Design and Installation Manual for the Infiltrator ATL System in British Columbia

Infiltrator ATL System in British Columbia	

The purpose of this manual is to provide the minimum specifications for design and installation of the Infiltrator ATL **(Advanced Treatment Leachfield)** System in British Columbia. Each revised version of this manual supersedes the previous version.

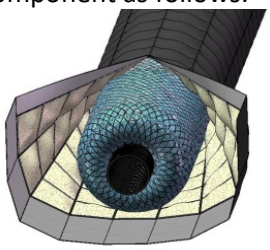
The systems presented in this document are common configurations and are provided for illustrative purposes. They are not intended to restrict the use of other configurations, which may be utilized provided the design conforms to the Sewerage System Regulation, the Sewerage System Standard Practice Manual (SPM) in effect at the time of design, and provincial/local regulations, as applicable.

For more detailed design and installation information, please contact Infiltrator Water Technologies at 1-800-221-4436

The Infiltrator ATL System

The Infiltrator ATL is a patent-pending, proprietary system consisting of six components. Upon entering the Infiltrator ATL, septic tank effluent progresses through each component as follows:

- nominally 30-cm-diameter conduit
  - 10-cm-diameter pipe
  - Large-diameter synthetic aggregate
  - Coarse geotextile
  - Small-diameter synthetic aggregate
  - Fine geotextile
- 15-cm-deep specified system sand



ATL System Conduit

System Sand

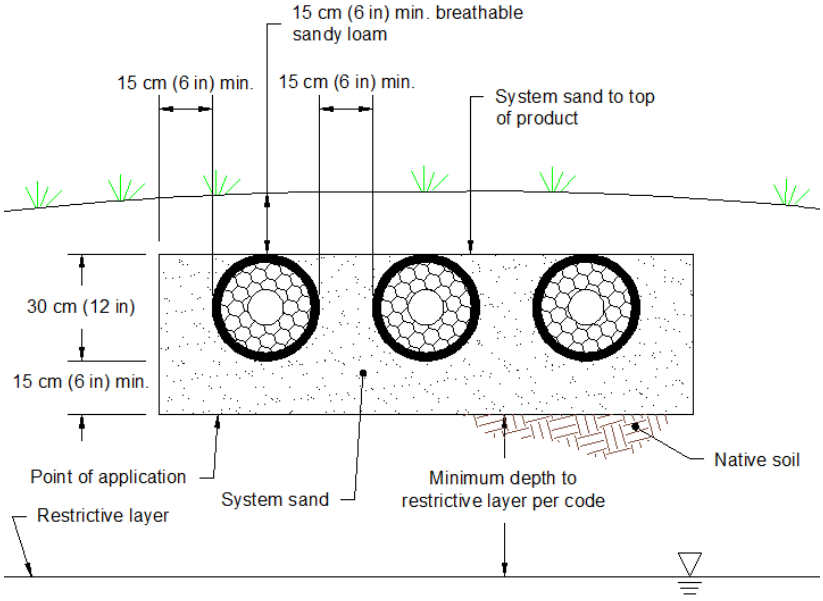
"System sand" is the term used to describe the coarse sand material that surrounds the Infiltrator ATL System conduits. Acceptable materials for use as system sand are listed below.

SPMV2	• material which meets ASTM C33 modified specifications
SPMV3	• Clean Coarse Sand; or • Mound sand

The following minimum system sand dimensions are required for all Infiltrator ATL System configurations:

- 15 cm of system sand below the Infiltrator ATL conduit rows;
- 15-cm system sand extension on both ends of the Infiltrator ATL conduit rows; and
- 15 cm of system sand adjacent to and between each Infiltrator ATL conduit row.

There is no requirement for any minimum amount of system sand on top of the Infiltrator ATL conduit rows. Cover soil should be a breathable sandy loam with no clay.



The Infiltrator ATL System is certified by NSF International as complying with NSF/ANSI 40 for the production of Class I effluent. This allows for design and installation of the Infiltrator ATL System in British Columbia (BC) as a Type 2 treatment system, as defined in the Sewerage System Regulation (SSR) and the Sewerage System Standard Practice Manual (SPM).

This manual is intended to provide system design, installation, and use information to the users in BC – Authorized Persons, local health officers, system installers, and system owners. All ATL Systems shall comply with the specifications and instructions in this manual. If design, installation, operation, or maintenance specifications are not specifically addressed in this manual, or do not conform to relevant requirements in the SSR and the SPM in effect at the time of design, the SSR and the SPM or other best practice manual in effect at the time of design shall be applicable.

