SSF SELECTION EXAMPLE

Disposal System Selection Example
SSF Disposal Field

Site conditions

Test pit observations:

Soil layers	Soil type	Depth of soil (mm)
Organic	Organic mat	0 – 50
First	Sandy silt	50 – 210
Second	Silty clay	210 – 800
Third	Clay	800 – 1525

Site Inspection field notes including the following:

Scenario 1

- Water table at 1375 mm
- Lot slope in area of proposed system – 8%

Scenario 2

- No signs of water table encountered in test pit
- Lot slope in area of proposed system – 15%

Proposed development:

Three-bedroom single family home, new construction.

Selection procedure

Scenario 1

- Lot slope is 5% or greater so a selectable sloping sand filter (SSF) may be an option.
- Selected flow is 1000 l/day
- From table 15.1 the system length for a SSF is 15.5 m

TABLE A15.1: SLOPING SAND FILTER SELECTION LENGTH, AND HOLE SPACING FOR PRESSURE FED SYSTEMS

Selected flow (lpd)	Min. L (m)	Number of Holes	Hole Spacing
1000 →	15.5	12	Centre of first hole 0.875 m from the ends of the pipe then spaced 1.25 m on centres
1200	18.5	14	Centre of first hole 1.125 m from the ends of the pipe then spaced 1.25 m on centres
1350	21	16	Centre of first hole 1.125 m from the ends of the pipe then spaced 1.25 m on centres
1500	23	18	Centre of first hole 0.875 m from the ends of the pipe then spaced 1.25 m on centres

- Lot slope at proposed system location is 8%

- Depth to confining layer (water table) is 1375 – 50 (organic mat) = 1325 mm
- Start at the appropriate depth to confining layer range in table 15.2 and move right across the table until it intersects with the lot slope.
- If there is a filter bottom slope value in the cell continue moving right across the table to the heel cut column.
- In this example there is no filter bottom slope in the cell (i.e. an X). Move up the column until a filter bottom slope is encountered. In this example the value is 5%. From that value continue moving right across the table to the heel cut column. In this example the heel cut is 0.3m. The heel cut does not include the organic mat so it would be measured from the top of the first soil layer.

TABLE A15.2: SLOPING SAND FILTER SELECTION BOTTOM SLOPE AND HEEL CUT

Heel cut does not include organic mat.

A selection cannot be made when filter bottom encounters clay.

Min. depth to confining layer	Ground Slope %																Heel Cut (m)
	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
0.55 - 0.84	5%	6%	7%	8%	9%	10%	11%	12%	13%	14%	15%	16%	17%	18%	19%	20%	0
0.85 - 1.14	X	X	X	5%	6%	7%	8%	9%	10%	11%	12%	13%	14%	15%	16%	17%	0.3
1.15 - 1.44	X	X	X	X	X	X	5%	6%	7%	8%	9%	10%	11%	12%	13%	14%	0.6
1.45 - 1.74	X	X	X	X	X	X	X	X	X	5%	6%	7%	8%	9%	10%	11%	0.9
≥ 1.75	X	X	X	X	X	X	X	X	X	X	X	X	5%	6%	7%	8%	1.2

- Compare heel cut to the test pit. This scenario would put the bottom of the filter at the top layer of the silty clay. Since it is not in the clay layer a selection can be made.

Scenario 2

- Lot slope is 5% or greater so a selectable sloping sand filter (SSF) may be an option.
- Selected flow is 1000 l/day
- From table 15.1 the system length for a SSF is 15.5 m
- Lot slope at proposed system location is 15%
- No water table was encountered so the depth to a confining layer is at least the depth of the test pit minus the organic mat (1575-50) = 1475 mm
- Start at the appropriate depth to confining layer range in table 15.2 and move right across the table until it intersects with the lot slope.
- In this example there is a filter bottom slope in the cell. In this example the value is 6%. Continue moving across the table to the heel cut column. In this example the heel cut is 0.9m.

