WESTERN UPPER PENINSULA HEALTH DEPARTMENT
RESIDENTIAL ON-SITE SEWAGE PROGRAM
ALTERNATIVE TECHNOLOGY POLICY

Subject:	Residential On-Site Sewage Program Alternative Technology Policy	Date: Revised:	June 15, 2001 August 28, 2023
Scope:	Environmental Health Division Staff and Western Upper Peninsula Community	Effective:	July 1, 2001 September 25, 2023

Purpose:

To establish an Alternative Technology Policy for the agency's residential on-site sewage program assuring that the agency's staff, clients, and sewage system designers and installers have information defining the agency's requirements for alternative sewage systems proposed for sites not meeting the minimum requirements of the Superior Environmental Health Code, or current legally adopted county sanitary code having authority in Baraga, Gogebic, Houghton. Keweenaw, and Ontonagon Counties (hereby referred to as the *Code* in this policy). The policy also defines the requirements for operation, maintenance, and monitoring of systems installed in accordance with the policy.

Policy:

It is the policy of the Western Upper Peninsula District Health Department to assess each residential building site requiring on-site sewage treatment and disposal for compliance with the requirements of the Code The health officer has the authority to issue a construction permit for an alternative sewage system if the site does not meet the site requirements for a conventional sewage system. In order to safeguard groundwater and surface water, and to prevent imminent public health hazards caused by surface discharge of untreated sewage, the Alternative Technology Policy is to be used for alternative sewage systems installed on sites with limited treatment capability.

This policy does not apply to commercial building sites regulated by the Michigan Criteria for Subsurface Sewage Disposal, or to residential site condominiums or subdivisions, or to land divisions with lots less than one acre in size under the regulator authority of Administrative Rules for On-site Water Supply and Sewage Disposal for Land Divisions and Subdivisions

Approvals:

Western Upper Peninsula District Health Department Board of Health Date: 9/25/2023

Cathryn A. Beer, Health Officer/Administrator Date: 10/11/2023

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1.0 SOIL AND SITE EVALUATIONS FOR ALTERNATIVE WASTEWATER TREATMENT SYSTEMS CONSISTING IN PART OF IN-SITU SOIL

1.01 Purpose. The purpose of this Section is to establish the minimum requirements for evaluating soil and site characteristics that may affect treatment or dispersal of wastewater, treated wastewater, or final effluent.

1.02 Scope.
(a) This Policy applies to soil and site evaluations for proposed building sites not meeting the minimum sewage system suitability standards set forth in the *Code.*
(b) The Alternative Technology Policy applies only to sites containing the minimum required six (6) inches or greater of in-situ soil types for which soil treatment capability has been credited by the Code .

1.03 Qualifications.
(a)A soil and site evaluation for the dispersal of wastewater, treated wastewater, or final effluent from an alternative wastewater treatment system shall be performed by environmental health sanitarian of the Western Upper Peninsula Health Department.
(b) A qualified consultant that designs and submits alternative permit applications to the Western Upper Peninsula Health Department under this policy shall be a licensed professional engineer or registered environmental health sanitarian in private practice. All references in the policy to engineer or professional engineer include a registered environmental health sanitarian in private practice.

(1) Number and Depth of Soil Evaluations. The number, type, depth, and location of soil profile evaluations shall be sufficient to delineate the area under investigation and to assure consistency of the data within that area and ensure the credited in-situ extends the entire area of the proposed alternative system including the basal area.
(a) Number of Soil Evaluations. A minimum of two (2) soil profile evaluation excavations shall be used to delineate a site within which a sewage treatment or dispersal component consisting in part of in-situ soil are to be located.
(b) Soil Verification. The department may require the property owner to provide additional soil pits for verification of soil profile evaluation data. The property owner may be required to make application for a revisit following the initial site denial. The health department shall be present at the site during the verification of soil profile evaluation data.

(2) Soil Interpretations.
(a) Redoximorphic features or mottles shall be interpreted as zones of seasonal or periodic soil saturation or groundwater, except as provided under the following subpart (3) *Soil Color Pattern Exemptions.*
(b) Unless determined otherwise, the highest elevation of seasonal soil saturation shall be the ground surface where redoximorphic features are present within four (4) inches of the bottom of the A horizon.
(c) An EGLE wetland delineation may be required if seasonal high water table is documented within 12 inches of natural grade, or as determined by the department to determine wetland boundaries. An alternative sewage system is prohibited to be installed in an area delineated to be a regulated wetland of the state.

(3) **Soil Color Pattern Exemptions.** The following conditions may discount the following conditions, not limited by enumeration, as indicators of seasonally saturated soil:
(a) Fossilized soil color patterns formed by historic periodic soil saturation.
(b) A soil profile that has an abrupt textural change, consisting of silt loam or finer textures overlying at least four (4) feet of unsaturated loamy sand or coarser textured soil and two (2) feet or less of periodically saturated soil immediately above the coarser material.
(c) Redoximorphic features orientated along old or decayed root channels.
(d) Residual sandstone colors.
(e) Unevenly weathered glacially deposited material, glacially deposited material naturally gray in color, or concretionary material in various stages of decomposition.
(f) Deposits of lime.
(g) Light colored silt or fine sand coatings on soil ped surfaces.
(4) **Soil Color Pattern Reports.** WUPHD shall report and describe any soil color pattern exemptions encountered.
(5) **Determination Requests.** WUPHD may request a determination by EGLE department staff on the significance of unusual soil color patterns usually indicating soil saturation when other evidence of soil saturation is not present.

1.04 **Soil and Site Evaluation Reports.** A soil and site evaluation report shall be prepared by the health department.

