

LID Infeasibility Criteria Checklist

This checklist reflects most, but not necessarily all of the items that will be reviewed by the Development Review. It is intended to be used as an aid by us to provide a consistent review of development work in Thurston County. All items may not be applicable in the review of each project and all items of concern to this office may not be covered on this checklist.

A BMP is considered infeasible if ANY of the infeasibility criteria below are present on the site.

Y	N	
		SOIL PRESERVATION AND AMENDMENT
		The site is comprised of till soils with slopes greater than 33%.
		FULL DISPERSION
		A 65 to 10 ratio of forested or native vegetation area to impervious area cannot be achieved.
		A minimum forested or native vegetation flowpath length of 100 feet (25 feet for sheet flow from a non-native pervious surface) cannot be achieved.
		The flow path cannot be located onsite or in a reserved offsite tract or easement area.
		The slope of the flowpath or dispersal area is steeper than 15% for any 20-foot reach of the flowpath, or steeper than 33% if a level spreader is used upstream and vegetation is established.
		The discharge point is within 300 feet of an erosion hazard or landslide hazard area unless the slope stability impacts of such systems have been analyzed and mitigated by a geotechnical professional, and appropriate analysis indicates that the impacts are negligible.
		The dispersion facility is within 50 feet from top of slopes steeper than 20% and greater than 10 feet high. A geotechnical assessment and soils report must be prepared addressing the potential impact of the facility on the slope. The geotechnical assessment may recommend a reduced setback, but in no case shall the setback be less than the vertical height of the slope.
		Flowpaths for adjacent dispersion devices cannot be sufficiently spaced to prevent overlap of flows in the flowpath areas.
		Discharge of runoff from dispersion devices is within 30 feet upgradient/10 feet downgradient of the drainfield primary and reserve areas. In addition, the flowpath does not intersect with the drainfield primary and reserve area. Note that this requirement can be waived if site topography will clearly prohibit flows from intersecting the drainfield or where site conditions (soil permeability, distance between systems, etc.) indicate that this is unnecessary.
		The dispersion of runoff would create flooding or erosion impacts.
		DOWNSPOUT INFILTRATION SYSTEMS
		The lot or site does not have outwash or loam soils.
		There is not at least 12 inches of permeable soil from the proposed bottom (final grade) of the infiltration system to the seasonal high groundwater table or other impermeable layer.

Y	N	
		The infiltration system is within 50 feet from top of slopes steeper than 20% and greater than 10 feet high. A geotechnical assessment and soils report must be prepared addressing the potential impact of the facility on the slope. The geotechnical assessment may recommend a reduced setback, but in no case shall the setback be less than the vertical height of the slope.
		The infiltration system is within 30 feet upgradient/10 feet downgradient of septic drainfield primary and reserve areas. This requirement can be waived if site topography will clearly prohibit flows from intersecting the drainfield or where site conditions (soil permeability, distance between systems, etc.) indicate that this is unnecessary.
		Within 10 feet from any structure or property line.
		If placed in fill material, the measured infiltration rate is less than 8 inches/hour.
		If placed under pavement, overflow cannot be sited at least 1 foot below the pavement.
		DOWNSPOUT DISPERSION SYSTEMS
		If using splashblocks – a vegetated flowpath at least 50 feet in length from the downspout to the downstream property line, structure, slope over 20%, stream, wetland, or other impervious surface is not feasible.
		If using a dispersion trench – a vegetated flowpath of at least 25 feet in between the outlet of the trench and any property line, structure, stream, wetland, or impervious surface is not feasible.
		The dispersion facility is within 50 feet from top of slopes steeper than 20% and greater than 10 feet high. A geotechnical assessment and soils report must be prepared addressing the potential impact of the facility on the slope. The geotechnical assessment may recommend a reduced setback, but in no case shall the setback be less than the vertical height of the slope.
		The discharge point is within 300 feet of an erosion hazard or landslide hazard area unless the slope stability impacts of such systems have been analyzed and mitigated by a geotechnical professional, and appropriate analysis indicates that the impacts are negligible.
		The discharge point is within 30 feet upgradient/10 feet downgradient of the drainfield primary and reserve areas. In addition, the entire flowpath must be oriented so as to not intersect with the primary or reserve areas. This requirement can be waived if site topography will clearly prohibit flows from intersecting the drainfield or where site conditions (soil permeability, distance between systems, etc.) indicate that this is unnecessary.
		Dispersion flowpath is over contaminated sites or abandoned landfills.
		A flowpath of at least 10 feet in width is not feasible.
		BIORETENTION AND RAIN GARDENS
		Note: criteria with setback distances are as measured from the bottom edge of the bioretention soil mix.
		Infeasibility Based on Written Recommendation

