Grand Traverse County Health Department
Environmental Health Division

Alternative Treatment System (ATS)
Policy and Procedure Manual

This document is authorized under the authority of **Section 5.19 (Variations)** of the **Environmental Health Regulations for Grand Traverse County Health Department** as amended May 25, 1994.

References are made to Sections of the Grand Traverse County Health Department (GTCHD) Environmental Health Regulations throughout this document.

Introduction

For the purpose of this document, an Alternative Treatment System (ATS) shall be defined as a system that is to be used instead of a conventional septic tank-absorption field system to provide enhanced treatment prior to effluent reaching a point of concern in the environment. The system may provide advanced treatment of septic tank effluent to a required standard prior to subsurface dispersal or result in enhanced treatment by the soil component in order to achieve performance criteria requirements.

This manual applies to residential building sites requiring on-site wastewater treatment systems (OSWTS) to comply with the GTCHD Environmental Health Regulations. The provisions of the Alternative Treatment System (ATS) Policy and Procedure Manual may apply in the event a site does not meet the minimum requirements of Section 2.458 Permit Denial. This regulation does not apply to commercial sites regulated by the Michigan Criteria for Subsurface Sewage Disposal or the GTCHD Environmental Health Regulations. This ATS manual does not apply to subdivisions, site condominiums, and land divisions less than 1.0 acre. The Michigan Department of Environmental Quality (MDEQ) regulates these various types of land developments. Community systems may be installed using the standards set forth in this ATS manual on a case-by-case basis with careful consideration of the Michigan Criteria guidelines and the MDEQ Part 22 rules. Special consideration will be given to any parcel where a replacement on-site wastewater system is needed due to failure of the existing system.

Technological advances in on-site wastewater treatment and effluent dispersal back into the environment have produced alternative options when site conditions do not allow for a conventional on-site wastewater treatment system. Alternative Treatment Systems, when properly designed, constructed, and maintained, can reduce concentrations of wastewater pollutants and provide a higher level of public health protection and environmental protection than conventional OSWTS.

In order to function effectively, alternative treatment systems require considerable oversight during design, construction, and operation. Therefore, the Grand Traverse County Health Department shall require a **construction permit** for the design and installation of an ATS; a **maintenance contract** for an ATS; and an **operating permit** for the operation of an ATS.

Construction Permit

1) Site Evaluation

a) Prior to commencing with an ATS construction permit, a site evaluation (commonly known as a Site Survey) shall be conducted by the GTCHD to determine whether or not the parcel or site meets the minimum requirements to construct an ATS. The appropriate Site Survey fee will be applicable.
b) When the Environmental Health Staff determines that a site meets the requirements of the ATS Manual, the permit applicant shall submit a complete application and permit fee to the GTCHD. The application shall be completed on a form provided by the GTCHD.

2) Site Suitability

a) Soils shall be evaluated to a minimum depth of 72 inches and recorded using the USDA soil classification system. Seasonal high water table shall be identified based on soil redoximorphic features or other indicators.
b) All components of the ATS and the absorption field shall meet all isolation requirements as described in Section 2.431 and Section 2.450, A & B. State or federal law may require additional minimum isolation distances.
c) The absorption field site of an ATS shall have a **minimum 18 inches of naturally occurring soils** below natural ground surface with suitable textures as listed in Section 2.457. The 18 inches of suitable soil shall be above seasonal high groundwater elevation. The depth to high groundwater elevation shall be confirmed by a soil profile with 6 inches or more of soil without redoximorphic features below the "A" horizon (topsoil). The natural ground surface is that which is formed by the forces of nature and not through the activities of man. Any soils encountered over an organic muck or marl layer will be considered unnatural or "filled" and will not be considered suitable.

    1) The infiltrative surface of the final dispersal media receiving pretreated effluent shall be separated from the seasonal high groundwater table or other restrictive soil layer by **no less than 36 inches** which includes appropriate fill material (over the minimum 18" of naturally occurring soils).

