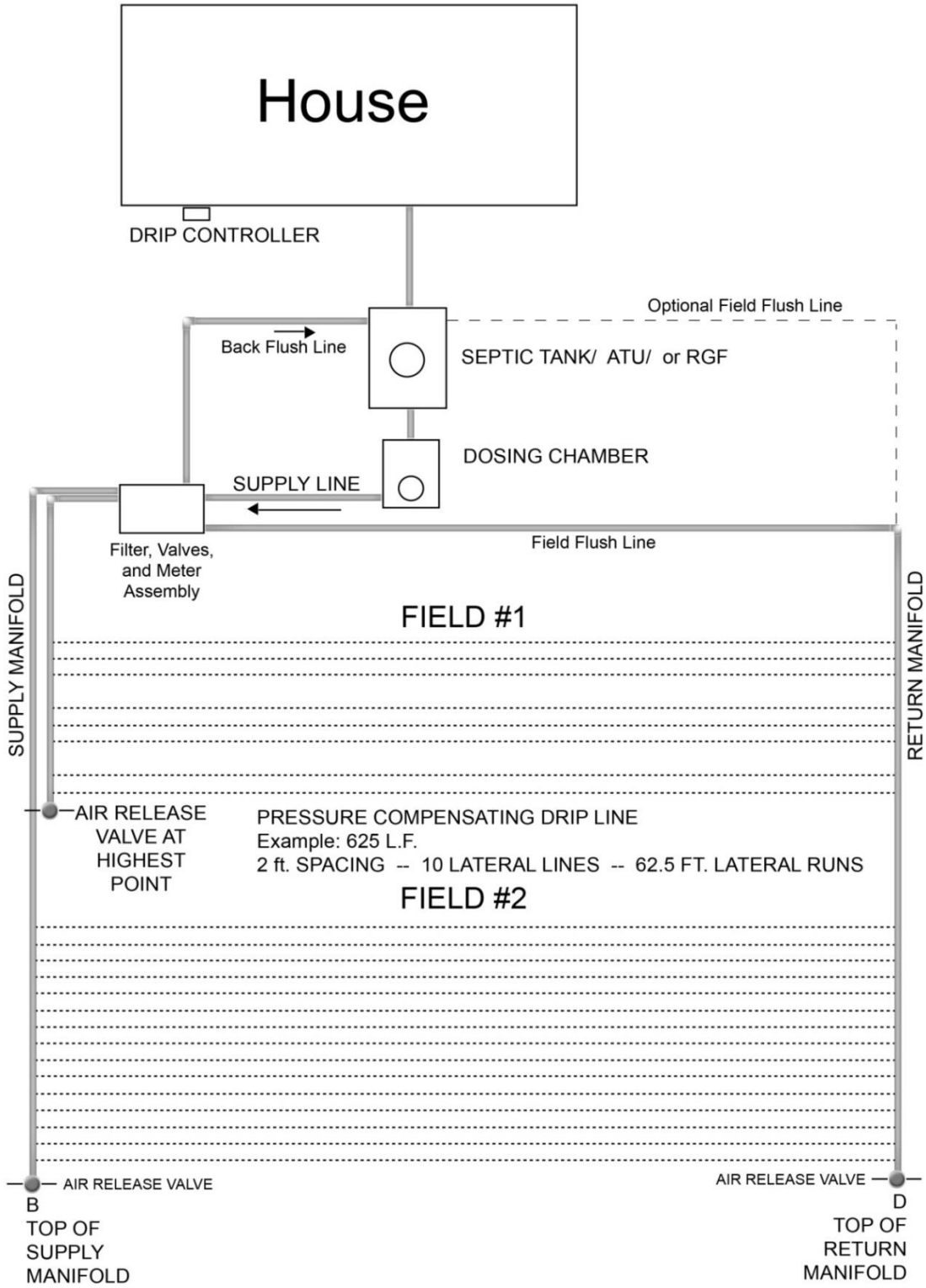


Figure 4-7. Overhead view of typical drip distribution system.