1.05 **Soil Saturation Determinations/Disputes.**
(1) General.
(a) A property owner's engineer, may submit documentation to the department to prove that redoximorphic features, or other soil color patterns, at a particular site are not indicative of periodically saturated soil conditions or high groundwater elevation.
(b) Documentation shall be in the form of an interpretative determination, soil saturation determination, or hydrograph procedure.
(c) The independent qualified soil evaluator (Certified Professional Soil Scientist, Certified or Licensed Soil Tester, Registered Environmental Health Sanitarian, or other person deemed qualified by the department) shall consult with the department staff regarding the required data collection prior to compiling an interpretative determination, soil saturation determination, or hydrograph procedure.
(d) The department must be given the opportunity to observe site activities related to a soil saturation determination/dispute in order to collect and verify information for subsequent decision making.
(e) Final determination shall be made by the health department.

1.06 **Supplemental Site Information.**
(1) General.
(a) Proposed building sites may require supplemental information to aid the department in assessing the proposed developments impact to environment, health, safety and general welfare of the public.
(b) Supplemental Site Information Examples. Examples of supplemental information that may be required to assess a sites development potential include:
1) A geological study or interpretation.
2) A hydrogeological study or interpretation.

3) A hydrological study or interpretation.
4) A Land Division Act determination.
5) Floodplain delineation conducted by EGLE
6) Wetland delineation conducted by EGLE. On sites where the limiting zone is identified as seasonal high water table, it shall be determined that site of the proposed system is not in a delineated wetland. Wetlands shall not be filled, dredged, or negatively impacted in the construction of an alternative sewage system.
7) High Risk Erosion Area or Critical Dunes delineation by EGLE.
8) Other investigations required by federal, state or local law to determine potential impact to environment, health, safety and general welfare of the public.
9) Other information required to perform a risk assessment.

2.0 MINIMUM CRITERIA FOR ALTERNATIVE WASTEWATER TREATMENT SYSTEMS CONSISTING IN PART OF IN-SITU SOIL

2.01 Purpose. The purpose of this Section is to provide minimum soil, site, and design criteria for the treatment and dispersal of treated wastewater or final effluent from an alternative secondary on-site wastewater treatment system consisting in part of in-situ soil.

2.02 Soil Evaluation.
(a) The soil evaluation shall determine that sufficient native soil is present so that the alternative sewage system, consists in part of in-situ soil. At least six (6) inches shall be an in-situ soil type for which soil treatment capability has been credited in accordance with the *Code*.
(b) The effective in-situ soil shall not be comprised of greater than 60% course sand or rock fragments (stone, cobble, or gravel) by volume or excessively permeable soils. Excessively permeable soil is soil that contains a high percentage of coarse to very coarse sands (2.0 mm and larger) and often including fine gravels and/or cobbles. Water passes through the soil very rapidly (i.e., soil permeability < 3 minutes/inch) which limits the treatment capability.
(c) Adequate soil shall be available in the greenbelt area, the area measured horizontally downslope from the edge of the proposed mound fill, which shall be maintained undisturbed prior to during and after construction so as not to impede lateral movement of effluent. If in-situ soil is not available, a twenty (20) foot wide greenbelt shall be provided of at least six (6) inches of sand fill material.

2.03 Secondary On-site Wastewater Treatment System Performance Standards/Effluent Quality
(a) The quality of effluent discharged from an alternative secondary on-site wastewater treatment system to in-situ soil, shall be equal to or less than all of the following:
(a) A monthly average of 30 mg/L Biological Oxygen Demand (BOD_5)
(b) A monthly average of 30 mg/L Total Suspended Solids (TSS)
(c) A monthly geometric mean of 10^4 Fecal Coliform (FC) Colony Forming Units (cfu) per 100 ml, and
(d) Other chemical or biological standards that may be set at the discretion of the department

2.04 Secondary On-site Wastewater Treatment System Designs.

(1) General.

(a) Alternative secondary on-site wastewater treatment systems shall be designed to hold wastewater and reduce the contaminant load of wastewater for dispersal to in-situ soil.

(b) Alternative secondary on-site wastewater treatment systems shall be designed to have sufficient capacity to accommodate the anticipated quantities of wastewater that will be discharged into the system.

(c) Alternative secondary on-site wastewater treatment systems intended to treat and disperse wastewater shall be designed to have sufficient ability to treat or separate out the anticipated types, quantities and concentrations of wastewater contaminants to be discharged into the system so that the dispersed wastewater will not create a human health hazard.

(2) Design Basis. The alternative on-site wastewater treatment systems shall be designed to produce an acceptable quality of effluent to meet NSF/ANSI Standard 40.

(3) Variance Requests.

(a) A variance from the requirements set forth in the *Code* may be granted by the health officer when all of the following conditions exist:

1) No substantial health hazard or nuisance is likely to occur.
2) Strict compliance with the code requirements would result in unnecessary or unreasonable hardship to the petitioner.
3) No state, local statute, or other applicable laws would be violated.
4) The protection of the environment, health, safety and general welfare of the public is demonstrated and assured.
5) The variance is applied for in writing.

(b) Alternative systems designs shall be limited to two or less variance requests for deviations from the *Code* in the following categories:

1) Effective in-situ soil depth
2) Vertical isolation distance to limiting zone above the estimated highest groundwater elevation, bedrock, limiting zone, or other restrictive feature
3) Horizontal isolation distance to surface water such as lakes, rivers, or streams, seasonal impounded wetland, water wells or other site attributes that are vulnerable to contamination. A reduction of isolation distance to the owner's on-site water well may only be considered if adequate protection of the aquifer is provided through a clay confining layer or confined aquifer, or
4) Square footage of the absorption system / soil application rate / increased hydraulic loading rate
5) Absorption system orientated perpendicular to contour of the original natural grade.

(4) Additional Variance Request Waivers. Alternative system designs requesting more than two variance requests in the above categories shall provide compensation, including but not limited to the following options:

(a) Increase in vertical isolation distances above restrictive feature

(b) Increase horizontal isolation distances to site attributes that are vulnerable to contamination

(c) Increase the square footage of the absorption system

(d) Maintain a linear loading rate in accordance with Hydraulic linear loading rate (gal/day/ft) in accordance with Table 1, 2000 by E. Jerry Tyler
(e) Dual treatment capacity, including secondary and tertiary treatment following the septic tank.
(F) Area is served by community water supply. Groundwater aquifer is not utilized as a drinking water supply. Lots served by municipal water may be reviewed on a case by case basis for additional variances.

