

## Glossary

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***accelerated climax plant community*** The process of restoring a site to a desirable climax plant community in reduced time when compared to natural processes.

***accessible route of travel*** This is defined in the *Washington Administrative Code* (WAC) 51-40 as “a continuous unobstructed path connecting all accessible elements and spaces in an accessible building or facility that can be negotiated by a person using a wheel chair and that is usable by persons with other disabilities.”<sup>1</sup>

***ADA*** *Americans with Disabilities Act* 42 U.S.C. 12201  
<http://www4.law.cornell.edu/uscode/42/ch126.html#PC126>

***aesthetics*** Evaluations and considerations with the sensory quality of resources (sight, sound, smell, taste, and touch) and especially with respect to judgment about their pleasurable qualities.<sup>2</sup>

***allogenic succession*** Changes in the composition of the plant community as a result of environmental forces.<sup>3</sup>

***alluvial fan*** A sloping fan-shaped mass of sediment deposited by a stream where it emerges from an upland onto a plain.

***anadromous*** Born in fresh water, migrating to and living in salt water, and then returning to freshwater to reproduce.<sup>4</sup>

***ancillary services*** Those secondary services provided at safety rest areas that include, but are not limited to, vending machines, interpretive signing, telephones, recreational vehicle (RV) sanitary disposal facilities, trails, scenic viewpoints, commercial and public information displays, and visitor information centers.

***angle of repose*** The angle between the horizontal and the maximum slope that a soil assumes through natural processes.

***atmospheric vacuum breaker (AVB)*** A device that contains a float check (poppet), a check seat and an air inlet vent. When water pressure is reduced to a gauge pressure of zero or below, the float check drops. This allows air to enter the device to

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<sup>1</sup> Accessibility Design for All, p. 6.

<sup>2</sup> U. S. Department of the Interior, Bureau of Land Management. BLM Manual: visual resource management, Washington D. C. 1977.

<sup>3</sup> Oliver and Larson, p. 29.

<sup>4</sup> Johnson and Stipula. 1993. p. G1

prevent backsiphonage. It is designed to protect against backsiphonage only.

**autogenic succession** Changes in the composition of a plant community due to interplant interactions (facilitation or competition).<sup>5</sup>

**backflow** Refers to the flow of water or other liquids, gases, or solids from any source back into the customer's plumbing system or the serving utility's water distribution system.

**backflow prevention assembly** Refers to a backflow preventer that is designed to be in-line tested and repaired, and to meet the head loss and flow requirements of the recognized approval authority. The assembly consists of the backflow prevention unit, two resilient seated shutoff valves, and test cock(s).

**background** The distant part of a landscape. Generally, the landscape area located from 4 miles to infinity from the viewer.<sup>6</sup>

**backpressure** Refers to water pressure that exceeds the operating pressure of the purveyor's potable water supply.

**backsiphonage** Backflow due to a negative or reduced pressure within the purveyor's potable water supply.

**berm** The continuous artificial contouring of a slope or water-channel bank.<sup>7</sup>

**Best Management Practices (BMPs)** Physical, structural, and/or managerial practices that, when used singly or in combination, reduce the downstream quality and quantity impacts of stormwater.<sup>8</sup>

**biofiltration** the cleaning of surface water using plants and other biological methods to extract or retain sediment and pollutants.

**bioregion** A geographic region based on topography and biological similarities such as watersheds, plant/animal ecosystems, or relative elevations.

**biosolids** Treated wastewater residuals or solids used as a soil amendment.

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<sup>5</sup> Oliver and Larson.

<sup>6</sup> U. S. Department of Agriculture, U. S. Forest Service, *Landscape Aesthetics: A Handbook for Scenery Management*, December 1995.

<sup>7</sup> Hugo Schiechtel, *Bioengineering for Land Reclamation and Conservation*, University of Alberta Press, 1980.

<sup>8</sup> *Highway Runoff Manual*, M 31-16. WSDOT, pp Glossary 1-2.

- blend** To create a balanced, visually harmonious interface between adjacent elements. A roadside treatment strategy that integrates roadside elements to preserve roadside character continuity.
- buffer** The zone contiguous with a sensitive area that is required for the continued maintenance, function, and structural stability of the sensitive area. The critical functions of a riparian buffer (those associated with an aquatic system) include shading, input of organic debris and coarse sediments, uptake of nutrients, stabilization of banks, interception of fine sediments, overflow during high water events, protection from disturbance by humans and domestic animals, maintenance of wildlife habitat, and room for variation of aquatic system boundaries over time due to hydrologic or climatic effects. The critical functions of terrestrial buffers include protection of slope stability, attenuation of surface water flows from storm water runoff and precipitation, and erosion control.<sup>9</sup>
- check dam** a small barrier, such as quarry spalls, sand bags, or silt fencing, that slows water velocity and allows solids to settle out behind the barrier.
- check valve** A generic term used for a variety of valves that specifically allow flow in only one direction.
- clay** Mineral soil particles with a diameter of less than 0.002 millimeter. A fine-grained soil that has a high plasticity index in relation to liquid limits.<sup>10</sup>
- clear zone** The total roadside border area, starting at the edge of the traveled way, available for use by errant vehicles.
- climax vegetation** Relatively stable vegetation in equilibrium with its environment and with good reproduction of the dominant plants.<sup>11</sup> A stable end-point to plant succession (“steady state”) where a group of species predominate and replaces itself.<sup>12</sup>
- coherence** Quality of state of being united in principles and relationships or to be logically and aesthetically connected.
- cognition** The mental process or function by which knowledge is acquired.

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<sup>9</sup> *Ibid*

<sup>10</sup> Donahue, Roy L., John C. Shickluna, and Lynn S. Robertson, *Soils: An Introduction to Soils and Plant Growth*, Prentice-Hall, Inc., Englewood Cliffs, New Jersey, 1971, p. 509.

