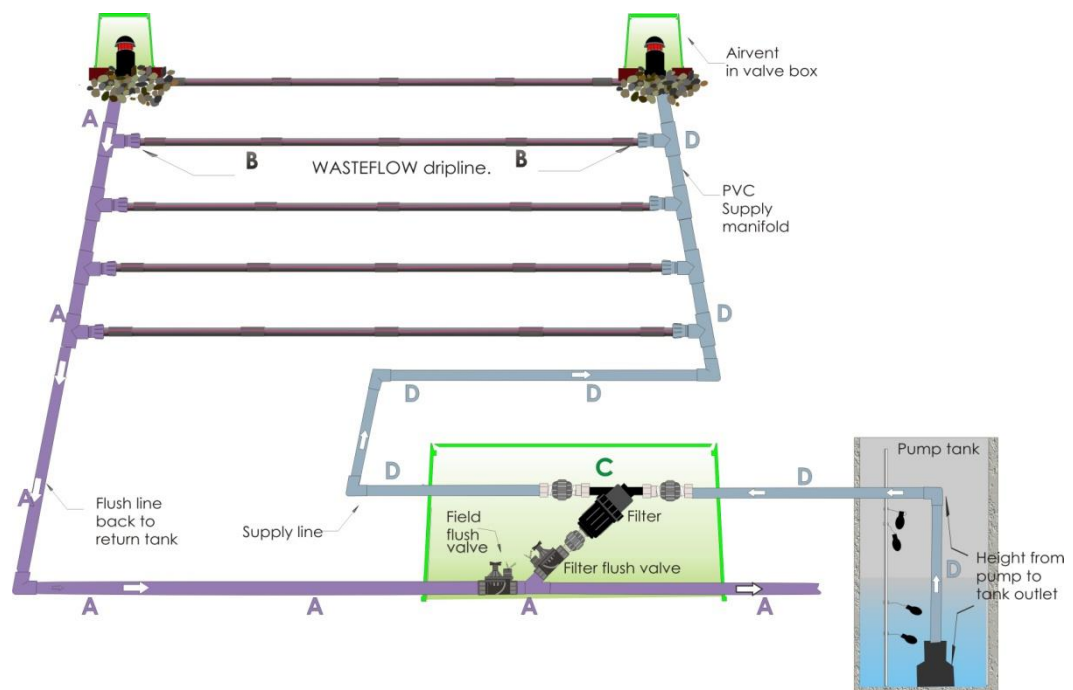


## Design and Installation Considerations for Geoflow Drip Distribution Systems

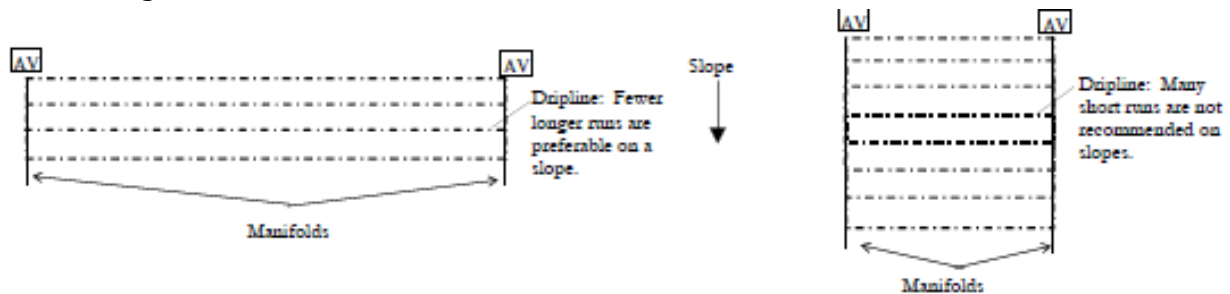
We supply Geoflow PC (pressure compensating) dripline with Geoshield antimicrobial and Treflan anti-root intrusion treatments guaranteed for 15 years by the manufacturer. PC emitters are moulded to the inside wall of the tubing at 600mm intervals.

**Geoflow drip system schematic**



- A minimum of 600mm of unsaturated soil from ground level above any restrictive layer or watertable is required for mole ploughing to permit infiltration and lateral transport of water through the sub-soils. Sites with less than 600mm can import sandy fill material and place the driplines in the fill. Local regulations may have different requirements.
- The drip lines can be inserted directly into the existing soil by a mole plough attached to a farm tractor if the site classification is suitable.
- Additional soil can be added to sites with shallow depth of soil to restrictive layers once the grass and roots (about 10mm) have been removed.
- Drip lines can be installed in existing soils or pegged in imported fill material 150 – 250 mm below the final surface.
- Drip lines are usually spaced on 600 mm centres.
- The maximum length of any PC drip line is approx 100 metres for even distribution.
- Supply and flush manifolds can be in the same trench with looped drip lines or at each end of the connecting drip lines.
- The lateral lines can be directed around trees which are useful and consume water.
- If possible the return manifolds should be sloped down to the pump tank so the effluent drains back to the tank when the pump turns off.