3) Qualifying Standards for ATS Approval

a) The product must be tested and certified according to product standards and testing protocol established by the National Sanitation Foundation (NSF) in NSF Standard No. 40, Class I, Residential Wastewater Treatment Systems. The NSF certification must be current at the time the product is permitted by the GTCHD. The list of currently certified Residential Wastewater Treatment Systems (updated daily) can be obtained from the NSF website at the following web address: http://www.nsf.org/certified/wastewater/
b) The product must have capabilities for offsite remote monitoring 24 hours a day, 7 days a week by the manufacturer/distributor and the certified maintenance provider.
c) The manufacturer/distributor must demonstrate the capabilities of providing adequate training and certification of installers and maintenance providers. They must also be conveniently available for consultation both on and off site.
d) The manufacturer must provide assurance that continued consultation and service will be provided in the event that the distributor should go out of business.
e) The manufacturer must demonstrate that they are a viable company with proven technical expertise in the wastewater industry and capable of providing assurance of product reliability and warranty the product in the event of poor product performance.
f) The manufacturer and/or distributor must demonstrate that replacement parts are readily available for all mechanical and electrical components of the product.

The GTCHD reserves the right to update and amend these requirements as deemed necessary by the Health Officer. Failure to meet and maintain these requirements may result in product acceptance being revoked in Grand Traverse County.

4) Design Parameters

a) The property owner proposing to install an ATS shall retain the services of a State of Michigan Licensed Professional Engineer (P.E.), State of Michigan or Nationally Registered Sanitarian (R.S.), or competent ATS design consultant approved by the Health Officer.
b) Design plans for the ATS and absorption components shall be submitted to this Department for review prior to permit issuance. All design plans shall be completed and approved by a Professional Engineer, Registered Sanitarian, or approved design consultant. At least two (2) sets of design plans and specifications shall be provided. Plans and specifications shall be clear, legible, scaled, and permanent copies. The plans shall be signed with the Professional Engineer's License number, Registered Sanitarian's Registration number, or approved design consultant's identification. The following are the minimum required elements of a complete design plan for an ATS and absorption field:

    - A minimum of two (2) soil evaluation/profile locations performed by a Professional Soil Scientist, Professional Engineer, Registered Sanitarian,

or approved design consultant. The soil profile descriptions shall include depth of topsoil, soil texture and structure by horizon, depth to seasonal high groundwater as indicated by soil mottling (redoximorphic features), and hydraulic loading capabilities of the soils. Soil profile evaluations shall be completed using either soil pits or borings.

- Details and configuration layouts depicting how the design is to be constructed and how the design is to accomplish the treatment and absorption that is claimed. Cross-sections are required with elevations of dispersal components.
- Location of the ATS sampling point and description of effluent sampling method.
- Inclusion of all system sizing calculations, dynamic head calculations, pump selection details, and any other calculations performed for the design of the system.
- Specifications, including a description of the materials for the project and the installation or construction practices and methods to be employed.
- A site plan with a benchmark delineating and detailing all treatment and absorption field components and their relationship to minimum isolation distance requirements as set forth in the GTCHD Environmental Health Regulations.
- The location of all of the following, either existing or proposed, within or adjacent to the ATS or absorption field components:
    1. Buildings or other structures
    2. Water bodies
    3. Wetlands
    4. Property lines
    5. Road right of ways
    6. Utility easements
    7. Water wells
    8. On-site wastewater treatment systems
    9. High risk erosion areas
    10. Natural Rivers Act designation areas
    11. Underground utilities
    12. Driveway and parking area
    13. Drainage easements
    14. Storm water collection basins
    15. Other factors that may affect location of the ATS

c) The Professional Engineer, Registered Sanitarian, or approved design consultant shall inspect and certify the construction of the ATS as approved by the GTCHD and provide such certification to the GTCHD prior to system start-up.

d) Basis of design shall be calculated using 150 gallons per bedroom per day. Under no circumstances shall the absorption field application rate exceed 1.0 gpd/ft^2. Whenever possible, the absorption field sizing shall conform to Section 2.457.

e) The discharge from a water softener, known as supernate or more commonly backwash, shall not be routed into the sewer system of a home with an ATS. The

high concentration of salts and minerals in supernate may adversely affect the normal operation of an ATS. Supernate is not considered sewage and therefore may be routed to a separate drainage system.

f) For all approved absorption field sites where the infiltrative surface of the final dispersal media is on or above the surface of the topsoil, all vegetation shall be cut (mowed) close to the ground surface and all debris shall be removed. The entire basal area of the mound shall be prepared by roughening in a ridge and furrow fashion with ridges following contours. Methods for roughening include chisel teeth fastened to a backhoe bucket, plowing with a multiple bottom chisel plow, or moldboard plow. Sand fill material shall be applied immediately after roughening. All appropriate methods to prevent soil compaction on the absorption field site shall be employed such as preventing use of heavy wheeled equipment (i.e. loaders & wheeled backhoes) and restricting working of soil to periods of dry weather conditions.

