# APPENDIX 1 - Minimum Technical Requirements for New Development and Redevelopment

## Section 1. Exemptions

Unless otherwise indicated in this section, the practices described in this section are exempt from the Minimum Requirements, even if such practices meet the definition of new development or redevelopment.

### Forest Practices

Forest practices regulated under Title 222 WAC, except for Class IV-General forest practices that are conversions from timberland to other uses, are exempt from the provisions of the Minimum Requirements.

### Commercial Agriculture

Commercial agriculture practices involving working the land for production are generally exempt. However, the conversion from timberland to agriculture, and the construction of impervious surfaces are not exempt.

### Oil and Gas Field Activities or Operations

Construction of drilling sites, waste management pits, and access roads, as well as construction of transportation and treatment infrastructure such as pipelines, natural gas treatment plants, natural gas pipeline compressor stations, and crude oil pumping stations are exempt. Operators are encouraged to implement and maintain Best Management Practices to minimize erosion and control sediment during and after construction activities to help ensure protection of surface water quality during storm events.

### Pavement Maintenance

The following pavement maintenance practices are exempt:

- pothole and square cut patching,
- overlaying existing asphalt or concrete pavement with asphalt or concrete without expanding the area of coverage,
- shoulder grading,
- reshaping/regrading drainage systems,
- crack sealing,
- resurfacing with in-kind material without expanding the road prism,
- pavement preservation activities that do not expand the road prism, and
- vegetation maintenance.

The following pavement maintenance practices are not categorically exempt, and are subject to the Minimum Requirements that are triggered when the thresholds identified for new or redevelopment projects are met per Section 3: Applicability of the Minimum Requirements.

- Removing and replacing an asphalt or concrete pavement to base course or lower, or repairing the pavement base: These are considered replaced hard surfaces.
- Extending the pavement edge without increasing the size of the road prism, or paving graveled shoulders: These are considered new hard surfaces.
- Resurfacing by upgrading from dirt to gravel, a bituminous surface treatment ("chip seal"), asphalt, or concrete; upgrading from gravel to chip seal, asphalt, or concrete; or upgrading from chip seal to asphalt or concrete: These are considered new impervious surfaces.

**Underground Utility Projects**

Underground utility projects that replace the ground surface with in-kind material or materials with similar runoff characteristics are only subject to 4.2 Minimum Requirement #2: Construction Stormwater Pollution Prevention Plan (SWPPP).

## Section 2. Definitions Related to Minimum Requirements

***Arterial***

A road or street primarily for through traffic. The term generally includes roads or streets considered collectors. It does not include local access roads which are generally limited to providing access to abutting property. See also RCW 35.78.010, RCW 36.86.070, and RCW 47.05.021.

***Bioretention BMPs***

Engineered facilities that treat stormwater by passing it through a specified soil profile, and either retain or detain the treated stormwater for flow attenuation. Refer to BMP T7.30: Bioretention for Bioretention BMP types and design specifications.

***Certified Erosion and Sediment Control Lead (CESCL)***

An individual who has current certification through an approved erosion and sediment control training program that meets the minimum training standards established by Ecology (see BMP C160: Certified Erosion and Sediment Control Lead). A CESCL is knowledgeable in the principles and practices of erosion and sediment control. The CESCL must have the skills to assess site conditions and construction activities that could impact the quality of stormwater and, the effectiveness of erosion and sediment control measures used to control the quality of stormwater discharges. Certification is obtained through an Ecology approved erosion and sediment control course. Course listings are provided online at Ecology's website.

***Commercial agriculture***

Those activities conducted on lands defined in RCW 84.34.020(2), and activities involved in the production of crops or livestock for commercial trade. An activity ceases to be considered commercial agriculture when the area on which it is conducted is proposed for conversion to a nonagricultural use or has lain idle for more than five years, unless the idle land is registered in a federal or state soils conservation program, or unless the activity is maintenance of irrigation ditches, laterals, canals, or drainage ditches related to an existing and ongoing agricultural activity.

***Converted vegetation (areas)***

The surfaces on a project site where native vegetation, pasture, scrub/shrub, or unmaintained non-native vegetation (e.g., Himalayan blackberry, scotch broom) are converted to lawn or landscaped areas, or where native vegetation is converted to pasture.

***Discharge point***

The location where a discharge leaves the Permittee's MS4 through the Permittee's MS4 facilities/BMPs designed to infiltrate.

***Effective impervious surface***

Those impervious surfaces that are connected via sheet flow or discrete conveyance to a drainage system. Impervious surfaces are considered ineffective if:

1. The runoff is dispersed through at least one hundred feet of native vegetation in accordance with BMP T5.30: Full Dispersion;
2. Residential roof runoff is infiltrated in accordance with BMP T5.10A: Downspout Full Infiltration; or
3. Approved continuous runoff modeling methods indicate that the entire runoff file is infiltrated.

***Erodible or leachable materials***

Wastes, chemicals, or other substances that measurably alter the physical or chemical characteristics of runoff when exposed to rainfall. Examples include erodible soils that are stockpiled, uncovered process wastes, manure, fertilizers, oily substances, ashes, kiln dust, and garbage dumpster leakage.

***Hard surface***

An impervious surface, a permeable pavement, or a vegetated roof.

***Highway***

A main public road connecting towns and cities.

***Impervious surface***

A non-vegetated surface area which either prevents or retards the entry of water into the soil mantle as under natural conditions prior to development. A non-vegetated surface area which causes water to run off the surface in greater quantities or at an increased rate of flow from the flow present under natural conditions prior to development. Common impervious surfaces include, but are not limited to, roof tops, walkways, patios, driveways, parking lots or storage areas, concrete or asphalt paving, gravel roads, packed earthen materials, and oiled, macadam or other surfaces which similarly impede the natural infiltration of stormwater. Open, uncovered retention/detention facilities shall not be considered as impervious surfaces for the purposes of determining whether the thresholds for application of Minimum Requirements are exceeded. Open, uncovered retention/detention facilities shall be considered impervious surfaces for purposes of runoff modeling.

***Land disturbing activity***

Any activity that results in a change in the existing soil cover (both vegetative and nonvegetative) and/or the existing soil topography. Land disturbing activities include, but are not limited to clearing, grading, filling, and excavation. Compaction that is associated with stabilization of structures and road construction shall also be considered a land disturbing activity. Vegetation maintenance practices, including landscape maintenance and gardening, are not considered land-disturbing activity. Stormwater facility maintenance is not considered land disturbing activity if conducted according to established standards and procedures.

