

**NORTH CAROLINA DEPARTMENT  
OF ENVIRONMENT AND NATURAL RESOURCES  
DIVISION OF ENVIRONMENTAL HEALTH  
ON-SITE WATER PROTECTION SECTION**

<b>INNOVATIVE WASTEWATER SYSTEM APPROVAL</b>
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**INNOVATIVE WASTEWATER SYSTEM NO: IWWS-2002-03-R3**

**FOR:** Tire Chip Substitution for Rock Aggregate in Nitrification Fields

**APPROVAL DATE:** October 24, 2002  
July 15, 2004  
August 4, 2008  
November 5, 2008

In accordance with NCGS 130A-343 and 15A NCAC 18A .1969, the use of tire chips has been found to meet the standards of an innovative system, technology, device, or component and is approved for use, subject to the conditions of this innovative approval.

**I. Permitting**

Approved tire chip aggregate may be substituted for washed gravel or crushed stone required under 15A NCAC 18A .1900 *et seq.* for soil absorption systems receiving domestic strength wastewater or sewage. Other tire chip aggregate substitutions may be made when designed by a Professional Engineer and specifically approved by the OSWP, DEH, DENR. An Authorized Agent of the Department shall indicate on the operation permit that tire chip aggregate is being used and name of the approved tire processor supplying the tire chip aggregate.

**II. Specifications**

Tire chip aggregate used as a rock substitute in nitrification trenches shall meet the following specifications:

1. Shall be free (98% or better by weight) of balls of wire and fine rubber particles less than 2 mm;
2. Shall be clean and free (98% or better by weight) of any-soil particles (fines) either adhering to the chips or floating loose within the chips;
3. Shall be nominally two (2) inches in size and may range from ½ inch to a maximum of four (4) inches in any one direction (95% or better by weight);
4. Shall not contain wire protruding more than one inch from the sides of the chips (85% or better by weight);
5. Tire chip aggregate shipped for use in OSWS in NC shall be supplied by a OSWP, DEH, DENR approved tire processor, and accompanied by a bill of lading certifying the specifications; and

6. Shall be delivered with a State approved Bill of Lading to the Installer certifying that conditions 1-5 are met.

### **III. Tire Processor's Approval**

1. Any tire processor wishing to provide tire chip aggregate for use in onsite wastewater systems in the state of North Carolina shall receive written approval from the On-Site Water Protection Section, DEH, DENR.
2. Applications for approval must include Processor contact person, facility name and address, and facility location if different from the address.
3. Tire processors must agree in writing with Part II Specifications to maintain their Approval.
4. Approved tire processors for tire chip aggregate for subsurface wastewater systems shall be listed on the On-Site Water Protection Section web page. (<http://www.deh.enr.state.nc.us/oww>).
5. Noncompliance with this approval may subject a tire processor to suspension or revocation of their approval.
6. Approvals are not transferable.
7. The tire chip aggregate manufacturer shall provide written instructions for the installation of systems using tire chip aggregate, including approved specifications, safety guidelines, and cleanup obligations for their customers.

### **IV. Siting Criteria**

The standard requirements for the siting of wastewater systems as specified in 15A NCAC 18A .1900. shall apply, except as follows:

1. Approved tire chip aggregate may be substituted for washed stone or gravel in subsurface sewage effluent absorption systems, required by 15A NCAC 18A .1900, including bed systems.
2. Approved tire chip aggregate may be used as a substitute for washed stone or gravel in repairs or extensions of nitrification trenches.
3. The minimum vertical separation required by Rule 15A NCAC 18A .1955(m) shall not be reduced, unless preceded by an approved pretreatment system achieving TS-I or TS-II quality effluent.

### **V. System sizing**

Tire chip aggregate may be substituted for rock or gravel aggregate on a one-to-one basis volumetrically as based on 15A NCAC 18A .1900.

### **VI. Installation Procedures**

The following installation requirements shall be met when tire chip aggregate is used in whole or part for the dispersal system:

1. The installation requirements of 15A NCAC 18A .1900.
2. Tire chip aggregate for subsurface sewage effluent absorption systems shipped from approved tire processors shall be accompanied by a freight bill of lading labeled as drainfield aggregate. The

bill-of-lading shall certify that the material meets the specifications for drainfield use. Contractors purchasing tire chip coarse aggregate shall retain a copy of the freight bill-of-lading as documentation of the tire chip aggregate size and quality. A copy of the bill of lading shall be provided to the local health department prior to issuance of the operation permit, and shall be retained with the operation permit filed with the local health department.

3. The tire chip aggregate shall be covered with a single and continuous layer of non-woven filter fabric extending across the top of the tire chip aggregate before backfilling. The fabric shall have a unit weight of at least 3.0 oz./yd<sup>2</sup> (per ASTM D-5261), a permittivity of at least 1.0 sec<sup>-1</sup> (per ASTM D-4491), a trapezoid tear strength of at least 35 lbs. (per ASTM D-4533), and have a mesh size equal to U.S. Sieve No. 70 (A.O.S.)(ASTM D-4751).
4. All tire chips not used in the nitrification trench shall be removed from the site by the installer or contractor for the onsite wastewater system. Any tire chips placed on top of the filter fabric after system inspection shall be covered adequately to prevent persons or pets from being punctured by the wires.
5. For LPP systems, the orifices shall be protected from aggregate shadowing by sleeving the discharge pipe laterals within the perforated pipe [which meets Rule .1955(e)] typically used for conventional nitrification lines.
6. The Installer shall be certified under NC General Statues 90A-70 as a minimum of a Level II Installer and shall be listed as receiving written instruction from the approved Tire Chip Aggregate Manufacturer.

## **VII. Operation, Maintenance and Monitoring Requirements**

Operation, maintenance and monitoring requirements for the applicable system as required in 15A NCAC 18A .1961 (a) and (b) shall be the same as those in all onsite wastewater systems using stone or gravel as aggregate.

## **VIII. Repair of System:**

The provisions of 15A NCAC 18A .1961(l) shall govern the repairs to malfunctioning wastewater systems.

Approved by: \_\_\_\_\_ Date: \_\_\_\_\_