5) Performance Criteria

a) An ATS shall be capable of consistently producing effluent with the following characteristics:

- **Biological Oxygen Demand (BOD_5)** less than or equal to **30 mg/L**
- **Total Suspended Solids (TSS)** less than or equal to **30 mg/L**
- **Total Inorganic Nitrogen (TIN)** less than or equal to **30 mg/L**
- For absorption field sites within 100 feet of a water body:
  (a) **Total Inorganic Nitrogen (TIN)** less than or equal to **15 mg/L**
  (b) **Total Phosphorus (TP)** less than or equal to **4 mg/L**

b) "Water body" shall be defined as the high water mark of any of the following:

- The Great Lakes and their connecting waterways
- Inland lakes and ponds
- Rivers, streams, and creeks
- Impoundments
- Perennial surface water

6) Deed Advisory

a) Prior to the operation of an ATS with advanced treatment, the owner of the ATS shall record an advisory attached to the deed of the property where the system is located. The deed advisory shall be recorded with the Grand Traverse County Register of Deeds and a copy submitted to the GTCHD complete with the assigned "Document Number."

b) The format for the deed advisory will be provided by the GTCHD.

Maintenance Contract Requirements

A legal contract between a certified ATS maintenance provider and the owner of an ATS shall be submitted to the GTCHD for approval prior to the issuance of an operating permit for the system. A maintenance contract shall be active as long as a residence, with an ATS, is inhabited.

1) Contract Conditions

a) The ATS maintenance provider shall be credentialed as a State of Michigan Professional Engineer, State of Michigan or Nationally Registered Sanitarian or otherwise competent ATS inspector approved by the Health Officer. The maintenance provider's license, registration, or certification must be current and in good standing. A list of acceptable certifications will be provided by the GTCHD.

b) The ATS shall be inspected and the physical characteristics of the effluent evaluated not less than annually by the ATS maintenance contractor. Analytical analyses of the effluent may be required depending on the status of the Operating Permit. The first inspection report will be due 90 days from system start-up. Subsequent reports shall be due annually on the anniversary date of system start-up.

c) The routine annual inspection shall evaluate the performance and condition of the ATS and the absorption field. The annual report shall include the following list of minimum elements:

(1) The analytical results of effluent sampling events if applicable (see "Monitoring Requirements").
(2) An itemized status checklist for the particular ATS based on the manufacturer's requirements for routine maintenance.
(3) An itemized status checklist for the absorption field and dosing components.
(4) Results of a physical evaluation of the treated effluent including visual appearance and odor.
(5) Measure of sludge and scum layers in the primary septic tank and other chambers.
(6) A list of any problems/alarms encountered throughout the year and the solution(s) for each incident.
(7) Identify any site changes that may affect the operation of the ATS or absorption field (i.e. landscape changes, structures, building additions).
(8) Certify that the ATS continues to be in compliance with conditions imposed by all permits issued by the GTCHD.
(9) Certify that the ATS continues to be in compliance with maintenance specifications of the manufacturer and system designer.

d) The GTCHD may require more frequent inspections, additional effluent monitoring, and/or remedial action due to the following:

(1) Past inspection report(s) and sample results indicate that an ATS is not meeting the performance criteria as stated in this manual.
(2) The ATS is not functioning according to manufacturer's specifications.
(3) The absorption field used to disperse the treated effluent is not functioning properly.
(4) The ATS or absorption field is creating a public health hazard or nuisance.

e) Any inspection or effluent analyses report shall be submitted to the GTCHD and the property owner within thirty days of the inspection or sampling event.
f) In the event the maintenance contract is terminated or cancelled, the system owner shall contract the services of another qualified maintenance provider prior to any lapse in service by the previous contractor.
g) In the event the maintenance contract is terminated or cancelled, the system owner and the maintenance provider shall contact the GTCHD within ten (10) business days of termination/cancellation.

2) Monitoring Requirements

a) The BOD_5, TSS, and TIN concentrations in the treated effluent produced by an ATS shall be determined for every ATS permitted by the GTCHD. Total phosphorus concentration shall be determined for systems where the absorption field is within 100 feet of a water body.
b) Sample collection must follow any operational or other requirements specified by the manufacturer for obtaining representative samples from the ATS.
c) In cases where the soil component is a key factor to achieve performance criteria, effluent samples may be collected below the dispersal media using a lysemeter(s). Lysemeter design and placement must be detailed in the final design plans.
d) The first set of effluent samples shall be submitted no less than thirty (30) days and no more than ninety (90) days after ATS start-up. This schedule should allow sufficient time for microbial efficacy to be developed within the treatment system. The ATS designer may submit an alternate sampling schedule to be considered by the GTCHD.
e) The ATS must be in full compliance with the performance criteria within six (6) months of system start-up. Several samples may be necessary during the start-up phase of the ATS.
f) After compliance with performance criteria has been established during the start-up phase, the operating permit sampling cycle will commence. The next routine analytical sampling event (measuring the chemical parameters to achieve performance criteria) shall occur five (5) years from the system start-up date at the time of the operating permit renewal.
g) Test results showing any parameter in non-compliance will initiate a monthly sampling frequency for the parameter(s). Two consecutive monthly samples for

