

Checklist LID.11

Full Dispersion

This checklist reflects most, but not necessarily all of the items that will be reviewed by the Development Engineering Section. It is intended to be used as an aid by us to provide a consistent review of development work in Pierce 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.

Y	N	
		MODELING AND SIZING
		Areas that are fully dispersed in accordance with 65/10 Dispersion have fully met Minimum Requirements #5, #6, and #7, and do not need to perform continuous runoff modeling to demonstrate compliance these minimum requirements.
		DESIGN CRITERIA
		Setbacks and Site Constraints
		The dispersion of runoff does not create flooding or erosion impacts.
		The discharge point is not located within 300 feet of erosion hazard, or landslide hazard area.
		The discharge point is not located within 50 feet from the top of slopes steeper than 20% and greater than 10 feet high.
		The discharge point is a minimum 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. These requirements 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.
		General 65/10 Design Criteria
		Project retains 65% of the site (or a threshold discharge area on the site) in a forested or native condition and impervious developed areas draining to the native vegetation do not exceed 10% of the entire site, or the ratio of the native vegetation area to the impervious area is not less than 65 to 10.
		The preserved area is placed in a separate tract or protected through recorded easements for individual lots.
		All trees within the preserved area at the time of permit application are retained, aside from the removal of dangerous or diseased trees.
		Passive recreation and related facilities do not exceed 8% of the preserved area.
		The preserved area does not include septic systems.
		Preserved areas are preserved or replanted in accordance with Checklist LID.01 Native Vegetation Protection, Reforestation, and Maintenance.
		Site meets the requirements for: <ul style="list-style-type: none"> • 65/10 Residential, Commercial, and Industrial Design Criteria (see details below), or • 65/10 Roadway Design Criteria (see details below)
		65/10 Residential, Commerical, Industrial Design Criteria

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		Applies to site development and roadways planned for urban density development.
		Meets all Design Criteria listed above.
		Lawn and landscaping areas (associated with the development areas) that are dispersed into the native vegetation area meet Volume III, Section 3.1 Soil Preservation and Amendment BMP requirements.
		Any additional impervious areas above the 10% do not drain to the native vegetation area.
		The native vegetation flowpath is at least 100 feet in length (25 feet for sheet flow from a non-native pervious surface).
		The flowpath is located onsite or in a reserved offsite tract or easement area.
		The slope of the flowpath or dispersal area is no steeper than 15% for any 20-foot reach of the flowpath. If a level spreader is used upstream and vegetation is established, the slope of the flowpath is no steeper than 33%.
		The flowpaths for adjacent dispersion devices are sufficiently spaced to prevent overlap of flows in the flowpath areas.
		Runoff from contributing impervious areas is dispersed into the native vegetation area using the dispersion approaches outlined in the following sections (i.e., Roof Downspout Dispersion, Driveway Dispersion, Roadway Dispersion, or Cleared Area Dispersion).
		Roof Downspout Dispersion
		Roof surfaces discharge to an area that consists of forested or native vegetative cover and that is more than 65% of the development site area (with less than 10% impervious total).
		Roof downspouts are dispersed in accordance with Downspout Dispersion and have flowpaths of 100 feet or more through native vegetation.
		Driveway Dispersion
		Driveway surfaces are within a threshold discharge area that is more than 65% forested or native vegetative cover and less than 10% impervious (total).
		Driveway surfaces are dispersed in accordance with Concentrated Flow Dispersion and have flowpaths of 100 feet or more through native vegetation, OR driveway surfaces are dispersed along with the road runoff in accordance with the roadway dispersion design requirements below.
		Roadway Dispersion
		Roadway surfaces are within a threshold discharge area that is more than 65% forested or native vegetative cover and less than 10% impervious (total).
		The road section is designed to minimize collection and concentration of roadway runoff.
		Concentrated flows are incrementally discharged from the ditch via cross culverts or at the ends of cut cross-sections at a maximum rate of 0.5 cfs for the peak 100-year flow.
		For discharge locations with up to 0.2 cfs for the peak 100-year flow, rock pads or dispersion trenches are used to disperse flows.
		For discharge locations with between 0.2 and 0.5 cfs discharge for the 100-year peak flow, dispersion trenches are used to disperse flows.

