



Low Impact Development

Urbanization and associated changes in the movement of stormwater over and through the landscape are some of the greatest and most complex threats to water quality, water supplies, and aquatic habitat in the Puget Sound region. The transition from a forested landscape to a built environment increases impervious surfaces such as roads, parking areas, sidewalks, rooftops, and compacted soils. Native vegetation and the upper soil layers that evaporate, transpire, store or infiltrate stormwater are typically removed. Water quality is impaired as stormwater flowing from impervious surfaces collects oil, grease, heavy metals, and other pollutants and is discharged to streams, lakes, wetlands, and the Puget Sound. The quantity and timing of stormwater flows also change dramatically. Overland flows, shallow sub-surface flows, and associated stream discharges increase significantly during winter, spring and summer precipitation events.

Current stormwater practices efficiently collect and convey precipitation from residential and commercial development to control ponds. Stormwater control design and maintenance standards often do not protect streams and wetlands from increased water volume discharged from urbanized landscapes. The change in the quantity and timing of stormwater runoff can significantly alter stream channel form. As a result, aquatic habitat and the ability of fish, insects and other stream life to survive are degraded.

Low Impact Development is a land use development strategy that emphasizes protection and use of on-site natural features integrated with engineered, small-scale stormwater controls at the parcel and subdivision scale to manage stormwater and maintain or restore pre-development watershed hydrologic functions.

Defining Low Impact Development

Restoring pre-development or natural hydrologic function implies maintaining the pre-disturbance balance among the overland flow, infiltration, storage, ground water recharge and evapotranspiration characteristics of the native landscapes predominant in the Puget Sound ecoregion. Low Impact Development strategies focus on evaporating, transpiring, and infiltrating stormwater on site through native soils, vegetation and bioengineering applications, rather than conveying stormwater—at increased volumes—through large structural systems to streams and wetlands.

Low Impact Development Goals

The primary goals of Low Impact Development are to dramatically reduce or eliminate impacts to streams, lakes or wetlands from commercial and residential development by maintaining the pre-disturbance stormwater flow volumes, flow frequencies and durations and water quality from the developed site.

Terms

Transpiration: water that is taken up for plant growth processes and evaporated through the plant tissue

Hydrologic function: how water flows over and through the landscape and is influenced by geology, climate, vegetation, soils, and humans

Interception and evaporation: the process of precipitation falling on vegetation and then evaporating back to the atmosphere

Effective impervious surface: surfaces that do not allow infiltration and direct stormwater to streams, lakes and wetlands

Bioretention: small, shallow depressions that are distributed through a development site and use soils and vegetation to store, infiltrate and transpire stormwater



- The basic strategies to plan and implement Low Impact Development include:
- Assess the site's soils, current and native vegetation cover, wetland areas, streams, ponds and other critical areas. Establish buffers and delineate protected areas;
 - Maximize retention of native vegetation to intercept, evaporate and transpire precipitation;
 - Preserve permeable, native soils and restore disturbed soils with compost and other amendments to infiltrate and store stormwater;
 - Retain and incorporate topographic site features that promote infiltration and storage of stormwater;
 - Direct the location of buildings and roads away from critical areas and soils that can effectively infiltrate stormwater;

Low Impact Development Strategies



- Minimize building footprints, and road widths and lengths to reduce impervious surfaces. Eliminate effective impervious surfaces;
- Utilize pervious surfaces (e.g. pervious pavement, pavers and gravel systems) where possible to promote stormwater infiltration;
- Utilize small, decentralized bio-retention areas with appropriate vegetation to infiltrate, store and transpire precipitation;
- Reduce the reliance on traditional conveyance and pond technologies to manage stormwater quality and quantity;
- Manage stormwater as close to its origin as possible.



- Low Impact Development focuses largely on strategies to more effectively manage stormwater. Low Impact Development can and should address other livability issues such as:
- Road design that reduces traffic speeds and promotes walking and biking as alternative transportation methods;
 - Developing at appropriate densities to meet Growth Management Act goals, and increase access to, and connection between, public transportation modes;
 - Subdivision layout and building design that promote interaction between neighbors and the connection to open space and recreation.



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