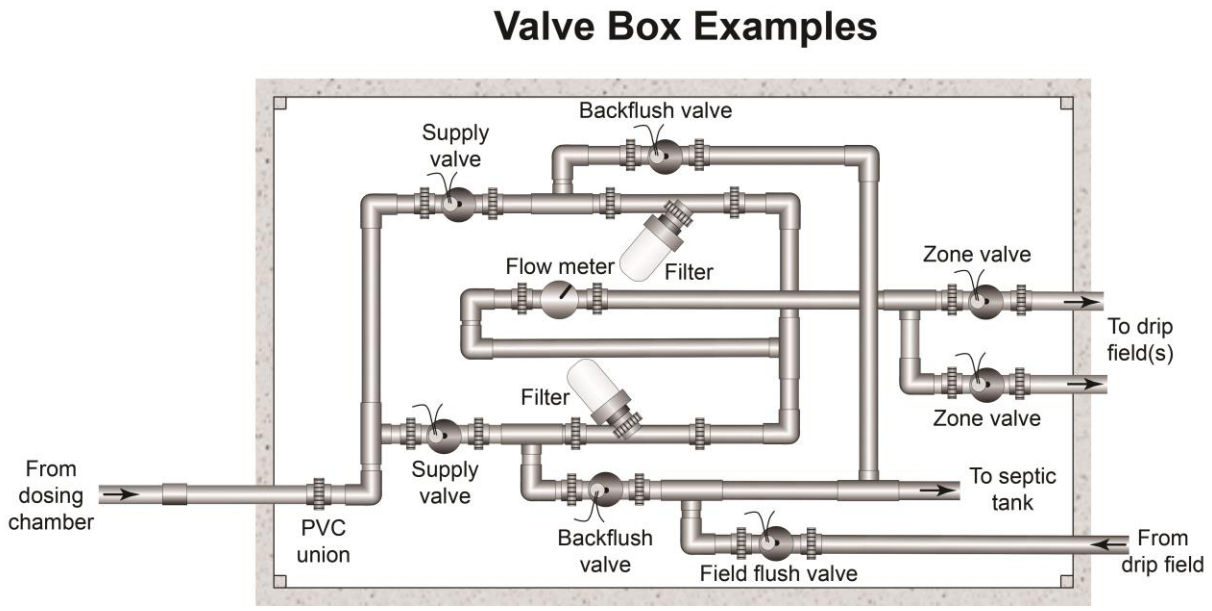


Figure 4-8. Overhead view of filter, valve, and meter assembly for a noncontinuous flush system.

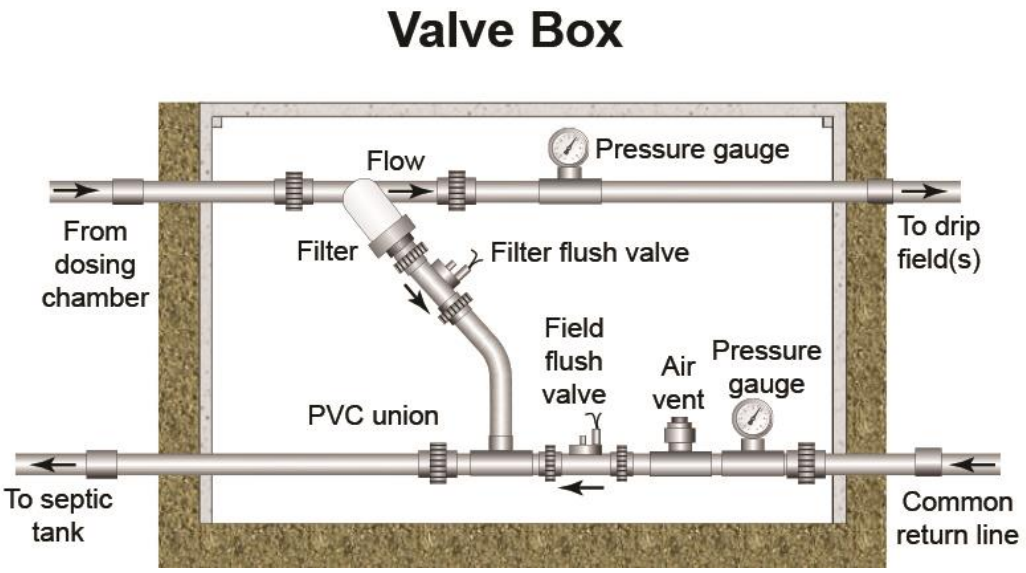


Figure 4-9. Cross-sectional view of typical filter, valve, and meter assembly for a noncontinuous flush system.

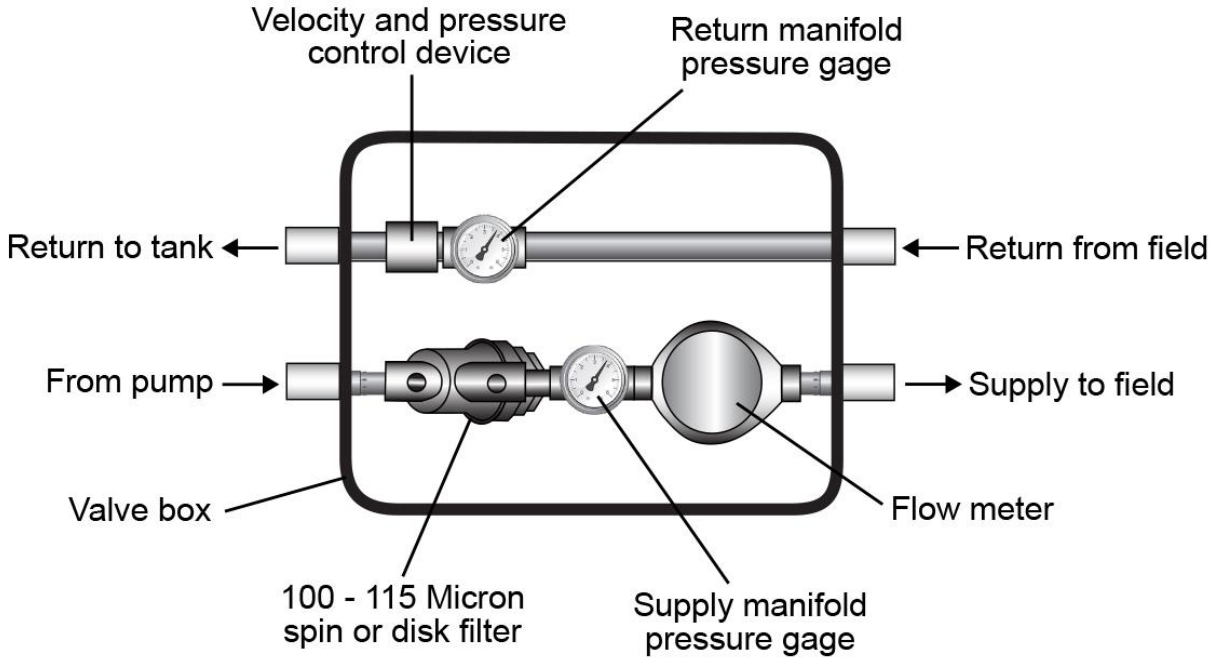


Figure 4-10. Overhead view of continuous flush system filter and meter assembly.