***Low Impact Development (LID)***

A stormwater and land use management strategy that strives to mimic pre-disturbance hydrologic processes of infiltration, filtration, storage, evaporation and transpiration by emphasizing conservation, use of on-site natural features, site planning, and distributed stormwater management practices that are integrated into a project design.

***Low Impact Development Best Management Practices (LID BMPs)***

Distributed stormwater management practices, integrated into a project design, that emphasize pre-disturbance hydrologic processes of infiltration, filtration, storage, evaporation and transpiration. LID BMPs include, but are not limited to:

- BMP T7.30: Bioretention,
- BMP T5.14: Rain Gardens,
- BMP T5.15: Permeable Pavements,
- BMP T5.10A: Downspout Full Infiltration,
- BMP T5.10B: Downspout Dispersion Systems,
- BMP T5.10C: Perforated Stub-out Connections
- BMP T5.30: Full Dispersion,
- BMP T5.13: Post-Construction Soil Quality and Depth,
- BMP T5.19: Minimal Excavation Foundations,
- BMP T5.17: Vegetated Roofs, and
- BMP T5.20: Rainwater Harvesting.

***Low Impact Development (LID) Principles***

Land use management strategies that emphasize conservation, use of on-site natural features, and site planning to minimize impervious surfaces, native vegetation loss, and stormwater runoff.

***Maintenance***

Repair and maintenance includes activities conducted on currently serviceable structures, facilities, and equipment that involves no expansion or use beyond that previously existing and results in no significant adverse hydrologic impact. It includes those usual activities taken to prevent a decline, lapse, or cessation in the use of structures and systems. Those usual activities may include replacement of dysfunctional facilities, including cases where environmental permits require replacing an existing structure with a different type structure, as long as the functioning characteristics of the original structure are not changed. One example is the replacement of a

collapsed, fish blocking, round culvert with a new box culvert under the same span, or width, of roadway. In regard to stormwater facilities, maintenance includes assessment to ensure ongoing proper operation, removal of built-up pollutants (i.e., sediments), replacement of failed or failing treatment media, and other actions taken to correct defects as identified in the BMP design guidance within Volume V of the SWMMWW. See also Pavement Maintenance exemptions in Section 1: Exemptions.

***Native vegetation***

Vegetation comprised of plant species, other than noxious weeds, that are indigenous to the coastal region of the Pacific Northwest and which reasonably could have been expected to naturally occur on the site. Examples include trees such as Douglas fir, western hemlock, western red cedar, alder, big-leaf maple, and vine maple; shrubs such as willow, elderberry, salmonberry and salal; and herbaceous plants such as sword fern, foam flower, and fireweed.

***New development***

Land disturbing activities, including Class IV-general forest practices that are conversions from timberland to other uses; structural development, including construction or installation of a building or other structure; creation of hard surfaces; and subdivision, short subdivision and binding site plans, as defined and applied in Chapter 58.17 RCW. Projects meeting the definition of redevelopment shall not be considered new development.

***New impervious surface***

A surface that is:

- changed from a pervious surface to an impervious surface (e.g. resurfacing by upgrading from dirt to gravel, a bituminous surface treatment ("chip seal"), asphalt, concrete, or an impervious structure); or
- upgraded from gravel to chip seal, asphalt, concrete, or an impervious structure; or
- upgraded from chip seal to asphalt, concrete, or an impervious structure.

  Note that if asphalt or concrete has been overlaid by a chip seal, the existing condition should be considered as asphalt or concrete.

***On-site stormwater management BMPs***

As used in this appendix, a synonym for Low Impact Development BMPs.

***Outfall***

A point source as defined by 40 CFR 122.2 at the point where a discharge leaves the Permittee's MS4 and enters a surface receiving waterbody or surface receiving waters. Outfall does not include pipes, tunnels, or other conveyances which connect segments of the same stream or other surface waters and are used to convey primarily surface waters (i.e., culverts).

***Permeable pavement***

Pervious concrete, porous asphalt, permeable pavers, or other forms of pervious or porous paving material intended to allow passage of water through the pavement section. It often includes an aggregate base that provides structural support and acts as a stormwater reservoir.

***Pervious Surface***

Any surface material that allows stormwater to infiltrate into the ground. Examples include lawn, landscape, pasture, native vegetation areas, and permeable pavements.

***Pollution-generating hard surface (PGHS)***

Those hard surfaces considered to be a significant source of pollutants in stormwater runoff. See the listing of surfaces under pollution-generating impervious surface.

***Pollution-generating impervious surface (PGIS)***

Those impervious surfaces considered to be a significant source of pollutants in stormwater runoff. Such surfaces include those which are subject to any of the following:

- vehicular use;
- industrial activities (as further defined in the glossary of the SWMMWW);
- storage of erodible or leachable materials, wastes, or chemicals, and which receive direct rainfall or the run-on or blow-in of rainfall;
- metal roofs unless they are coated with an inert, non-leachable material (e.g., baked-on enamel coating); or
- roofs that are subject to venting significant amounts of dusts, mists, or fumes from manufacturing, commercial, or other indoor activities.

***Pollution-generating pervious surface (PGPS)***

Any pervious surface subject to any of the following:

- vehicular use,
- industrial activities (as further defined in the glossary of the SWMMWW);
- storage of erodible or leachable materials, wastes or chemicals, and that receive direct rainfall or run-on or blow-in of rainfall,
- use of pesticides and fertilizers, or
- loss of soil.

Typical PGPS include permeable pavement subject to vehicular use, lawns and landscaped areas including: golf courses, parks, cemeteries, and sports fields (natural and artificial turf).

***Pre-developed condition***

The native vegetation and soils that existed at a site prior to the influence of Euro-American settlement. The pre-developed condition shall be assumed to be forested land cover unless reasonable, historic information is provided that indicates the site was prairie prior to settlement.

***Project***

Any proposed action to alter or develop a site.

***Project site***

That portion of a property, properties, or right of way subject to land disturbing activities, new hard surfaces, or replaced hard surfaces.

