



June 3, 2019

**New England Treatment Access, Inc.**  
5 Forge Parkway  
Franklin, MA  
02038

### **Facility Odor Control Overview**

The following is an overview of the odor control system proposed for installation at the above referenced facility.

#### **I. Existing Building Ventilation System**

The facility has a number of exhaust fans that provide ventilation for the building. Exhausted air is replaced using air make-up systems. The overall exhaust volume is greater than the overall make-up air volume to ensure that the building envelope is kept at a slight negative pressure relative to atmosphere. This helps eliminate fugitive odor escape from the building.

The odor control system will be installed on the air exhausted from the building. The sources will be combined in a common exhaust duct and routed to the odor control system.

#### **II. Odor Control Process Description**

Drawing number 30745-PFD is attached for reference. It is a Process Flow Diagram for the odor control system.

The combined general exhaust sources will be direct ducted to a wet scrubber / humidification system. The primary purpose of this equipment is to fully saturate the air ensuring the optimum condition of temperature and moisture for downstream odor control.

The central exhaust fan will provide the necessary motive force for the collection of the exhaust air as well as to overcome the system resistance imposed by the odor control equipment. It will operate at all times and at a constant air volume.

The final stage of the odor control process is a Biological Oxidation system or Biofilter. Biofiltration utilizes mass transfer followed by biological oxidation to reduce the concentration of odorous compounds within the exhaust stream.

The systems work using a high contact area, high residence time substrate that serves to provide a very large interfacial surface area between the gas and a liquid film. This is where odorous compounds are removed from the exhaust air and absorbed into the liquid.

Once transferred to the liquid film, bacteria that reside within will metabolize the compounds. Metabolic reaction products will include  $H_2O$ ,  $CO_2$  and corresponding acids.

After the concentration of odorous compounds has been reduced the exhaust air is discharged to atmosphere through the top of the biofilter bed.



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### III. Odor Control System Description

The following is a general description of the odor control system components.

#### Wet Scrubber / Humidifier Vessel, ACC Model XFWS-64-6-SS

- Nominal capacity 30,000 ACFM
- Crossflow configuration
- All 316L SS with PP mass transfer packing
- Externally accessible spray headers

#### Central Exhaust Fan, AirPro Model BIHS 365 Industrial Centrifugal

- Arrangement 8, direct driven with coupling
- 75 HP, 460V/3/60 TEFC Motor, Inverter Duty
- 316 SS all parts in contact with airstream

#### Biofiltration System

- Open top, built up at site design
- Combination wood chip / compost media bed with integral watering
- Produced water / rainwater collection sump
- Bottom-up airflow configuration
- Sizing presently under evaluation approx. 4000-5000 ft<sup>2</sup>
- Empty bed velocity maximum 7.0 to 8.0 AFPM
- Empty bed residence time minimum 30 to 40 seconds

Also attached for reference is a general arrangement drawing of the humidifier – exhaust fan combination described above. Additional process design drawings for the Biofilter layout and size are presently in detail design.

#### Applied Contaminant Control Ltd.

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