Appendix K

4.4.2 Approval Conditions

1. Water under pressure shall not serve the dwelling unless a public sewer or another acceptable method of on-site disposal is available.
2. Composting toilet models must be approved by DEQ before installation (section 5.5).
3. Units are restricted to the disposal of human feces, urine, and small quantities of household garbage.

   Household garbage should be limited to the manufacturer's recommendations. Chemicals, pharmaceuticals, and nonbiodegradable products (e.g., plastics) should not be disposed of in a composting toilet.

Appendix L

4.13 ~~Grey~~ Gray Water System

Revision: ~~September 16, 2004~~ August 18, 2016
Installer registration permit: Property owner or standard and basic (complex if pressurized)
Licensed professional engineer required: No (yes if pressurized)

4.13.1 Description

A gray water system is used to distribute gray water in the root zone of landscaping. ~~Grey water is untreated household wastewater that has not come into contact with toilet waste.~~ ~~Grey~~ Gray water is domestic wastewater that consists of ~~includes~~ used water from bathtubs, showers, and sinks used only for hand washing ~~bathroom wash basins, and water from clothes washing machines and laundry tubs~~. Other acceptable gray water sources may be determined on a case-by-case basis as long as the source does not come into contact with blackwaste or food products (e.g., drinking fountain, ice machine). ~~It shall~~ Gray water does not include wastewater from toilets, kitchen sinks, water softeners, dishwashers, ~~or~~ clothes washing machines, or non-domestic wastewater sources ~~laundry water from soiled diapers~~. A ~~grey~~ gray water system consists of a separate plumbing system for the approved gray water sources from the ~~blackwaste and kitchen plumbing~~ non-approved wastewater sources, a dosing chamber or tank with surge capacity ~~tank~~ to temporarily hold large drain flows, a filter to remove particles that could clog the irrigation system, a pump to move the ~~grey~~gray water from the ~~surge tank~~dosing chamber to the ~~irrigation~~drip irrigation field (if necessary), and a~~n~~ drip irrigation system or mini-leachfield to distribute the ~~grey~~gray water.

4.13.2 Approval Conditions

1. ~~Grey~~ Gray water ~~treatment and disposal~~ system~~s~~ components must meet all the effective soil depths and separation distance ~~setback~~ criteria ~~and soil application rate criteria as found in the rules (~~ required by IDAPA 58.01.03~~)~~ for standard systems.
2. Minimum irrigation area shall be based on the landscape area calculated in equation 4-11 and/or 4-12.
3. ~~Specialized~~ Separate plumbing designs for the gray water and other wastewater sources will need to be approved by the Idaho Division of Building Safety, Plumbing Program ~~Bureau~~.
4. Grey water ~~surge~~ tanks for gravity flow systems must be watertight, ~~and~~ noncorrosive, and be included on the approved product lists in section 5.2 and 5.3.
5. Dosing chambers shall meet the requirements of section 4.19.3.4 and should account for surge flows and storage to meet the irrigation needs of the system, and
    a. Must have an overflow to the subsurface sewage disposal system with an invert elevation lower than the inlet or pressure pipe outlet of the chamber.
    b. High level audio and visual alarms are not required.

6. The system must be designed by a PE licensed in Idaho if using drip or pressure distribution.
7. ~~Operations and maintenance manuals must be provided to the property owner~~ The design engineer shall provide an O&M manual for the system to the health district before permit issuance.
8. The drip distribution (irrigation) system shall meet the requirements of section 4.5 for pretreated effluent drip distribution systems except that a pretreatment system is not required.
9. Mini-leachfields shall meet the design requirements for drainfields outlined in IDAPA 58.01.03.008, except for those deviations allowed in table 4-12, and shall use geotextile fabric for the drainrock-soil barrier.

10. ~~Grey~~ Gray water may not be used to irrigate vegetable gardens.

~~9. Capacity of the septic tank and size of the blackwaste drainfield and replacement area shall not be reduced by the existence or proposed installation of a grey water system servicing the dwelling.~~

11. ~~Grey~~ Gray water shall not be applied on the land surface or be allowed to reach the land surface.

12. All wastewater generated that is not approved to be discharged to the gray water system shall either discharge to a full-sized subsurface sewage disposal system or collection system for a private or public municipal wastewater treatment plant.

Table 4-12. ~~Grey~~Gray water gravity flow mini-leachfield design criteria.