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		<p>If included, dispersion trenches meet the following design criteria:</p> <ul style="list-style-type: none"> • Designed to accept surface flows (free discharge) from a pipe, culvert, or ditch end and aligned perpendicular to the flowpath • Minimum of 2 feet wide by 2 feet deep • Minimum of 50 feet in length • Filled with 0.75-inch to 1.5-inch washed rock • Minimum spacing of 50 feet between centerlines
		Flowpaths from adjacent discharge points do not intersect within the 100-foot flowpath lengths, and dispersed flow from a discharge point is not intercepted by another discharge point.
		There is no county-determined potential for significant downstream impacts.
		Cleared Area Dispersion
		Cleared areas draining to the dispersion areas consist of bare soil, non-native landscaping, lawn, or pasture.
		Runoff from the cleared area is dispersed through at least 25 feet of native vegetation.
		No more than 25 feet in contributing flowpath length (i.e., through the cleared area). The dispersal flowpath length is extended 1 foot for every 3 feet of contributing flowpath beyond 25 feet (up to a maximum contributing flowpath of 250 feet).
		The topography of the non-native pervious surface does not allow runoff to concentrate prior to discharge to the dispersal area.
		65/10 Roadway Project Design Criteria <i>Applies to public and private roads, typically on roads outside of the urban growth areas.</i>
		Uncollected or Natural Dispersion into Adjacent Vegetated Areas (i.e., sheet flow into the dispersion area)
		Depth to the average annual maximum groundwater elevation is at least 3 feet.
		The contributing impervious surface flowpath length is less than 75 feet.
		The contributing pervious flowpath length is less than 150 feet.
		The lateral slope of contributing impervious drainage area is less than 8%.
		The longitudinal slope of road is less than 5%.
		Road side slopes (not part of the dispersion area) are less than 25%.
		Dispersion area does not include road side slopes unless native vegetation is re-established and slopes are less than 15%.
		Road shoulders that are paved or graveled are counted as impervious surface. (Permeable pavement shoulders are considered a hard surface, not an impervious surface.)
		The length of the dispersion area is equivalent to length of road.
		The average longitudinal (parallel to road) slope of the dispersion area is less than 15%.
		The average lateral slope of the dispersion area is less than 15%.

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		<p>For sites with outwash soils with initial hydraulic conductivity of 4 inches per hour or greater, the following criteria are met:</p> <ul style="list-style-type: none"> • 10 feet of dispersion area flowpath is provided for up to 20 feet of contributing impervious width (i.e., perpendicular to the direction of roadway travel). • Each additional foot of contributing impervious width includes an additional 0.25 feet of dispersion area flowpath.
		<p>For sites with soils not meeting the above criteria (Types C and D, and some Type B), the following criteria are met:</p> <ul style="list-style-type: none"> • 6.5 feet of flowpath is included for every 1 foot of contributing impervious width draining to it. • A minimum flow path distance of 100 feet is provided.
		Channelized Stormwater Into Areas With a) Native Vegetation or b) Cleared Land in Areas Outside of the UGA
		Depth to the average annual maximum groundwater elevation is at least 3 feet.
		Channelized flow is re-dispersed to produce the longest possible flowpath.
		Flows are evenly dispersed across the dispersion area.
		The length of dispersion area is equivalent to length of the road.
		The average longitudinal and lateral slopes of the dispersion area are less than 8%.
		The slope of any flowpath segment is no steeper than 15% for any 20-foot reach of the flowpath segment.
		Flows are dispersed using rock pads and dispersion techniques as specified under Roadway Dispersion (see above).
		For sites with outwash soils with initial hydraulic conductivity of 4 inches per hour or greater, the dispersion area flowpath is at least half the width of the contributing impervious drainage area.
		<p>For sites with soils not meeting the above criteria (Types C and D, and some Type B), the following criteria are met:</p> <ul style="list-style-type: none"> • 6.5 feet of flowpath is included for every 1 foot of contributing impervious width draining to it. • A minimum flow path distance of 100 feet is provided.
		Engineered Dispersion of Stormwater Runoff into Areas with Engineered Soils
		Depth to the average annual maximum groundwater elevation is at least 3 feet.
		Average longitudinal (parallel to road) slope of dispersion area is less than 15%.
		Average lateral slope of dispersion area is less than 15%.
		The dispersion area is planted with native trees and shrubs.

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		Stormwater is dispersed via sheet flow or via collection and re-dispersion in accordance with the techniques specified under Roadway Dispersion (see above).
		For sites with outwash soils with initial hydraulic conductivity of 4 inches per hour or greater, the following criteria are met: <ul style="list-style-type: none"> • Soil are amended to meet Volume III, Section 3.1 Soil Preservation and Amendment BMP requirements. • 10 feet of dispersion area flowpath is provided for up to 20 feet of impervious width. • An additional 0.25 feet of dispersion area flowpath is provided for each additional foot of impervious width beyond 20 feet.
		For sites with soils not meeting the above criteria (Types C and D, and some Type B), the following criteria are met: <ul style="list-style-type: none"> • Soil are amended to meet Volume III, Section 3.1 Soil Preservation and Amendment BMP requirements. • The dispersion area must meet the 65/10 ratio.
		CONSTRUCTION CRITERIA INCLUDED IN THE SWPPP
		The preserved area is shown on all property maps.
		The dispersion area is clearly identified (e.g., using flagging or high visibility fencing) and protected prior to and during construction.
		A soil and vegetation management plan is provided showing areas to be protected and restoration methods for disturbed areas.
		Construction SWPPP sheets outline construction sequencing that will protect the dispersion area during construction.
		Construction SWPPP BMPs and protection techniques are implemented as applicable. The upslope of construction areas are stabilized and overland flow distances are minimized.
		Operate machinery outside of dispersion area during construction.
		Refer to construction requirements in Checklist 42: Preserving Native Vegetation and Restoring Site Vegetation .
		INSPECTION CRITERIA
		The dispersion facility meets applicable design and construction criteria (see * in Design Criteria above).