Authorized Persons

The SSR defines APs as Registered Onsite Wastewater Practitioners (ROWPs) or Professionals. The ATL System shall be designed by an Authorized Person (AP). The ATL System shall be installed by, or installed under the supervision of, and AP.

Multiple Bed Systems

If site conditions prevent design and installation of a single ATL System bed along the contour, the ATL System may be installed in multiple bed configurations, with the following conditions:

- each bed must run along the length of any contour;
- each bed must receive equal flows (zoning); and
- each bed must meet all other requirements of the SPM or other best practice manual.

Effluent Distribution

The ATL System can accommodate all methods of effluent distribution, including gravity, pump-to-gravity, serial, and pressure distribution. If pressure distribution is utilized, the small-diameter pressure distribution piping should be placed within the 10-cm-diameter distribution pipe within the ATL conduit for the entire length of each ATL conduit row.

Dosed Systems

If effluent is pumped to the ATL System, the maximum volume per cycle shall be ¼ of the DDF.

Fill and Cover Materials

System sand shall be used to raise the elevation of the ATL System to meet minimum vertical separation requirements as constructed. System sand or approved soil as per the SPM shall be used to create side slopes in above-ground system applications. The Infiltrator ATL System is designed for use in BC with a minimum of 15 cm (6”) of cover material comprised of breathable sandy loam.

Distribution Boxes (D-boxes)

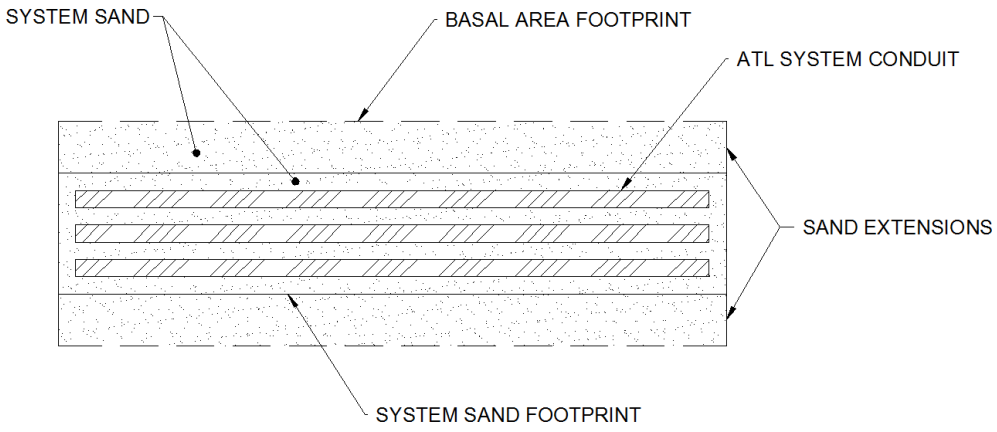
D-boxes are recommended in gravity applications (as shown in the drawings on pages 6-9) when equal effluent distribution is desired within a single disposal field, or when multiple beds are specified. Serial distribution is allowed. In serial distribution applications, use of raised connections is recommended.

The ATL System designer should consider all aspects of the SPM or other best practice document in effect at the time of design, as well as the information below, in the design of each ATL System in British Columbia.

System Sand Footprint: The system sand footprint is the area that is created by considering (1) the amount of ATL conduit to be used, and (2) the system sand between and beside the individual ATL conduit rows.

Basal Area Footprint: The basal area footprint is the area at the Point of Application created in accordance with the SPM in effect at the time of design, considering Daily Design Flow (DDF) and Type II HLR for the soil and site conditions.

The minimum system sand footprint and basal area footprint as calculated cannot be reduced. These areas must be maintained to ensure adequate area for (1) appropriate placement of the ATL System conduits and (2) infiltration of treated effluent into the native soil.



In designing the ATL System, area adjustments are necessary as follows:

- If the minimum required basal footprint is smaller than the area of the system sand footprint, no adjustments are necessary.

- If the minimum required basal footprint is larger than the area of the system sand footprint, area adjustments are required.

In most instances, the width of the system is extended to increase the system sand footprint. In level applications, this is accomplished by increasing the distance (and system sand) between the conduit rows. In sloped applications, this is accomplished by adding a system sand extension on the downslope side of the system sand footprint. The length of the bed area may be altered, but only by extending both the system sand and the ATL System conduit rows.