Y	N	
		The following items require evaluation of site-specific conditions and a written recommendation from an appropriate licensed professional (e.g., engineer, geologist, hydrogeologist).
		Professional geotechnical evaluation recommends infiltration not be used due to reasonable concerns about erosion, slope failure, or downgradient flooding.
		The only area available for siting would threaten the safety or reliability of pre-existing underground utilities, pre-existing underground storage tanks, pre-existing structures, or pre-existing road or parking lot surfaces.
		The only area available for siting does not allow for a safe overflow pathway to a stormwater drainage system.
		There is a lack of usable space for bioretention or rain garden areas at re-development sites, or there is insufficient space within the existing public right-of-way on public road projects.
		Infiltrating water would threaten existing below grade basements.
		Infiltrating water would threaten shoreline structures such as bulkheads.
		<p style="text-align: center;">Infeasibility Without Further Justification</p> <p>The following items can be cited as reasons for infeasibility without further justification (though some require professional services to make the observation).</p>
		The bioretention or rain garden is not compatible with the surrounding drainage system as determined by the county (e.g., project drains to an existing stormwater collection system whose elevation or location precludes connection to a properly functioning bioretention or rain garden area).
		The site cannot be reasonably designed to locate bioretention or rain garden areas on slopes less than 8%.
		<p>For properties with known soil or groundwater contamination (typically federal Superfund sites or state cleanup sites under the Model Toxics Control Act (MTCA)):</p> <ul style="list-style-type: none"> • Within 100 feet of an area known to have deep soil contamination. • Where groundwater modeling indicates infiltration will likely increase or change the direction of the migration of pollutants in the groundwater. • Wherever surface soils have been found to be contaminated unless those soils are removed within 10 horizontal feet from the infiltration area. • Any area where these facilities are prohibited by an approved cleanup plan under the state Model Toxics Control Act or Federal Superfund Law, or an environmental covenant under Chapter 64.70 RCW.
		Within 100 feet of a closed or active landfill.
		Within 10 feet of an underground storage tank and connecting underground pipes when the capacity of the tank and pipe system is 1,100 gallons or less. As used in these criteria, an underground storage tank means any tank used to

Y	N	
		store petroleum products, chemicals, or liquid hazardous wastes of which 10% or more of the storage volume (including volume in the connecting piping system) is beneath the ground surface.
		Within 100 feet of an underground storage tank and connecting underground pipes when the capacity of the tank and pipe system is greater than 1,100 gallons.
		Field testing indicates potential bioretention or rain garden sites have a measured (a.k.a., initial) native soil saturated hydraulic conductivity less than 0.30 inches per hour. A small-scale or large-scale PIT in accordance with Appendix III-A shall be used to demonstrate infeasibility of bioretention and rain garden areas.
		<p style="text-align: center;">Setbacks and Site Constraints</p> <p style="text-align: center;">The following items can be cited as reasons for infeasibility without further justification (though some require professional services to make the observation).</p>
		The open water maximum surface elevation of all bioretention or rain garden areas is less than 1 foot below the lowest finished floor elevation of any structures within 25 feet.
		Within 10 feet from any structure or property line, unless approved by the County.
		Within 50 feet from top of slopes steeper than 20% and greater than 10 feet high. A geotechnical assessment and soils report must be prepared addressing the potential impact of the facility on the slope. The soils report may recommend a reduced setback, but in no case shall the setback be less than the vertical height of the slope.
		Within 5 feet from septic tanks and distribution boxes.
		Within 30 feet upgradient, or 10 feet downgradient, of the drainfield primary and reserve areas (per WAC 246-272A-0210). This requirement may be modified by the Tacoma-Pierce County Health Department if site topography clearly prohibits flows from intersecting the drainfield or where site conditions (soil permeability, distance between systems, etc.) indicate that this is unnecessary.
		<p>There is not at least 3 feet of vertical clearance from the lowest elevation of the bioretention soil (or any underlying gravel layer) to the seasonal high groundwater elevation or other impermeable layer if the area tributary to the facility meets or exceeds any of the following thresholds:</p> <ul style="list-style-type: none"> • 5,000 sf of pollution-generating impervious surface (PGIS) • 10,000 sf of impervious area • 0.75 acres of lawn and landscape
		There is not at least 1 foot of vertical clearance from the seasonal high groundwater or other impermeable layer for bioretention or rain garden areas with a contributing area less than the above threshold.