***Rain garden***

A non-engineered shallow landscaped depression, with compost-amended native soils and adapted plants. The depression is designed to pond and temporarily store stormwater runoff from adjacent areas, and to allow stormwater to pass through the amended soil profile. See BMP T5.14: Rain Gardens.

***Receiving waterbody or receiving waters***

Naturally and/or reconstructed naturally occurring surface water bodies, such as creeks, streams, rivers, lakes, wetlands, estuaries, and marine waters, or groundwater, to which a MS4 discharges.

***Redevelopment***

On a site that is already substantially developed (i.e., has 35% or more of existing hard surface coverage), the creation or addition of hard surfaces; the expansion of a building footprint or addition or replacement of a structure; structural development including construction, installation or expansion of a building or other structure; replacement of hard surface that is not part of a routine maintenance activity; and land disturbing activities.

***Replaced hard surface***

For structures, the removal and replacement of hard surfaces down to the foundation. For other hard surfaces, the removal down to bare soil or base course and replacement.

***Replaced impervious surface***

For structures, the removal and replacement of impervious surfaces down to the foundation. For other impervious surfaces, the removal down to bare soil or base course and replacement.

***Site***

The area defined by the legal boundaries of a parcel or parcels of land that is (are) subject to new development or redevelopment. For road projects, the length of the project site and the right-of-way boundaries define the site.

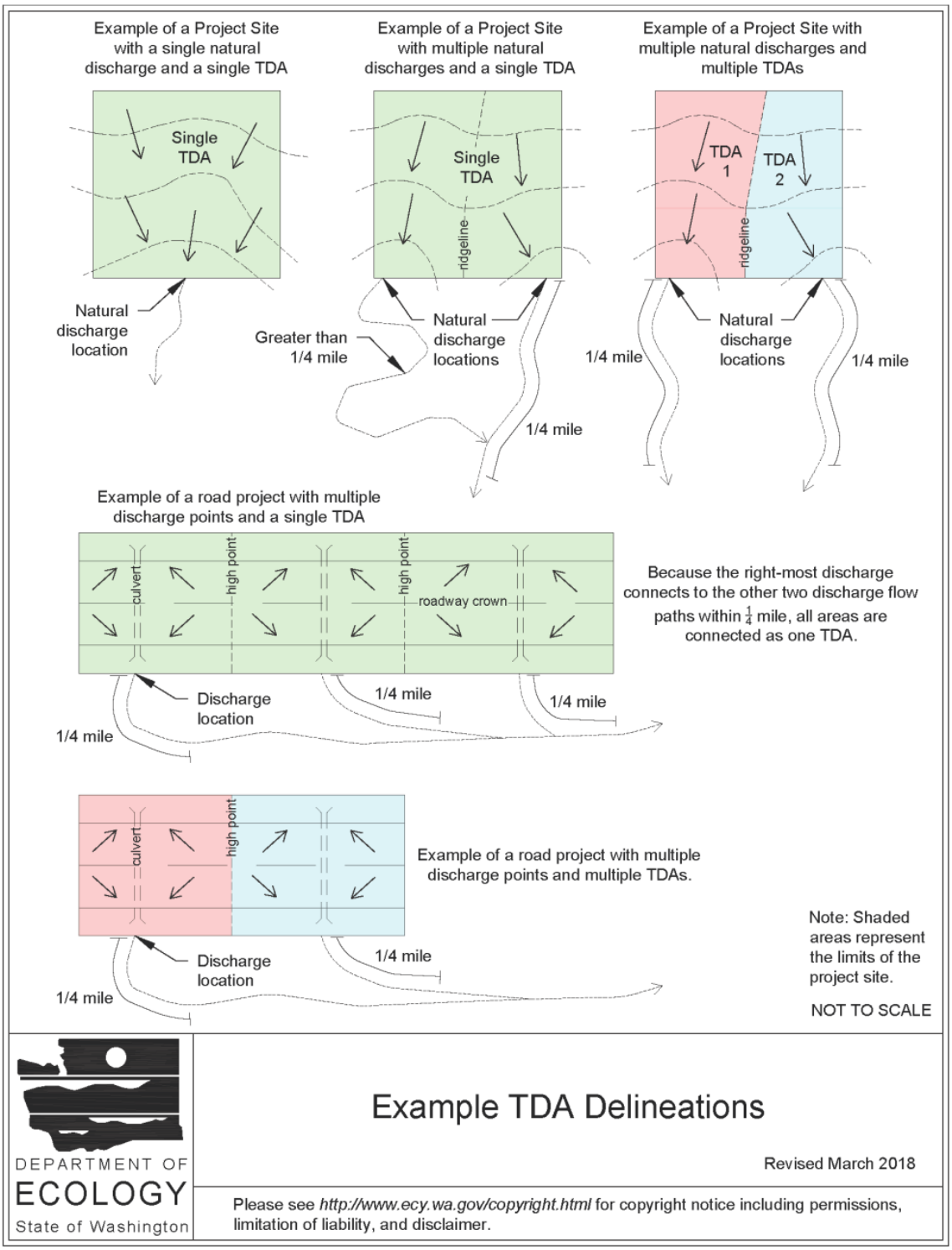
***Source control BMP***

A structure or operation intended to prevent pollutants from coming into contact with stormwater through physical separation of areas or careful management of activities that are sources of pollutants. The SWMMWW separates source control BMPs into two types. *Structural Source Control BMPs* are physical, structural, or mechanical devices or facilities that are intended to prevent pollutants from entering stormwater. *Operational Source Control BMPs* are non-structural practices that prevent or reduce pollutants from entering stormwater. See Volume IV of the SWMMWW for details.

***Threshold Discharge Area***

An area within a project site draining to a single natural discharge location or multiple natural discharge locations that combine within one-quarter mile downstream (as determined by the shortest flowpath). The examples in Figure 1: Example TDA Delineations below illustrate this definition. The purpose of this definition is to clarify how the thresholds of this appendix are applied to project sites with multiple discharge points***.***

**Figure 1: Example TDA Delineations**



***Vehicular Use***

Regular use of an impervious or pervious surface by motor vehicles. The following are subject to regular vehicular use:

- roads,
- un-vegetated road shoulders,
- bike lanes within the traveled lane of a roadway,
- driveways,
- parking lots,
- unrestricted access fire lanes,
- vehicular equipment storage yards, and
- airport runways.