Mini-leachfield Design Criteria	Minimum	Maximum
Number of drain lines per irrigation zone	1	—
Length of each perforated line	—	100 feet
Distribution area square footage	—	1,500
Bottom width of trench	6 inches	18 inches
Total depth of trench	12 inches	18 inches
Spacing of line, center-to-center	3 feet	4 feet
Depth of earth cover over lines	6 inches	12 inches
Depth of aggregate over pipe	2 inches	—
Depth of aggregate beneath pipe	2 inches	—
Grade on perforated pipe	Level	1 inch/100 feet

4.13.3 Design Requirements

1. ~~Grey~~ Gray water flows are determined by calculating the maximum number of occupants or visitors in the wastewater generating structure ~~dwelling.~~, Residences shall be based on the first bedroom with two occupants and each bedroom thereafter with one occupant unless higher usage is proposed by the applicant.
2. Estimated daily ~~grey~~gray water flows for each occupant are:

   ~~a. Showers, bathtubs, and wash basins (total): 25 GPD per occupant~~

   ~~b. Clothes washer: 15 GPD per occupant~~

Table 4-13. Gray water flows by fixture type connected to system in gallons per person per day.

Fixture	Gallons/Person/Day
Shower/bath	18
Hand sinks (faucets)	12
Other	Case-by-case determination

Multiply the number of occupants and visitors by the estimated ~~grey~~gray water flow for the fixtures proposed to be connected to the gray water system.

For example: A three-bedroom house is designed for four people. The house has ~~a washing machine connection,~~ shower and hand sinks thus each occupant is assumed to produce ~~4~~30 GPD of ~~grey~~gray water, resulting in a total of ~~160~~ 120 GPD.

2. The formula shown in Equation 4-11 is used to estimate the square footage of landscape to be irrigated:

$$LA = \frac{GW}{ETxPFx0.62}$$

Equation 4-11. Landscaped area needed for ~~grey~~gray water produced.

where:

GW = estimated ~~grey~~gray water produced (gallons per week)
LA = landscaped area (square feet)
ET = evapotranspiration (inches per week)
PF = plant factor, based on climate and type of plants either 0.3, 0.5, or 0.8
0.62 = conversion factor (from inches of ET to gallons per week)

For example: If ET = 2 inches per week, and lawn grasses are grown with a PF of 0.8 (high water using) then the landscaped area is equal to:

LA = (~~160~~ 120 GPD x 7 days)/(2 x 0.8 x 0.62) = ~~1,129~~ 847 ft² of lawn.

3. An alternative to using ~~grey~~gray water for lawns is to irrigate landscape plants. A plant factor depends on the type of plants watered, an ET rate, and plant canopy. Table 4-~~12~~14 is used to calculate square footage of landscape plants that can be irrigated with ~~grey~~gray water.

Table 4-~~12~~14. ~~Grey~~Gray water application rates for landscape plants.

Evapotranspiration (inches per week)	Relative Water Need of Plant (plant factor)	Gallons per Week		
		200 ft² Canopy	100 ft² Canopy	50 ft² Canopy
1	Low water using 0.3	38	19	10
	Medium water using 0.5	62	31	16
	High water using 0.8	100	50	25
2	Low water using 0.3	76	38	19
	Medium water using 0.5	124	62	31
	High water using 0.8	200	100	50
3	Low water using 0.3	114	57	28
	Medium water using 0.5	186	93	47
	High water using 0.8	300	150	75

Note: square feet (ft^2)

Gallons per week (GPW) calculation for this chart was determined with **Equation** Error! No text of specified style in document.**-1:**

$$\cancel{Grey}Gray\ water\ flow\ (GPW) = ET \times plant\ factor \times area \times 0.62\ (conversion\ factor)$$

Equation Error! No text of specified style in document.**-1. Gallons per week needed for irrigated plants.**

This formula does not account for irrigation efficiency. If the irrigation system does not distribute water evenly, extra water will need to be applied.

For example: A three-bedroom home ~~with a washer~~ will produce ~~1,120~~840 GPW (7 days x ~~160~~120 GPD). If ET = 2 inches per week, then with the ~~1,120~~840 gallons of ~~grey~~gray water a homeowner could irrigate the following :

a. ~~Eight~~Four small fruit trees: ~~8~~4 x 50 = ~~400~~200 gallons (high water using, 50-foot canopy)
b. ~~Eight~~Six medium shade trees: ~~8~~6 x 62 = ~~496~~372 gallons (medium water using, 100-foot canopy)
c. ~~Seven~~Eight large shrubs: ~~7~~8 x 31 = ~~217~~248 gallons (medium water using, 50-foot canopy)
d. Total water use per week: ~~1,113~~820 GPW

4.13.4 Other Requirements

1. The Uniform Plumbing Code (UPC) ~~Grey~~Gray Water Standards require that all ~~grey~~gray water piping be marked *Danger—Unsafe Water*.
2. Valves in the plumbing system must be readily accessible, and backwater valves must be installed on ~~surge/holding tank~~dosing chamber drain connections to sanitary drains or sewer piping. Ball valves are recommended to be used in the system. Finally all piping must be downstream of water-seal type trap(s). If no such trap exists, an approved vented running trap shall be installed upstream of the connection to protect the building from possible waste or sewer gasses.
3. ~~Surge tank~~Dosing chamber or tank must be vented and ~~have a locking gasketed lid. If the surge tank is within the structure, then the venting must meet the requirements of the UPC. Outside surge tanks shall be vented with a 180° bend and screened. A minimum capacity of 50 gallons is required. The surge tank must be placed on a 3-inch concrete slab or on dry, level compacted soil and the lid labeled *Grey Water Irrigation System, Danger—Unsafe Water*. Surge tanks shall be constructed of solid durable materials, not subject to excessive corrosion or decay, and shall be watertight. T~~the tank drain and overflow gravity drain must be permanently connected to the structure's septic tank or sewer line. The drain and overflow drain shall not be ~~less in size~~ smaller in diameter than the inlet pipe.
4. Filters with a minimum flow capacity of 25 GPM are required.
5. ~~Pumps are usually required to lift the grey~~gray ~~water from the surge tank to the irrigation system (section 4.19). Alternatively if all of the landscape plants are below the building drain lines, then the grey water irrigation system could use gravity to distribute the grey water.~~
6. ~~Irrigation system can be either a mini-leachfield or a subsurface drip irrigation system. Mini-leachfield designs follow IDAPA 58.01.03.008, except for those deviations allowed by Table 4-13, and are required to use geotextile for the drainrock-soil barrier.~~