(5) Variance Denial. The department may decline a request for a variance when the protection of health, safety, and general welfare of the public is not demonstrated and assured.

2.05 Recognized Secondary On-site Wastewater Treatment System Methods and Technologies.
(1) General.
(a) Alternative secondary on-site wastewater treatment system methods and technologies that are recognized by NSF/ANSI Standard 40 shall be utilized in a design for a specific project.
(b) The level of effluent quality shall be demonstrated to the department by means of standards institute approvals, third party scientifically reviewed papers, detailed research papers or other proven methods that includes laboratory data including the influent and effluent wastewater quality for determining the consistent performance of an alternative secondary on-site wastewater treatment system. The data must clearly document the manufacturer's claims as to the performance of a product.
(c) If the department is not satisfied that the information submitted provides reasonable evidence of the effectiveness and reliability of the alternate method, the department shall deny the approval.

2.06 Distribution/Dispersal System Design.
(1) General.
(a) The components for the dispersal of wastewater, treated wastewater or final effluent from an alternative secondary on-site wastewater treatment system shall be designed in accordance with:
1) Pressure Mound Systems Technical Guidance for Site Suitability, Design, Construction and Operation and Maintenance, MDEQ June 2003
2) Michigan Criteria for On-Site Wastewater Treatment 1/29/2013 Final Edited Draft
3) Table 4.2, Soil Loading Rates for Infiltrative Surfaces Wisconsin Administrative Code, Chapter Comm 83, Table 83.44-1 *Maximum Soil Application Rates Based Upon Percolation Rates,* and/or Table 83.44-2 *Maximum Soil Application Rates Based Upon Morphological Soil Evaluations,* or other
4) Technical Guidance Manual if approved by the department, or
5) As per the alternative technology manufacturer's recommendations installation and design manual.

(2) Deviations.
(a) In lieu of the above referenced design guidelines, a designer may opt to use another proven method for designing a dispersal component. Requests for alternate dispersal system designs shall be accompanied by detailed system design and construction plans by a professional engineer, certification of the performance capabilities of the product submitted by professional engineer, research supporting the proposed system materials, design and sizing, and empirical data showing the results of system use in other states with similar soil conditions.
(b) The detailed plans and information submitted with the approval request shall be reviewed by the department to determine whether or not there is a reasonable certainty that the information submitted provides evidence of the effectiveness and reliability of the proposed alternate dispersal method.

(c) If the department is not satisfied that the information submitted provides reasonable evidence of the effectiveness and reliability of the alternate method, the department shall deny the approval.

2.07 Infiltrative Surface.

(a) When a secondary pre-treatment unit is proposed prior to the final disposal absorption system, the infiltrative surface of unsaturated soil to which treated effluent is discharged shall be located at least 24 inches above the estimated highest groundwater elevation, bedrock, limiting zone, or other restrictive feature.

(b) When the treatment component is part of the absorption system, the infiltrative surface of unsaturated soil to which treated effluent is discharged shall be located at least 36 inches above the estimated highest groundwater elevation, bedrock, limiting zone, or other restrictive feature.

(c) Sand fill material required to achieve the required separation to estimated highest groundwater elevation, bedrock, or other restrictive feature shall meet MDOT 2NS or ASTM C33 specification.

2.08 Dispersal Capabilities.

(a) The effluent parameter with the highest concentration shall determine the maximum application rate.

(b) The soil conditions at the infiltrative surface of unsaturated soil to which effluent is to be discharged shall be used to establish the maximum application rate for a dispersal design.

(c) The moist soil consistence of the soil horizon in which the infiltrative surface of an on-site wastewater treatment system dispersal component will be located may not be stronger than firm classification.

(d) When a secondary pre-treatment unit is proposed prior to the final disposal absorption system, the maximum soil application or soil loading Rates based on the in-situ soil shall be no more than two times the Application Rate (GPD/ft2) of the Code for no more than a 50% size reduction in the square footage of the absorption system.

(e) When the treatment component is part of the absorption system, the maximum soil application or soil loading rates based on the in-situ soil shall not increase the application rate (GPD/ft2) of the as the Code requires beyond a 30% size reduction in the square footage of the absorption system.

(f) The design of a treatment or dispersal component consisting in part of in-situ soil shall reflect restrictive soil horizons that affect treatment or dispersal.

2.09 Effluent Distribution.

(a) The distribution of treated effluent to the in-situ soil shall be accomplished by means of pressurized distribution.

1) Small frequent doses to the mound by means of dosing to promote unsaturated flow and enhanced treatment and hydraulics are required. Design shall provide uniform doses with no more than 0.5 gallons per orifice per dose.
2) Current and best practice recognizes the importance and benefit of reducing instantaneous hydraulic and organic loading. Small doses followed by resting periods spread evenly throughout the day enhances microbial activity, improves treatment, and system longevity.
3) Control of pumping units by means of programmable timers is preferred. Time dosing in conjunction with pressure distribution shall be design standard for all alternative systems.
4) Seasonal or intermittent use dwellings that may have high intermittent volumes exceeding the maximum GPD system design shall utilize flow equalization with a timed dosage and provide sufficient storage in equalization tank for two (2) days surge of peak demand in addition to the GPD design to dose the system on non-peak days.

2.10 Dispersal Component Orientation.
(a) The infiltrative surface of a dispersal component consisting in part of in-situ soil and located in fill material above original natural grade shall be level, unless an alternating valve uniformly doses effluent to separate cells installed level at multiple elevations.
(b) The longest dimension of a dispersal component consisting in part of in-situ soil shall be oriented along the surface contour of the component site location.
(c) Dispersal components consisting in part of in-situ soil shall be located as to minimize the infiltration of storm water into the component.

