**Summary Explanation between a Traditional Septic System and Drip ATS system**

Wastewater treatment systems are crucial for managing household wastewater in areas not served by municipal sewage systems. Two common systems are Traditional septic systems and Drip Aerobic Treatment Systems (ATS). This report explores their differences, functionalities, costs, and the regulatory framework provided by the Tennessee Department of Environment and Conservation (TDEC).

**Traditional Septic Systems**

1. **Basic Design:**
   * Traditional septic systems consist of a **septic tank and a drain field**. Wastewater from the home flows into the septic tank, where solids settle at the bottom and are partially decomposed by bacteria.
2. **Treatment Process = ANAEROBIC** 
   * The septic tank operates anaerobically, meaning it lacks oxygen. Anaerobic bacteria break down solids, and the resulting effluent flows to the drain field, where further treatment occurs as it percolates through the soil.
3. **Maintenance:**
   * Regular pumping is necessary to remove accumulated solids. Maintenance every 3 to 5 years costs between $250 and $500, depending on tank size and usage.
4. **Limitations:**
   * The effectiveness of traditional septic systems depends on the soil’s ability to absorb and treat wastewater. Poor soil conditions or high groundwater levels can limit their use.
5. **Average Costs:**
   * Installation costs range from $3,000 to $7,000, influenced by system size and local conditions.

**Drip Aerobic Treatment Systems (ATS)**

1. **Basic Design:**
   * Drip ATS are advanced systems that use aerobic processes to treat wastewater more thoroughly. They consist of an aerobic treatment unit, aeration components, and a drip dispersal field.
2. **Treatment Process = AEROBIC** 
   * The aerobic treatment unit introduces air, allowing aerobic bacteria to break down organic matter efficiently. Treated effluent is then evenly dispersed into the soil through drip lines.
3. **Maintenance:**
   * Regular maintenance ensures aeration components function properly and prevents clogging. This typically costs $300 to $600 annually.
4. **Advantages:**
   * Drip ATS provide higher-quality effluent, making them suitable for areas with poor soil conditions or limited space. They reduce the risk of groundwater contamination and are environmentally friendly.
5. **Average Costs:**
   * Installation costs range from $8,000 to $20,000, depending on complexity and site requirements.

**TDEC Rules and Regulations for Drip ATS Systems**

1. **Site Evaluation and System Design:**
   * A licensed soil scientist or engineer must evaluate the soil to determine suitability. A professional engineer designs the system based on site-specific conditions.
2. **Permitting and Approval:**
   * A TDEC permit is required before installation. Applications must include site evaluations, design plans, and maintenance agreements. TDEC reviews applications to ensure compliance with state regulations.
3. **Installation Requirements:**
   * Systems must be installed by TDEC-licensed installers, ensuring proper construction and compliance with the approved design.
4. **Operation and Maintenance:**
   * Regular maintenance by a licensed provider is essential. Property owners must have a service contract for routine checks and report submissions to TDEC.
5. **Reporting and Compliance:**
   * Maintenance providers submit regular reports detailing system performance and maintenance activities. TDEC may conduct inspections for compliance.
6. **Environmental Protection:**
   * Systems must meet effluent quality standards to prevent pollution. Adequate setbacks and buffers are required to protect water resources.

**Conclusion**

Understanding the differences between traditional septic systems and drip ATS, as well as the regulatory framework by TDEC, helps property owners make informed decisions about wastewater treatment solutions. Traditional systems rely on anaerobic processes and are cost-effective for suitable soil conditions. Drip ATS use aerobic processes, offering better effluent quality and flexibility in challenging environments, though at higher installation and maintenance costs. Adhering to TDEC rules ensures systems are environmentally safe and compliant with state regulations.



