**Soil Quality Restoration (SQR) for New Lawns:**

**Use this checklist when SQR will be used to improve the soils on site and provide credit to manage the water quality volume from adjacent impervious surface areas**

**Method 5**

**The goal of Method 5 is to create an 8 inch thick healthy profile through a combination of tillage and respread of topsoil. Method 5 combines 4-7 inches of topsoil and tillage to achieve an 8 inch soil profile depth. Method 5 requires a minimum of 4 inches of topsoil being respread. Tillage depth varies between 1-4 inches depending on depth of topsoil spread. *Runoff must be distributed evenly across the SQR area if SQR area will be used to manage the water quality volume from adjacent impervious surfaces.***

Applicant\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Submitted by\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Location\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. Attach copy of Soil Quality Management Plan including site and soil maps.
2. What is the size of the SQR area in square feet? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. What is the drainage area flowing onto the SQR area? (Include the SQR area)

(The drainage area may need to be divided into multiple subwatersheds in order to ensure that the runoff will be distributed evenly as sheet flow over SQR areas.)

\_\_\_\_\_\_\_ AC \_\_\_\_\_\_\_\_SF \_\_\_\_\_\_\_\_\_\_\_\_\_\_% Impervious

1. How will runoff be distributed evenly as sheet flow over the SQR area?

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1. Please attach documentation of existing soil conditions including description of topsoil to be used and *percent of organic matter present from lab analysis*.

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**Table:** Recommended tillage and topsoil depths for soil quality restoration to achieve an 8-inch deep healthy soil profile.

|  |  |  |
| --- | --- | --- |
| **Method** | **Initial Tillage****Depth of Subsoil****(inches)** | **Topsoil Depth** |
| 5 | 1 | 7 |
| 5 | 2 | 6 |
| 5 | 3 | 5 |
| 5 | 4 | 4 |

1. Identify depth of tillage and type of tillage tool(s) to be used. Attach photos of tillage equipment to be used. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_
2. Provide the calculations and quantities of materials applied as amendments

**Topsoil:**

\_\_\_\_Depth of topsoil (in feet) [For example: 4” of topsoil = 4”/12” = 0.33 ft of topsoil]

\_\_\_\_Depth of topsoil (in feet) x \_\_ SF of treated area = \_\_\_\_\_CF of topsoil

\_\_\_\_CF of topsoil / 27 cf/cy = \_\_\_\_ cy of topsoil needed

 \_\_\_\_CF of topsoil x 90 lbs/cf = \_\_\_\_lbs of topsoil/2,000 lbs/ton = \_\_\_tons of topsoil needed

1. Provide a copy of the planting plan with quantities of seed or plants used and a listing of species and rates applied.\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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1. Describe the erosion and sediment control measures used to protect the soil quality restoration area until vegetation is established. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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1. If the area being treated with Soil Quality Restoration will give credit for managing runoff from impervious surfaces show calculations for determining that the storage capacity of the treated area meets or exceeds the water quality volume (WQv), please complete the following items. Please attach your calculations. (See example at end of document.)

Input from Table 6:

* 1. \_\_\_\_\_ % Organic Matter by weight (See example at end to convert % Organic Matter from

 your lab analysis to % Organic Matter by Weight)

* 1. \_\_\_\_\_\_ Available Water Storage (in/8 in soil)

Input from Table 8:

* 1. \_\_\_\_\_\_ Excess Water Storage (Subtract 1.25 inches from Available Water Storage above)
	2. \_\_\_\_\_\_ List factor used to determine maximum impervious area to be treated

\*(If you need to extrapolate excess water volume to determine the factor in Table 8, divide Excess Water Storage inches by 1.1875 to get factor to determine maximum impervious areas to be treated. For example, 0.5 inches/1.1875 = 0.42.)

1. How many square feet of impervious surface can be managed by the Soil Quality Restoration area.

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_(Multiply available SQR area x factor = sq ft of impervious surface site can manage)

12. Provide a copy of the planting plan with quantities of seed or plants used and a listing of species and rates applied.\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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***FOR REVIEWERS USE ONLY***

[ ]  Design appears to comply with applicable design standards, and local, state, and federal requirements.

[ ]  Design does not appear to comply with applicable design standards, and local, state, and federal requirements.

Comments:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Name of Reviewer: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Signature: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Example:** Assume Method 5 will use 4 inches of tillage and 4 inches of topsoil.

Tillage Layer:

4”/12” = 0.33’ deep x 1’ wide x 1’ long= 0.33cf

0.33cf x 90 lbs (assume subsoil) = 29.7 lbs/cf or 30 lbs/cf of subsoil

Topsoil Layer:

4”/12” = 0.33’ deep x 1’ wide x 1’ long = 0.33cf

= 0.33cf x 80 lbs/cf (assume topsoil) = 26.4 lbs/cf

30 lbs/cf + 26 lbs/cf = 56 lbs/cf for total 8 inch soil profile

26lbs/cf / 56 lbs/cf = 46% for topsoil layer

**If lab analysis shows 2% Organic Matter:**

46% x **2% organic matter** = 0.92% organic matter by weight

At 1% organic matter by weight, then available water storage is **1.03 in/ 8 in soil.** **No excess water storage available to address impervious surface runoff.**

**If lab analysis shows 3% Organic Matter:**

46% x **3% organic matter** = 1.38% organic matter by weight

At 1.38% organic matter by weight, then available water storage is **1.15 in/ 8 in soil.** **No excess water storage available to address impervious surface runoff.**

(1.33-1.03 = 0.30 /10 = 0.03 per each 0.1)

1.0 = 1.03 in/8 in soil

1.1=1.06 in/8 in soil

1.2 = 1.09 in/8 in soil

1.3 = 1.12 in/8 in soil

1.4 = 1.15 in/8 in soil

1.5 = 1.18 in/8 in soil

1.6 = 1.21 in/8 in soil

1.7 = 1.24 in/8 in soil

1.8 = 1.27 in/8 in soil

1.9 = 1.3 in/8 in soil

2.0 = 1.33 in/8 in soil

**If lab analysis shows 4% Organic Matter:**

46% x **4% organic matter** = 1.84% organic matter by weight

At 1.84% organic matter by weight, **then available storage is 1.27 in/8 in soil.** 1.27” -1.25” = 0.02” of excess storage

0.02 inches of excess water storage volume / 1.1875 = 0.02 factor x 10,000 square feet = 200 sq ft. Therefore, the SQR area in this example can manage the WQv for 200 sq ft of upstream impervious surface area.

**If lab analysis shows 5% Organic Matter:**

46% x **5% organic matter** = 2.3% organic matter by weight, then available storage is 1.42

1.42 inches – 1.25 inches = 0.17 inches of excess water storage

0.17 inches of excess water storage volume / 1.1875 = 0.14 factor

0.14 factor x 10,000 sq ft of SQR area = 1,400 sq ft. Therefore, the SQR area in this example can manage the WQv for

1400 sq ft of upstream impervious surface area.