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Ontario

**Building Materials Evaluation
Commission**

**Commission d'évaluation des
matériaux de construction**

BMEC AUTHORIZATION: 23-02-404 Ecoflo linear biofilter EL30 System

Date of Authorization: May 24, 2023
Date of Expiry¹: May 24, 2028

1. Applicant

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Environment Ltd.

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3. Authorization

The Ecoflo linear biofilter EL30 System primarily consists of a primary/septic tank, an effluent filter, a dosing device, the Ecoflo linear biofilter Treatment Modules, System Sand, and a sampling device. The Ecoflo linear biofilter EL30 System can be installed in-ground, partially raised, or fully raised.

The Ecoflo linear biofilter EL30 System is authorized as a combined treatment and dispersal system. This authorization is not an approval for the use of the Ecoflo linear biofilter EL30 System as a treatment unit, where treatment units are permitted for use with Class 4 Sewage Systems.

Additional descriptive information is provided in documents supplied by the Applicant listed in Appendix A.

¹ This Authorization expires on the date shown. It is the responsibility of Authorization holders to make a complete application considering the time for review and complexity of the new application.

Reports and assessments provided by the Applicant demonstrate that if the Premier Tech Water and Environment Ltd.'s Ecoflo linear biofilter EL30 System are manufactured, designed, constructed, tested, and installed in accordance with the manufacturer's instructions and limitations, and the specific terms and conditions stated in this authorization, the use of the Ecoflo linear biofilter EL30 System shall be deemed to not be a contravention of Article 8.6.2.2., "Other Treatment Units" and Section 8.7 "Leaching Beds" of Division B of the Ontario Building Code.

All other requirements pertaining to the manufacture, design, construction, testing, and installation are subject to the requirements of the Building Code, and subject to the following terms and conditions contained below.

4. Specific Terms and Conditions

4.1. General

4.1.1. This Authorization is contingent on maintenance of the CAN/BNQ 3680-600 certification including annual CAN/BNQ certification audits.

4.2. Definitions

- 4.2.1. Raised or partially Raised means a sewage system in which any part of the system is above the natural ground elevation;
- 4.2.2. Vertical Separation means the depth of unsaturated soil below the system, as measured from the bottom of the System Sand, at a minimum 300 mm depth below the Ecoflo linear biofilter EL30 modules, to a limiting layer such as high groundwater table, bedrock, or soil with a percolation time (T) less than 1 min/cm greater than 50 min/cm; and
- 4.2.3. Ecoflo linear biofilter System Sand is defined in Section 4.3.7 of this Authorization.

4.3. System Requirements

- 4.3.1. There are six (6) main components to the Ecoflo linear biofilter EL30 System:
1. Primary/Septic tank;
 2. Effluent filter;
 3. Dosing Device;
 4. Ecoflo linear biofilter EL30 treatment modules;
 5. System Sand; and
 6. Sampling device.
- 4.3.2. All raw sewage shall enter into a primary/septic tank sized in accordance with Article 8.2.2.3. "Septic Tanks" of Division B, of the Ontario Building Code;
- 4.3.3. The effluent filter shall meet the requirements of Article 8.6.2.1. "Septic Tank Systems" of Division B of the Ontario Building Code and shall be connected to the outlet of the septic tank;