Notes:

1. The plants listed in Table 4-~~14~~15 are tolerant of sodium and chloride ions or have been reported to do well under ~~grey~~gray water irrigation.
2. Different types of media can be used in ~~grey~~gray water filtration. These include nylon or cloth filters, sand filters, and rack or grate filters.
3. ~~Table 4-13 lists criteria for the design of mini-leachfields.~~

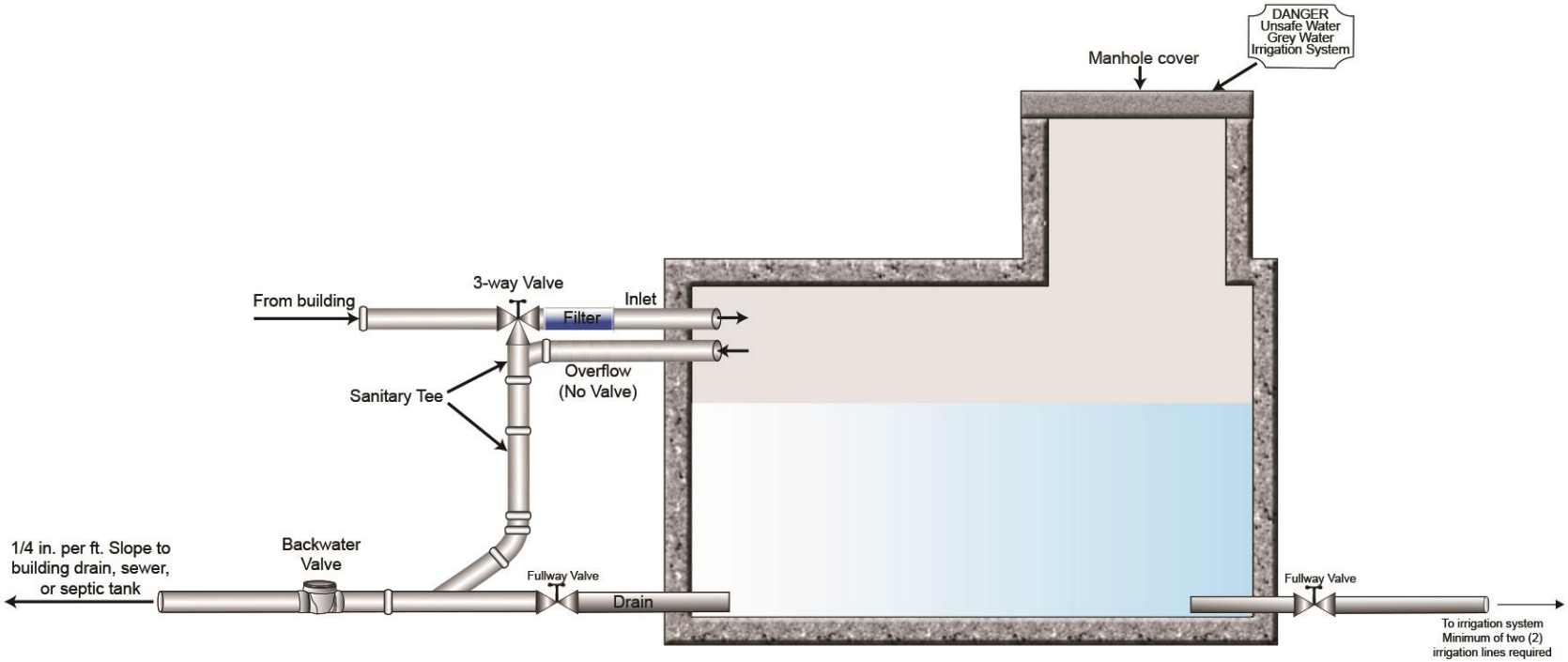
~~**Table 4-13. Grey water mini-leachfield design criteria.**~~

~~**Mini-leachfield Design Criteria**~~	~~**Minimum**~~	~~**Maximum**~~
~~Number of drain lines per irrigation zone~~	~~1~~	~~—~~
~~Length of each perforated line~~	~~—~~	~~100 feet~~
~~Bottom width of trench~~	~~6 inches~~	~~18 inches~~
~~Total depth of trench~~	~~12 inches~~	~~18 inches~~
~~Spacing of line, center-to-center~~	~~3 feet~~	~~4 feet~~
~~Depth of earth cover over lines~~	~~6 inches~~	~~12 inches~~
~~Depth of aggregate over pipe~~	~~2 inches~~	~~—~~
~~Depth of aggregate beneath pipe~~	~~2 inches~~	~~—~~
~~Grade on perforated pipe~~	~~Level~~	~~1 inch/100 feet~~

Table 4-~~14~~15. Sodium and chloride tolerant plants.

