DELAWARE COUNTY HEALTH DEPARTMENT
Environmental Health Division

SPECIFICATIONS FOR MICRO-MOUND SYSTEM

NAME: _____ **APPLICATION #:** _____

MUNICIPALITY: _____ **DATE:** _____

1.) Building Sewer: Type:_____ Diameter:_____

2.) Slope:
____ 0 – 8%
____ 8.1- 15%
____ 15.1 – 25% (release agreement required)

3) Depth of sand _____ inches
(Under Tubing)

4.) Primary Treatment: No. of Septic Tanks: _____ Vol.: 1st Compartment _____ gal.
Vol.: 2nd Compartment _____ gal.

No. of Aerobic Tanks: _____

Total Tank Capacity: _____ gal.

5.) Secondary Treatment:

_____ free access intermittent sand filter No._____ Size _____
_____ buried intermittent sand filter No._____ Size _____
_____ aerobic tank Mfgr: _____ Model#_____ Size _____
_____ peat filter Mfgr: _____ Model#_____ Size _____
_____ Other (_____)

6.) Dosing Tank Capacity: _____ gal (attach tank manufacture spec sheet)

7.) Mound Specifications & Loading information:

_____ Number of bedrooms
_____ GPD
_____ Average GPD
_____ Depth to Limiting Zone
_____ Depth of sand
_____ Basal Loading Rate (BLR Per soil scientist)
_____ Horizontal liner loading rate (HLLR per soil scientist)
_____ Number of Mounds
_____ Number of Zones
_____ Required Downslope Berm (HM x 3 x SCF/12)
_____ Actual Downslope Berm

8.) Basal Sand Required (This is the overall sand area required including the downslope berm but not the side berms)

(_____ GPD / _____ Gal/sqft/day BLR) = _____ sqft (Required)

Length _____ ft Width _____ ft = _____ sqft (Actual)

9.) Horizontal Linear Loading / Required length (including side sand berms)

(_____ GPD / _____ HLLR) = _____ ft (Required)

_____ ft (Actual)

10.) DRIP TUBING & SAND BED LOADING:

(Note: tubing runs must be at least 4 ft less than the length of the sand bed)

Length of tubing runs _____ft

TOTAL LINEAR FEET OF TUBING = _____ ft

Tubing Zone # 1 _____ ft
Tubing Zone # 2 _____ ft

Drip line spacing: _____ ft

Spacing from the end of the Sand Bed: _____ ft

TOTAL SQUARE FEET OF SAND BED AREA: (_____GPD/.75gal/ft2/day)

Required = _____

Actual = _____

11.) Hydraulic Unit (check one):

_____ two-disc filter 15 GPM unit
_____ three-disc filter 25 GPM unit

12.) Vertical Lift: _____ **ft** (from dose enable to base of hydraulic unit – 8 ft. max)

**** FOR ADDITIONAL ZONES, PLEASE ATTACH SPEC SHEETS***
***** Areas with letters before the line will be used to answer questions 20 and 21.***

13.) Zone _____:

_____ linear feet of drip tubing (cannot be >300 ft per lateral unless engineer design is approved by American Manufacturing Inc. and is attached)
_____ length of longest lateral
_____ number of drip irrigation laterals or number of field flush connections
_____ distance between drip tubing
_____ distance between drip emitters (must be 2 feet apart)
_____ field flush flow rate (1.6 gpm x number of lateral connections)
_____ dosing rate (linear feet of drip tubing/distance between emitters x 0.61 gph/60 min/hr)
S) _____ total drip tube forward flush flow rate required (dosing rate + field flush flow rate must meet hydraulic unit specifications)

14.) Zone _____:

_____ linear feet of drip tubing (cannot be >300 ft per lateral unless engineer design is approved by American Manufacturing Inc. and is attached)
_____ length of longest lateral
_____ number of drip irrigation laterals or number of field flush connections
_____ distance between drip tubing
_____ distance between drip emitters (must be 2 feet apart)
_____ field flush flow rate (1.6 gpm x number of lateral connections)

_____ dosing rate (linear feet of drip tubing/ distance between emitters x 0.61 gph/60 min./hr)

_____ total drip tube forward flush flow rate required (dosing rate + field flush flow rate must meet hydraulic unit specifications)

15.) Friction Loss for Hydraulic Unit (need to use table 2A & 2B)

_____ maximum total drip tube forward flush flow required (the largest # from all zones)

E) _____ feet of head loss from hydraulic unit (from table 2A based on disc filter and maximum design drip tubing forward flushing flow rate)

_____ size of supply line (1.5" minimum)

_____ supply line equivalent fitting length (50 ft. of pipe)

_____ length of supply line (30 ft. max.)

_____ total equivalent length of pipe feet of pipe (supply line equivalent fitting length in feet + supply line in feet)

_____ supply line friction loss (total pipe x head loss due to friction using chart 2B/100 feet of pipe (at 15 or 25 gpm)