- 4.3.4. The septic tank effluent shall be distributed to each row of Ecoflo linear biofilter EL30 treatment modules using a dosing device and a distribution box. The dosing device may consist of either a Premier Tech and Water Environment Ltd.'s Dosing Device, or a pump chamber with an effluent dosing pump;
- 4.3.5. The Ecoflo linear biofilter EL30 treatment module has an effective length of 1,183 mm, a width of 660 mm and a total height of 330 mm, and consists of:
1. The filtration pad;
 2. The protective chamber housing, including the perforated distribution channel and corresponding cover;
 3. The perforated PVC pipe when using low pressure distribution; and
 4. The inlet cap and end cap assembly.
- 4.3.6. Effluent shall be distributed over the length of each row of Ecoflo linear biofilter treatment modules using the perforated distribution channel located along the centreline of the protective chamber, or for low pressure distribution, with a perforated PVC pipe placed within the centre channel of the protective chamber;
- 4.3.7. The Ecoflo linear biofilter EL30 System Sand and fill
1. All Ecoflo linear biofilter System configurations require each row of Ecoflo linear biofilter EL30 treatment modules to be centered onto a System Sand layer leach field;
 2. The System Sand layer shall be provided to ensure a minimum of:
 - a. 300 mm under the modules;
 - b. 864 mm width (centered beneath the modules);
 - c. 150 mm past each end of the rows; and
 - d. Meet the following requirements:
 - i. A percolation time (T) not less than 4 min/cm and not more than 12 min/cm;
 - ii. D10 value not less than 0.13 and not exceeding 0.60
 - iii. A uniformity coefficient less than 8; and
 - iv. Not more than 5% fines passing through a 0.074 mm (No. 200) sieve.
- 4.3.8. Following installation of the System Sand for each row of Ecoflo linear biofilter EL30 treatment modules, backfill, System Sand, or Leaching Bed Fill with a percolation time not exceeding 15 min/cm can be used to fill in the area between the rows of Ecoflo linear biofilter EL30 treatment modules to cover the complete dispersal surface area. The final thickness of suitable material over the leach field shall be a minimum of 300 mm from the top of modules. The maximum depth of backfill material is 600 mm;
- 4.3.9. The backfill used shall be material permeable to water and air, exempt of any organic matter, impervious soil, stones, rocks, debris or other objects that could damage the modules;
- 4.3.10. For each Ecoflo linear biofilter System, the system installer is to receive a copy of the sieve analysis for both the System Sand and any leaching bed fill used, and these results are to be available upon request to the Chief Building Official/ Principal Authority; and

4.3.11. The sampling device consists of a collecting tray with a 100 mm (4 in) access port attached to collect and inspect the effluent. The collecting tray is to be installed under the system sand layer and positioned at the beginning of the third of the length of a row, based on the direction of water flow.

4.4. Design

4.4.1. Vertical Separation

- 4.4.1.1. The percolation time (T) of the native soil shall determine the minimum vertical distance from the bottom of the Ecoflo linear biofilter System Sand to the high groundwater table, bedrock, or soil with a percolation time (T) less than 1 min/cm or greater than 50 min/cm;
- 4.4.1.2. If T is less than or equal to 6 min/cm, or greater than 50 min/cm, the vertical separation distance shall be at least 600 mm;
- 4.4.1.3. If T is greater than 6 min/cm, and less than or equal to 50 min/cm, the vertical separation distance shall be at least 450 mm;
- 4.4.1.4. Where the native soil cannot provide for the entire vertical separation, System Sand or imported sand may be provided to achieve the required vertical separation. The imported sand shall have a T-time not exceeding 15 min/cm;

4.4.2. Number of Ecoflo linear biofilter EL30 Treatment Modules Required

- 4.4.2.1. Each Ecoflo linear biofilter EL30 treatment module has the capacity to treat 95 L per day;
- 4.4.2.2. The formula to determine the number of Ecoflo linear biofilter EL30 treatment modules required is $Q/95$;
- 4.4.2.3. The number of Ecoflo linear biofilter EL30 treatment modules must be rounded up at all times;

4.4.3. Module Spacing Requirements

- 4.4.3.1. The Ecoflo linear biofilter EL30 treatment modules shall be placed level within each row;
- 4.4.3.2. When multiple rows are used, the Ecoflo linear biofilter EL30 modules shall be spaced using the following criteria:
 - 1. The rows shall be spaced a minimum of 864 mm apart, calculated center to center; and
 - 2. The rows shall start and finish with a minimum separation of 150 mm at each end of a row of modules and the edge of the System Sand;
- 4.4.3.3. The modules shall be distributed evenly over the dispersal surface, subject to adjustment to ensure:

1. Minimum clearances are provided in accordance with Article 8.2.1.6. “Clearances for a Class 4 or 5 Sewage System” of Division B of Ontario’s Building Code;
2. Minimum separation distances are provided as required in item 4.4.3.2 above;

