

## Calculating Percent Cleared Area

The Vermont Shoreland Protection Act (Chapter 49A of Title 10, §1441 et seq.) establishes of a maximum of 40 percent cleared area for a landowner’s portion of their parcel, located within the Protected Shoreland Area. This worksheet provides a landowner a method for calculating the percent of cleared area within the Protected Shoreland Area, which is a measurement required on the Shoreland Permit Application.

### Why Cleared Area is Important

Shoreland clearing directly impacts aquatic habitat, slope stability, and water quality. The more shoreland area cleared of its natural vegetation and topography, the more degradation to aquatic habitat and water quality.

### Calculating Cleared Area

Cleared areas include all the areas cleared within the Protected Shoreland Area (PSA). After determining the area of each of these spaces, add them together and divide their total by the area of the PSA for the percent of cleared area.

#### Step 1.

The first step is to know how much of your parcel is within the PSA. To calculate the area of your land in the PSA, use a copy of your parcel map to draw in the boundary of the PSA. If you don’t have a parcel map, ask your town for your property map with a known scale on it. You may also visit the [Vermont Agency of Natural Resources Atlas](#) where you may view your property and measure the total area of your parcel that lies within the PSA. Otherwise, follow the steps below:

#### Step 2.

Using your parcel map, read the scale and draw in the boundary of the PSA, which is 250 feet from the lake’s mean water level, measured horizontally. If your land slopes greater than 20 percent, add in the additional number of feet using the worksheet “Determining the Lakeside Zone and the Protected Shoreland Area.”

**Materials:**

- Parcel map (or site plan map)
- Calculator
- Paper and pencil
- Measuring tape

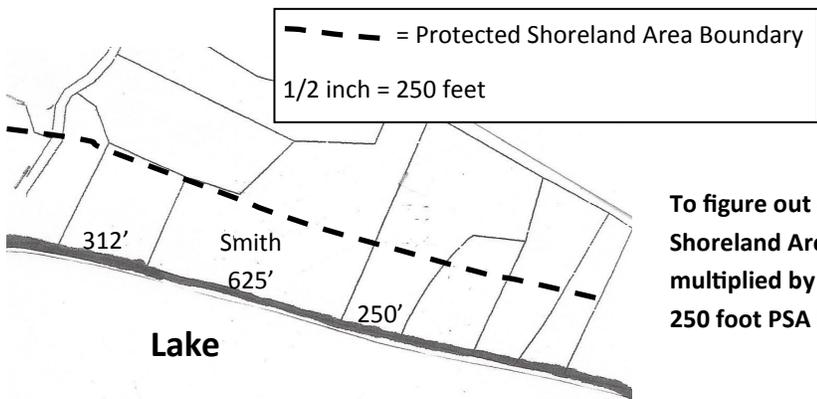
**Examples of Cleared Areas:**

- Grass lawns
- Gardens
- Landscaped areas
- Pathways
- Impervious surfaces

**Related Field Worksheets:**

- *Determining the Lakeside Zone and Protected Shoreland Area*
- *Estimating Mean Water Level*
- *Determining the Slope of Your Shoreland*

[dec.vermont.gov/watershed/lakes-ponds](http://dec.vermont.gov/watershed/lakes-ponds)



To figure out the total area of the Smith’s Protected Shoreland Area, use the rectangular area formula: Length multiplied by width. 625 feet lake frontage multiplied by the 250 foot PSA boundary, or  $625' \times 250' = 156,250$  square feet.

**Step 3.**

Field Work: Head outside with your tape measure and measure all the cleared areas within the PSA. For unusual shapes, use the Calculating Area of Geometric Shaped Parcels.

- Town or state roads as well as private roads servicing more than one landowner crossing through your property do not have to be included as cleared areas in your calculations.
- If you have a few trees in a lawn, you can measure their circumference and calculate their basal area by using the chart below. Subtract the basal area from your cleared areas.
  - DBH = Diameter at Breast Height, approximately 4 1/2 feet from the ground
  - Basal Area = Refers to a footprint area of a tree
  - Circumference = Refers to the distance around trunk

**Step 4.**

Math Work: Add the total of all the cleared areas and divide it by the total of the PSA Area and multiply it by 100 for the percentage of cleared area.

$$\% \text{ Cleared Area} = (\text{Total of Cleared Areas} \div \text{Area of PSA}) \times 100$$

**Tree Circumference and Basal Area**

| <b>Circumference<br/>(Inches)</b> | <b>DBH<br/>(Inches)</b> | <b>Basal Area<br/>(Square Feet)</b> |
|-----------------------------------|-------------------------|-------------------------------------|
| 29                                | 9.2                     | 0.5                                 |
| 30                                | 9.6                     | 0.5                                 |
| 31                                | 9.9                     | 0.5                                 |
| 32                                | 10.2                    | 1.0                                 |
| 33                                | 10.5                    | 1.0                                 |
| 34                                | 10.8                    | 1.0                                 |
| 35                                | 11.1                    | 1.0                                 |
| 36                                | 11.5                    | 1.0                                 |
| 37                                | 11.8                    | 1.0                                 |
| 38                                | 12.1                    | 1.5                                 |
| 39                                | 12.4                    | 1.5                                 |
| 40                                | 12.7                    | 1.5                                 |
| 41                                | 13.1                    | 1.5                                 |
| 42                                | 13.4                    | 1.5                                 |
| 43                                | 13.7                    | 1.5                                 |
| 44                                | 14.0                    | 1.5                                 |
| 45                                | 14.3                    | 1.5                                 |
| 46                                | 14.6                    | 1.5                                 |
| 47                                | 15.0                    | 1.5                                 |
| 48                                | 15.3                    | 1.5                                 |
| 49                                | 15.6                    | 1.5                                 |
| 50                                | 15.9                    | 1.5                                 |
| 51                                | 16.2                    | 1.5                                 |
| 52                                | 16.6                    | 1.5                                 |