Agapanthus	Cottonwood	Honeysuckle	Olive	Rosemary
Arizona cypress	Crape myrtle	Italian stone pine	Pfitzer bush	Strawberry clover
Bermuda grass	Deodar cedar	Juniper	Purple hopseed bush	Star jasmine
Bougainvillea	Evergreen shrubs	Oaks	Redwoods	Sweet clover
Carpet grass	Holly	Oleander	Rose	

Figure 4-21 shows a single-tank gravity ~~grey~~gray water system, and Figure 4-22 shows a single-tank pumped ~~grey~~gray water system.



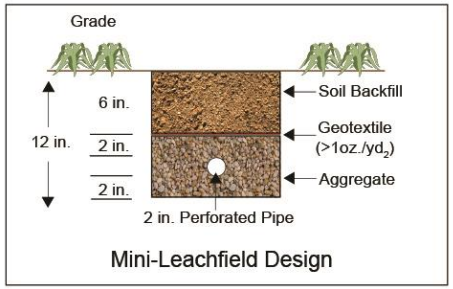
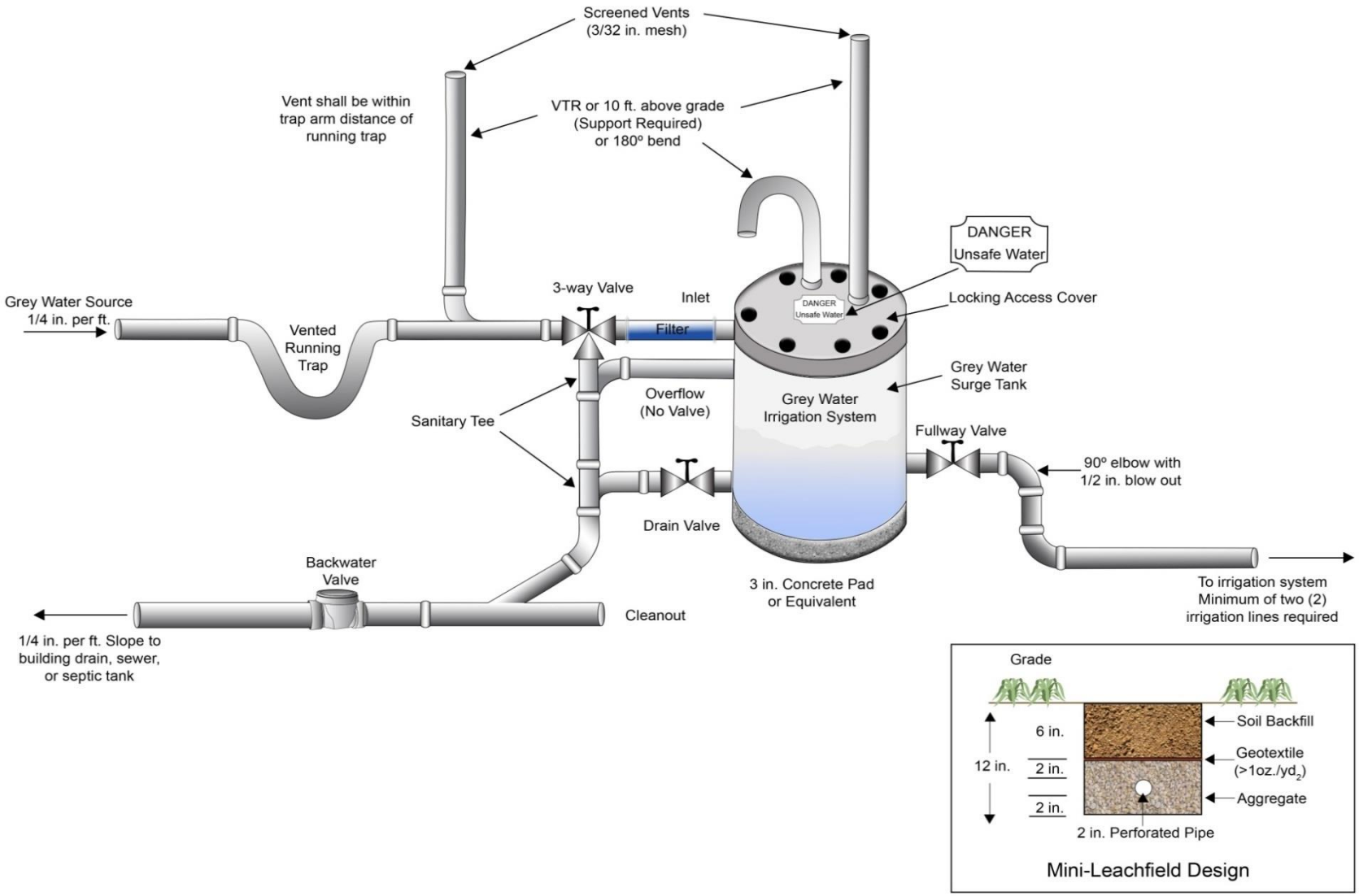


Figure 4-21. ~~Grey~~Gray water system (single-tank gravity).