The following are not considered subject to regular vehicular use:

- sidewalks not subject to drainage from roads for motor vehicles,
- paved bicycle pathways separated from and not subject to drainage from roads for motor vehicles,
- restricted access fire lanes, and
- infrequently used maintenance access roads.

***Wetlands***

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. Wetlands do not include those artificial wetlands intentionally created from non-wetland sites, including, but not limited to, irrigation and drainage ditches, grass-lined swales, canals, detention facilities, wastewater treatment facilities, farm ponds, and landscape amenities, or those wetlands created after July 1, 1990, that were unintentionally created as a result of the construction of a road, street, or highway. Wetlands may include those artificial wetlands intentionally created from non-wetland areas to mitigate the conversion of wetlands.

# Section 3. Applicability of the Minimum Requirements

## 3.1 Minimum Requirement Thresholds

Not all of the Minimum Requirements apply to every new development or redevelopment project. The applicability varies depending on the project type and size. This section identifies thresholds that determine the applicability of the Minimum Requirements to projects. Use the flow charts in Figure 2: Flow Chart for Determining Whether the Permittee Must Regulate the Project, Figure 3: Flow Chart for Determining Requirements for New Development, and Figure 4: Flow Chart for Determining Requirements for Redevelopment to determine which of the Minimum Requirements apply. The Minimum Requirements themselves are presented in Section 4: Minimum Requirements.

Use the thresholds in Sections 3.2 and 3.3 at the time of application for a subdivision, plat, short plat, building permit, or other construction permit. The plat or short plat approval shall identify all stormwater BMPs that are required for each lot. For projects involving only land disturbing activities, (e.g., clearing or grading), the thresholds apply at the time of application for the permit allowing or authorizing that activity. Note the exemption in Section 1: Exemptions for Forest Practices other than Class IV General.

