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Challenging Sites: Depaving

Minimizing impervious pavement protects on-site water quality and reduces runoff, which protects off-site water quality. Impervious cover is considered by many to be a reasonable proxy for some types of common pollutants and runoff volume itself is damaging.

It's likely that there are many little paved areas throughout the watershed that no one needs or uses, but that collectively are impacting water quality downstream. Tearing out pavement and replacing it with landscape area, also known as depaving, is an effective means of restoring your watershed.

Figure 1 Homeowners often don't use the entire paved area of their driveway. In Portland, this driveway configuration reduces runoff by about 5000 gallons/year.

Deconstruction & Restoration

To effectively implement depaving:

- Consider where water currently flows on-site. If runoff flows to the proposed depaved area, then may want to replace this area with shrubs and trees or ensure that flows can safely be conveyed to an existing area drain structure. In any case, restoring the soil (*see 3 Restore Disturbed Soils)* will go a long way towards soaking up additional runoff.
- Locate underground utilities. On private property, call 811 to get your utilities lines marked.
- Consider current land use and take appropriate cautions with contaminated soils. Soils that smell bad or look funny may be contaminated. Hydrocarbons from oils are easily broken down by microbes in the soil, which will be more numerous on the roots of plants. For this kind of contamination, exposing contaminated soils and replanting should not impact overall water quality; however, if there is any question or other contaminants are found, engage an environmental scientist to devise a strategy for your project or find an alternative place to depave.
- Tell your neighbors about the proposed work and observe noise regulations. Depaving is noisy at times.
- Implement erosion prevention and sediment control measures. Depaving is messy. Keep soil covered with a natural, breathable material like jute. Install wattles, biobags, or compost socks at the bottom of stockpiles and encircle catch basins and area drains. Avoid sediment fences, which aren't very effective at controlling fine soil particles like clay and silt. These are minimum measures that any homeowner can implement.
- If your saw cutter used to remove the pavement requires a water source, then any water that runs off during operations (unless it's draining to a landscape area with no piped connection via an aera drain) will be carrying an unhealthy amount of sediment downstream. In this case, saw cutting operations should be done with two people, one saw cutting and one following behind with a wet vacuum to pick up the water. Additional measures may be called for.

Figure 1 Many small unused pavement areas add up to a lot of unnecessary pavement in a watershed.

- Remove the pavement and any rock below and recycle it through a local recycler (see Metro's Find a Recycler website: http://www.oregonmetro.gov/index.cfm/go/by.web/id=1383). Asphalt, concrete, and rock can be recycled or repurposed; however, avoid re-using crushed concrete in stormwater facilities. In studies, crushed concrete has increased the pH of runoff that has come in contact with it. An array of hand and power tools may be used. Depave, a non-profit organization in Portland, Oregon with years of success has some great, detailed guidance on planning considerations, appropriate tools, safety equipment, and more: http://depave.org/learn/how-to-depave/. Ignore their information on plant species, which is either specific to the region or recommends using invasive species to break up pavement. (Invasive species change which plants can grow where, which impacts how water flows around the watershed. They can increase runoff as they pull down trees and push out beneficial, often more deeply rooted, species. Water quality, too, can be impacted; quick growing plants are often poorly rooted and don't hold soil.)

Figure 2 Sawcutters can be used to break pavement into manageable squares, but don't forget they need electricity and a water source.

- Amend the soils by mixing compost into them. "CS*3 Restore Disturbed Soils"* for more information. Depending on the pavement and rock depth removed, clean topsoil may need to be imported so that the landscape area can meet and match existing grades, but often the soil expands so much upon restoration that after you add compost, no additional soils are needed.
- Revegetate the area with native grasses and grass-like plants, flowers, and shrubs. Trees may be planted if they will be planted in at least 140 square feet of soil. (To be healthy and long-lived, depending on the species, trees need access to at least 140 to 340 square feet of soil that is a minimum of 3' deep.)
- Mulch the area with 2 – 3 inches of clean, weed-seed and pollutant free organic mulch, after planting and once a year. Avoid yard waste mulch since studies have shown this is prone to include pollutants. Avoid wood chips and sawdust since this will rob the soil of nitrogen.

Maintenance

Maintenance for depaved areas is the same as conventional landscape.

- Remove weeds twice a year, ideally in late May and October.
- Replenish compost in gardens and under tree canopies to a depth of 2-3 inches and lawns 1/4 inch, annually.
- Irrigate per the following guidance (see CS Supplemental Information)

Cost Considerations

Depaving existing pavement will always be more expensive than doing nothing, but your watershed is probably already impacted from the pavement that exists and only addressing new development will never result in our water quality goals being met. Many depaving projects to date have been done with volunteer labor, as a way of raising awareness about the connection between impervious pavement and watershed health. There are still costs associated with using volunteer labor including materials such as imported soils,

Figure 3 Volunteers learn about the connection between impervious pavement and water quality as they work to remove asphalt at a school.

compost and other soil amendments as desired, erosion control and vegetation; and services such as waste removal, and equipment rental (i.e. sawcutter, jackhammer, additional hand tools). If volunteer labor will not be used, then heavy equipment such as a backhoe will likely be the most cost-effective approach. Mobilization and operation of this equipment will add cost.

Permits

Permitting varies, so check with your local jurisdiction's building or development services department to find out what codes may apply to your project. Zoning and planning codes will likely dictate whether practices described here for new development are permissible. Depaving existing areas could require a permit if parking will be reduced or work is performed in the public right-of-way. Erosion control codes will also usually come into play when excavating more than a certain threshold of dirt and materials.

If information in this guidance conflicts with your jurisdiction's requirements or approach, then follow guidance provided by them instead.