

PSDS Design - Worksheet "F" v1.3

Disposal Field: Trench Bottom Area and Length Sizing

The completed system is to comply with the Private Sewage Systems Standard of Practice 1999.

Disposal Field: Sizing

This worksheet is for use in Alberta to: size the required trench bottom area and total lateral length of a disposal field..

It can be used for: calculating the required trench bottom area for disposal fields, and the base area for treatment mounds.

Use only Imperial units of measurement throughout (feet, inches, Imperial gallons, etc.)

Step 1) Determine the expected volume of sewage per day:

Note: Use Table 3.1.14.A. as a guide to determine expected volume of sewage per day. Provide allowance for additional load factors as detailed in 3.1.14.

Assure that the sewage strength does not exceed the requirements of 3.1.9.

Expected Volume of
Sewage per Day

gal/day **F1**

Step 2) Determine the (design) soil effluent loading rate:

*Note: Effluent loading rate can be determined from soil texture classification according to 7A.1.5. **or** from percolation test results according to 7A.1.4.*

Table A.4.A. (column 4) provides the effluent loading rate for soils between 5 and 60 minute per in

Soil Effluent Loading
Rate

gal/sq.ft. per day **F2**

Step 3) Calculate the required infiltration area for the soil before area reduction factors:

Expected Volume of Sewage per
Day

gal/day

*From **F1** this worksheet.*

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Soil Effluent Loading Rate

gal/sq.ft. per day

*From **F2** this worksheet.*

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Infiltration Area
Required

sq. ft. **F3**

*(Before Reduction
Factors)*

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Complete Step 4 ONLY for a system with a septic tank and NO other pretreatment or pressure distribution.

Step 4) Calculate the minimum allowable infiltration area for systems with no additional pretreatment or pressure distribution:

Minimum Field Size for Septic Tank System with No Other Pretreatment or Pressure Distribution

400 sq. ft.

The minimum area of a disposal field served by a septic tank with no other pretreatment is 400 sq. ft. as required in 7A.1.2.

OR

Infiltration Area Required

From F3 this worksheet.

Required Trench Bottom Area

sq. ft.

F4

*(Before Reduction Factors)
The greater of 400 or F3.*

Complete Step 5 if the system incorporates pretreatment (other than or in addition to a septic tank) and/or pressure distribution.

Step 5) Calculate the required "trench bottom area" including area reduction factors:

Minimum Infiltration Area

sq. ft.

*(Before Reduction Factors)
From F3 this worksheet.*

X

Pretreatment +/- or Pressure Distribution Reduction Factor

$(1 - \text{_____})$
(see examples below)

A reduction is applied to fields served by additional pretreatment or pressure distribution as provided in 7A.1.3.

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Required Weeping Lateral Trench Bottom Area

sq. ft.

F5

*(Including Reduction Factors)
For a system with a septic tank and no other pretreatment or pressure distribution, this box will be the same as F4 this worksheet.*

*Examples: - a 20% reduction factor means that $(1 - 0.20)$ or 0.80 (80%) of the F4 area is required,
- a 20% plus 30% reduction means that $(1 - 0.20 - 0.30)$ or 0.50 (50%) of the F4 area is required.*

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Step 6) Determine the Weeping Lateral Trench Bottom "credited" width:

Width of trench or chamber	Width Factor IF Chambers are Used	Credited Width of Weeping Lateral Trench Bottom
<div style="border: 1px solid black; width: 100%; height: 30px; margin-bottom: 5px;"></div> ft.	<div style="border: 1px solid black; width: 100%; height: 30px; margin-bottom: 5px;"></div> ft.	<div style="border: 1px solid black; width: 100%; height: 30px; margin-bottom: 5px;"></div> ft. (3 ft. maximum)
F6a	F6b	F6
<i>The minimum and maximum width is detailed in 7A.2.3. and 7B.1.3.</i>	<i>Factor = 1 for laterals with gravel or other media and NO chambers, Factor = 1.6 for chambers as detailed in 7B.1.5.</i>	<i>The minimum width (1') and maximum width (3') is detailed in 7A.2.3., 7B.1.3. and 7B.1.5.</i>

Step 7) Calculate the required length of distribution laterals:

Required Trench Bottom Area	Credited Width of Weeping Lateral Trench Bottom	Length of Distribution Laterals Required
<div style="border: 1px solid black; width: 100%; height: 30px; margin-bottom: 5px;"></div> sq. ft.	<div style="border: 1px solid black; width: 100%; height: 30px; margin-bottom: 5px;"></div> ft.	<div style="border: 1px solid black; width: 100%; height: 30px; margin-bottom: 5px;"></div> ft.
<i>(Including Reduction Factors) From F4 OR F5 this worksheet as appropriate</i>	<i>From F6 this worksheet.</i>	F7

Step 8) Summarize the information:

Required Trench Bottom Area (Including Area Reduction Factors)	<div style="border: 1px solid black; width: 100%; height: 30px; margin-bottom: 5px;"></div> sq. ft.	From F5 this worksheet.
Actual Width of Lateral Trench or Chamber	<div style="border: 1px solid black; width: 100%; height: 30px; margin-bottom: 5px;"></div> ft.	From F6a this worksheet.
Credited Width of Weeping Lateral Trench Bottom	<div style="border: 1px solid black; width: 100%; height: 30px; margin-bottom: 5px;"></div> ft.	From F6 this worksheet.
Total Length of Laterals Required	<div style="border: 1px solid black; width: 100%; height: 30px; margin-bottom: 5px;"></div> ft.	From F7 this worksheet.

Step 9) Confirm the design complies with the Standard of Practice.

*This worksheet does NOT consider all the requirements of the mandatory Standard.
Please work safely and follow safe practices near trenches and open excavations.*