_____ static head loss from the dose enabler (second float) to the hydraulic unit (8 feet max)

F) _____ total feet of head loss (supply line friction loss + static head loss)

16.) Supply Lines Friction Loss

Zone____:

_____ zone total drip tubing forward flush flow rate required

_____ size of supply line (confirm on spec sheet)

_____ length of supply line plus 50 feet safety factor

G) _____ supply line friction loss (total pipe x head loss due to friction using chart 2B/100 feet of pipe) (round the "A" gpm up to the next gpm on the chart)

Zone____:

_____ zone total drip tubing forward flush flow rate required

_____ size of supply line (confirm on spec sheet)

_____ length of supply line plus 50 feet safety factor

H) _____ supply line friction loss (total pipe x head loss due to friction using chart 2B/100 feet of pipe) (round the gpm up to the next gpm on the chart)

FOR ADDITIONAL ZONES, PLEASE ATTACH SPEC SHEETS

****** Areas with letters before the line will be used to answer questions 20 and 21.***

17.) Return Lines Friction Loss:

Zone____:

_____ zone 1 field flush flow rate (take from zone information)

_____ size of return line (confirm on spec sheet)

_____ length of return line (confirm on spec sheet)

I) _____ return line friction loss (total pipe x head loss due to friction using chart 2B/100 feet of pipe (round the gpm up to the next gpm on the chart)

Zone____:

_____ zone field flush flow rate (take from zone information)

_____ size of return line (confirm on spec sheet)

_____ length of return line (confirm on spec sheet)

J) _____ return line friction loss (total pipe x head loss due to friction using chart 2B/100 feet of pipe (round the gpm up to the next gpm on the chart)

18.) Vertical Lift Friction Loss from Hydraulic Unit to the Emitter at the Highest Elevation:

K) _____ total static head (drop between hydraulic unit and the highest drip emitter)
* this elevation change must be shown on the plot plan
** if <0' enter 0 (may need remote zone valve)

19.) Flushing Head Loss (use Table 3A based on the maximum lateral length)

L) _____ zone _____
M) _____ zone _____

20.) Total Head Loss for Zone _____:

Add the following numbers that have already been calculated:

_____ feet of head loss from the hydraulic unit "**E**"
_____ total feet of head loss (from hydraulic unit pump to hydraulic unit) "**F**"
_____ supply line friction loss for zone "**G**"
_____ return line friction loss for zone "**I**"
_____ total static head loss "**K**"
_____ flushing head loss for zone "**L**"
_____ **TOTAL HEAD LOSS FOR ZONE _____**

21.) Total Head Loss for Zone _____:

Add the following numbers that have already been calculated:

_____ feet of head loss from the hydraulic unit "**E**"
_____ total feet of head loss (from hydraulic unit pump to hydraulic unit) "**F**"
_____ supply line friction loss for zone "**H**"
_____ return line friction loss for zone "**J**"
_____ total static head loss "**K**"
_____ flushing head loss for zone "**M**"
_____ **TOTAL HEAD LOSS FOR ZONE _____**

22.) Size of Pump:

A) _____ maximum pressure loss (the single largest total head loss for any zone)
B) _____ disc filter back flush (115 ft + total feet of head loss from hydraulic unit pump to hydraulic unit)
_____ use the larger number of line A or B above to determine the pump size at 15 gpm or 25 gpm
_____ pump selected _____ volts _____ HP _____ phase

23.) Average Gallons per Dose:

_____ number of doses per day per zone
_____ average flow (gpd x 0.6) * use this number for "average flow" here on out

Zone_____:

_____ percentage of total drip tubing in zone (linear feet of tubing for zone/linear feet of tubing in the system)
N) _____ total average gpd for zone (% of tubing in zone x total average flow)
_____ **gallons per dose** (gallons per day for the total doses in a zone/number of doses)

Zone_____:

_____ percentage of total drip tubing in zone (linear feet of tubing for zone/linear feet of tubing in the system)
O) _____ total average gpd for zone (% of tubing in zone x total average flow)
_____ **gallons per dose** (gallons per day for the total doses in a zone/number of doses)

24.) Average Flow Minutes Per Dose:

Zone____:

_____ minutes of total time (gallons per day per Zone N/dosing rate for zone)
_____ **minutes per dose** (minutes of total time/number of doses)

Zone____:

_____ minutes of total time (gallons per day per Zone O/dosing rate for zone)
_____ **minutes per dose** (minutes of total time/number of doses)

Prepared By:_____ **Reviewed by:** _____
(Designer) **Delaware County Health Department**