Screened Vents
(3/32 in. mesh)
Vent shall be within
trap arm distance of
running trap
VTR or 10 ft. above grade
(Support Required)
or 180º bend
DANGER
Unsafe Water
Locking Access Cover
Grey Water Source
1/4 in. per ft.
Vented
Running
Trap
3-way Valve
Inlet
Filter
Grey Water
Surge Tank
Overflow
(No Valve)
Grey Water
Irrigation System
Sanitary Tee
Fullway Valve
90º elbow with
1/2 in. blow out
Drain Valve
Backwater
Valve
3 in. Concrete Pad
or Equivalent
To irrigation system
Minimum of two (2)
irrigation lines required
Cleanout
1/4 in. per ft. Slope to
building drain, sewer,
or septic tank
Grade
6 in.
12 in.
2 in.
2 in.
Soil Backfill
Geotextile
(>1oz./yd2)
Aggregate
2 in. Perforated Pipe
Mini-Leachfield Design

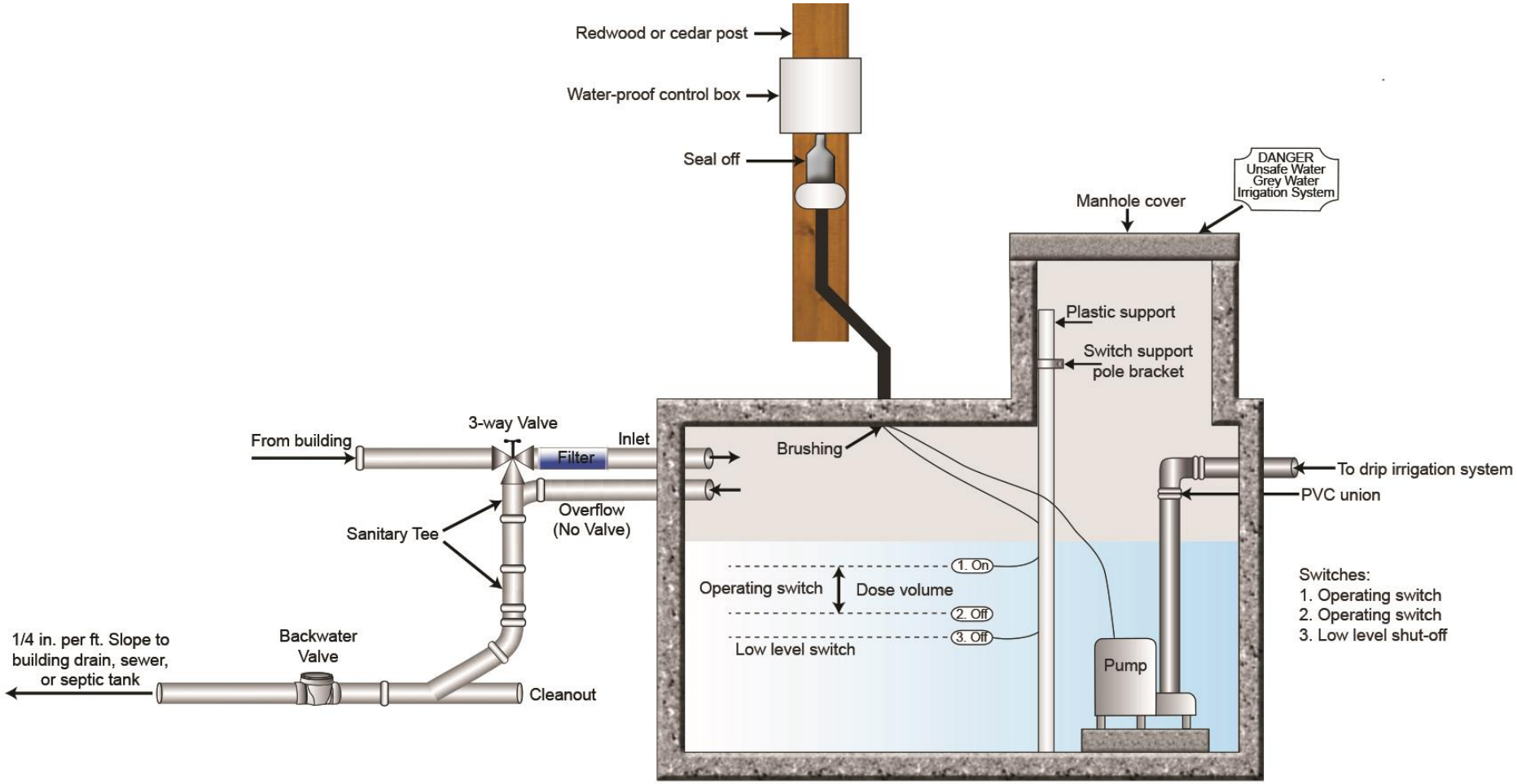
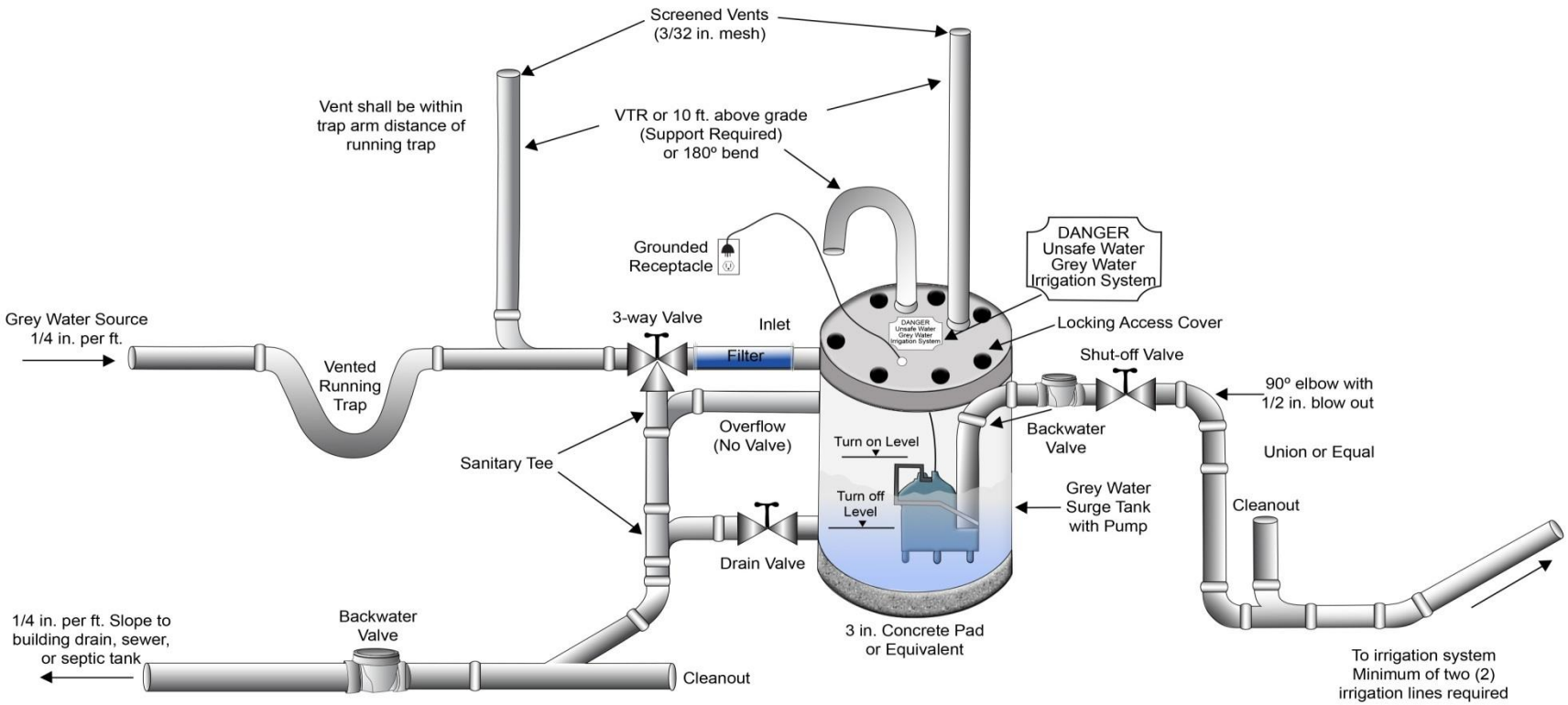