<sup>11</sup> *Ibid*, p. 510.

<sup>12</sup> Oliver and Larson, p. 147.

**color** The property of reflecting light of a particular wavelength that enables the eye to differentiate otherwise indistinguishable objects. A hue (red, green, yellow, blue, and so on). as contrasted with a value (black, white, or gray).<sup>13</sup>

**compensatory mitigation** The attempt to compensate for wetlands impacts. It usually involves the creation, preservation, restoration, or enhancement of a wetland to replace functions lost due to unavoidable impacts.

**complexity** The multiple qualities in a landscape that provide visual interest such as the combination of form, color, and texture.

**compost** Stable, mature, decomposed organic solid waste that is the result of the accelerated, aerobic biodegradation and stabilization under controlled conditions. The result has a uniform, dark, soil-like appearance.

**conduit** A pipe containing electrical wiring.

**control** The driver's ability to safely drive the vehicle.

**constructed wetlands** Areas "created or restored specifically to treat either point or nonpoint source pollution wastewater."<sup>14</sup> Although a constructed wetland might look the same as a created wetland, different regulations apply. Design and maintenance of constructed wetlands is determined according to their stormwater and hydraulic functions. Vegetation is used to maximize the desired functions.

**contamination** An impairment of the quality of potable water (by sewage, industrial fluids, or waste) that creates an actual hazard to the public health through poisoning or the spread of disease.

**context sensitive design** A collaborative, interdisciplinary approach that involves all stakeholders to develop a transportation facility that fits its physical setting and preserves scenic, aesthetic, historic, and environmental resources, while maintaining safety and mobility. Context Sensitive Design is an approach that considers the total context within which a transportation improvement project will exist.<sup>15</sup>

**contour** An imaginary line on the surface of the earth connecting points of the same elevation.

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<sup>13</sup> U. S. F. S., December 1995.

<sup>14</sup> TRB, 1996

<sup>15</sup> U.S. Department of Transportation, Federal Highway Administration. <http://www.fhwa.dot.gov/csd/>

**contour interval** The difference in elevation between two contours.<sup>16</sup>

**contrast** Diversity or distinction of adjacent parts. Effect of striking differences in form, line, color, or texture of a landscape.

**corridor continuity** The overall coordination and sequence of visual features as experienced by the roadway user.

**corridor management plans** A written document that specifies the actions, procedures, controls, operational practices, and administrative strategies to maintain the scenic, historic, recreational, cultural, archeological, and natural qualities of a Scenic and Recreational Highway.

**created wetlands** Those wetlands that have been constructed on a non-wetland site specifically to compensate for wetland losses permitted under Section 404 of the Clean Water Act.<sup>17</sup> Created wetlands can also be created to compensate for impacts under local permits or WSDOT directive. Wetlands can also be accidentally created as a result of construction activities.

**critical area** See *sensitive area*.

**critical habitat** (A) Specific areas within the geographical area occupied by the species, at the time it is listed, on which are found those physical or biological features both essential to the conservation of the species, and which may require special management considerations or protection. (B) Specific areas outside the geographical area occupied by the species, at the time it is listed, that the U. S. Secretary of the Interior or the U. S. Secretary of Commerce determines are essential for the conservation of the species.<sup>18</sup>

**cross connection** Any actual or potential physical connection between a potable water line and any pipe, vessel, or machine containing a nonpotable fluid, or having the possibility of containing a nonpotable fluid, such that it is possible for the non-potable fluid to enter the water system by backflow.

**cross section** The representation of a landform as it would appear if cut by an intersecting plane.

**cultural element** Attributes in a human-altered landscape; generally, scenically positive cultural elements, most of which have

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<sup>16</sup> Morris M. Thompson, *Maps for America*, U.S. Department of Interior, Geological Survey National Center, Reston, Virginia, 1987.

<sup>17</sup> TRB, 1996

<sup>18</sup> Endangered Species Act (ESA), 1973

historical backgrounds or nostalgic connotations. Examples include split-rail fences, stone walls, barns, orchards, hedgerows, and cabins.<sup>19</sup>

**cut** That part of the ground surface that, when graded, is lower than the original ground.<sup>20</sup>

**cuttings** Live plant material without a previously developed root system. Source materials for cuttings should be dormant when the cutting is taken.

**datum** In surveying, a reference point, line, or surface for computing or correlating the results of surveys. In surveying, there are two principal types of datums: vertical and horizontal.

**dB (A-Weighted Sound Level)** The sound pressure levels in decibels measured with a frequency weighting network corresponding to the A-scale on a standard sound level meter as specified by ANSI S1.4-1971. The A-scale tends to suppress lower frequencies (below 1,000 Hz) and best approximates the sound as heard by the normal human ear.

**decibel** A decibel is a unit used to measure and describe the intensity of sound. A decibel is one-tenth of a Bel. A Bel is defined as the common logarithm of the ratio of two powers. Mathematically, a decibel is defined as:

$$\text{dB} = 10 \log_{10} (P_1/P_2),$$

Where  $P_2$  is the reference pressure and is equal to  $2 \times 10^{-5} \text{ N/m}^2$  (0.0002  $\mu$  bars).

**decision sight distance** The sight distance required for a driver to 1) detect an unexpected or difficult-to-perceive information source or hazard, 2) interpret the information, 3) recognize the hazard, 4) select an appropriate maneuver, and 5) complete the maneuver safely and efficiently.

**delineated wetland** A wetland whose boundary has been identified by a qualified biologist using a standard delineation methodology evaluating soils, vegetation, and hydrology. A right of entry might be required to formally delineate a wetland for project purposes if it does not occur entirely on WSDOT right of way. The delineated boundary is flagged in

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<sup>19</sup> U. S. F. S., December 1995.