4.4.4. Dispersal Surface

- 4.4.4.1. Where the percolation time (T) of the native soil is greater than 15 min/cm to a maximum of 50 min/cm, the area (m²) to be covered by the System Sand in the Ecoflo linear biofilter EL30 System shall be equal to or larger than the area determined by the formula $DS = QT/400$, in which DS is the dispersal surface in m², T is the percolation time (T) in min/cm of the native soil, and Q is the total daily design sewage flow in litres;
- 4.4.4.2. Where the percolation time (T) of the native soil is less than or equal to 15 min/cm, the area (m²) to be covered by the System Sand in the Ecoflo linear biofilter EL30 System shall be equal to the larger of the area determined by the formula $DS = QT/850$ or the total minimum area required considering the minimum separation distances provided in 4.4.3.2 above; and
- 4.4.4.3. Where the Ecoflo linear biofilter EL30 System is designed as individual trenches, the combined total bottom area of the trenches shall not be less than the dispersal surface area calculated in 1 or 2 above, based on the T-time of the native soil.

4.5. Installation Requirements

- 4.5.1. Information required by the Chief Building Official/ Principal Authority as per Sentence 1.3.5.4.(1) of Division C of the Ontario Building Code shall be provided prior to the start of construction;
- 4.5.2. The Ecoflo linear biofilter EL30 System shall be installed as per the manufacturer’s installation instructions as found in the “Installation Guide – Ecoflo linear biofilter EL30 Model Series”, version 649228 dated May 5, 2023;
- 4.5.3. The “Installation Guide – Ecoflo linear biofilter EL30 Model Series” version 649228 dated May 5, 2023, and a copy of this Authorization shall be placed on site and remain on site during the installation of the Ecoflo linear biofilter EL30 System;
- 4.5.4. No person shall put into use or operate the Ecoflo linear biofilter EL30 System unless the person has entered into an agreement whereby the servicing and maintenance of the Ecoflo linear biofilter EL30 System and its related components will be carried out by either the manufacturer, an authorized representative, or a duly trained service provider to service and maintain the Ecoflo linear biofilter EL30 System according to Section 4.6; and
- 4.5.5. No reduction in the size of the Ecoflo linear biofilter EL30 System shall be permitted with the use of a treatment unit beyond that of a septic tank.

4.6. Servicing, Operation and Maintenance

- 4.6.1. Conduct and record at least once during every twelve (12) month period, an inspection and servicing as specified by the Applicant, Premier Tech Water and Environment, Ecoflo linear biofilter EL30 System Maintenance Agreement – Ontario, dated December 2022;
- 4.6.2. Effluent sampling shall be performed in accordance with the requirements of Sentence 8.9.2.4.(1) of Division B of the Ontario Building Code, as follows:
 - (a) initially, once during the first 12 months after the sewage system was put into use, and
 - (b) thereafter, once during every 12 month period, at least 10 months and not more than 18 months after the previous sampling has been completed;
- 4.6.3. The concentration of cBOD5 and suspended solids in the grab sample described in Section 4.6.2. above is deemed to comply with the Code requirements when neither exceed 20 mg/L;
- 4.6.4. If the results of a sample do not comply with Section 4.6.3, then the person operating the system shall promptly submit the results to the Chief Building Official/ Principal Authority and inform Premier Tech Water and Environment or an authorized agent, and the course of action to remedy the problem shall be identified. The system shall be resampled within six (6) months of a non-compliant sample and the results are to be submitted to the Chief Building Official/ Principal Authority; and
- 4.6.5. Premier Tech Water and Environment or their agent shall retain records of the sampling test results for each Ecoflo linear biofilter EL30 System received pursuant to the terms and conditions set out in Sections 4.6.1. to 4.6.4. above, for a period of ten (10) years and shall promptly forward copies of those records to the Chief Building Official/ Principal Authority when requested.

