



ENGINEERED SUBSURFACE WASTEWATER DISPOSAL SYSTEM REVIEW PROCEDURE

PURPOSE: To document the process and resources available for reviewing and approving Engineered Subsurface Wastewater Disposal Systems.

SCOPE: This document covers the review and approval of engineered subsurface wastewater disposal systems as required and defined in the [Subsurface Wastewater Disposal Rules 10-144 Chapter 241, section 11](#), infra. *These rules describe the DHHS review as a desk review of the proposal (see rules section 11).* This approval is not authorization to install the system, rather, it is permission for the Local Plumbing Inspector to issue a permit to install.

OWNER: Subsurface Wastewater Team Manager

DEFINITIONS/ACRONYMS:

BOD5: The five-day biochemical oxygen demand, measured in mg/l.

Department: The Department of Health and Human Services

Design Engineer: A Professional Engineer licensed to practice in Maine.

Engineered System: Any subsurface wastewater disposal system designed, installed, and operated as a single unit to treat and dispose of 2,000 gallons of wastewater per day or more; or any system designed to dispose of wastewater with a combined BOD5 (five day biochemical oxygen demand) and TSS (total suspended solids) concentration greater than 1,400 mg/L.

[HHE-200 Form](#): Subsurface Wastewater Disposal System Application

[HHE-204 Form](#): Subsurface Wastewater Disposal System Variance Request

[HHE-220 Form](#): Application for Engineered Subsurface Wastewater Disposal System

Interested parties: Interested parties in an application for an Engineered System include but are not limited to property owners, the applicant, project managers acting on behalf of the applicant, Site Evaluators, Maine Department of Environmental Protection (MDEP) staff, and Local Plumbing Inspector(s) for the relevant municipality.

LPI: Local Plumbing Inspector

PE: A Maine licensed Professional Engineer.

Reviewer: The Subsurface Wastewater Team Manager

SE: Site Evaluator licensed to practice in Maine.

Subsurface Wastewater Disposal Rules: The State of Maine [Subsurface Wastewater Disposal Rules 10-144, CMR 241](#). (2023)

TSS: Total Suspended Solids, measured in mg/l.

RESPONSIBILITIES:

1. The Subsurface Wastewater Team Manager, or their designee (herein described as “the Reviewer”) is responsible for reviewing and approving applications for Engineered Systems.
2. The MDEP is responsible for reviewing and providing input on the environmental impact expected from an engineered system, per the 2023 MOU between DHHS and MDEP.

POLICY & PROCEDURE:

1. The Rules require a pre-application discussion with the PE, assigned MDEP staff, and other parties as appropriate. This discussion is initiated by the design engineer. The discussion is intended to work out minor issues if any, to set out design parameters, and to work through any other potential problems prior to submission of an application. The broad goal is to enable the PE to submit an application that can be processed with little modification. Note: in practice, this review usually happens after an Engineered System Application is received by the Department.

- a. From the preliminary discussion through acceptance of the design engineer’s statement of compliance, the design engineer is the primary point of contact. Site Evaluators are routinely participants but are not the primary point of contact.

If a pre-application discussion does not occur and an application is received, the Reviewer typically arranges a meeting with the same people to discuss the application that has been submitted.

2. The design engineer submits an application for an Engineered System on an HHE-220 Form, incorporating the results of the preliminary discussion as needed. The HHE-220 form is linked here: [G:\SWW\FORMS\2019 updates including HHE documents\HHE-220 Engineered System Fillable.pdf](#)

A completed HHE-220 application includes the following exhibits:

- USGS 7.5’ topographic map, if available, or 15’ topographic map showing project location
- Mounding Analysis
- Transmissivity Analysis
- HHE-200 and HHE-204 Form(s)
- Operations and Maintenance Manual
- Soil test pit logs prepared by a licensed Site Evaluator (SE).
- Plans submitted electronically as a pdf file
- A review fee of \$100.00 is required.