ATL Conduit Design Loading Rate

The ATL System was tested in accordance with NSF/ANSI 40 at loading rate of 2.2 gallons per linear foot (27.32 L/m). Therefore, the maximum design loading rate for the ATL conduit is 27.32 L/m.

ATL conduit is fabricated in 3.05 m (10 foot) lengths. Individual ATL conduits may not be cut. Therefore, each single 3.05 m (10 foot) ATL conduit will provide a maximum design loading rate of 83.33 L per unit. When calculating the total length of ATL conduit required for a given Daily Design Flow (DDF) as per the SPM, the system designer should use the 83.33 L/conduit design loading rate for a single ATL conduit unit.

Example DDF = 1300 lpd ÷ 83.33 L/conduit = 15.6 conduits, rounded up to 16 conduits

When dividing the total length of ATL conduit required for the system into individual rows, the system designer must always round-up – as opposed to removing - individual ATL conduit units in order to create ATL conduit rows of even length.

ATL System Design – Minimum ATL Conduit Lengths

A minimum of 39.6 m (130 feet) of ATL conduit is required for any system. Conduit rows must extend to within 15 cm of each end of the bed.

Individual ATL conduit rows within a system shall be a minimum of 9.14 m (30 feet) in length.

Sloped Systems

On sites with slopes greater than 10%, the 15 cm (6 in) deep basal sand layer must be extended a minimum of 90 cm (3 ft) on the downslope side. This additional sand is called a sand extension (see page 2).

Maximum slope on a site is 30%.

Basic rules of onsite sewage treatment system use and care apply to the ATL System. System owners shall operate the system in accordance with the procedures and specifications described in the SPM, all other provincial and local regulations, and the following:

System Use and Abuse

Your Infiltrator ATL System is intended for use with residential-strength wastewater within the design daily flow volume. To ensure long-term function of your system:

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  - Keep daily wastewater flow within design parameters. (Average flow is ½ Daily Design Flow (DDF) over a 30 day period)
  - Do not connect the rainwater management system to the Infiltrator ATL System.
  - Direct water from the rainwater management system away from the Infiltrator ATL System.
  - Solvents, paint, pharmaceuticals, aggressive cleaning products, and non-biodegradable items should not enter the Infiltrator ATL system.
  - Solids, such as but not limited to, cigarette butts, diapers, feminine hygiene products, cat litter, and paper towels should not be introduced into the Infiltrator ATL system.
- Introduce only normal residential wastewater into the system
- Maintain leak-free household plumbing fixtures, such as faucets and toilets.
- Do not utilize a garbage grinder.
- The ATL System is intended for use in non-traffic applications.

Operation and Maintenance

Your Infiltrator ATL System has no specific operating instructions. Proper use of the system as noted above is the primary operating concern.

Maintenance of the Infiltrator ATL System includes the following:

- The septic tank has an effluent filter, it should be cleaned by an AP on an annual basis.
- The septic tank should be pumped on a regular basis and, if concrete, checked for leaks and cracks. The interval for septic tank pumping varies depending upon use. Check with an AP or your local health department for the appropriate pumping interval.
- If present, the alarm system should be tested annually by an AP to ensure that it is functional

If at any time you have concerns about the use, operation, or maintenance of your Infiltrator ATL System, contact the Infiltrator Water Technologies' Technical Department at 1-800-221-4436.

System Start-up

There are no specific requirements for placing the ATL System into service. If the system has an alarm, an AP should, after system use has been initiated, test the alarm to ensure it is functional.

Intermittent Use

The Infiltrator ATL System is designed for intermittent use, and requires no special attention if it is to be placed out of use for extended periods of time.

Trouble Shooting

In the event that any of the following indicators arise, contact an AP.

- Wastewater back-up into the dwelling
- Persistent septic odor
- Unusually wet area atop and/or around the system
- "Breakout" of effluent along the side of a slope or other landscape feature

Repair

An AP shall be contacted when there are indications of malfunction with the Infiltrator ATL System. When visiting the site, the AP should, at a minimum, do the following:

- Assess the present condition of the Infiltrator ATL System and the surrounding area
- Research the history of use, including:
    - water volume use
    - contaminants
- Evaluate the site for groundwater intrusion
- Inspect the septic tank
- Inspect the Infiltrator ATL System conduit lines
- Check faucet and toilet function

Upon completion of the site visit, the qualified onsite wastewater system professional should contact the Infiltrator Water Technologies' Technical Department with the inspection report.