Figure 4-22. ~~Grey~~Gray water system (single-tank pumped).


Screened Vents
(3/32 in. mesh)
Vent shall be within
trap arm distance of
running trap
VTR or 10 ft. above grade
(Support Required)
or 180º bend
Grounded
Receptacle
DANGER
Unsafe Water
Grey Water
Irrigation System
Grey Water Source
1/4 in. per ft.
3-way Valve
Inlet
Filter
Locking Access Cover
Shut-off Valve
Vented
Running
Trap
90º elbow with
1/2 in. blow out
Overflow
(No Valve)
Backwater
Valve
Union or Equal
Sanitary Tee
Turn on Level
Turn off
Level
Grey Water
Surge Tank
with Pump
Cleanout
Drain Valve
1/4 in. per ft. Slope to
building drain, sewer,
or septic tank
Backwater
Valve
3 in. Concrete Pad
or Equivalent
Cleanout
To irrigation system
Minimum of two (2)
irrigation lines required

Appendix M

See subsequent pages.

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Appendix N

2.1.2 Soil Design Groups and Subgroups

This section is provided as a guide to field environmental health personnel in making technical allowances for standard systems and for health districts to use in selecting alternative systems. The required absorption area of a subsurface sewage disposal system depends on the texture of the soils in the proposed disposal system location. In a similar manner, required separation distances between the disposal area and features of concern, such as wells, surface water, and ground water, depend on soil texture. Soils surrounding the disposal system and those below it may not be the same.

The soil design group or subgroup (Table 2-4) used to determine the ~~minimum effective soil depth, and applicable~~ vertical separation distances~~,~~ describes the finest-textured soils adjacent to ~~the drainfield trenches~~ and beneath the drainfield for the effective soil depth. The soil design group or subgroup (Table 2-4) used to determine the horizontal separation distances to surface water is the coarsest-textured soils adjacent to and beneath the drainfield for the effective soil depth. Effective soil depths are described in section 2.2.2, 2.2.3, and 2.2.5 for standard and basic alternative systems. Some complex alternative treatment systems have effective soil depth reductions that impact vertical separation distances. Complex alternative treatment system effective soil depth reductions are described within each treatment system's individual guidance section.

All other soil textures and some soil features (i.e., gravel, coarse sand, all clays, organic muck, claypan, hardpan, and duripan) are unsuitable for installing a standard drainfield system.

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