<sup>20</sup> Steven Strom and Kurt Nathan, *Site Engineering for Landscape Architects*, Van Nostrand Reinhold, New York, 1992.

the field and surveyed. The biology report will include the delineation survey with flag locations and numbering.

***Design Clear Zone*** The minimum target value used in highway design.

***designated lands*** Lands that have been officially recognized or identified for their special functions. Many of these are managed for environmental functions as well as other uses, such as recreation. These can include: National Wildlife Refuges; National Forests; National Parks; state, county, and local jurisdiction parks; Wild and Scenic Rivers; Scenic and Recreational Highways; designated critical habitat for threatened or endangered species such as spotted owls; or priority habitat areas such as oak woodlands, agricultural lands, and sensitive plant habitat.

***detention facility*** An above or below ground facility, such as a pond or tank, that temporarily stores stormwater runoff and subsequently releases it at a slower rate than it is collected by the drainage facility.

***detention pond*** A type of drainage facility designed to hold surface and stormwater runoff for a short period of time and then release it over time via adjacent surface water bodies or aquifers.

***ditches*** Narrow depressions designed to collect, convey, and discharge stormwater runoff from roadway surfaces, adjacent right of way, and groundwater discharge from adjacent slopes. Many ditches are diverted streams and creeks. Because of this hydraulic function, it is not uncommon to see wetland (hydrophytic) vegetation growing in roadside ditches.

***double check valve assembly (DCVA)*** An approved assembly consisting of two independently operating check valves, loaded to the closed position by springs or weights, and having suitable connections for testing. It is installed as a unit with and between two resilient seated shutoff valves

***ecological succession*** The natural tendency of plant communities to

***ecosystem*** a complex of biological communities and the physical and chemical environment forming a functioning whole in nature. Wetlands, upland forests, lakes, and streams are examples of types of ecosystems.<sup>21</sup>

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<sup>21</sup> Transportation Research Board. "Report 379: Guidelines for the Development of Wetland Replacement Areas. Washington D.C., National Academy Press. 1996. p. 72.

**elevation** Vertical distance of a point above or below a reference surface or datum.<sup>22</sup>

**enclose** A roadside treatment strategy, the aim of which is a more or less permeable buffer between two adjacent elements, typically the roadway and adjoining lands. Roadside treatments, such as berms, structures, or vegetation, are used to provide visual buffers along both sides of the road.

**endangered species** Any species of plant or animal that is in danger of extinction throughout all or a significant portion of its range.<sup>23</sup>

**enhancement** Any improvement of a structural component to increase the level of ecological functioning of a site.

**Environmental Resource Area** Areas that have been identified in the field by a biologist as having high environmental resource value. Environmental Resource Areas may include (but are not limited to): stream corridors; oak woodlands, or other high quality habitat areas designated as locally or regionally important; known habitats for state or federal endangered, threatened, or priority species; and rare or sensitive plant communities.

**erosion** The wearing away of the land surface by running water, wind, ice, or other geological agents, including such processes as gravitational creep. Also detachment and movement of soil or rock fragments by human and animal activities.

**erosion prevention and sediment control** Any temporary or permanent measures taken to reduce erosion, control siltation and sedimentation, and ensure that sediment-laden water does not leave a site.

**exotic species** A species found in but not native to a particular area.

**expectancy** The driver's readiness to respond to events, situations, or the presentation of information. It is primarily a function of the driver's experience.

**expose** A roadside treatment strategy, the aim of which is to preserve or open a visual sight line, or remove vegetation for operational purposes, such as in the Design Clear Zone.

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<sup>22</sup> Thompson, 1987

<sup>23</sup> ESA, 1973

- facility** All or any portion of buildings, structures, vehicles, equipment, roads, walks, parking lots, or other real or personal property or interest in such property.<sup>24</sup>
- fascine** A tied bundle of plant stems or branches, laid in a trench or a terrace on the contour and staked into position. Used to slow water velocities, trap sediment and establish vegetation. Used on basically stable slopes that have a shallow, unstable surface layer.
- feature** A visually distinct or outstanding part, quality, or characteristic of a landscape.
- fill** That part of the ground surface that, when graded, is higher than the original ground.<sup>25</sup>
- finish grading** Minor changes to finalize a prepared earth surface to its desired grade.
- fixed service item** A stationary facility or structure such as a utility box or light standard.
- forb** An herbaceous plant, such as clover, which is not a grass, sedge, or rush.
- foreground** Detailed landscape generally found from the observer to 100 meters (300 feet) away.
- form** The mass or shape of an object. Usually considered to be three dimensional.
- friable** readily crumbled
- genotype** The genetic make-up of an organism.
- grading** Modification of the ground surface by cuts and/or fills.
- groundcover** Low-growing plants that form a dense, extensive growth and tend to prevent weeds and soil erosion.
- groundwater** Water that occurs below the surface of the earth, which is contained in pore spaces. It is either passing through or standing in the soil and underlying strata and is free to move under the influence of gravity.<sup>26</sup>
- guidance** The process of directing the course of the driver through signing and other visual clues.

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<sup>24</sup> Subpart A, 49 CFR Part 27.

<sup>25</sup> Strom and Nathan, 1992.

<sup>26</sup> TRB, 1996

***gully*** A channel or miniature valley cut by concentrated runoff but through which water commonly flows only during and immediately after heavy rains or snowmelt.

