SNP
Sound Native Plants
ECOLOGICAL RESTORATION SPECIALISTS

RESTORING COMPACTED SOIL

(360) 352-4122 • www.soundnativeplants.com • PO Box 7505, Olympia WA 98507 • Fax (360) 867-0007

It's always best to prevent impacts in the first place (see our information sheet on *Limiting Compaction*), but sometimes soil compaction happens, despite the best-laid plans. And sometimes you inherit compacted soil when you purchase property. What can you do and what are you required to do to remedy the situation?

New construction must meet minimum soil best management practices (BMPs) in the Department of Ecology (DOE) *Stormwater Management Manual for Western Washington*. These BMPs apply to cleared and graded areas that "will not be covered by an impervious surface, incorporated into a drainage facility or engineered as structural fill or slope." The soil must include an organic matter (OM) minimum of 10% (for planting beds) and 5% (for turf) dry weight in the topsoil layer and a pH between 6.0 and 8.0 (or matching that of the original soil). Planting beds must be top-dressed with a 2" layer of mulch. Soil must be easy to dig in by hand to 12". Any OM added to the topsoil must meet certain requirements—see DOE's composting website (www.ecy.wa.gov/programs/swfa/organics/soil.html) for a list of permitted compost facilities in Washington.

Decompaction is the initial step in restoring damaged soil. First consider the soil type and moisture level. If the soil is too wet, decompaction can break down clay or loam soil particles. Working when it is too dry can pulverize the soil structure and turn it to fine powder that rain will seal. Ideally, the soil should be moist enough that digging doesn't create dust, but dry enough to drive equipment without creating ruts. Remove gravel, concrete and construction debris from the compacted area. Carefully remove piles of fill within the drip line of existing trees, which can suffocate the root system, and restore the original grade.

Decompact the soil by scarifying the soil surface with a backhoe, a bobcat or tractor with ripping teeth or a cultivator, disk harrow or other piece of agricultural machinery. Rip to a depth that will result in soil that is easy to dig in for at least the top 12", taking into account any soil amendments that will be added. Take care to not rip within the drip line of existing trees to prevent damage to surface feeder roots. The best way to restore these areas is to mulch around the tree with 3–4" of organic material.

Sometimes, soil amendment follows decompaction, but it is not always recommended. However, applying organic mulch after decompaction is essential. The goal of soil restoration is to foster a healthy, living soil. Worms, insects, roots and fungi improve soil porosity and prevent re-compaction. Decompaction is needed so new plantings can root, but it provides short-lived benefits to the soil. Scarified soil will slump and pore space will reduce over time. Adding organic mulch on a regular basis will increase moisture-retention and aeration, improve soil fertility, and increase soil flora and fauna, thereby increasing pore space. In fact, in sites where restricted access, buried utilities or existing vegetation prevents physical decompaction, simply spreading a thick organic mulch layer will help decompact the underlying soil, even with no other actions. See our information sheet on mulches (www.soundnativeplants.com/PDF/Mulches.pdf) to learn more.

Instances where soil amendments may be indicated include sites where you must add material to attain the desired grade, and sites where you need to improve soil drainage for stormwater management purposes. If soil amendments are needed, it is always best to amend the entire site, not just the planting holes. For smaller projects, mulches are preferable to soil amendments (additives that are incorporated into the soil). Soils can subside when OM amendments break down, exposing and desiccating plant roots. Establishing a competitive, native plant community on the site will also help to limit slumping and compaction in the future. Plants intercept rainfall, encourage soil biota, increase moisture retention and contribute OM to the soil.

WA: SOUNDNP017BL OR: LCB#8781