These installation instructions are for the Infiltrator ATL System in British Columbia. Infiltrator ATL Systems may only be installed according to this manual, the SPM in effect at the time of design, and any other provincial and local regulations.

If unsure of the installation requirements for a site, contact the AP responsible for the design. If unsure of the use of the Infiltrator ATL System, contact Infiltrator Water Technologies. A Record of Sewerage System (RSS) which is comprised of the soil and site evaluation and the design of the onsite system must be filed, and accepted by the local health department before installation.

Before You Begin

Materials and Equipment Needed

- ☐ Infiltrator ATL System conduits
- ☐ System sand
- ☐ PVC pipe and couplings
- ☐ Backhoe
- ☐ Laser, transit or level
- ☐ Shovel and rake
- ☐ Observation port and cap per design
- ☐ Endcaps
- ☐ 10-cm internal corrugated pipe couplers
- ☐ Tape measure

Common practices shall apply to the installation of the Infiltrator ATL System. These include, but are not limited to:

- ☐ avoid soil compaction on the infiltrative surface area, including all areas downslope of a sloped system; and
- ☐ install the Infiltrator ATL System conduit and system sand on the same day that the system footprint is excavated/exposed.

The use of tracked vehicles for material installation is preferred.

Excavating and Preparing the Site

NOTE: *The Infiltrator ATL System may not be installed during periods when the soil is sufficiently wet to exceed its plastic limit, as this causes machinery to smear the soil.*

1. Stake out the locations of tank(s), pipes, conduit rows, and corners of the system to be scarified/excavated, per design. Set the elevations as shown on the approved plan. [Note: The proper elevation of solid PVC header line going to each Infiltrator ATL conduit row should be determined to ensure compliance with the required system bottom depth as shown on the approved permit. This height may vary dependent on system height and configuration used.]
2. Install sedimentation and erosion control measures.
   NOTE: *The installation of temporary drainage swales/berms (surface diversions) may be necessary to protect the site during rainfall events.*
3. Excavate the trenches or bed area or scarify the ground, per design.
4. Rake the trench or bed bottom and sides (when applicable) if smearing has occurred during excavation. Remove large stones and cut off protruding roots, fill voids with compacted system sand.
   NOTE*: Smearing does not occur in sandy soils, so raking is not necessary. In fine textured soils (silts and clays), avoid walking on the excavation bottom to prevent compaction and loss of soil structure.*
5. Verify that each trench, or the bed area, is at the proper slope from side-to-side and from end-to-end using a level, transit, or laser.

Installing the System

1. Install the system sand footprint layer over the entire Infiltrator ATL System area as per design. System sand should be leveled and stabilized prior to introduction of the Infiltrator ATL conduit. Installer should retain records verifying that system sand meets the specifications as described in the SPM (See Page 2 of this manual, “System Sand”). Remove plastic stretch wrap from Infiltrator ATL conduits.
2. Place Infiltrator ATL conduits on the surface of the system sand with the white stripe/seam in the 12 o’clock position, arranged in the configuration shown on the system design. Using the provided 10-cm-diameter internal pipe couplings, connect the Infiltrator ATL conduits end-to-end to create rows of the required length.

3. Infiltrator ATL conduit shall be installed level. A laser level or transit is recommended to ensure proper alignment.
4. Infiltrator ATL conduit rows shall be:
   - installed on a level plane with one another;
   - be installed parallel to any contours;
   - be separated by a minimum of 15 cm of system sand; and
   - be installed with the white stripe/seam oriented in the 12 o'clock position.
5. In serial distribution applications, use of an offset adapter is recommended.
6. Install a cap on the end of each Infiltrator ATL conduit row that is not connected with piping.
6. Once the Infiltrator ATL conduit is placed on the surface of the system sand and distribution piping is connected to the conduits per design, additional system sand shall be ladled between and to the top of each of the Infiltrator ATL conduit rows. System sand shall also be installed on each side and at each end of the backfilled Infiltrator ATL conduit rows, per the design. This additional system sand shall be stabilized. Where possible all machine work should be done from the uphill side of the infiltration area to reduce possible compaction of the receiving soil area.

Installing Observation/Monitoring Ports

If observation or monitoring ports are specified in the system design:

1. Cut a 10-cm-diameter PVC pipe to the desired length, ensuring the pipe will extend a minimum of 15 cm above final grade. Attach a PVC Tee to the bottom of the monitoring pipe
2. Drill a minimum of ten 0.2- to 1.2 cm holes within 1 to 15 cm of the bottom of the pipe and tee, and wrap the bottom end of the pipe in filter fabric.
3. Install the monitoring pipe at the appropriate location, based on site conditions, and ensure the bottom of the pipe is at the bottom of the system sand footprint (at the Point of Application).
4. Install a removable, water-tight, secure cover cap.