***habitat*** The environment occupied by individuals of a particular species, population, or community.<sup>27</sup>

***herbaceous plant*** Any flowering plant except those developing persistent woody bases and stems above ground.

***humus*** Decomposed organic matter that remains once visible plant structure can no longer be determined.

***hydraulic conveyance system*** Natural and man made drainage facilities that collect, contain, and provide for the flow of surface and stormwater from the highest elevations down to a receiving water. The natural elements of the conveyance system include swales, and small drainage courses, streams, rivers, lakes, and wetlands. The man made elements of the conveyance system include gutters, ditches, pipes, channels, and most retention/detention facilities.<sup>28</sup>

***hydrology*** The science that relates to the occurrence, properties, and movement of water on the earth. It includes water found in the oceans, lakes, wetlands, streams, and rivers, as well as in upland areas, above and below ground, and in the atmosphere.<sup>29</sup>

***impact*** An action that adversely affects a wetland or other ecosystem; for example, road construction, timber clearing, or agricultural activities that result in wetland conversion or degradation.<sup>30</sup>

***impervious surface*** A hard surface area that either prevents or retards the entry of water into the soil. Common impervious surfaces include roof tops, walkways, driveways, parking lots, concrete or asphalt paved roadways, gravel roads, packed earthen materials, and oiled surfaces.

***indicator*** One of the specific environmental attributes measured or quantified through field sampling, remote sensing, or compilation of existing data from maps or land use reports,

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<sup>27</sup> TRB, 1996

<sup>28</sup> *Highway Runoff Manual*, WSDOT

<sup>29</sup> TRB, 1996

<sup>30</sup> TRB, 1996

used to assess ecosystem condition or functions or exposure to environmental stress agents.<sup>31</sup>

***infiltration*** The downward movement of water from the surface to the subsoil.

***information display*** A kiosk that includes a map of Washington, local travel services, and attractions. In selected safety rest areas, commercial travel information is provided. The display may be free standing or mounted.

***insertion loss*** The actual acoustical benefit derived from a noise barrier.

***intactness*** Untouched or unaltered, especially by anything that harms or diminishes its character.

***integrated vegetation management:*** (IVM) A vegetation management approach focusing on using long-term solutions to establish stable, low-maintenance roadside plant communities compatible with highway safety, maintenance objectives, neighbors' concerns, and environmental quality, while at the same time deterring invasion of undesirable plants.

***interpolation*** The determination of the elevation of a location between two known points. Done by calculating the slope between known points and using the horizontal distance from the known point to the intermediate point to calculate the elevation of the intermediate point.

***invasive vegetation*** Those (typically) nonnative plant species that will often outcompete native plant communities.

***jurisdictional wetlands*** All naturally occurring wetlands, wetlands unintentionally created as the result of construction activities, and those created specifically for the compensation of wetland losses. These wetlands are regulated by the Army Corps of Engineers and local jurisdictions.

***kiosk*** A conveniently located structure accommodating ancillary services such as vending machines, traveler information, or telephones. The kiosk might also include a sheltered area for serving refreshments on a donation basis.

***landscape*** An area composed of interacting ecosystems that are repeated because of geology, land form, soils, climate, biota, and human influences throughout the area. Landscapes are

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<sup>31</sup> TRB, 1996

generally of a size, shape, and pattern that is determined by interacting ecosystems.<sup>32</sup>

**leaching** The removal of materials (CaCO<sub>3</sub>, MgCO<sub>3</sub>, and other more soluble materials) in solution from the soil.

**legibility** The quality in a landscape that allows the viewer to understand or comprehend it and to make decisions about future actions.

**Leq** A statistical descriptor that provides a single number to describe the varying traffic noise levels. It is a constant, average sound level that, over the specified period of time, contains the same amount of sound energy as the varying levels of the traffic noise.

**line** The path, real or imagined, that the eye follows when perceiving abrupt differences in form, color, or texture. Within landscapes, lines may be found as roads, ridges, skylines, structures, changes in vegetative types, or individual trees and branches.<sup>33</sup>

**listed species** Any species listed by a state or federal agency as threatened or endangered under the Endangered Species Act of 1973.

**live poles** A form of cutting taken from woody vegetation with a diameter greater than 50 mm (2 inches).

**live stakes** A form of cutting taken from one to two year old woody vegetation with a diameter of less than 50 mm (2 inches).

**loam** A soil texture class that contains 7 to 27 percent clay, 28 to 50 percent silt, and less than 52 percent sand.<sup>34</sup>

**maintenance pull-off** A widened shoulder area near fixed service items. Suggested width 4 meters minimum. Suggested length 30 meters maximum.

**microorganisms** Forms of life that are either too small to be seen with the unaided eye, or are barely discernible.<sup>35</sup>

**middleground** The zone between the foreground and the background in a landscape. The area located from 100 meters to 4 miles from the observer.

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<sup>32</sup> U. S. F. S., December 1995.

<sup>33</sup> BLM, 1977

<sup>34</sup> Ibid, p. 536.

<sup>35</sup> Ibid, p. 538.

**migration corridor** An area that is usually used by migrating wildlife to move between suitable habitat.

**monitoring** The collection of information after construction to assess if the replacement project is successful and to keep the regulatory agencies and construction agency informed about the status of the replacement project.<sup>36</sup>

**mottling** Soils irregularly marked with spots of color. The presence of orange mottling usually indicates soils that have been through periods of saturation interspersed with periods where the soil had dried out.

**mycorrhizae** A beneficial group of fibrous fungi that engulf soil particles and pore spaces to absorb water and nutrients in solution and transfer this solution to the roots of plants. In effect, they multiply the plants' root systems many times.

**mystery** Characteristics in a landscape that excite wonder, curiosity, or surprise.

**native plant** A plant occurring naturally in a particular region, ecosystem, or habitat at the time of European settlement.

**natural wetlands** Wetlands in existence due to natural forces alone, or unintentionally developed through construction or management practices. Natural wetlands can be found in unusual areas, including filled areas, ditches, borrow pits, ponds, and agricultural fields. Natural wetlands are protected by federal, state, and local regulations as well as WSDOT's internal policies. (See Division 2.)