3. For any subsurface wastewater disposal system which requires a variance to provisions of the Subsurface Wastewater Disposal Rules, the Subsurface Wastewater Disposal System Variance Request, HHE-204 Form, must be completed, signed, and included in the Engineered System application. The Local Plumbing Inspector must not issue a permit for the installation of a subsurface wastewater disposal system requiring a variance from the Department until approval has been received from the Department. The Subsurface Wastewater Disposal System Variance Request, HHE-204 Form can be found at the following link: G:\SWW\FORMS\PDF\hhe-204_01-2011.pdf
4. The application is reviewed by the Reviewer for completeness, including signature(s), review fee, and inclusion of all exhibits and plans. If incomplete, the Reviewer contacts the design engineer to have her/him provide a complete application.
5. The application is kept electronically by creating a separate subfolder for the project in the appropriate municipality subfolder on the G:/ drive. For example, <G:\SWW\Engineered Systems\Engineered\Sample Town\New Project>. All digital submissions are stored in this folder. Upon receiving a hardcopy application, the Reviewer will request from the applicant an electronic copy of the application and supporting documentation.
6. At the beginning of the application review, a request is made to an assigned MDEP staff from the Bureau of Land Resources, one preferably involved with Site Development Law, to review the Engineered System. The Reviewer provides the assigned MDEP staff with a completed "Request for a Review" form linked here: <G:\SWW\Engineered Systems\DHHS Transmittal to DEP Sheet.docx>. The MDEP and the Reviewer review Engineered System as specified in the May 2023 MOU linked here: <G:\SWW\Engineered Systems\Memorandum of Understanding with DEP>
7. Within 20 working days of the request for review, or within a time frame mutually agreed upon, The MDEP shall:
 - a. submit comments indicating that either 1) MDEP has found no reason to believe that normal operation of the disposal system will result in unreasonable adverse impact on the natural environment or other uses of groundwater and surface water provided that the system is properly constructed and maintained, or 2) that MDEP has found that the normal operation of the disposal field would lead to unreasonable adverse effects and needs to be re-evaluated by the Department.
 - b. submit comments on the proposal which explain the project impacts on groundwater and surface water resources, along with recommendations for Department action on the project, including a justification for any recommended denial or conditions of approval; or
 - c. submit a request for additional information or clarification of information, stating specifically the nature of the information requested and explaining why such information is necessary to fulfill the obligations specified in the MOU.
8. If MDEP is unable to complete its review of a project within 20 working days, it will provide a written statement to the Department explaining that the review was not completed and requesting an additional time to comment, with written notice to the applicant(s). Decisions to extend comment deadlines will be made by the Department on a case-by-case basis, with written notice to the applicants.

9. If no comment or request for a specified additional amount of time is received from MDEP within 20 working days, then the Department will assume that MDEP has no concerns about the system.

10. The Reviewer reviews the application for conformance with the State of Maine Subsurface Wastewater Disposal Rules (10-144 Chapter 241, Section 11). These rules can be found at the following link: <https://www.maine.gov/dhhs/mecdc/environmental-health/dwp/documents/SubsurfaceWastewaterDisposalRulesProposal.pdf>

Additional information can be found in the “Guidance Supplement for the Maine Subsurface Wastewater Disposal Rules” linked here: <https://www.maine.gov/dhhs/mecdc/environmental-health/plumb/documents/guidance-manual-2011-final.doc>

- a. Review the narrative and exhibits in the application. The narrative should be consistent with the pre-application discussion on major points. It is common for the application to include minor alterations or additions as the application was developed after the pre-application discussion.
- b. Chapter 241’s section on engineered systems (under Miscellaneous Systems) calls for “not less than three observation holes per engineered disposal field”. If this disposal field is split up into several beds or pods, then at least three observation holes need to characterize each bed or pod.
- c. Review the mounding and transmissivity analysis and spot check the calculations and assumptions. Most engineers use the Hantush Method for calculation of mounding and transmissivity, but other recognized methods are also acceptable. The submission must include an analysis of the proposed system design and site hydraulics to determine that there will be an adequate vertical separation between the bottom of the disposal field and any mounded water table. This analysis must include all calculations, justification of methodology and assumptions, and other supporting data and documentation. Any additional vertical separation distance needed to offset mounding effects and maintain compliance with Table 5F must be stated in the mounding analysis report (Ch. 241 Sec 11(A)(2)(i). This separation needs to be maintained throughout the predicted mounding conditions. The separation is measured between the predicted mound and the stone (Sec 11(A)(2)(f) under the distribution pipes, concrete or plastic disposal devices, or similar device if stone is used. If no stone is called for then the bottom of the disposal device is the top measuring point. This applies to the Eljen GSF units. Since the Division of Environmental and Community Health accepted the 2009 installation manual for the Eljen GSF, the bottom of the disposal device has been considered the top measurement point. Also see that Chapter 241 describes the Geoflow, Enviro-Septic, Advanced Enviro-Septic, and Infiltrator ATL system as “gravel-less disposal tubing”.
 - i. DHHS Guidance on Wastewater Mounding Impact Analysis (also known as the mounding screening analysis and linked in previous versions of this SOP) does not provide a height of the mounded groundwater. It cannot ensure that there is an adequate separation between the mound and the above-mentioned distribution device and therefore not appropriate for a mounding analysis.