**Figure 2: Flow Chart for Determining Whether the Permittee Must Regulate the Project**

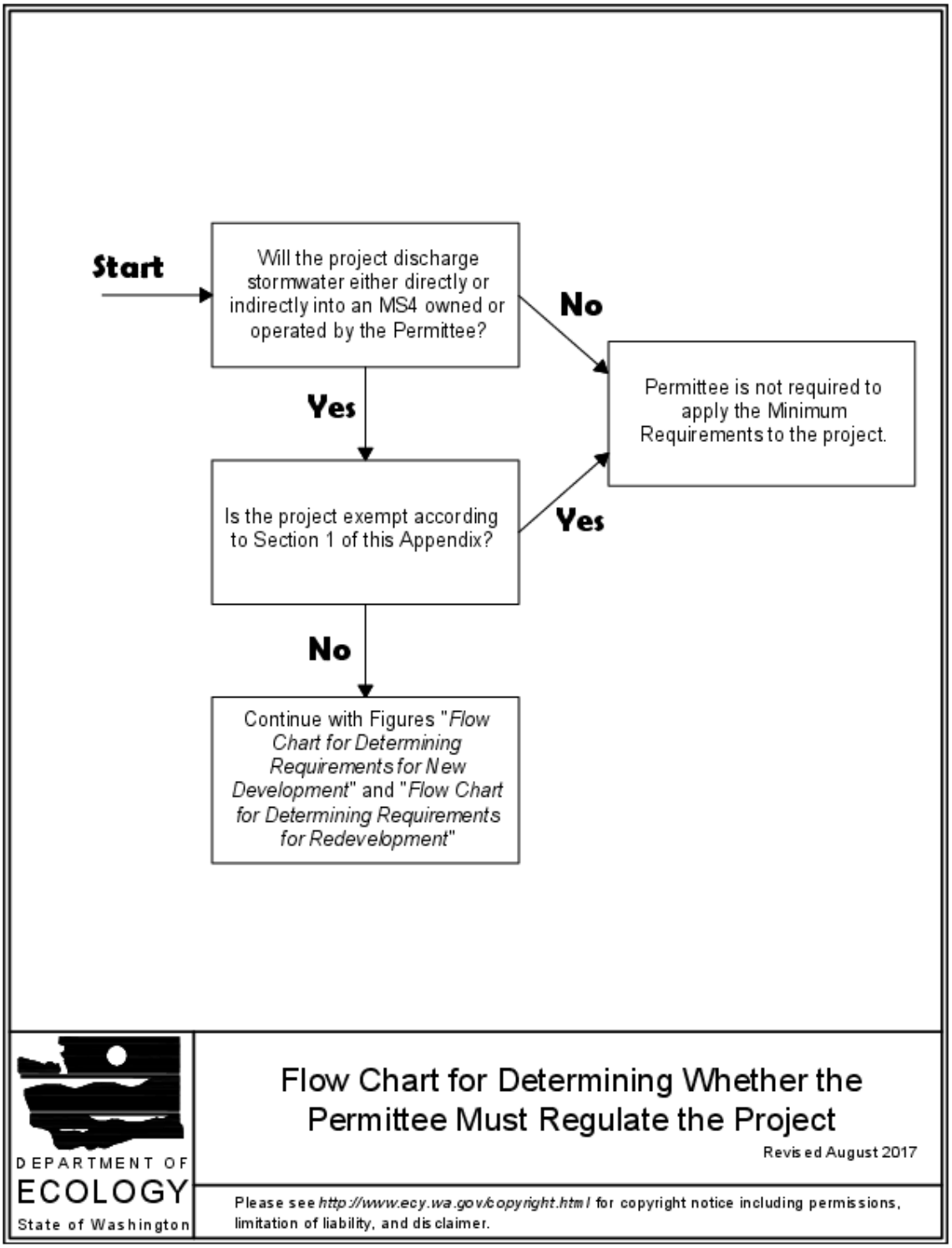


**Figure 3: Flow Chart for Determining Requirements for New Development**

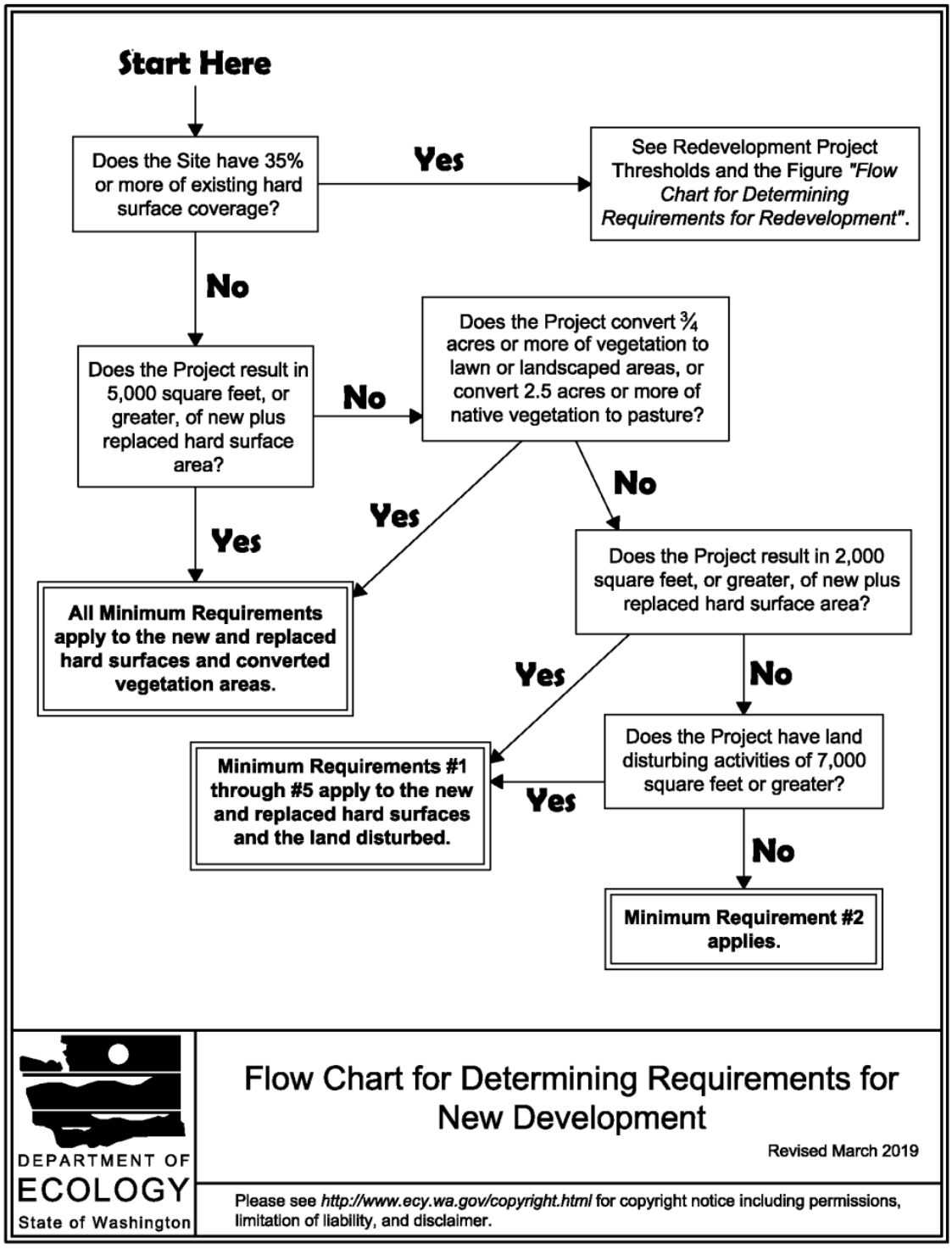
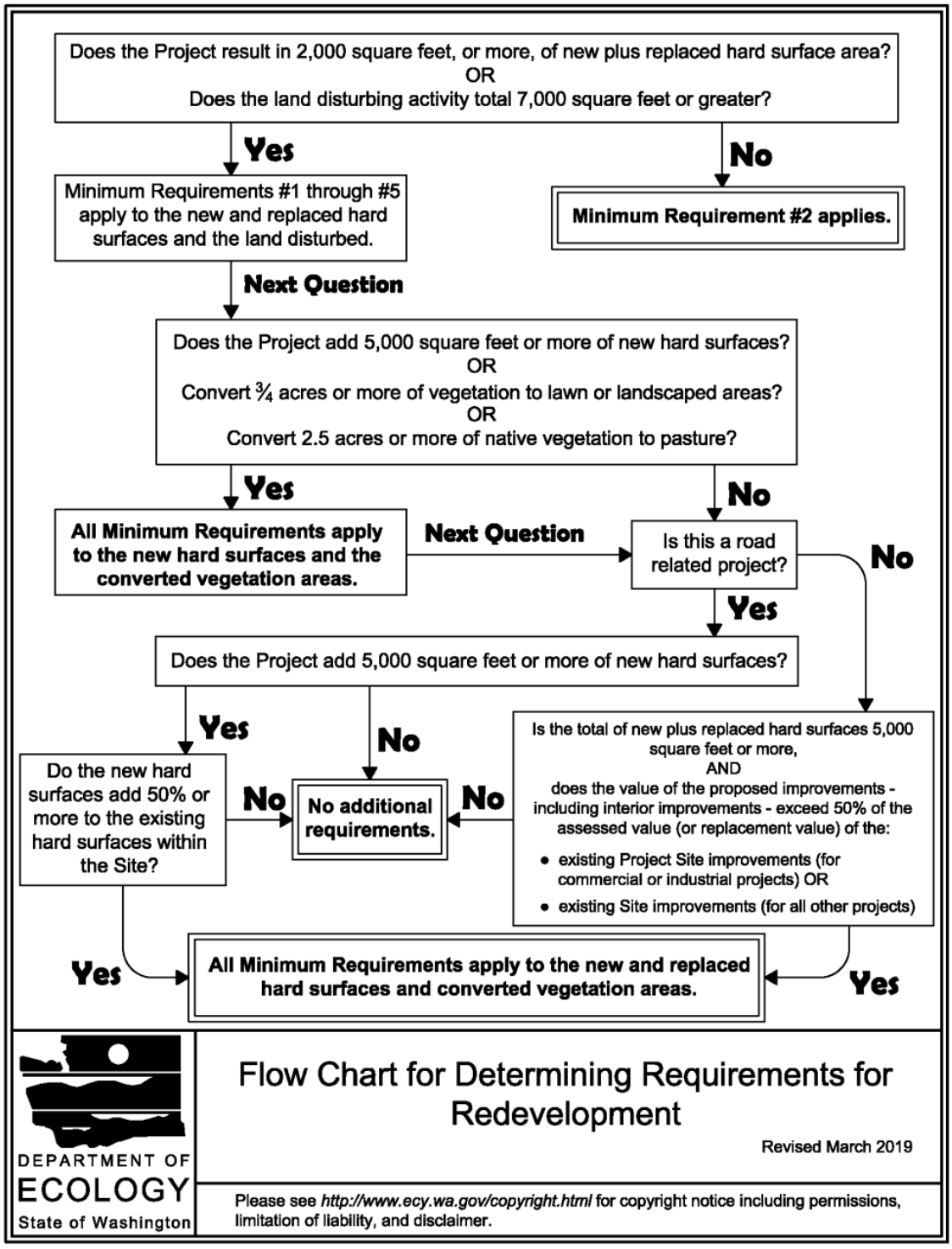


**Figure 4: Flow Chart for Determining Requirements for Redevelopment**



## 3.2 New Development Project Thresholds

All new development shall be required to comply with Minimum Requirement #2.