**navigation** Trip planning and execution.

**nonjurisdictional wetlands** Nonjurisdictional wetlands include those artificial wetlands intentionally created from nonwetland sites, including, but not limited to, irrigation and drainage ditches, canals excavated in uplands, stormwater detention ponds, wastewater treatment facilities created in uplands, and certain agricultural activities and landscape amenities created in uplands. Grass-lined swales and wastewater treatment facilities can be constructed in wetlands but must be so designated and specifically designed for water treatment purposes. Mitigation will be required to compensate for the wetland lost to such a facility

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<sup>36</sup> TRB, 1996

**old growth forest** A late successional or climax stage in forest development. In western Washington, ancient or old growth forests have a canopy of very large living conifers, shade-tolerant trees beneath the canopy, and abundant large snags and logs.<sup>37</sup>

**OTED** Office of Trade and Economic Development. Their website is found at: <http://www.oted.wa.gov/aboutoted.htm> Provides leadership and support to promote sustainable economic vitality throughout the state.

**physiographic** a geographic unit with discrete physical characteristics, such as elevation, aspect, and rainfall patterns.

**pioneer species** Fast growing plants that are quick to establish on poor soils. Nodules on their roots fix nitrogen giving them a competitive edge in disturbed soil environments.

**plant association** A particular, consistent group of species growing in a particular, consistent type of habitat.

**plant community** A general term describing the group of plants growing in an area.

**plant material** Trees, shrubs, ground covers, cuttings, live stakes, live poles, rhizomes, tubers, rootstock, and seedlings are referred to collectively as “plants” or “plant material.”

**plant succession** Directional, cumulative change in the species that occupy a given area through time.<sup>5</sup>

**point of interest** A scenic, historical, natural, or other attraction of sufficient interest to travelers to warrant construction of a pullout and/or viewing area within WSDOT right of way. The site might include interpretive displays, potable water, or other ancillary services. A Point of Interest might be located within a larger roadside park or safety rest area.

**pollutant** An element that enters a biological pathway or becomes concentrated to the extent that it might cause injury to living organisms or the functioning of environmental systems.

**pore space** Total space not occupied by soil particles in a bulk volume of soil, commonly expressed as a percentage.<sup>38</sup>

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<sup>37</sup> Norse, Elliott A. *Ancient Forests of the Pacific Northwest*, Washington, DC: Island Press. 1990. p. 287.

<sup>38</sup> *Ibid*, p. 546.

**potable water** Water that is safe for human consumption and free from harmful or objectionable materials as described by the jurisdictional health authority.

**pressure vacuum breaker assembly** An approved assembly consisting of a spring loaded check valve loaded to the closed position, an independently operating air inlet valve loaded to the open position, and suitable connections for testing. It is installed as a unit with and between two resilient seated shutoff valves. It is designed to protect against backsiphonage only.

**profile** The representation of a landform seen from the side.

**old growth forest** A late successional or climax stage in forest development. In western Washington, ancient or old growth forests have a canopy of very large living conifers, shade-tolerant trees beneath the canopy, and abundant large snags and logs.<sup>39</sup>

**ramp** Any directional route of pedestrian travel having a running slope between 2% and 8.3%.

**receiver** Any human that could potentially experience wayside noise from vehicles on a roadway at a given location.

**receptor** A coordinate point in three dimensional space for which the decibel level is either measured or calculated. Receptor may also be referred to as a “receiver point”.

**recreational vehicle (RV)** A general term used to describe motorized vehicles designed for pleasure travel. The cabin design frequently includes sleeping, eating, and toilet facilities.

**recreational vehicle account** *In Washington*, an account funded by an annual recreational vehicle license fee. Proceeds fund the construction, maintenance, and operation of RV sanitary disposal facilities in safety rest areas on federal-aid highways as authorized by RCW 46.68.

**Recreational Vehicle Citizens Advisory Committee** A volunteer advisory committee established under RCW 46.10.063, which provides for input from “citizen representatives of the recreational vehicle user community.” The committee provides guidance on the expenditure of funds from the Recreational Vehicle Account and advises WSDOT on operation of sanitary disposal facilities.

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<sup>39</sup> Norse, Elliott A. *Ancient Forests of the Pacific Northwest*, Washington, DC: Island Press. 1990. p. 287.

**reduced pressure backflow assembly** An approved assembly consisting of two independently operating check valves, spring loaded to the closed position, separated by a spring loaded differential pressure relief valve loaded to the open position, and having four suitable test cocks for checking the water tightness of the check valves and the operation of the relief valve. It is installed as a unit with and between two resilient seated shutoff valves.

**reference site** An established undisturbed natural site that is used as a comparative design guide to help determine the desired plant composition and species densities for the created, or enhanced project site. It should be located near the project site, preferably within the same watershed, and have similar landscape setting, hydrology and topography.

**restoration** Ecological restoration is the process of assisting the recovery and management of ecological integrity. Ecological integrity includes a critical range of variability in biodiversity, ecological processes and structures, regional and historical context, and sustainable cultural practices.<sup>40</sup>

**retention** The process of collecting and holding surface and stormwater runoff with no surface outflow.

**retention/detention facility (R/D)** A type of drainage facility designed either to hold water for a considerable length of time and then release it by evaporation, plant transpiration, and /or infiltration into the ground; or to hold surface and stormwater runoff for a short period of time and then release it to the surface and stormwater management system.

**retention pond** A type of drainage facility designed to hold water for a considerable length of time allowing it to evaporate or infiltrate into the soil.

**rhizome** A root-like, usually horizontal stem, growing under or along the ground that sends out roots from its lower surface and leaves, or shoots from its upper surface. The primary means by which some plants spread or reproduce.