5. General Conditions

- 5.1. The use of the Ecoflo linear biofilter EL30 System as described in Section 3. and the Specific Terms and Conditions set out in Section 4. must comply with:
 - (a) the *Building Code Act, 1992*, (the “Act”) as amended or re-enacted,
 - (b) except as specifically authorized herein, the Building Code as amended or remade, and
 - (c) all other applicable legislation.
- 5.2. A copy of this Authorization shall accompany each application for a building permit and shall be maintained on the site of the construction with the building permit.
- 5.3. The Applicant specified in Section 1. shall promptly notify the BMEC of:
 - (a) the failure of the Applicant to comply with any of the Specific Terms and Conditions set out in Section 4.,

- (b) the failure of the material, system or building design that is the subject matter of this Authorization to
 - i. comply with any of the Specific Terms and Conditions set out in Section 4., or
 - ii. provide a satisfactory level of performance in situ, or
- (c) the occurrence of any of the events described in General Conditions 5.4.(a), (b), or (e).

5.4. The BMEC may amend or revoke this Authorization at any time on its own initiative, or at the request of the Applicant specified in Section 1. Without restricting the foregoing, the BMEC may amend or revoke this Authorization where it determines that:

- (a) any change has been made to:
 - (i) the name of the Applicant specified in Section 1.,
 - (ii) the address or other contact name information of the Applicant specified in Section 1.,
 - (iii) the ownership of the Applicant specified in Section 2.,
 - (iv) the manufacturing facilities specified in Section 2,
 - (v) the material, system, or building design that is the subject matter of this Authorization, or
 - (vi) a test method relevant to this Authorization,
- (b) the Applicant has failed to comply with any of the terms and conditions set out in this Authorization,
- (c) in the opinion of the BMEC, the use of the material, system or building design authorized herein provides an unsatisfactory level of performance in situ,
- (d) in the opinion of the BMEC, amendment or revocation of the Authorization is appropriate on the basis of potential danger to public health and safety,
- (e) the Act or Building Code has been amended, re-enacted or remade in a manner relevant to this Authorization,
- (f) this Authorization was issued on mistaken, false or incorrect information, or
- (g) a revision of an editorial nature is appropriate.

Dated at Toronto this 23 day of May 2023

BUILDING MATERIALS EVALUATION COMMISSION



CHAIR, BUILDING MATERIALS EVALUATION COMMISSION

attached – “Appendix A – Supporting Information”

Appendix A – Supporting Information

The following is a list of the documents that were submitted and reviewed, but were not limited to:

1. Application, Premier Tech Water and Environment Ltd., “Ecoflo linear biofilter EL30 System” as amended;
2. Certification, Bureau de normalisation du Québec, “Performance Report in accordance with Annex A of the standard CAN/BNQ 3680 600/2009-05-01 M2 » dated October 2022;
3. Design Guide, Premier Tech Water and Environment Ltd., “Design guide | Ontario – Ecoflo linear biofilter EL30 model series”, as amended;
4. Engineer’s Report, R.J. Burnside & Associates Limited, “Application for BMEC Authorization Ecoflo Linear Biofilter EL30 System Project No.: 300056016.0000”, dated December 23, 2023;
5. Installation Guide, Premier Tech Water and Environment Ltd., “Installation guide – Ecoflo linear biofilter EL30 model series”, as amended;
6. Letter, Premier Tech Water and Environment Ltd., “Response to BMEC questions” dated March 7, 2023;
7. Letter, Premier Tech Water and Environment Ltd., “Response to letter 1” dated March 31, 2023;
8. Letter, Premier Tech Water and Environment Ltd., “Response to letter 2” dated April 27, 2023;
9. Maintenance Guide, Premier Tech Water and Environment Ltd., “Maintenance, sampling and troubleshooting guide – Ecoflo linear biofilter EL30”, as amended
10. Manual, Premier Tech Water and Environment Ltd., “Owner’s manual - Ecoflo linear biofilter EL30 model series”, as amended;
11. PowerPoint Slides, Premier Tech Water and Environment Ltd., “BMEC Authorization, May 5th, 2023, Clarification meeting” dated May 5, 2023;
12. Technical Data Sheet, Premier Tech Water and Environment Ltd., “Ecoflo linear biofilter treatment module”, dated December 20, 2022;
13. Technical Document, Premier Tech Water and Environment Ltd., “Ecoflo linear biofilter treatment system - Detailed description of the system”, dated December 16, 2022; and
14. Warranty, Premier Tech Water and Environment Ltd., “Maintenance Program and Warranty Activation Form – Ecoflo linear biofilter EL30”, dated December 21, 2022.