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		Within 300 feet of an erosion hazard or landslide hazard area unless the slope stability impacts of such systems have been analyzed and mitigation proposed by a geotechnical professional, and appropriate analysis indicates that the impacts are negligible.
		Within 100 feet from drinking water wells and springs used for drinking water supplies.
		The proposed bioretention or rain garden area is determined to have potentially negative impacts on groundwater quality.
		PERFORATED STUB-OUT PIPES Applies to "Roof Surfaces" in Lists #1 and #2.
		There is not at least 1 foot (vertical) of permeable soil from the proposed bottom (final grade) of the perforated stub-out connection trench to the highest estimated groundwater table or other impermeable layer.
		The only location available for the perforated stub-out connection is under impervious or heavily compacted soils.
		For sites with septic systems, the only location available for the perforated portion of the pipe is located upgradient of the drainfield primary and reserve areas, and/or the only location available for the discharge point is within 10 feet downgradient of the drainfield primary and reserve areas. This requirement can be waived if site topography will clearly prohibit flows from intersecting the drainfield or where site conditions (soil permeability, distance between systems, etc.) indicate that this is unnecessary.
		The connecting pipe discharges to a stormwater facility designed to meet Minimum Requirement #7.
		The only location available for the perforated stub-out system (not the discharge point) is within 50 feet from top of slopes steeper than 20% and greater than 10 feet high. A geotechnical assessment and soils report must be prepared addressing the potential impact of the facility on the slope. The geotechnical assessment may recommend a reduced setback, but in no case shall the setback be less than the vertical height of the slope.
		The perforated stub-out system (not the discharge point) is within 10 feet from any structure or property line.
		The perforated portion of the pipe is within 300 feet of an erosion hazard area or landslide hazard area, or above slopes greater than 20% unless the slope stability impacts of such systems have been analyzed and mitigated by a geotechnical professional, and appropriate analysis indicates that the impacts are negligible.
		PERMEABLE PAVEMENT
		Infeasibility Based on Written Recommendation The following items require evaluation of site-specific conditions and a written recommendation from an appropriate licensed professional (e.g., engineer, geologist, hydrogeologist).