**rills** A small, intermittent water course with steep sides, usually only a few inches deep.

**riparian** The interface of aquatic and terrestrial systems in flood plains, rivers, and streams. Riparian systems are valued for diverse functions such as flood reduction, groundwater

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<sup>40</sup> <http://nabalu.flas.ufl.edu/ser/definitions.html>

supply, streambank stabilization, habitat and migration corridors for wildlife, erosion control, and preservation of water habitats.<sup>41</sup>

**ripping** Deep cultivation using specialized soil ripping equipment, usually done on compacted soils to increase pore space and improve soil structure for plant growth and infiltration of surface water.

**roadside classification** Any of five classifications given to a route or stretch of roadway through a review process conducted by WSDOT, and documented in the WSDOT “Roadside Classification Log.” Roadside character classifications fall within two categories: natural and built. *Natural* includes the Open and Forest roadside character classification. *Built* includes the Rural, Semiurban, and Urban roadside character classifications.

**roadside function:** Any activity or role for which the roadside is specifically required, suited and used.

**roadside:** The *roadside* is the area outside the traveled way. This applies to all lands managed by WSDOT and may extend to elements outside the right of way boundaries.<sup>42</sup> This includes unpaved median strips and auxiliary facilities such as rest areas, roadside parks, viewpoints, heritage markers, pedestrian and bicycle facilities, wetlands and their associated buffer areas, stormwater treatment facilities, park and ride lots, and quarries and pit sites.

**roadside park** A roadside user facility for safe vehicular parking off the traveled way. These sites might be equipped with features or elements such as a point of interest, picnic tables, and/or chemical toilets. Unlike a safety rest area, a roadside park does not *necessarily* provide a permanent rest room building.

**roadside partner** A person who’s work influences or impacts the roadside either directly or indirectly. Examples include but are not limited to: Architects, Environmental Offices, Heritage Corridors Program, Hydraulics Office, Landscape Architects, and Maintenance personnel.

**roadside restoration** The use of planning, design, construction, and maintenance activities to restore roadside plant communities

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<sup>41</sup> TRB, 1996. p. 76.

<sup>42</sup> WSDOT owns and manages the land within the right of way boundaries. WSDOT also owns, or has partial investment in, properties outside of the right of way boundaries; for example, wetland mitigation sites. In addition, WSDOT has an interest in elements outside the right of way boundaries which may affect roadway safety.

according to designated roadside character and *Roadside Classification Plan* provisions.

**roadside treatment strategies** Conceptual design strategies used to coordinate implementation of roadside guidelines and fulfill roadside functions. The three basic treatment strategies are enclose/screen, expose, and blend.

**roadway** The roadway is the portion of a highway, including shoulders, for vehicular use. A divided highway has two or more roadways.

**rotational failure** a slide that moves along a surface of rupture that is curved and concave.<sup>43</sup>

**runoff** That portion of the precipitation on a drainage area that is discharged as overland flow. Types include surface flow, groundwater flow, and seepage.

**Safety Rest Area Roadside Master Plan** A map of existing and projected safety rest areas and roadside parks. The Master Plan considers a 20 year planning horizon.

**safety rest area (SRA)** A roadside facility equipped with permanent rest room building(s), parking area, potable water, picnic tables, refuse receptacles, illumination, telephones, and other ancillary services. SRAs might include traveler information.

**Safety Rest Area Team** A WSDOT working group representing various divisions, regions, service centers, and offices responsible for safety rest area planning, programming, design, construction, maintenance, and operation. The team assists the Heritage Corridors Program in the development of short and long term plans and budgets.

**sand** A mineral soil particle between 0.05 and 2.0 mm in diameter. A soil textural class.<sup>44</sup>

**scale** The degree of resolution at which ecological processes, structures, and changes across space and time are observed and measured.

**Scenic and Recreational Highways** A public road having special scenic, historic, recreational, cultural, archeological, and/or natural qualities that have been recognized as such through legislation or some other official declaration. The terms

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<sup>43</sup> Turner & Schuster, eds, 1996, *Landslides Investigation and Mitigation, Special Report, Transportation Research Board*, pp. 56-57.

<sup>44</sup>Donahue, et al., p. 550.

“byway,” “road,” and “highway” are synonymous. They are not meant to define higher or lower functional classifications or wider or narrower cross-sections. Moreover, the terms State Scenic Byway, National Scenic Byway, or All-American Road refer not only to the road or highway itself but also to the corridor through which it passes.

**screen** The use of roadside treatments such as vegetation, berms, or walls to visually block undesirable views.

**section** See *cross-section*.

**seedlings** Plants grown from cuttings, seeds, or other approved propagation methods. They are generally under 3 years old and under 600 mm (2 ft) in height. Measurement is by height, in 75mm (3inch) increments, or by age and number of times transplanted.

**sensitive areas** (also called critical areas) Places in the landscape that are subject to natural hazards or that support unique, fragile, or valuable natural resources. In many cases, these areas have been designated as sensitive by local jurisdictions under the state Growth Management Act (GMA) and thus may have special regulations attached to them. Each jurisdiction has its own definition of what constitutes a sensitive area and has its own set of regulations that address the restrictions associated with these areas.

The Shoreline Management Act and Growth Management Act include as nonjurisdictional those wetlands created after July 1, 1990, that were unintentionally created as a result of the construction of a road, street, or highway. WSDOT has a “no net loss” policy regarding wetlands and will mitigate impacts to wetlands created after that date.

These areas can be highly susceptible to disturbance. Examples of sensitive areas include: streams, wetlands, steep slopes, erosion hazard areas, coal mine hazard areas, landslide hazard areas, seismic hazard areas, and floodplains, and smaller watersheds feeding into shellfish harvest areas.