2.11 Isolation Distances.
(a) Standard minimum isolation distance requirements set forth in the *Code* shall be observed.
(b) Justification for reductions in the standard minimum isolation distance requirements may be demonstrated for sites applying alternative, innovative or experimental on-site wastewater treatment systems.
(c) The minimum isolation distance to surface water or impounded wetlands shall be no less than 50 feet.
(d) A proposed reduction in isolation distance to the property owner's drinking water well may only be considered if the terminates in a confined protected aquifer, or has a minimum 10-foot clay confining layer of substantial aerial extent to protect the aquifer, and there is no risk to contamination of the drinking water aquifer. The property owner shall agree and provide water well sampling for coliform bacteria, nitrate, and nitrite on an annual basis to ensure safe drinking water standards are maintained.
(e) The minimum isolation distance to drinking water wells shall be increased to 100 feet where there is shallow fractured bedrock and exposed bedrock outcrops at ground surface on the site.

2.12 Technology Selection. Technology selection for the treatment and dispersal of treated wastewater from an alternative secondary on-site wastewater treatment system consisting in part of in-situ soil shall meet or exceed NSF/ANSI Standard 40.
(a) Primary treatment in the form of sufficiently sized septic tanks shall precede and be completely separate from the secondary treatment.
(b) Secondary treatment shall be designed with access for final effluent sampling prior to dispersal into the in-situ soil.
(c) Tertiary treatment may be required in some cases to overcome site limitation, and shall be designed with access for final effluent sampling prior to dispersal into the in-situ soil.

2.13 Design Plans.
(a) Design plans for alternative secondary on-site wastewater treatment systems and dispersal components, meeting the minimum design criteria outlined in this policy, shall be endorsed and officially sealed by a licensed professional engineer, either having experience and expertise in the field of environmental engineering *or wastewater treatment design* to the department for review.
(b) The procedures and elements of a complete permit application and design plan submittal are outlined in Section 4.0 *Permit Applications and Design Plan Submittals.*

2.14 Unsuitable Building Sites.
(1) Site Denials. Proposed building sites not meeting the minimum soil and site criteria presented of this policy shall be deemed unsuitable building sites for new construction.

(a) Sewage Lagoons. Sites not meeting the minimum soil and site criteria presented of this policy, but do meet the minimum requirements presented in the On-site Sewage Program Protocol, Lagoon Permitting Procedures, February 4, 2009, revised June 28, 2016, or current approved revision, may be considered for a sewage lagoon.
(b) Public Sewer Connection. Any proposed dwellings with pressurized water shall be connected to a community on-site sewage system or municipal sewer system.
(c) Appeals. In the event an applicant disagrees with a decision of the department, the applicant will be directed to the appeals process set forth in *Appeals* section of the Code.
(d) Risk Based Analysis. Applicants requesting a formal appeal before the Board of Appeals shall submit a Risk-based Analysis prepared, endorsed, and officially sealed by a licensed professional engineer having experience and expertise in the field of environmental engineering *or wastewater treatment design.* A *Risk-Based Analysis* of a proposed project shall be required in order to aid the department in assessing a proposed development's impact to environment, health, safety and general welfare of the public The Risk-based Analysis shall be submitted at least 45 days prior to the date of the appeals hearing.

(2) General. For proposed building sites having been denied an alternative sewage system, all potential impacts of a proposed alternative secondary on-site wastewater treatment and associated dispersal system shall be assessed and presented to the department by a qualified licensed professional engineer, as described above. The assessment shall be referred to as a R*isk-Based Analysis*, and shall address a proposed development's impact to environment, health, safety and general welfare of the public. The r*isk-based analysis* is essential to the technology selection and decision-making process for fragile environments.

(3) Components. The minimum components of a r*isk-based analysis* shall include the following:

(a) Complete site and soil evaluation reports.
(b) Identification and summarization of a proposed dispersal area's natural hydraulic assimilative capacity; microbial assimilative capacity; and nutrient assimilative capacity.
(c) The identification of the direction of groundwater flow, a narrative description of local hydrogeology, and a description of local potable aquifer usage.
(d) A site map and narrative description depicting the expected zone of influence, or area of impact, resulting from the dispersal of treated wastewater or final effluent to the environment.
(e) The characterization of target receptors located within the anticipated zone of influence.
(f) The characterization of target receptors located immediately outside of the anticipated zone of influence.
(g) A discussion of the proposed (or existing) well location(s), neighboring well location(s) and construction, and an assessment of the local potable aquifer's vulnerability to effluent discharge(s).

(h) A discussion of expected groundwater usage and effluent flow rates, and potential impact to local hydrogeology.
(i) Geological and hydrological survey, interpretations and discussions as appropriate.
(j) Other observations, interpretations and discussions as appropriate.
(k) Engineered proposal to overcome the risks identified in the Risk-Based Analysis.

(4) Methods.

(a) General. The methods of data collection and interpretation are at the discretion of the qualified professional. Standard methods shall be used when site conditions are exceptionally fragile.

(b) Statement of Accuracy. Methods of data collection and interpretation shall be endorsed by the qualified professional. A signed statement of accuracy by the licensed professional engineer shall be required with a risk-based analysis submittal.

(4) Independent Third-Party Evaluation. The Risk-Based Analysis shall be submitted to EGLE On-site Wastewater Program with a request for review to determine if the proposal sufficiently addresses the proposed development's impact to environment, health, safety and general welfare of the public.

3.0 PRELIMARY PLAN CONSIDERATIONS

3.01 Purpose. The purpose of this Section is to provide guidance in obtaining preliminary plan approvals for alternative secondary on-site wastewater treatment and associated dispersal components which have been matched to site-specific conditions by a professional engineer. The owner's authorized professional engineer may generate a preliminary proposal for review by the department. The purpose of the preliminary proposal shall be to attempt to determine mutually agreeable wastewater treatment and dispersal technologies for the proposed development, prior to incurring the cost of a complete design plan that may ultimately be denied by the department.