Covering the System

NOTE: *Before backfilling, the system shall be inspected and approved by the system designer, as required in the SPM and in compliance with all provincial and local ordinances and procedures.*

1. Material placed around the system sand and atop the Infiltrator ATL conduit may be additional system sand or material which meets the requirements of the SPM. However, the final 15 cm placed atop or adjacent to the Infiltrator ATL System shall be comprised of breathable sandy loam - no clay).
2. Backfill the bed by pushing material over the Infiltrator ATL System. It is best to mound several extra cm of soil over the finish grade to allow for settling. This also ensures that runoff is diverted away from the system. ***NOTE:*** *Do not drive over the system while backfilling in sand.*
3. The maximum amount of cover over the ATL System in trench or bed configuration is as per the SPM.
4. After the system is covered, the site should be seeded or sodded. Ensure that sand-based sod, and not clay-based sod, is used to prevent erosion.

NOTE: *If the system is for new home construction, it is important to leave marking stakes along the boundary of the system. This will notify contractors of the system location so they will not cross it with equipment or vehicles.*

INFILTRATOR WATER TECHNOLOGIES, LLC ("Infiltrator")
ATL SYSTEM STANDARD LIMITED WARRANTY

(a) The structural integrity of the Infiltrator ATL System conduits manufactured by Infiltrator (collectively referred to as "Units"), when installed and operated in a leachfield of an onsite septic system in accordance with Infiltrator's installation instructions, is warranted to the original purchaser ("Holder") against defective materials and workmanship for one year from the date upon which Letter of Certification is issued for the septic system containing the Units provided, however, that if a septic permit is not required for the septic system by applicable law, the one (1) year warranty period will begin upon the date that installation of the septic system commences. In order to exercise its warranty rights, Holder must notify Infiltrator in writing at its corporate headquarters in Old Saybrook, Connecticut within fifteen (15) days of the alleged defect. Infiltrator will supply replacement Units for those Units determined by Infiltrator to be defective and covered by this Limited Warranty. Infiltrator's liability specifically excludes the cost of removal and/or installation of the Units.

(b) THE LIMITED WARRANTY AND REMEDIES IN SUBPARAGRAPH (a) ARE EXCLUSIVE. THERE ARE NO OTHER WARRANTIES WITH RESPECT TO THE UNITS, INCLUDING NO IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

(c) This Limited Warranty shall be void if any part of the ATL System components is manufactured by anyone other than Infiltrator. The Limited Warranty does not extend to incidental, consequential, special or indirect damages. Infiltrator shall not be liable for penalties or liquidated damages, including loss of production and profits, labor and materials, overhead costs, or other losses or expenses incurred by the Holder or any third party. Specifically excluded from Limited Warranty coverage are damage to the Units due to ordinary wear and tear, alteration, accident, misuse, abuse or neglect of the Units; the Units being subjected to vehicle traffic or other conditions which are not permitted by the installation instructions; failure to maintain the minimum ground covers set forth in the installation instructions; the placement of improper materials into the system containing the Units; failure of the Units or the septic system due to improper siting or improper sizing, excessive water usage, improper grease disposal, or improper operation; or any other event not caused by Infiltrator. This Limited Warranty shall be void if the Holder fails to comply with all of the terms set forth in this Limited Warranty.

Further, in no event shall Infiltrator be responsible for any loss or damage to the Holder, the Units, or any third party resulting from installation or shipment, or from any product liability claims of Holder or any third party. For this Limited Warranty to apply, the Units must be installed in accordance with all site conditions required by state and local codes; all other applicable laws; and Infiltrator's installation instructions.

(d) No representative of Infiltrator has the authority to change this Limited Warranty in any manner whatsoever, or to extend this Limited Warranty. No warranty applies to any party other than the original Holder.

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The above represents the standard Limited Warranty offered by Infiltrator. A limited number of states and counties have different warranty requirements. Any purchaser of Units should contact Infiltrator's corporate headquarters in Old Saybrook, Connecticut, prior to such purchase, to obtain a copy of the applicable warranty, and should carefully read that warranty prior to the purchase of Units.

Infiltrator™
Water Technologies
Part of ADS

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