Y	N	
		Professional geotechnical evaluation recommends infiltration not be used due to reasonable concerns about erosion, slope failure, or downgradient flooding.
		Infiltrating and ponded water below the new permeable pavement area would compromise adjacent impervious pavements.
		Infiltrating water below a new permeable pavement area would threaten existing below grade basements.
		Infiltrating water would threaten shoreline structures such as bulkheads.
		Down slope of steep, erosion prone areas that are likely to deliver sediment.
		Fill soils are used that can become unstable when saturated.
		Excessively steep slopes where water within the aggregate base layer or at the subgrade surface cannot be controlled by detention structures and may cause erosion and structural failure, or where surface runoff velocities may preclude adequate infiltration at the pavement surface.
		Permeable pavements cannot provide sufficient strength to support heavy loads at industrial facilities such as ports.
		Installation of permeable pavement would threaten the safety or reliability of pre-existing underground utilities, pre-existing underground storage tanks, or pre-existing road subgrades.
		<p style="text-align: center;">Infeasibility Without Further Justification</p> <p style="text-align: center;">The following items can be cited as reasons for infeasibility without further justification (though some require professional services to make the observation).</p>
		<p>For properties with known soil or groundwater contamination (typically federal Superfund sites or state cleanup sites under the Model Toxics Control Act (MTCA)):</p> <ul style="list-style-type: none"> • Within 100 feet of an area known to have deep soil contamination. • Where groundwater modeling indicates infiltration will likely increase or change the direction of the migration of pollutants in the groundwater. • Wherever surface soils have been found to be contaminated unless those soils are removed within 10 horizontal feet from the infiltration area. • Any area where these facilities are prohibited by an approved cleanup plan under the state Model Toxics Control Act or Federal Superfund Law, or an environmental covenant under Chapter 64.70 RCW.
		Within 100 feet of a closed or active landfill.
		Within 10 feet of any underground storage tank and connecting underground pipes, regardless of tank size. As used in these criteria, an underground storage tank means any tank used to store petroleum products, chemicals, or liquid hazardous wastes of which 10% or more of the storage volume (including volume in the connecting piping system) is beneath the ground surface.

Y	N	
		At multi-level parking garages, and over culverts and bridges.
		The site design cannot avoid putting pavement in areas likely to have long-term excessive sediment deposition after construction (e.g., construction and landscaping material yards).
		The site cannot reasonably be designed to have a porous asphalt surface at less than 5% slope, or a pervious concrete surface at less than 10% slope, or a permeable interlocking concrete pavement surface (where appropriate) at less than 12% slope. Grid systems upper slope limit can range from 6 to 12%; check with manufacturer and local supplier.
		The subgrade soils below a pollution-generating permeable pavement (e.g., road or parking lot) do not meet the soil suitability criteria for providing treatment. See soil suitability criteria for treatment in the Chapter 6 of Volume V. Note: In these instances, the county may approve installation of a six-inch sand filter layer meeting county specifications for treatment as a condition of construction.
		Underlying soils are unsuitable for supporting traffic loads when saturated. Soils meeting a California Bearing Ratio of 5% are considered suitable for residential access roads.
		Appropriate field testing indicates soils have a measured (a.k.a., initial) subgrade soil saturated hydraulic conductivity less than 0.3 inches per hour. Only small-scale PIT or large-scale PIT methods in accordance with Appendix III-A shall be used to evaluate infeasibility of permeable pavement areas. (Note: In these instances, unless other infeasibility restrictions apply, roads and parking lots may be built with an underdrain, preferably elevated within the base course, if flow control benefits are desired.)
		Roads that receive more than very low traffic volumes, and areas having more than very low truck traffic. Roads with a projected average daily traffic volume of 400 vehicles or less are very low volume roads (AASHTO, 2001)(U.S. Dept. of Transportation, 2013). Areas with very low truck traffic volumes are roads and other areas not subject to through truck traffic but may receive up to weekly use by utility trucks (e.g., garbage, recycling), daily school bus use, and multiple daily use by pick-up trucks, mail/parcel delivery trucks, and maintenance vehicles. Note: This infeasibility criterion does not extend to sidewalks and other non-traffic bearing surfaces associated with the collector or arterial.
		Replacing existing impervious surfaces unless the existing surface is a non-pollution generating surface over an outwash soil with a saturated hydraulic conductivity of four inches per hour or greater.
		At sites defined as “high-use sites.”
		In areas with “industrial activity” as defined in the Glossary.
		The risk of concentrated pollutant spills are more likely, e.g., gas stations, truck stops, and industrial chemical storage sites.
		Routine, heavy applications of sand occur in frequent snow zones to maintain traction during weeks of snow and ice accumulation.