3.02 Scope.
(a) Preliminary plan approvals apply to proposed building sites not meeting the minimum sewage system suitability standards set forth in the *Code* .
(b) Under certain circumstances, at the discretion and direction of the department, preliminary plan approvals may apply to other proposed building sites influencing fragile environments, health, safety and general welfare of the public.

3.03 Qualifications. Preliminary plan submittals for the treatment and dispersal of wastewater, treated wastewater, or final effluent for building sites not meeting the minimum soil and/or site criteria described in the Code shall be submitted by the owner's authorized licensed professional engineer.

3.04 Technology Selection.
(1) General. Technology selection is the process by which an alternative secondary on-site wastewater treatment system and associated dispersal component is matched with a proposed building site's most limiting site feature(s).

(2) Technology Selection Process.
(a) Technology selection for a specific site shall be based on soil and site evaluations.
(b) The methods and technologies of wastewater treatment and dispersal selected for a site shall be conceived and proposed by the owner's authorized professional engineer.
(c) The methods and technologies of wastewater treatment and dispersal selected for a site shall be based on site-specific data and proven scientific design methods and criteria.
(d) The methods and technologies of wastewater treatment and dispersal selected for a site shall be of sufficient design to protect the environment, and health, safety, and general welfare of the public.
(e) The methods and technologies of wastewater treatment and dispersal selected shall be substantiated and verifiable.
(f) The methods and technologies of wastewater treatment shall meet or exceed NSF/ANSI Standard 40.

3.05 Preliminary Proposals.
(a) The owner's authorized professional engineer shall provide the department with a preliminary proposal for the selected methods and technologies of wastewater treatment and dispersal for a specific site.
(b) Preliminary proposals shall be in writing and include, at a minimum, the following elements:
(1) A concept plan outlining the design and performance standards of the proposed alternative secondary on-site wastewater treatment system.
(2) A concept plan outlining the design and performance standards of the proposed dispersal component.
(a) A discussion, presented by the owner's authorized professional engineer, outlining how the proposed system(s) will accomplish protection of the environment, and health, safety, and general welfare of the public.
(b) A legible proposed site plan that:
1) Is presented on paper;
2) Is drawn to scale or fully dimensioned at minimum ¼ inch equal one foot;
3) Shows the intended building location and building details;
4) Shows the intended site(s) for septic tanks;
5) Shows the intended site(s) for the alternative secondary or tertiary on-site wastewater treatment system;
6) Shows the intended site(s) for soil dispersal, including basal area;
7) Shows the intended sites(s) for soil dispersal replacement area (if available, site shall be retained)
8) Shows the protected greenbelt area downslope of the soil dispersal system;
9) Shows the proposed or existing well location;
10) Shows nearest property lines;
11) Shows surface water, wetlands, and floodplain features if applicable;
12) Shows the location of bedrock outcrop features;
13) Shows neighboring property site features potentially impacted by proposed development, including but not limited to water wells, surface water, wetlands, etc.
14) Shows 1-foot contour elevations in area of the proposed absorption system, as well as other elevations of site features including water well, surface water, etc.
(c) The department may require a written statement from the manufacturer providing assurance that the technology is appropriate for the proposed application.
(d) Any other relative scientific literature or site information that may assist in the decision-making process.

3.06 **Formal Meeting.**
(a) When an owner's authorized professional engineer has completed the technology selection process as outlined in Subsection 2.12 *Technology Selection*, and developed a complete preliminary proposal according to Subsection 3.05 *Preliminary Proposals*, a formal meeting to discuss the preliminary proposal may be scheduled by the department with the owner's authorized professional engineer.
(b) The intent of the formal meeting shall be to review and discuss the preliminary proposal to determine if the methods proposed are mutually agreeable.
(c) Upon completion of the formal meeting and a preliminary proposal review process, the department shall accept the proposal, reject the proposal, require additional information or clarification, or require verification.

3.07 **Preliminary Approvals.**
(a) When the department and property owner's authorized professional engineer have come to a mutually acceptable agreement as a result of a formal meeting and preliminary proposal review process, the department shall issue a letter of provisional approval within 30 days of receipt of the preliminary plans.
(b) The letter of provisional approval shall address construction requirements and any additional measures required for the site development.
(c) The letter of provisional approval shall direct the applicant to continue the permit application process as outlined in Section 6.0 *Permit Applications and Design Plan Submittals.*

3.08 **Preliminary Denials.**
(a) When the department and property owner's authorized professional engineer cannot come to a mutually acceptable agreement, the department shall issue a letter of denial within 30 days of receipt of preliminary plans.
(b) The letter of denial shall state the deficiencies noted, the public health concerns of the department, and suggestions, if any, to accomplish a mutually acceptable agreement. The professional engineer may submit plan revisions for further preliminary review.

3.09 **Limitation of Responsibility.** Preliminary plan approval by the department may not be construed as an assumption by the department of any responsibility for the design of the alternative on-site wastewater treatment system and associated dispersal component(s). The department does not hold itself liable for any defects in design and/or construction, or for any damages that may result from a specific installation.

3.10 **Appeals.** In the event an applicant disagrees with a decision of the department, the applicant will be directed to the appeals process set forth in *Appeals* section of the *Code* .

(a) Applicants shall submit a Risk-based Analysis prepared by a licensed professional engineer in accordance with 2.14 along with a request for an appeal.

4.0 PERMIT APPLICATIONS AND DESIGN PLAN SUBMITTALS

4.01 Purpose. The purpose of this Section is to establish the minimum requirements for permit applications and associated design plan submittals for the treatment and dispersal of wastewater, treated wastewater or final effluent from an alternative secondary on-site wastewater treatment system(s)

4.02 Scope. This Section applies to all proposed building sites not meeting the minimum sewage system suitability standards set forth in the *Code*, and where alternative secondary on-site wastewater treatment systems are proposed.