The following new development shall comply with Minimum Requirements #1 through #5 for the new and replaced hard surfaces and the land disturbed:

- Results in 2,000 square feet, or greater, of new plus replaced hard surface area, or
- Has land disturbing activity of 7,000 square feet or greater.

The following new development shall comply with Minimum Requirements #1 through #9 for the new and replaced hard surfaces and the converted vegetation areas:

- Results in 5,000 square feet, or greater, of new plus replaced hard surface area, or
- Converts ¾ acres, or more, of vegetation to lawn or landscaped areas, or
- Converts 2.5 acres, or more, of native vegetation to pasture.

## 3.3 Redevelopment Project Thresholds

All redevelopment shall be required to comply with Minimum Requirement #2.

The following redevelopment shall comply with Minimum Requirements #1 through #5 for the new and replaced hard surfaces and the land disturbed:

- Results in 2,000 square feet or more, of new plus replaced hard surface area, or
- Has land disturbing activity of 7,000 square feet or greater.

The following redevelopment shall comply with Minimum Requirements #1 through #9 for the new hard surfaces and converted vegetation areas:

- Adds 5,000 square feet or more of new hard surfaces or,
- Converts ¾ acres, or more, of vegetation to lawn or landscaped areas, or
- Converts 2.5 acres, or more, of native vegetation to pasture.

The local government may allow the Minimum Requirements to be met for an equivalent (flow and pollution characteristics) area. The equivalent area may be within the same TDA. If the equivalent area is outside the TDA, or off-site, the equivalent area must drain to the same receiving water and the guidance for equivalent facilities using in-basin transfers must be followed, as detailed in *I-D.6 Regional Facility Area Transfers* in the SWMMWW. The Permittee is responsible for maintaining tracking records for all area transfers approved by the Permittee.

## 3.4 Additional Requirements for Redevelopment

Road-related projects shall comply with all the Minimum Requirements for the new and replaced hard surfaces (including pavement, shoulders, curbs, and sidewalks) and the converted vegetation areas if the new hard surfaces total 5,000 square feet or more and total 50% or more of the existing hard surfaces within the site.

Other types of redevelopment projects shall comply with all the Minimum Requirements for the new and replaced hard surfaces and the converted vegetation areas if:

- the total of new plus replaced hard surfaces is 5,000 square feet or more, and
- For commercial or industrial projects: the valuation of the proposed improvements, including interior improvements, exceeds 50% of the assessed value of the existing Project Site improvements.
- For all other projects: the valuation of the proposed improvements, including interior improvements, exceeds 50% of the assessed value of the existing Site improvements.

The Permittee may exempt or institute a stop-loss provision for redevelopment projects from compliance with Minimum Requirement #5, #6, #7, and/or #8 as applied to the replaced hard surfaces if the Permittee has adopted a plan and a schedule that fulfills those requirements in regional facilities.

The Permittee may grant a variance/exception to the application of Minimum Requirement #7 to replaced impervious surfaces if such application imposes a severe economic hardship. See Section 6: Exceptions/Variances.

## SECTION 4. MINIMUM REQUIREMENTS

This Section describes the Minimum Requirements for stormwater management at new development and redevelopment sites. Section 3: Applicability of the Minimum Requirements, should be consulted to determine which of the Minimum Requirements apply to any given project. Figure 3: Flow Chart for Determining Requirements for New Development and Figure 4: Flow Chart for Determining Requirements for Redevelopment, should be consulted to determine whether the Minimum Requirements apply to new surfaces, replaced surfaces, or new and replaced surfaces.

### 4.1 Minimum Requirement #1: Preparation of Stormwater Site Plans

The Permittee shall require a Stormwater Site Plan from all projects meeting the thresholds in Section 3.1 of this Appendix. Stormwater Site Plans shall use site-appropriate development principles, as required and encouraged by local development codes, to retain native vegetation and minimize impervious surfaces to the extent feasible. Stormwater Site Plans shall be prepared in accordance with the guidance in *III-3 Stormwater Site Plans* in the SWMMWW.

### 4.2 Minimum Requirement #2: Construction Stormwater Pollution Prevention Plan (SWPPP)

Permittees may choose to allow compliance with this Minimum Requirement to be achieved for an individual site if the site is covered under and fully implementing the requirements of Ecology's *Construction Stormwater General Permit - National Pollutant Discharge Elimination System (NPDES) and State Waste Discharge General Permit for Stormwater Discharges Associated with Construction Activity*.

**Project Thresholds**

All new development and redevelopment projects are responsible for preventing erosion and discharge of sediment and other pollutants into receiving waters.

Permittees must require a Construction Stormwater Pollution Prevention Plan (SWPPP) for all projects which result in 2,000 sq. ft. or more of new plus replaced hard surface area, or which disturb 7,000 sq. ft. or more of land.

Projects below those thresholds (listed above) are not required to prepare a Construction SWPPP, but must consider all of the Construction SWPPP Elements (listed below) and develop controls for all Construction SWPPP Elements that pertain to the project site. The Permittee may develop an abbreviated Construction SWPPP format to meet the Construction SWPPP requirement under this permit for project sites that will disturb less than 1 acre.

**General Requirements**

The Construction SWPPP shall include a narrative and drawings. All BMPs shall be clearly referenced in the narrative and marked on the drawings. The Construction SWPPP narrative shall include documentation to explain and justify the pollution prevention decisions made for the project. Each of the 13 Construction SWPPP Elements (listed below) must be considered and included in the Construction SWPPP unless site conditions render the Element unnecessary and the exemption from that Element is clearly justified in the narrative of the SWPPP.