TABLE A15.2: SLOPING SAND FILTER SELECTION BOTTOM SLOPE AND HEEL CUT																	
Heel cut does not include organic mat.																	
A selection cannot be made when filter bottom encounters clay.																	
Min. depth to confining layer	**Ground Slope %**																**Heel Cut (m)**
	5	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	
0.55 - 0.84	5%	6%	7%	8%	9%	10%	11%	12%	13%	14%	15%	16%	17%	18%	19%	20%	0
0.85 - 1.14	X	X	X	5%	6%	7%	8%	9%	10%	11%	12%	13%	14%	15%	16%	17%	0.3
1.15 - 1.44	X	X	X	X	X	X	5%	6%	7%	8%	9%	10%	11%	12%	13%	14%	0.6
1.45 - 1.74	X	X	X	X	X	X	X	X	X	5%	6%	7%	8%	9%	10%	11%	0.9
≥ 1.75	X	X	X	X	X	X	X	X	X	X	X	X	5%	6%	7%	8%	1.2

- Compare heel cut to the test pit. This scenario would put the bottom of the filter in the clay layer. As specified in table 15.2 a selection cannot be made when the filter bottom encounters clay.
- Although the test pit indicates at least 1475 mm to the confining layer a lower depth to confining layer value can be used for the selection process.
- In this scenario the selection process can be started again using a lower depth to confining layer than what exists, in this case a range of 1.15 – 1.44 m. Moving across the table to intersect the lot slope of 15% shows a filter bottom slope selection of 9% is available. Continue moving across the table to the heel cut column. In this instance the heel cut is 0.6m.

TABLE A15.2: SLOPING SAND FILTER SELECTION BOTTOM SLOPE AND HEEL CUT																	
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Min. depth to confining layer	**Ground Slope %**																**Heel Cut (m)**
	5	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	
0.55 - 0.84	5%	6%	7%	8%	9%	10%	11%	12%	13%	14%	15%	16%	17%	18%	19%	20%	0
0.85 - 1.14	X	X	X	5%	6%	7%	8%	9%	10%	11%	12%	13%	14%	15%	16%	17%	0.3
1.15 - 1.44	X	X	X	X	X	X	5%	6%	7%	8%	9%	10%	11%	12%	13%	14%	0.6
1.45 - 1.74	X	X	X	X	X	X	X	X	X	5%	6%	7%	8%	9%	10%	11%	0.9
≥ 1.75	X	X	X	X	X	X	X	X	X	X	X	X	5%	6%	7%	8%	1.2

- Compare heel cut to the test pit. This scenario would put the bottom of the filter in the silty clay layer. Since it is not in the clay layer a selection can be made using the 9% filter bottom slope and a heel cut of 0.6 m.

Note:

- Although Scenario 2 shows a selection on silty clay in accordance with Table 9 of the Standard, higher permeable soil will improve the infiltration ability beneath the sloping sand filter and lower the chance of discharge into the organic root mat during peak flow or periods of heavy rainfall conditions. Selectors should consider installing the system higher or in a different location on better soils when the option exists.

Notification Form

The notification form is completed like other selections. One difference is the depth of permeable soil. These sections are meant to identify the depth of soil used for treatment in a system. For a selectable sloping sand filter, the form can be completed using the depth of filter sand used to construct the system.

System Details:

Disposal Field Length (m) 15.5 ← Length from table 15.1

System Selection or Design ○ Design ◉ Selection ← Selected flow

Design Capacity (L/Day) 1000

Depth of Soil 450 ← Enter 450 mm as per the schematic

Type of Permeable Soil, please specify Filter sand ← Use filter sand

EXAMPLE

Depth to Bedrock, Water Table, or too Permeable Soil(m) ◉ greater than ○ equal to 1.45 ← From test pit (Scenario 2)

