SOIL IMPROVEMENT/ LAND RECLAMATION

Fact Sheet

Biosolids provide nutrients and organic matter to damaged soils, enabling renewed plant growth.

SEEKING SOLUTIONS

Our collective footprint as humans has disturbed native landscapes and underlying soils. Heavy equipment used in construction can compact soils. Mining can result in loss of topsoil. Overgrazing disturbs native vegetation and wind and water erosion occurs when ecosystems are disturbed. Following this damage, soils are often unable to support plant life due to lack of nutrients and organic matter, compaction, altered pH and other ecosystem changes.

BENEFITS OF BIOSOLIDS

Disturbed soils can be restored and revitalized through the addition of organic matter. Nutrient-rich, organic biosolids replace lost topsoil and improve soil fertility and stability, thus decreasing erosion and aiding in revegetation. Biosolids have been used successfully to reclaim large construction sites, surface mines, parks and road cuts. Biosolids composts are an excellent organic soil for building or renewing wetlands. Wildlife habitat and rangelands have been restored using biosolids products.

HOW IT WORKS

Soil improvement and land reclamation projects use onetime or infrequent applications of large quantities of biosolids to increase the amount of nutrients and organic matter in the poor or damaged soil. The nutrients in the biosolids jump-start the growth of plants on the site and provide a pool of nutrients which plants can access over time. Soil, following biosolids application is better aerated and lighter. Water enters into the soil rather than eroding off the soil surface. Unlike nutrients in commercial fertilizers, nutrients added in the biosolids will stay in the topsoil over time and the restored ecosystem will prosper over time.

Before and after a reclamation with biosolids

WHAT'S HAPPENING

Here are some of the ways biosolids have reclaimed damaged soils:

- ***Wildlife habitat enhancement*** - Invasive plants like Scotch broom and blackberry vines can take over natural wildlife habitats. To re-establish native grasses and plants, biosolids have been tilled into the soil and reseeded with grasses and other native plant species following the

removal of invasive plants. These improvement projects remain welcoming wildlife habitats for years to come.

- ***Copper mine reclamation*** **-** Biosolids help reclaim soils impacted by mining activities. As a part of restoring former mines, biosolids helps to revegetate extensive areas of piled rock and mine tailings and stabilize slopes. Researchers have also studied which tree species are the best fit for screening trials and plant establishment in reclaimed mine tailings.
- ***Wetlands restoration*** **-** Biosolids, biosolids compost and yard debris compost have been used to restore land to previous wetland characteristics. The nutrient-rich organic material provided an excellent growth medium for native wetland plant species, while stabilizing slopes. This successful venture may lead the way for other wetland restoration projects in urban environments.
- ***Shoreline reclamation*** **-** Biosolids are being used in shoreline stabilization and the establishment of wildlife habitat protecting sensitive west coast fish populations.
- ***Road reclamation*** **-** The Mountains to Sound Greenway Trust, centered in King County, vv Washington, has applied Class A biosolids compost to revegetate logging road scars and landings in the foothills of the Cascade Mountains along the Interstate 90 corridor. The Mountains to Sound Greenway Trust is a public-private partnership dedicated to maintaining a green belt for approximately 100 miles along Interstate 90 from Ellensburg to Seattle.
- ***Rangeland restoration*** **-** Biosolids applied to rangeland has significantly improved rangeland vegetation and soil fertility. In turn, farmers have seen enhanced forage quality and higher beef yields. Windblown dust is also reduced on the biosolids amended soils and water-holding capacity is increased.

Biosolids were used to reclaim the Granby Mine in British Columbia.

- ***Gravel pit reclamation*** **-** Former sand and gravel mines have utilized biosolids to establish vegetation. One former gravel pit was transformed into a U.S. Open Championship Golf Course.
- ***Strip mine reclamation*** **-** Several hundred acres have been applied with biosolids to reclaim disturbed soils and re-establish a healthy tree cover.
- ***Copper mine reclamation*** **-** Decades of mining activity have left acres of barren land that was unable to support plant life. Biosolids have been used to rebuild the soil so plants can grow on hundreds of acres of land, which are now used as native habitat or to graze cattle.
- ***Hard rock mine reclamation*** **-** The U.S. EPA Superfund program has used biosolids to restore sites devastated by hard rock mining activities. By applying high rates of biosolids to these contaminated lands, EPA has been able to restore plants and wildlife. Biosolids are part of EPA's answer in some of the biggest Superfund sites in the country including Jasper County, MO; Leadville, CO and Bunker Hill, ID.
- ***Golf course establishment*** **-** Exceptional Quality biosolids have been used to establish new golf courses by enabling better grass vitality in a shorter turn around time.