- ii. Information on the USGS Hantush method of Simulation of Groundwater Mounding Beneath Hypothetical Stormwater Infiltration Basins can be found at the following link: <G:\SWW\Engineered Systems\USGS Hantush.pdf>
 - iii. From the Colorado School of Mines, Guidance for Evaluation of Potential Groundwater Mounding can be found at the following link: <G:\SWW\Engineered Systems\Guidance for Evaluation of Potential Groundwater Mounding.pdf>
- d. Check that the HHE-220 Form page 1 has been signed by the Licensed Professional Engineer (PE) and the HHE-200 Form page 1 has been signed and dated by the Licensed Site Evaluator (SE). Pages 2 and 3 are optional and often left blank as their content is addressed elsewhere in the application. If a variance is needed, a completed request form (HHE-204) with all signatures is needed, including the Local Plumbing Inspector's signature. Check that all the large system design sheets and details are signed, stamped and dated by the PE.
 - e. Review the Operations and Maintenance (O&M) Manual. The O&M Manual must include inspection schedules, pumping schedules, and record keeping procedures. Manufacturers' operations and maintenance manuals for pumps, monitoring devices and other equipment may be included in this exhibit, and are recommended, but are not a substitute for the exhibit.
 - f. Review the soil test pit logs for consistency with the soil criteria in the Rules, and check that the logs are signed and dated by the SE. Check that the disposal field is sized according to the appropriate sizing factor in table 5D.
 - g. Review the plans, paying particular attention to horizontal setbacks and vertical separations.
 - h. Disposal System: The designer of the disposal system should be encouraged to consider the equal distribution of the wastewater in the disposal field. The equal distribution of wastewater is assumed for mounding calculations and optimal performance, but not always achieved.
 - i. If the design appears to present no threat to ground or surface water quality or to the general health, welfare, and safety of the public, an approval letter is written by the Reviewer using one of the following template letters:
 - 8. The template letter for approval of an Engineered System can be found at the following link: [G:\SWW\Engineered Systems\\\$engineered template approval letter.docx](G:\SWW\Engineered Systems\$engineered template approval letter.docx)
 - 9. The template letter for approval of an After the Fact review of an Engineered System can be found at the following Link: [G:\SWW\Engineered Systems\\\$engineered template approval letter ATF review.docx](G:\SWW\Engineered Systems\$engineered template approval letter ATF review.docx)

Incorporate any findings and conditions that are not already addressed in the template's standard language. Store this document in the appropriate folder on the G:\ drive.

11. If the application does not conform with the Rules, the Reviewer contacts the Design Engineer to resolve the problem to enable approval.

12. The approval is generally addressed to the property owner/applicant unless an agent has been designated. The approval is copied to the design engineer, site evaluator, LPI, MDEP reviewer, and any other interested parties. If the design engineer's and interested parties' e-mail addresses are known, the approval is sent via e-mail with a digital (scanned) signature. Otherwise, signed hard copies are sent.

13. Records of Engineered System applications, supporting documentation, and approvals are kept at the following link in folders by Town and System Name: <G:\SWW\Engineered Systems\Engineered>

14. The HHE220A form used to record the final inspection of an Engineered System, completed by the design engineer, is found at the following link: <G:\SWW\Forms\2019 updates including HHE documents\HHE-220A Form.docx>

ASSOCIATED DOCUMENTS: See links within this document.

SUPERCEDED DOCUMENTS: None.

RETENTION:

1. This document is retained per the DWP Documentation Control Procedure.

REVISION LOG

Section	Page	Rev.	Date	Description of Change	Approved by:
		Original	5-7-2021		Nathan S. Saunders P.E.
10b	4	A	7-14-2022	Added detail on the requirements of the mounding analysis.	Nathan S. Saunders P.E.
6,7,10	3,4,5	B	12-05-2023	Added details that arose in the review of engineered systems in 2021-23 Ch, 241 references updated	Alexander L. Pugh, L.G.