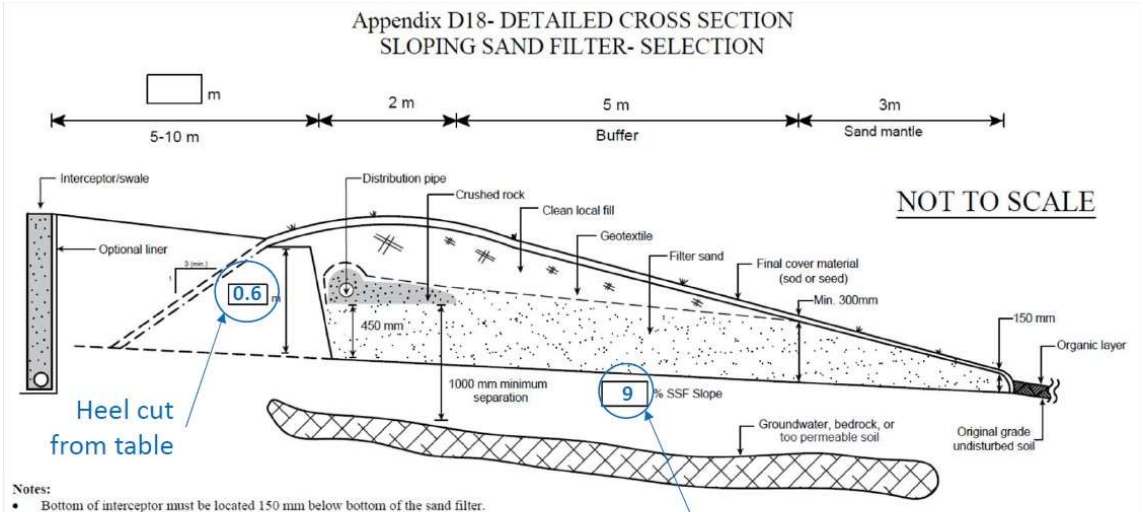
Disposal Field Layout:

○ Area Bed, at grade	○ Area Bed, fully Trenched	○ Area Bed, partially trenched
○ C1	○ C1 Raised	○ C2
○ C2 Raised	○ C3	○ Holding Tank
○ Multiple Trench, at grade		○ Multiple Trench, fully trenched
○ Multiple Trench, partially trenched		○ Other_____
◉ Sand Filter		

Malfunction Replacement ○ Yes (Malfunction Inspection Form Required) ◉ No ← YES or NO

All clearance distances required by the Standard will be maintained ◉ Yes ○ No ← This must be YES

Selection Schematic



Notes:

- Bottom of interceptor must be located 150 mm below bottom of the sand filter.
- Backfill around filter to be low permeability clean local fill compacted in 200 mm lifts.
- If low permeability fill is not available, 12 total mils of impermeable membrane can be used around the filter.
- Use of a liner on the bottom of the filter is not allowed.

DISPOSAL FIELD REQUIREMENTS		
100 Min	mm	Final cover material, seed, or sod
200 to 350	mm	Clean local permeable backfill
Required over crushed rock and filter sand		Barrier material
75	mm	Crushed rock above pipe
	mm	Distribution pipe diameter
15.5	m	Distribution pipe length
125	mm	Crushed rock below pipe
	m	Interceptor/swale depth — Liner: Yes ☐ No ☐
	m/s	Filter sand Permeability — Minutes at 20°C

SELECTION CRITERIA	
Flow (L/d):	1000
Lot slope:	15 %
Soil Type:	Filter sand
Soil depth (mm):	450
Notification No.	
Location:	
Qualified Person/ Engineer:	

General Conditions

Contractor shall verify location of all wells, watercourses, lot boundaries, and all elevations prior to construction (within 30 m from the location of disposal system).

Roof, foundation and lot drainage must be directed away from disposal field, septic tank and pump (siphon) chamber.

Steps must be taken to ensure that the proposed disposal field area is not subject to vehicular traffic or any other disturbance such as excavation, or stockpiling of excavated material etc.,

It is the applicant's responsibility to assure that the construction of foundations, driveway, well or any other development on the lot will not impact on the feasibility of on site sewage disposal field installation.

Disposal System must be installed by a contractor licensed to install on-site sewage disposal systems in Nova Scotia.

All work must be completed in accordance with the Nova Scotia On-Site Sewage Disposal Systems Standard.