Y	N	
		<p style="text-align: center;">Setbacks and Site Constraints</p> <p>The following items require evaluation of site-specific conditions and a written recommendation from an appropriate licensed professional (e.g., engineer, geologist, hydrogeologist).</p>
		Permeable pavement surfaces are less than 1 foot below the lowest finished floor elevation of any structures within 25 feet.
		Within 50 feet from top of slopes steeper than 20% and greater than 10 feet high. A geotechnical assessment and soils report must be prepared addressing the potential impact of the facility on the slope. The geotechnical assessment may recommend a reduced setback, but in no case shall the setback be less than the vertical height of the slope.
		Within 30 feet upgradient/10 feet downgradient of the drainfield primary and reserve areas. This requirement can be waived if site topography will clearly prohibit flows from intersecting the drainfield or where site conditions (soil permeability, distance between systems, etc.) indicate that this is unnecessary.
		There is not at least 1 foot of vertical clearance from the base of the lowest gravel course or treatment layer to the seasonal high groundwater or other impermeable layer.
		Within 300 feet of an erosion hazard, or landslide hazard area unless the slope stability impacts of such systems have been analyzed and mitigation proposed by a geotechnical professional, and appropriate analysis indicates that the impacts are negligible.
		Within 100 feet from drinking water wells and springs used for drinking water supplies.
		SHEET FLOW DISPERSION
		Positive drainage for sheet flow runoff cannot be achieved.
		Area to be dispersed (e.g., driveway, patio) cannot be graded to have less than a 15% slope.
		For flat to moderately sloped areas, at least a 10-foot wide vegetation buffer for dispersion of the adjacent 20 feet of contributing surface cannot be achieved. For variably sloped areas, at least a 25-foot vegetated flow path between berms cannot be achieved.
		The dispersion of runoff would create flooding or erosion impacts.
		Within 50 feet from top of slopes steeper than 20% and greater than 10 feet high. A geotechnical assessment and soils report must be prepared addressing the potential impact of the facility on the slope. The geotechnical assessment may recommend a reduced setback, but in no case shall the setback be less than the vertical height of the slope.
		The discharge point is within 300 feet of an erosion hazard or landslide hazard areas unless the slope stability impacts of such systems have been analyzed and mitigated by a geotechnical professional, and appropriate analysis indicates that the impacts are negligible.

Y	N	
		Discharge point is within 30 feet upgradient/10 feet downgradient of the drainfield primary and reserve areas, or the any part of the flowpath intersects with the primary or reserve areas. This requirement can be waived if site topography will clearly prohibit flows from intersecting the drainfield or where site conditions (soil permeability, distance between systems, etc.) indicate that this is unnecessary.
		Flowpath is over contaminated sites or abandoned landfills.
		CONCENTRATED FLOW DISPERSION
		A minimum 3-foot length of rock pad and 50-foot flowpath, OR a dispersion trench and 25-foot vegetated flow path for every 700 sf of drainage area followed with applicable setbacks cannot be achieved.
		More than 700 sf drainage area drains to any dispersion device.
		The dispersion of runoff would create flooding or erosion impacts.
		Within 50 feet from top of slopes steeper than 20% and greater than 10 feet high. A geotechnical assessment and soils report must be prepared addressing the potential impact of the facility on the slope. The geotechnical assessment may recommend a reduced setback, but in no case shall the setback be less than the vertical height of the slope.
		The discharge point is within 300 feet of an erosion hazard or landslide hazard areas unless the slope stability impacts of such systems have been analyzed and mitigated by a geotechnical professional, and appropriate analysis indicates that the impacts are negligible.
		Discharge point is within 30 feet upgradient/10 feet downgradient of the drainfield primary and reserve areas, or the any part of the flowpath intersects with the primary or reserve areas. This requirement can be waived if site topography will clearly prohibit flows from intersecting the drainfield or where site conditions (soil permeability, distance between systems, etc.) indicate that this is unnecessary.
		Flowpath is not over contaminated sites or abandoned landfills.
		A minimum vegetated flowpath of 50 feet (if using rock pads) or 25 feet (if using dispersion trenches) between the discharge point and any property line, structure, steep slope (greater than 20%), stream, lake, wetland, or other impervious surface is not feasible.