4.03 Qualifications.
(1) Permit applications and associated design plan submittals for proposed building sites meeting the minimum soil and site requirements of Section 2.0 *Minimum Criteria for Alternative Wastewater Treatment Systems Consisting in Part of In-Situ Soil,* shall be endorsed and officially sealed by a licensed professional engineer having experience and expertise in the field of environmental engineering *or wastewater treatment design.*
(2) The selected alternative secondary treatment technology that is selected shall be endorsed by the manufacturer based on the site limitation.

4.04 Permit Applications.
(1) No person shall construct, alter, extend, or replace a sewage system without first having been issued a construction permit from the department. A construction permit application form provided by the department shall be used for recording permit application information.
(2) A permit application shall be completed in full, signed by the owner or the owner's authorized representative, and shall be accompanied by all required design plans, exhibits and fees. If the owner of a property uses an authorized representative to obtain a new system construction permit, a signed statement from the owner of the property assigning authority for the representative to act on the owner's behalf shall accompany the application. This statement shall include specific information allowing the representative to act on the owner's behalf in all aspects of an application for an on-site sewage treatment and dispersal system.
(3) The applicant shall be held responsible for all information supplied to the department. The signed permit application and all required exhibits serve as the basis by which the department determines the issuance of a construction permit.

4.05 Permit Application and Design Plan Review Process.
(1) Permit applications and associated design plan submittals for the treatment and dispersal of wastewater, treated wastewater or final effluent from an alternative secondary on-site wastewater treatment system shall be submitted to the department for review.
(2) The department shall conduct a review of all permit applications/design plan submittals within 30 days of receipt.
(3) Upon completion of the permit application/design plan review, the department shall accept the design, reject the design, require additional information of clarification, or require verification.

(4) If the permit application/design plan is not acceptable, the department shall notify the submitter in writing and shall state the deficiencies or actions, or both, necessary to bring the design into compliance with the requirements of this guideline.
(5) When a completed permit application and associated design plan are deemed acceptable, the department shall issue a construction permit in accordance with requirements of the *Code*.

4.06 Design Plans for Alternative Secondary On-site Wastewater Treatment Systems and Associated Dispersal Components.

(1) General. When design plans are submitted to the department for review, at least two (2) sets of plans and one (1) set of specifications shall be provided. Plans and specifications submitted for review shall be clear, legible and permanent copies.

(2) Design Plan Elements. The following are the minimum required elements of a complete design plan submittal for an alternative secondary on-site wastewater treatment system and associated dispersal component(s):

(a) The final proposed plan with all of the components identified in 3.05.
(b) A written variance request completed in accordance with the *Code*, on a form provided by the department.
(c) Details and configuration layouts depicting how the design is to be constructed and how the design is to accomplish the treatment and dispersal that is claimed. Cross-sections with site elevations are required.
(d) Inclusion of all system sizing calculations, dynamic head calculations, pump selection details, and any other calculations performed for the design of the system(s).
(e) Specifications, including a description of the materials for the project and the installation or construction practices and methods to be employed.
(f) A scaled site plan with a bench mark and 1-foot elevation contours, (minimum ¼ inch per foot scale), delineating and detailing all treatment and dispersal components, and their relationship to minimum isolation distance requirements set forth in the *Code*.
(g) A description of a contingency plan in the event that the proposed project fails to provide effluent quality that meets the minimum parameters or the system fails and cannot be repaired. The contingency plan shall include names and contact information for contracted maintenance provider, representative of the system manufacturer, sewage system installer in the event substantial repairs are necessary, engineering firm, and licensed septage hauler.
(h) Proposed dates of construction and an identification of the name of the sewage system installer who is licensed by WUPHD and certified by the system manufacturer.
(i) A copy of the Alternative Secondary Treatment system manufacturer operation and maintenance manual and signed maintenance contract with a maintenance provider. The maintenance contract shall be agreed upon with the provider for a minimum term of 3 years. Upon expiration, a new contact shall be provided to the health department for the life of the system.
(j) Alternative agreement signed by the property owner.
(k) Copy of the draft Affidavit that shall be recorded with the deed of the property at the appropriate County Courthouse Register of Deeds as per 4.08.

4.07 Construction/Installation Requirements.
(1) General.
(a) The alternative secondary on-site wastewater treatment technologies and associated dispersal components are to be constructed/installed in accordance with the approved plans, permit stipulations, and applicable construction requirements set forth in the *Code and Technical Manual.*
(b) Prior to approval of the construction permit, the property owner or the owner's authorized representative, must sign a list of specific construction permit requirements, acknowledging future installation, operation and maintenance requirements of the system. Format to be provided by the department.

4.08 Affidavits.
(1) Prior to installation of the system(s), an Affidavit shall be recorded with the deed of the property at the appropriate County Courthouse Register of Deeds. The Affidavit shall contain information on the technology used, maintenance contract requirements, annual maintenance and effluent sampling requirements, location of the system, and the Agreement to Permit and Alternative Sewage System. Format to be provided by the department.
(2) A copy of the recorded Affidavit shall be provided to the department prior to installation.

4.09 Revocation of Approval.
(a) The department may revoke any plan approval issued under this Section when one (1) or more of the following conditions exist:
1) The location of the system(s) specified in the design is altered or negatively impacted by compaction.
2) The required minimum in-situ soil is removed.
3) There is an increase in the scope of the project prior to, during, or following construction of the system.
4) The department acquires new information indicating that any department rules or regulations are violated before, during, or after construction.
5) The health officer has reasonable cause to believe that an intentional misrepresentation has occurred.
(b) The revocation of a plan approval and the reasons for revocation shall be conveyed in writing to the submitter of the plans as noted in the application.
(c) If a plan approval is revoked, the installation or alteration of a system may not continue until another plan approval is obtained.