Clearing and grading activities for developments shall be permitted only if conducted pursuant to an approved site development plan (e.g., subdivision approval) that establishes permitted areas of clearing, grading, cutting, and filling. These permitted clearing and grading areas and any other areas required to preserve critical or sensitive areas, buffers, native growth protection easements, or tree retention areas as may be required by local jurisdictions, shall be delineated on the site plans and the development site.

The Construction SWPPP shall be implemented beginning with initial land disturbance and until final stabilization. Sediment and Erosion control BMPs shall be consistent with the BMPs contained in *II-3 Construction Stormwater BMPs* in the SWMMWW.

Seasonal Work Limitations: From October 1 through April 30, clearing, grading, and other soil disturbing activities may only be authorized by the Permittee if silt-laden runoff will be prevented from leaving the site through a combination of the following:

1. Site conditions including existing vegetative coverage, slope, soil type and proximity to receiving waters; and
2. Limitations on activities and the extent of disturbed areas; and
3. Proposed erosion and sediment control measures.

Based on the information provided and/or local weather conditions, the Permittee may expand or restrict the seasonal limitation on site disturbance.

The following activities are exempt from the seasonal clearing and grading limitations:

1. Routine maintenance and necessary repair of erosion and sediment control BMPs,
2. Routine maintenance of public facilities or existing utility structures that do not expose the soil or result in the removal of the vegetative cover to soil, and
3. Activities where there is one hundred percent infiltration of surface water runoff within the site in approved and installed erosion and sediment control facilities.

## Construction SWPPP Elements

### *Element 1: Preserve Vegetation / Mark Clearing Limits*

a. Before beginning land disturbing activities, including clearing and grading, clearly mark all clearing limits, sensitive areas and their buffers, and trees to be preserved within the construction area.

b. Retain the duff layer, native top soil, and natural vegetation in an undisturbed state to the maximum degree practicable.

### *Element 2: Establish Construction Access*

a. Limit construction vehicle access and exit to one route, if possible.

b. Stabilize access points with a pad of quarry spalls, crushed rock, or other equivalent BMPs, to minimize tracking of sediment onto public roads.

c. Locate wheel wash or tire baths on site, if the stabilized construction entrance is not effective in preventing tracking sediment onto roads.

d. If sediment is tracked off site, clean the affected roadway(s) thoroughly at the end of each day, or more frequently as necessary (for example, during wet weather). Remove sediment from roads by shoveling, sweeping, or picking up and transporting the sediment to a controlled sediment disposal area.

e. Conduct street washing only after sediment is removed in accordance with 2.d (above).

f. Control street wash wastewater by pumping back on site, or otherwise prevent it from discharging into systems tributary to waters of the State.

### *Element 3: Control Flow Rates*

a. Protect properties and waterways downstream of development sites from erosion and the associated discharge of turbid waters due to increases in the velocity and peak volumetric flow rate of stormwater runoff from the project site.

b. Where necessary to comply with 3.a (above), construct stormwater infiltration or detention BMPs as one of the first steps in grading. Assure that detention BMPs function properly before constructing site improvements (e.g., impervious surfaces).

c. If permanent infiltration BMPs are used for temporary flow control during construction, protect these BMPs from siltation during the construction phase.

### *Element 4: Install Sediment Controls*

Design, install, and maintain effective erosion controls and sediment controls to minimize the discharge of pollutants.

a. Construct sediment control BMPs (sediment ponds, traps, filters, etc.) as one of the first steps in grading. These BMPs must be functional before other land disturbing activities take place.

b. Minimize sediment discharges from the site. The design, installation and maintenance of erosion and sediment controls must address factors such as the amount, frequency, intensity and duration of precipitation, the nature of resulting stormwater runoff, and soil characteristics, including the range of soil particle sizes expected to be present on the site.

c. Direct stormwater runoff from disturbed areas through BMP C241: Sediment Pond or other appropriate sediment removal BMP, before the runoff leaves a construction site or before discharge to an infiltration facility. Runoff from fully stabilized areas may be discharged without a sediment removal BMP, but must control flow rates per Element 3: Control Flow Rates.

d. Locate BMPs intended to trap sediment on site in a manner to avoid interference with the

movement of juvenile salmonids attempting to enter off-channel areas or drainages.

e. Provide and maintain natural buffers around surface waters, direct stormwater to vegetated areas to increase sediment removal and maximize stormwater infiltration, unless infeasible.

f. Where feasible, design outlet structures that withdraw impounded stormwater from the surface to avoid discharging sediment that is still suspended lower in the water column.

***Element 5: Stabilize Soils***

a. Stabilize exposed and unworked soils by application of effective BMPs that prevent erosion. Applicable BMPs include, but are not limited to: temporary and permanent seeding, sodding, mulching, plastic covering, erosion control fabrics and matting, soil application of polyacrylamide (PAM), the early application of gravel base on areas to be paved, and dust control.

b. Control stormwater volume and velocity within the site to minimize soil erosion.

c. Control stormwater discharges, including both peak flow rates and total stormwater volume, to minimize erosion at outlets and to minimize downstream channel and stream bank erosion.

d. Soils must not remain exposed and unworked for more than the time periods set forth below to prevent erosion:

- During the dry season (May 1 - September 30): 7 days
- During the wet season (October 1 - April 30): 2 days

e. Stabilize soils at the end of the shift before a holiday or weekend if needed based on the weather forecast.

f. Stabilize soil stockpiles from erosion, protect with sediment trapping measures, and where possible, locate away from storm drain inlets, waterways and drainage channels.

g. Minimize the amount of soil exposed during construction activity.

h. Minimize the disturbance of steep slopes.

i. Minimize soil compaction and, unless infeasible, preserve topsoil.

***Element 6: Protect Slopes***

a. Design and construct cut-and-fill slopes in a manner to minimize erosion. Applicable practices include, but are not limited to, reducing continuous length of slope with terracing and diversions, reducing slope steepness, and roughening slope surfaces (for example, track walking).

b. Divert off-site stormwater (run-on) or groundwater away from slopes and disturbed areas with interceptor dikes, pipes and/or swales. Off-site stormwater should be managed separately from stormwater generated on site.

c. At the top of slopes, collect drainage in pipe slope drains or protected channels to prevent erosion. Temporary pipe slope drains must be sized to convey the flow rate calculated by one of the following methods:

- Single Event Hydrograph Method: The peak volumetric flow rate calculated using a 10-minute time step from a Type 1A, 10-year, 24-hour frequency storm.

