Soil Amendment Standards

(Required as of February 15, 2010)

Preserving and Restoring Healthy Soils on Site Developments

Healthy soil is vital to a clean environment and healthy landscapes. Deep soil that is rich in organic material absorbs rainwater, helps prevent flooding and soil erosion, and filters out water pollutants. Healthy soil also stores water and nutrients for plants to use in dry times, promoting healthy plants that require less irrigation, toxic pesticides, and other resources. Land development and landscaping practices can damage these valuable soil functions by removing or compacting topsoil. The result is erosion, unhealthy landscapes that are difficult and expensive to maintain, polluted water, destroyed fish habitat, and increased need for costly stormwater management structures. (King County 2005 "Achieving the Post-construction Soil Standard")

As of February 15, 2010 the City of SeaTac adopted King County's soil amendment requirements (KCC 16.82.100.F & G), in the absence of City of SeaTac standards, as a part of the City's National Pollutant Discharge Elimination System (NPDES) compliance efforts. These soil standards apply to projects that:

1. create 2000 square feet or more of new impervious surface, or
2. result in 7000 square feet or more of land disturbing activity.

This document is intended to describe how to meet these soil amendment requirements, as well as provide clarifications and minor modifications to King County's soil amendment requirements in terms of seasonal restrictions and cash assignment requirements.

Key Requirements and Modifications of King County's Standards

- Soil amendment calculations and a site map indicating projected soil amendment areas are due at the time of project application submittal.

- Unlike King County, the City of SeaTac **does not** limit the installation of soil amendments to the growing season (May 1 – October 1). However, soil amendments, whether compost or topsoil, shall be installed in a manner that will prevent off-site impacts from construction site run-off. Further, soil amendments are subject to "Wet Season Construction" requirements (2009 KCSWDM).

    - Owners/contractors may provide a cash assignment for soil amendments if requesting final approval between October 1 – May 1 (during the rainy season)
    - Cash assignment amounts shall equal 150% x (materials + labor)
    - Owners/contractors must provide documentation ensuring legal access to the site (via construction easement, condition of sale, etc.) to install soil amendments as a condition of cash assignment acceptance/approval
    - Cash assigned soil amendments shall take place the following year during the growing season
    - Plats/subdivision are allowed to extend the cash assignment period for single family lots (only) for one year beyond period identified above

- Topsoil layer must be a minimum 8 inches thick
    - Topsoil must have an organic matter content between 5 – 10%
    - Topsoil must have a suitable pH for proposed landscape plants

- When feasible, the subsoil layer shall be scarified at least 4 inches with some incorporation of upper material

- **Exemptions:**
  The following portions of the project area are exempt from soil amendment requirements:
    - areas covered by an impervious surface, or
    - areas incorporated into a drainage facility, or
    - structural fill or engineered slopes

Options for Meeting Soil Standards (Soil Amendment Calculations)

1) Amend Existing Soils in Place

- Import 8 cubic yards compost per 1000 sq. ft. of disturbed soil area
- Spread compost evenly over the disturbed soils in a 2.5 inch layer
- Rototill compost in 12 inches deep where feasible (8 inch minimum depth)

Soil Amendment Calculations

Amount of imported compost needed to amend soils on site equals the total square footage of disturbed site soils divided by 1000 times 8 cubic yards.

(_____/ 1000) x 8 cubic yards = _____
square feet disturbed soils cubic yards of imported compost

Example: Single Family Home with 3500 square feet of post construction disturbed soil
(3500 square feet disturbed soils /1000) x 8 cubic yard = imported compost needed
(3.5) x 8 cubic yards = imported compost needed
28 cubic yards = imported compost needed

Soil Amendment Calculation Examples

Square Feet of Post Construction Disturbed Soils	Cubic Yards of Imported Compost Required
5000	40
4500	36
4000	32
3500	28
3000	24
2500	20
2000	16

2) Import Topsoil Mix

- Once construction is complete, scarify subsoil layer at least 4 inches deep where feasible
- Import 25 cubic yards of topsoil containing 5 to 10% organic matter (8 to 13% organics is acceptable)
- Spread topsoil evenly over the disturbed soils in a 8 inch layer

Topsoil Calculations

Amount of imported topsoil needed to satisfy the soil standards on site equals the total square footage of disturbed site soils divided by 1000 times 25 cubic yards.

(_____/ 1000) x 25 cubic yards = _____
square feet disturbed soils cubic yards of imported topsoil

Example: Single Family Home with 3500 square feet of post construction disturbed soil
(3500 square feet disturbed soils /1000) x 25 cubic yard = imported topsoil needed
(3.5) x 25 cubic yards = imported topsoil needed
87 cubic yards = imported topsoil needed

Other Soil Amendment Options

King County's soil amendment guide "Achieving the Post-construction Soil Standard" identifies three additional options, which the City considers less feasible in an urban construction environment (i.e. non-native/disturbed soils, limited staging areas) and are not included in this document. However, these options are still available for projects within the City of SeaTac and can be found at: http://your.kingcounty.gov/ddes/forms/ls-inf-SoilPost-ConStd.pdf. These options are listed in King County's guidance document as:

- **Leave native soil undisturbed, and protect from compaction during construction**
  [**Note:** This option is only available for sites which contain previously undisturbed native soils, such as undisturbed forested lots.]
- **Native Soil: Stockpile site duff and topsoil, and reapply after grading and construction**
  [**Note:** This option is only available for sites which contain previously undisturbed native soils, such as undisturbed forested lots.]
- **Disturbed Soil: Stockpile site soil, reapply, and amend in place**

Inspection Approval of Soil Standards

Soil amendments should take place at the final stage of construction, to ensure soil amendments are not damaged by construction activities. Contractors/property owners needing a soil amendment inspection should call the City and request a Final Erosion Sedimentation Control Inspection (FESC). For single family construction call 206.973.4764. For commercial or multifamily construction call 206.973.4730.

- Call in FESC inspection after installation of soil amendments, prior to installation of landscaping.
- Provide City inspector with a site map indicating areas needing soil amendments, as well as soil amendment calculations (see for formulas on previous page)
- If importing topsoil mix, provide City inspector with copies of site specific receipts of delivered materials indicating volumes in cubic yards and organic content of topsoil
  - The contractor shall also provide documentation to confirm that the imported top soil is at an appropriate pH for the proposed landscaping
- If amending soil in place, provide City inspector with copies of site specific receipts of delivered compost indicating the volume of materials delivered in cubic yards
- The inspector may require random locations for test pits to be dug to confirm depths of soil amendments and scarification
- If soil standards have been met, the City inspector will indicate a partial approval "soil standards met" on the Inspection Card

Soil pH by Plant Type

A nursery can provide specific information about suitable pH for landscape plants. Here are optimal soil pH ranges for various plant types:
Lawns – 5.5 to 7.5 pH
Shrubs (except acid-tolerant plants) – 5.5 to 7.0 pH
Acid-Tolerant Shrubs (Rhododendrons, Azaleas, Mountain Laurels, Camellias, Blueberries, native plants) – 4.5 to 5.5 pH
Annual Flower and Vegetable Gardens – 6.0 to 7.0 pH
(King County 2005 "Achieving Post-construction Soil Standard")