4.10 Limitation of Responsibility. An approval of a plan by the department may not be construed as an assumption by the department of any responsibility for the design of the alternative on-site wastewater treatment system and associated dispersal component(s). The department does not hold itself liable for any defects in design and/or construction, or for any damages that may result from a specific installation.

4.11 Appeals. In the event an applicant disagrees with a decision of the department, the applicant will be directed to the appeals process set forth in *Appeals* section set forth in the Code.

5.0 PRE-STARTUP REQUIREMENTS

5.01 **Purpose.** The purpose of this Section is to establish those actions required prior to startup of an alternative secondary on-site wastewater treatment system and/or dispersal component.

5.02 **Scope.** This Section applies to all building sites for which an alternative secondary on-site wastewater treatment system and/or dispersal component construction permit has been approved.

5.03 **Inspections.**

1. **Preliminary Inspection**
(a) Once site preparation has been completed, but prior to sand fill installation, a preliminary inspection shall be conducted by the department.

2. **Final Inspection**
(a) Before any portion of the system has been covered, a final inspection shall be conducted in accordance with the Code .
(b) It shall be unlawful to backfill and/or operate any portion of the system installation until authorization has been granted by the department.
(c) The department may deny final approval of any installation which does not comply with the conditions stipulated on the permit
(d) When applicable, actual sieve analyses for sand, aggregate or other materials, along with the bills of sale, shall be provided to the department prior to startup.

5.04 **Operation and Maintenance Program.**
(a). All alternative on-site wastewater treatment systems require annual maintenance and effluent sampling in order to ensure that the system is operating as designed.
(b) The annual operation and maintenance program shall include sampling protocol in accordance with section 6.0 Post Start-up Maintenance Requirements.
(c) An Operation and Maintenance (O&M) contract shall be maintained between the property owner and an approved maintenance provider for the life of the system.
(d) The signed copy of the O&M contract shall indicate the approved maintenance provider and the specifications of the agreement
(e) If not included with the permit application, an O&M handbook, system manual, or other guideline must be submitted to the department with the copy of the signed O&M contract prior to the final inspection.
(f) The owner of the system shall be responsible for ensuring that the maintenance of the system occurs in accordance with the approved O&M handbook, system manual, or other guidelines as determined by the system manufacturer. Maintenance shall be provided on an annual basis, or more frequently if specified by the manufacturer.
(g) At the discretion of the department, additional maintenance, above and beyond that suggested by the system designer or manufacturer may be required. Any additional maintenance issues will be identified in the conditional approval of a permit.

(h) The homeowner shall notify the department in the event a contract is canceled, expired, or not renewed.
(i) Property owner shall attend alternative system maintenance and permit requirement education meeting with the health department representatives prior to installation of alternative system. Final approval of the system shall not be granted until this educational meeting is attended. A copy of the final inspection report will be provided at the time of the meeting.

6.0 POST-STARTUP MAINTENANCE REQUIREMENTS

6.01 **Purpose.** The purpose of this Section is to establish those actions required after the startup of an alternative secondary wastewater treatment system and/or dispersal component.

6.02 **Scope.** This Section applies to all building sites for which an alternative secondary on-site wastewater treatment system and/or dispersal component has been installed and is in operation.

6.03 **Operation and Maintenance Reporting.**
(a) The owner of an alternative secondary on-site wastewater treatment system shall report to the department at the completion of each inspection, maintenance or servicing event specified in the approved O&M program.
(b) The inspection, maintenance or servicing reports shall be submitted to the department within 30 days from the date of inspection, but no later than November 1st of each year.
(c) The department may require verification of any information contained in an inspection, maintenance or servicing report.
(d) The homeowner shall notify the department in the event a contract is canceled, expired, or not renewed.

6.04 **Sampling Protocol.**
(a) A sampling regimen shall be developed and incorporated into the O&M contract
(b) At a minimum, effluent samples shall be collected from the discharge of the alternative secondary on-site wastewater treatment system by October 1 of each year.
(c) Sample parameters shall include, but may not be limited to: Five-Day Biological Oxygen Demand (BOD_5); Total Suspended Solids (TSS); and Fecal Coliforms (FC). The quality of effluent, to be analyzed by a qualified laboratory, shall be equal to or less than all of the following:

1. A monthly average of 30 mg/L BOD_5
2. A monthly average of 30 mg/L TSS
3. A monthly geometric mean of 10^4 Fecal Coliform-colony forming units (cfu) per 100 ml

(d) At the discretion of the department additional sampling, above and beyond that suggested by the system designer or manufacturer may be required in order to further assess system performance. Examples of additional sample parameters may include:

1. Total Nitrogen
2. Nitrate-nitrogen (NO3-N)
3. Ammonia-Nitrogen (NH3-N)
4. Chemical Oxygen Demand (COD)
5. Total Phosphorus

6. Phosphates
7. pH
8. Dissolved Oxygen (DO)
9. Conductivity
10. Fats Oils and Grease (FOG)
11. Formaldehyde

(e) At the discretion of the department, annual bacteriological and/or nitrate/nitrite sampling of the on-site drinking water supply may be required. Any additional sampling issues will be identified in the conditional approval of a permit.
(f) Effluent sampling shall be required for the life of the system.
(g) Sampling results shall be submitted to the department prior to November 1 of the operating year.
(h) Effluent sampling frequency may be reduced at the discretion of the Department based on a minimum of three consecutive years of compliant effluent sample results.
(i) Sampling of seasonal or intermittent use system shall be conducted after at least one month of use for the season. The sampling event shall be scheduling during the operational period.

6.05 **Sample Reporting.**
(a) The owner of an alternative secondary on-site wastewater treatment system shall report to the department at the completion of each sampling event specified in the approved O&M program.
(b) Required samples in accordance with 5.04 shall be collected by October 1 of each year.
(c) The sample results shall be submitted to the department within 30 days from the date of sample collection, but no later than November 1st of each year.
(d) The department may require verification of any information contained in a sampling report.