**service connection** The piping connection by means of which water is conveyed from the serving utility’s distribution main to a customer’s premises.

**settleable solids** (SS) Settleable solids are the materials which settle out of suspension within a defined period (typically one hour). It is reported on a volume basis (milliliter per liter,

mL/L), but can also be reported on a weight basis (milligrams per liter, mg/L).

**shape** Contour, spatial form, or configuration of a figure. Shape is similar to form, but shape is usually considered to be two-dimensional.

**shrub** A low, woody plant having several stems.

**sight distance** The length of highway visible to the driver.

**silt** A mineral soil separate consisting of particles of 0.05 and 0.002 mm in diameter. A soil textural class.<sup>45</sup>

**sleeve** A pipe containing other irrigation pipe. Also called *casing pipe*. (See Figure 840.1)

**slope gradient** the angle of the slope as expressed in a percentage.

**soil** The unconsolidated mineral and organic matter on the surface of the earth that has been subjected to and influenced by genetic and environmental factors of parent material, climate (including moisture and temperature effects), macro and microorganisms, and topography, all acting over a period of time and producing a product – soil – that differs from the material from which it is derived in many physical, chemical, biological, and morphological properties and characteristics.<sup>46</sup>

**soil bioengineering** the use of live plant materials and engineering techniques to reinforce soil and stabilize slopes.

**soil erosion** The part of the overall process of denudation that includes the physical breakdown, chemical dissolving, and transportation of material by agents such as water, wind, ice, and gravity.<sup>47</sup>

**soil horizons** A layer of soil approximately parallel to the land's surface and differing from adjacent genetically related layers in physical, chemical, and biological properties or characteristics, such as color, structure, texture, consistency, amount of organic matter, and degree of acidity or alkalinity.<sup>48</sup>

**soil organic matter** The organic fraction of the soil that includes plant and animal residues at various stages of decomposition, cells and

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<sup>45</sup> Ibid, p. 552.

<sup>46</sup> Ibid, p. 553.

<sup>47</sup> TRB, 1996

<sup>48</sup> Ibid, p. 558.

tissues of soil organisms, and substances synthesized by the soil population.<sup>49</sup>

**soil structure** The combination or arrangement of primary soil particles into secondary particles or units. The secondary units are characterized and classified on the basis of size, shape, and degree of distinctness into classes, types, and grades respectively. Examples are: platy, prismatic, columnar, blocky, granular, and crumb.<sup>50</sup>

**solar exposure** refers to the exposure of the road surface to the rays of the sun. Solar exposure can be blocked by land forms, structures, and vegetation adjacent to the roadway.

**species** Includes any subspecies of fish, wildlife, or plants; any distinct population segment of any species of vertebrate fish or wildlife that interbreeds when mature.<sup>51</sup>

**steppe** A grass covered semi-arid plain, such as those found in Washington east of the Cascade mountain range.

**stormwater** That portion of precipitation that does not naturally percolate into the ground or evaporate, but flows via overland flow, interflow, channels, or pipes into a defined surface water body or infiltration facility.

**Stormwater Site Plan (SSP)** A plan that shows the measures that will be taken during and after project construction to provide erosion, sediment, and stormwater control. Specific elements of the plan are outlined in the *Highway Runoff Manual*.

**swale** A shallow drainage conveyance with relatively gentle side slopes, generally with flow depths less than one foot. May be designed for infiltration, biofiltration, or water conveyance.

**subsoil** The soil layers below the topsoil that contain little or no organic matter.

**sustainable roadsides** are those roadsides that are designed and maintained with the intent of integrating successful physical, environmental and visual functions with low life cycle costs.

**Temporary Erosion and Sediment Control (TESC) Plan** A plan required on any project involving earthwork. The specific elements are outlined in the *Highway Runoff Manual*.

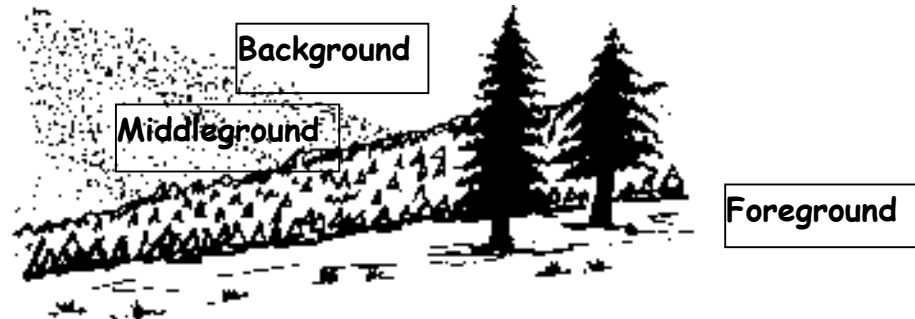
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<sup>49</sup> Ibid, p. 561.

<sup>50</sup> Ibid, p. 561.

<sup>51</sup> Endangered Species Act, 1973

**texture** The visual interplay of light and shadow created by variations in the surface of an object. Grain or nap of a landscape or a repetitive pattern of tiny forms. Visual texture can range from smooth to coarse as seen in the sketch below.



**Figure 500.1 Texture**

**threatened species** Any species of plant or animal that is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.<sup>52</sup>

**tilth** The physical condition of soil as related to its ease of tillage, fitness as a seedbed, and ease of seedling emergence and root penetration.<sup>53</sup>

**topsoil** The original or present, dark-colored, upper soil that ranges from a few millimeters to a meter thick at different locations.<sup>54</sup>

**Total Suspended Solids (TSS)** The entire weight of organic and inorganic particles dispersed in a volume of water, expressed in milligrams per liter (mg/L).

