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Wastewater Treatment and Infiltration Systems

Drip Distribution Systems –Industrial and Commercial

Many premises located in unsewered areas experience difficulties with effluent discharges. The licensing requirements and regulations governing discharges of trade effluent are justifiably onerous to protect the environment. However, meeting the conditions of environmental controls over effluent discharges can often be hugely expensive for the companies and facilities concerned.

Drip irrigation of wastewater (also known as drip distribution or drip dispersal) is an effective soil infiltration system and can be a viable option in many situations. Drip can provide solutions for many clients with effluent discharges from production and commercial facilities in unsewered areas.

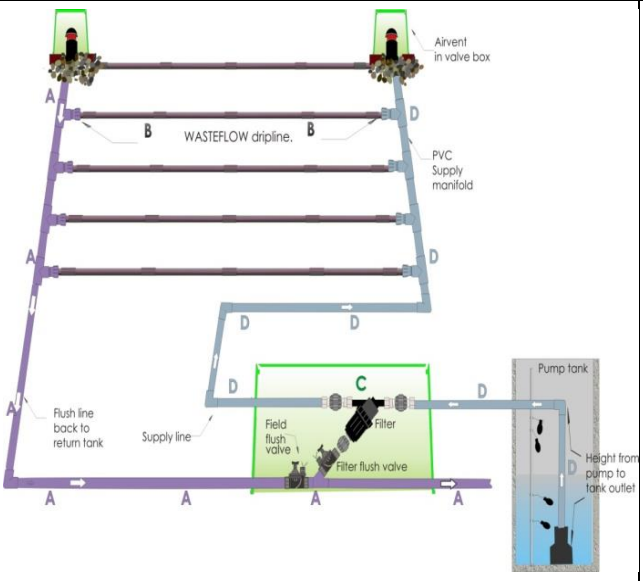
Irish EPA research (Jan 2016) reported very positive results from tests of residential drip systems designed and supplied by Ashtecs and the Code of Practice was revised to include drip systems. It is also used in large scale industrial and commercial applications and is considerably more cost effective. Drip irrigation can provide a cost–effective alternative to other methods of effluent discharge such as discharging to receiving waters or spray irrigation or large raised mounds and sand filters.

How does it work?

Tiny amounts of water are released from a network of drip irrigation tubing just below the grass surface. The drip tubing is specially designed for wastewater and to repel roots. The water is filtered and pumped in controlled doses day and night.

How is it Installed?

The dripline is inserted directly into the soil just below the ground surface by a mole plough or pipe insertion machinery. Drip lines are spaced less than a metre apart in a closed loop network.



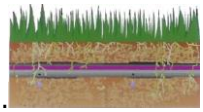
½" flexible polyethylene drip tubing with emitters attached to the inside wall, are spaced 600mm apart. Driplines are laid approx. 600mm apart in a network.

Mole ploughing driplines

The use of the drip technology for wastewater is becoming more widespread following the 2016 EPA report on its successful use on studies in Ireland.

Ashtecs are distributors of Geoflow pressure compensating Wasteflow® drip systems as evaluated by Trinity/EPA research in Ireland.

The Geoflow drip tubing has been treated to repel roots and bacterial slimes.



GEOFLOW SUBSURFACE DRIP

What are the Benefits of Drip Distribution for discharges?

- Drip can provide significant savings over alternative methods.
- Uptake of water by evapotranspiration is maximized.
- Installations are invisible and safe to walk or play on.
- Use on difficult sites- high water tables, tight soils, rocky terrain, steep slopes, around existing buildings and trees.
- Easy to install directly into existing soils with little disturbance.
- Multiple zones can be used for large areas or compact sites.
- Can be used with existing or customized treatment systems.
- Shallow installation allows treatment in the biologically active topsoil
- Removal of pathogens and viruses in the aerated soil is maximized.
- Uptake of phosphorous and nitrates is increased.
- Wastewater is recycled in an environmentally sensitive manner.
- Efficient natural treatment and reuse of wastewater
- 15-year warranty for root intrusion and drip tubing integrity.
- Systems are robust with an expected life of 30 years.
- Turnkey design, installation with ongoing system management and servicing.