the parameter(s) in compliance are required. Any modifications or repairs to the system used to achieve compliance shall be reported in writing to the GTCHD.

h) If compliance is not met within six (6) months of monthly sampling, the ATS maintenance provider shall submit to the GTCHD a written report detailing the method and schedule for achieving compliance.
i) If compliance is not achieved within one (1) year from the date of the initial non-compliance, use of the system shall be terminated unless a plan for further modifications is approved by the GTCHD.
j) A laboratory certified by the State of Michigan and approved by the GTCHD shall conduct the effluent analyses.

Operating Permit

An operating permit must be obtained from the GTCHD as a requirement for a residential home to utilize an ATS for on-site wastewater treatment and dispersal. The operating permit shall allow the use of an ATS for a maximum of five (5) years from the date of permit issuance after which it will expire and require renewal. A new operating permit must be obtained every 5 years as long as an ATS is required and used as the on-site wastewater treatment system. An application for an operating permit for an ATS shall consist of a GTCHD approved application form. The application form will contain clear, concise, and specific information that will enable the GTCHD to determine whether the standards for issuance of an operating permit have been met.

The GTCHD may revise existing permit conditions or impose new conditions that are designed to enable compliance with the original operating permit requirements. An operating permit shall be valid only if an ATS remains in compliance with requirements and restrictions stipulated by the construction permit, operating permit, and performance criteria.

1) Conditions of Operating Permit

a) The Property Owner(s) acknowledges the right of the GTCHD to enter upon the property, where the ATS and absorption field are located, for the purpose of inspecting the facilities and their operation adequacy.
b) The Property Owner(s) acknowledges that while the GTCHD approved the design plan for the ATS, the system was not designed by the GTCHD and therefore, it is not liable if the ATS does not function as designed or intended.
c) The ATS shall consistently produce effluent in compliance with the performance criteria set forth in this ATS manual based on analytical analyses of the effluent.
d) The ATS shall be in compliance with maintenance specifications of the manufacturer.
e) The ATS shall be in compliance with operation and maintenance specifications established by the system designer.
f) The property owner(s) shall have a valid maintenance contract in effect as required by this ATS manual.

g) The property owner(s) shall be in compliance with conditions of any permits issued by the GTCHD.
h) The operating permit shall not be transferable from one party to another. Following change of ownership of the property served by an ATS, the new owner shall apply for a new operating permit within thirty (30) days of closing on the property.
i) Operating permits shall expire on December 31 (12/31) of the fifth year after issuance. Completed applications for renewal shall be submitted to the GTCHD no later than October 31 (10/31) of the fifth year.

2) Non-compliance with the Operating Permit

a) If the ATS fails to meet the conditions of the operating permit, the construction permit, or the maintenance contract, the owner shall immediately notify the Health Officer and, at his or her sole expense, immediately enter into an agreement approved by the Health Officer to provide for the proper disposal of septage generated on the property. The Health Officer shall approve such an agreement if it promptly provides for the lawful disposal of septage by a State of Michigan licensed septage hauler until such time that the ATS can operate properly as specified in this ATS manual. In addition, the owner shall, at his or her own expense and within the time frame required by the Health Officer, make corrections to the system to meet the requirements of this ATS manual without danger to public health or the environment.
b) If the owner or the owner's agent fails to apply for an operating permit renewal, fails to submit the annual performance report, or fails to correct system deficiencies as required to meet the performance criteria, the system will be deemed in violation of the Grand Traverse County Environmental Health Regulations and shall subject the owner to enforcement action through the Grand Traverse County Prosecuting Attorney.
c) The Health Officer shall have the right to revoke an ATS operating permit for one or more of the following reasons:
    (1) A maintenance report is not submitted as required.
    (2) The ATS fails to meet the conditions of any permit issued by the GTCHD.
    (3) The owner fails to comply with any corrective orders issued by the Health Officer.