**traffic barrier** Any type of longitudinal barrier, including bridge rails, guardrails, earthen berms, or impact attenuators used to redirect vehicles from hazards located within the Design Clear Zone; to prevent median crossovers; to prevent errant vehicles from going over the side of a bridge structure; or to protect workers, pedestrians, or bicyclists from vehicular traffic.

**translational failure** a slide mass that displaces along a planar or undulating surface of rupture and slides out over the original ground surface. Translational slides frequently grade into

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<sup>52</sup> ESA, 1973

<sup>53</sup> Ibid, p. 570.

<sup>54</sup> Ibid, p. 570.

flows or spreads. Generally, translational slides are relatively shallower than rotational slides.<sup>55</sup>

**traveler information** Commercial and non-commercial information that informs and orients the traveling public. Examples include access information for food, gas, lodging, local attractions, regional tourist attractions, roadway conditions, and construction schedules.

**tuber** A swollen, usually underground stem, such as the potato, bearing buds from which new plant shoots arise.

**turbidity** The visual clarity of the water as measured in Nephelometric Turbidity Units (NTUs). The turbidity, or clarity, of surface streams is an important determinant of its condition and productivity. Turbidity in water is caused by suspended and colloidal matter, such as clay, silt, organic and inorganic matter, and microorganisms. Turbidity does not settle out of water in a reasonable time period. The turbidity of drinking water is less than 1 NTU, while the turbidity of stream water can vary from fewer than 10 NTUs to greater than a few hundred NTUs.

**unity** Landscape with a quality or state of being made whole or a condition of harmony.

**“unsuitable soils”** Generally organic soils that are not appropriate for engineering functions. These soils might be ideal for roadside restoration and revegetation functions.

**vicinity zones** Areas on the National Highway System and on Scenic and Recreational Highways that need a safety rest area or roadside park facility in order to meet WSDOT service objectives.

**view** Something that is looked toward or kept in sight, especially a broad landscape or panorama. Act of looking toward an object or scene

**visitor information center** A staffed or non staffed facility that displays and dispenses free tourist and travel maps and brochures.

**vista** A confined view, especially one seen through a long passage, as between rows of trees or down a canyon. A vista often focuses upon a specific feature in the landscape.

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<sup>55</sup> Turner & Schuster.

***Volunteer Refreshment Program*** A program that allows non-profit service organizations to serve refreshments to the traveling public on a donation basis.

***water bars*** Small logs, or concrete barriers, usually less than 15cm in diameter, placed along a trail or slope to intercept the downhill flow of precipitation and direct it to a desired location.

***water quality standards*** The discharge of polluted waters to waters of the state is a violation of the Washington State Water Pollution Control Law (RCW 90.48.080). Ecology establishes surface water quality standards (WAC 173-021A) as required by the Environmental Protection Agency (EPA). These standards are intended to protect surface waters of the state for beneficial uses including: public health, enjoyment, and the propagation and protection of fish, shellfish, and wildlife. State water quality criteria are defined for classifications of waters and include turbidity, fecal coliforms, dissolved oxygen, temperature, and pH. All water discharged from construction sites shall meet the water quality standards for turbidity at the discharge point into the surface water resource. There is not a “dilution” or “mixing zone.” Turbidity shall not exceed 5 NTUs over the water resource’s turbidity when the water resource’s turbidity is 50 NTUs or less, or have more than a 10 percent increase in turbidity when the water resource’s turbidity is more than 50 NTUs.

***watershed*** An area of land surface defined by a topographic divide that collects precipitation into a stream or river. Sometimes referred to as a drainage basin.

***wattle*** A length of straw contained in a sausage-shaped netting. These are biodegradable and are generally buried to half their depth along the contour to slow water flow and trap sediment.

***weed*** Any plant growing in a location in which it is not desired. A plant growing out of place.

***wetland*** Wetlands are defined under the Clean Water Act as “those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes,

bogs, and similar areas.” Areas do not need to have surface water throughout the year to qualify as wetlands.<sup>56</sup>

**wetland banking** A form of compensatory mitigation where typically a large mitigation site is developed using creation and/or restoration. This is developed in advance of project wetland impacts. Credit is withdrawn from the bank to compensate for unavoidable wetland impacts. This is generally accomplished through a written agreement signed by regulatory agencies governing the use of the bank.

**wetland buffer** The area adjacent to a wetland that serves to protect the wetland from outside influences. Wetland buffers also contribute to the integral functions of the wetland. Regulated buffer widths vary depending upon the quality of the wetland and guidelines established by the local jurisdiction under the state Growth Management Act. Required buffer widths will be identified in the project’s wetland/biology report. Wetland buffers must be shown on contract plans sheets. No work may occur within an identified wetland buffer area unless it has been approved by the appropriate permitting agency.

**wetland functions** The physical, chemical, and biological processes that can be attributed to a wetland ecosystem. Wetland functions are generally grouped into three categories: (1) *habitat* (providing the factors and conditions necessary to support wetland-dependent species); (2) *water quality* (improving the quality of downstream surface and groundwaters through the uptake of contaminants, sediment retention, nutrient retention, supply, and so forth); (3) *hydrology* (moderating surface and groundwater flows, including flood attenuation, maintenance of base flow, and so forth).<sup>57</sup>

**wildflowers** Native flowering plants including flowering forbes, shrubs and trees.

**wildlife** Any undomesticated animals, including vertebrates and invertebrates.

**xeriscape** A landscaping concept based on water conservation through the use of plant materials and techniques appropriate for dry climates or site conditions.

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<sup>56</sup> Clean Water Act, 1972

<sup>57</sup> Transportation Research Board. *Report 370: Guidelines for the Development of Wetland Replacement Areas*. Washington, D.C.: National Academy Press, 1996. pp 71-8.