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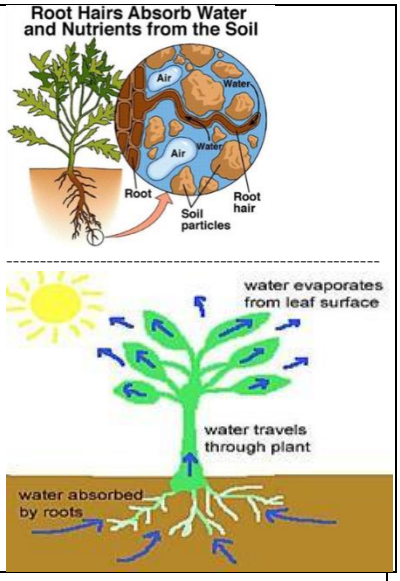
Drip Tubing

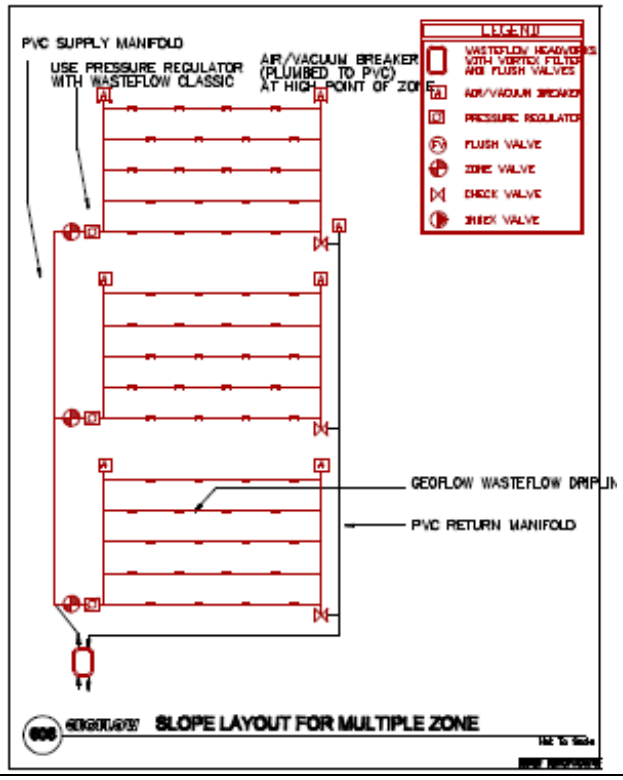
The Geoflow dripline has a series of emitters spaced at 600 mm intervals in the drip tubing which are moulded into the dripline at the time of manufacture. Each pressure compensating emitter opens when the design pressure is reached and releases 0.03 litres/min of water to literally drip into the soil. The pressure compensating dripline minimises the effects of pressure disparities throughout the dripfields and optimises control over dosing volumes throughout the infiltration area. Modelling has shown that the water released from drip emitters moves predominately vertically downwards through the soil.

Only Geoflow drip tubing is pre-treated to prevent bacterial deposits adhering to the tubing walls and to prevent root intrusion from vegetation. The PVC supply pipe to the dripfield and the return pipe to the treatment system are directed through the system headworks containing a fine mesh 130 micron filter with automatic flushing and backwashing of the filter and complete network.

The uniform dosing and resting operation combined with the shallow placement in the topsoil will:

1. maximise the treatment of the wastewater in the unsaturated topsoil and nitrogen and phosphorous uptake by the grass roots;
2. maximise evapotranspiration via plant transpiration and air drying;
3. enhance the soil infiltration and percolation through the subsoil;
4. facilitate horizontal water movement in the topsoil for pollution attenuation and safe effluent dispersal;
5. minimise water mounding in periods of seasonal high water table.
6. flow equalisation and uniform dosing spreads the flows over a 24 hour period.





The size of the drip system is limited only by the amount of land available.

Systems in free draining soils require less area than in slowly permeable soils.

Multiple zones are dosed sequentially by a high head pumping system generating sufficient pressure to operate the pressure compensating patented drip emitters.