- Drip systems are often divided into zones that can be loaded independently.
- Each zone should be a similar sized area as dosing volumes to zones will be equal.
- Lateral lengths within a zone should be close to equal to achieve efficient flushing of each of the laterals.
- Installation should be carried out when the soil is dry enough to prevent compaction and smearing of the infiltrative surface.



- Individual drip lines should be installed level following the naturally occurring ground contour 150 – 250 mm below final surface.
- At least one air release valve shall be installed at the high point of each distribution field or zone within a distribution field.
- Residual water in tubing will drain from the emitters after each dose so drain-down should be managed to prevent localised overloading through the lower laterals of the network.
- The pump(s) must be suitable for the wastewater system and sized in accordance with design recommendation.
- The pump tank should provide sufficient storage for equalisation of peak flows. Equalisation storage from one-half to one day between the pump-enable water level and the alarm water level is necessary for small flow systems.
- The treatment system and pump tank should be installed such that the force main, filter and system flush return pipes can drain by gravity. The return pipes must connect to the building sewer line upstream of the primary treatment tank.
- Hand placement of drip line laterals may be needed to go around trees or other obstructions left in the distribution field or in fill material.
- Lay drip line laterals in trenches without kinks, or rocks or debris in direct contact.
- For drip lines which contain loops, prior to connection to the return flush manifold make the loop connection at the end of the drip line using a flexible pressure rated pipe assembly or rigid pipe assembly with two 90°elbows.
- Extreme care must be taken during system installation to assure no soil or debris enters the tank, supply manifold lines, and drip line network. Pipe ends and dripline ends should be progressively taped during installation to prevent soil entering the network.
- Provisions shall be made to screen solids > 3mm from the wastewater stream prior to reaching the drip line filter.
- The return manifold pipe must connect to the building sewer line 1 – 2 m upstream of the primary treatment tank.
- The supply manifold is connected to the force main and should be installed at the highest elevation of the distribution field or zone for field flushing purposes.

- During installation the pump tank must be filled and water made available to allow flushing of the lines during installation and for commissioning.

### System Commissioning

- The pump must be installed and a power source available to facilitate dosing.
- Before commissioning, make sure all system electrical components are connected, to the system control panel, dose chamber pump, and alarms.
- Controls and float levels shall be set to assure the minimum dose is available prior to initiating a dosing cycle to a zone.
- System Flush - Flush force main, supply manifold, drip line laterals, return manifold and return flush line to remove any soil, pipe shavings or other debris. Check for leaks at all exposed pipe joints.
- The design dosing pressures must be checked to assure that the system is providing the design pressure to the distribution field or to each zone.
- After the system has been inspected to assure all design criteria has been met, backfill of the system and its components may begin.
- Drip fields should be landscaped to shed surface water and grassed. Grass should be regularly mowed with a light mower and removed.

### **WASTEFLOW PC ½ gph Specification**

The dripline shall consist of nominal sized one-half inch linear low density polyethylene tubing, with turbulent flow slow draining anti siphon drip emitters bonded to the inside wall. The drip emitter flow passage shall be 0.032" x 0.045" square. The tubing shall have an outside diameter (O.D.) of approximately .64-inches and an inside diameter (I.D.) of approximately .55-inches. The tubing shall consist of three layers; the inside layer shall be a *Geoshield*® protection, the middle layer shall be black and the outside layer shall be purple striped for easy identification. The pressure compensating emitters shall be molded from virgin polyethylene resin with a silicone rubber diaphragm. The pressure compensating emitters shall have nominal discharge rates of 0.53 gallons per hour. The emitters shall be impregnated with Treflan® to inhibit root intrusion for a minimum period of fifteen years and shall be guaranteed by the manufacturer to inhibit root intrusion for this period.

Please refer to The Geoflow Design, Installation and Maintenance Guidelines at [www.ashtecs.com](http://www.ashtecs.com) for full guidelines.

**We supply complete turnkey treatment and sub-surface infiltration systems, including installation, commissioning and certification so the total system selection and operation is matched to each site.**