6.06 **Septic Tank Maintenance.**
(a) Septic tanks shall be pumped by a licensed septage hauler every three years, when septic tank is one third or more full of sludge, or as per the manufacturer's warranty. Pumping shall be at the owner's expense.
(b) Documentation in the form of a receipt from the licensed septage hauler shall be submitted with the annual report.
(c) Effluent filter located inside the septic tank shall be cleaned on an annual basis along with the annual alternative system maintenance.

6.07 **Noncompliance.**
(1) **General.**
(a) The owner of an alternative secondary on-site wastewater treatment system and associated dispersal component is responsible for the proper operation and performance of the system.
(b) In the event that an alternative secondary on-site wastewater treatment system or associated dispersal component is found to be in noncompliance with the requirements of the permit or effluent quality parameters, the following actions must be taken:

1. The approved maintenance provider shall inspect the system, perform maintenance, and correct any deficiencies noted.
2. Septic tanks, pump tanks, and collection chambers shall be pumped by a licensed septage hauler if deemed necessary to restore the system to baseline start-up conditions.

3. At the discretion of the department, increased sampling frequency or additional sampling parameters in order to further assess system performance in accordance with 5.04.
4. At the discretion of the department, sampling of the septic tank waste effluent may be required for waste characterization. If septic tank waste effluent is determined to be high strength waste, additional alternative secondary on-site treatment components shall be added to accommodate the high strength waste.
5. The approved maintenance provider shall report to the department at the completion of inspection and/or servicing.
6. Subsequent samples shall be taken to determine system compliance within 6 months
7. If compliance cannot be achieved, a contingency plan shall be initiated. Contingency plans shall meet the minimum requirements outlined in 6.09.
8. Use of the system may need to be discontinued if the system malfunctions and is found to be non-repairable, or if non-compliance with the permit results in an imminent health hazard. If use is discontinued, the owner shall obtain a temporary Pump and Haul permit for off-site disposal of wastewater via a licensed septage hauler.
9. Within a reasonable time-frame, not to exceed 90 days, the system shall be repaired/replaced to perform as outlined in the permit.
10. The department may require the installation of additional alternative secondary on-site treatment components, at the owner's expense, if deemed necessary to provide compliant effluent quality.
11. *The department may require the installation of additional alternative secondary on-site treatment components or increasing the square footage of the absorption area discharging effluent to the in-situ soil, at the owner's expense, if the gallons per day (GPD) wastewater flow exceeds the original basis of design. The department may require the installation of a water meter or pump panel capable of monitoring flows to determine if the flow exceeds the original basis of design.*

(c) Replacement of the system or system components shall be completed at a frequency deemed necessary by the manufacturer based on the expected life expectancy of the system or components.

(2) Enforcement.

(a) If compliance with the conditions of the permit cannot be achieved, or if the health officer determines that the health code has been violated, he/she shall issue a notice of violation to the owner. The health officer shall issue this notice no later than 90 days after the discovery of the alleged violation.

(b) A person failing to comply with the permit requirements or the provisions of the health code is subject to the enforcement provisions of the *Code* .

6.08 Department Access.

(a) The department shall have access to an on-site wastewater treatment system during regular business hours in order conduct surveillance monitoring. The department shall provide adequate notification to the property owner of intent to access the system for surveillance or inspection.

(b) Surveillance monitoring resulting from noncompliance with the permit may be charged a monitoring fee in accordance with the department fee schedule.

(c) The department shall be allowed to initiate required maintenance at the responsible person's expense if non-compliance with the permit or health code results in an imminent health hazard.

6.09 Contingency Plans

A contingency plan shall be implemented when the quality of discharged effluent fails to meet the parameters outlined in section 2.03. The contingency plan shall comply with the table below:

Effluent Quality Parameters	Compliant (Monthly Average)	Requires Maintenance (Monthly Average)	Non-Compliant (Monthly Average)	Non-Compliant (Monthly Average)	Significant Deficiency Equivalent to Untreated Wastewater (Monthly Average)
Five Day Biological Oxygen Demand (BOD5)	≤30 mg/L	31 - 45 mg/L	46 - 60 mg/L	≥61 mg/L	≥100 mg/L
Total Suspended Solids (TSS)	≤30 mg/L	31 - 45 mg/L	46 - 60 mg/L	≥61 mg/L	≥100 mg/L
Fecal Coliform Count - colony forming units	≤10,000 cfu/100mL	10,001 - 12,000 cfu/100mL	12,001 to 15,000 cfu/100mL	≥15,001 cfu/100mL	≥20,000 cfu/100mL
Action Required	Normal Operation	Pump Septic Tanks	Pump Septic Tanks	Wastewater Characterization to determine wastewater strength	Wastewater Characterization to determine wastewater strength
	Annual Maintenance and Sampling	Maintenance Required	Detailed Inspection of System by Maintance Provider and manufacture representative to ensure proper function and use	Pump Septic Tanks After Wastewater Characterization Sampling Completed	System Not Functioning as Designed. Discontinue Use of System
	Consider for reduction in sampling frequency if 3 consecutive compliant sampling events are obtained	Effluent resampling required in 6 months	Restore the system to baseline start-up conditions. Homeowner shall discontinue use of any chemcials interfeerring with the biological actions of the treatment system.	Additional Septic Tank Capacity or Treatment Capacity/Capabilty May be Necessary Depending on Sample Results	Obtain temporary Pump and Haul Permit
			Effluent resampling required in 6 months	Consultation with Engineering Firm	Consultation with Engineering Firm
			Additional Septic Tank Capacity May be Necessary to provide additional primary treatment if compliance cannot be achieved within 24 months	Submit Proposed Remedy within 6 Months. Complete Approved Remedy within 12 Months	Additional Treatment Capacity and Capability Required to Resume Use of System