  ***OR***

- Continuous Simulation Method: The 10-year peak flow rate, as determined by an approved continuous runoff model with a 15-minute time step.

The hydrologic analysis must use the existing land cover condition for predicting flow rates from tributary areas outside the project limits. For tributary areas on the project site, the analysis must

use the temporary or permanent project land cover condition, whichever will produce the highest flow rates. If using the Western Washington Hydrology Model (WWHM) to predict flows, bare soil areas should be modeled as "landscaped" area.

d. Place excavated material on the uphill side of trenches, consistent with safety and space considerations.

e. Place check dams at regular intervals within constructed channels that are cut down a slope.

***Element 7: Protect Drain Inlets***

a. Protect all storm drain inlets made operable during construction so that stormwater runoff does not enter the conveyance system without first being filtered or treated to remove sediment.

b. Clean or remove and replace inlet protection devices when sediment has filled one-third of the available storage (unless a different standard is specified by the product manufacturer).

***Element 8: Stabilize Channels and Outlets***

a. Design, construct, and stabilize all on-site conveyance channels to prevent erosion from the flow rate calculated by one of the following methods:

- Single Event Hydrograph Method: The peak volumetric flow rate calculated using a 10-minute time step from a Type 1A, 10-year, 24-hour frequency storm.

  ***OR***

- Continuous Simulation Method: The 10-year peak flow rate, as determined by an approved continuous runoff model with a 15-minute time step.

The hydrologic analysis must use the existing land cover condition for predicting flow rates from tributary areas outside the project limits. For tributary areas on the project site, the analysis must use the temporary or permanent project land cover condition, whichever will produce the highest flow rates. If using the Western Washington Hydrology Model (WWHM) to predict flows, bare soil areas should be modeled as "landscaped" area.

b. Provide stabilization, including armoring material, adequate to prevent erosion of outlets, adjacent stream banks, slopes and downstream reaches at the outlets of all conveyance systems.

***Element 9: Control Pollutants***

Design, install, implement and maintain effective pollution prevention measures to minimize the discharge of pollutants. The project proponent must:

a. Handle and dispose of all pollutants, including waste materials and demolition debris that occur on site in a manner that does not cause contamination of stormwater.

b. Provide cover, containment, and protection from vandalism for all chemicals, liquid products, petroleum products, and other materials that have the potential to pose a threat to human health or the environment. On-site fueling tanks must include secondary containment. Secondary containment means placing tanks or containers within an impervious structure capable of containing 110% of the volume contained in the largest tank within the containment structure. Double-walled tanks do not require additional secondary containment.

c. Conduct maintenance, fueling, and repair of heavy equipment and vehicles using spill prevention and control measures. Clean contaminated surfaces immediately following any spill incident.

d. Discharge wheel wash or tire bath wastewater to a separate on-site treatment system that prevents discharge to surface water, or to the sanitary sewer, with local sewer district approval.

e. Apply fertilizers and pesticides in a manner and at application rates that will not result in loss of chemical to stormwater runoff. Follow manufacturers' label requirements for application rates and procedures.

f. Use BMPs to prevent contamination of stormwater runoff by pH-modifying sources. The sources for this contamination include, but are not limited to: recycled concrete stockpiles, bulk cement, cement kiln dust, fly ash, new concrete washing and curing waters, waste streams generated from concrete grinding and sawing, exposed aggregate processes, dewatering concrete vaults, concrete pumping and mixer washout waters.

g. Adjust the pH of stormwater if necessary to prevent violations of water quality standards.

h. Assure that washout of concrete trucks is performed off-site or in designated concrete washout areas only. Do not wash out concrete truck drums or concrete handling equipment onto the ground, or into storm drains, open ditches, streets, or streams. Washout of small concrete handling equipment may be disposed of in a formed area awaiting concrete where it will not contaminate surface or groundwater. Do not dump excess concrete on site, except in designated concrete washout areas. Concrete spillage or concrete discharge directly to groundwater or surface waters of the State is prohibited. Do not wash out to formed areas awaiting infiltration BMPs.

i. Obtain written approval from Ecology before using chemical treatment other than $CO_2$, dry ice, or food grade vinegar to adjust pH.

j. Uncontaminated water from water-only based shaft drilling for construction of building, road, and bridge foundations may be infiltrated provided the wastewater is managed in a way that prohibits discharge to surface waters. Prior to infiltration, water from water-only based shaft drilling that comes into contact with curing concrete must be neutralized until pH is in the range of 6.5 to 8.5 (su).

***Element 10: Control Dewatering***

a. Discharge foundation, vault, and trench dewatering water, which have similar characteristics to stormwater runoff at the site, into a controlled conveyance system before discharge to BMP C240: Sediment Trap or BMP C241: Sediment Pond.

b. Discharge clean, non-turbid dewatering water, such as well-point groundwater, to systems tributary to, or directly into surface waters of the State, as specified in Element 8: Stabilize Channels and Outlets, provided the dewatering flow does not cause erosion or flooding of receiving waters. Do not route clean dewatering water through stormwater sediment BMPs. Note that "surface waters of the State" may exist on a construction site as well as off site; for example, a creek running through a site.

c. Handle highly turbid or otherwise contaminated dewatering water separately from stormwater.

d. Other dewatering treatment or disposal options may include:
    i. Infiltration
    ii. Transport off site in a vehicle, such as a vacuum flush truck, for legal disposal in a manner that does not pollute state waters.
    iii. Ecology-approved on-site chemical treatment or other suitable treatment technologies.
    iv. Sanitary or combined sewer discharge with local sewer district approval, if there is no other option.
    v. Use of a sedimentation bag that discharges to a ditch or swale for small volumes of localized dewatering.

***Element 11: Maintain BMPs***

a. Maintain and repair all temporary and permanent erosion and sediment control BMPs as needed to assure continued performance of their intended function in accordance with BMP specifications.

b. Remove all temporary erosion and sediment control BMPs within 30 days after achieving final site stabilization or after the temporary BMPs are no longer needed.

***Element 12: Manage the Project***

a. Phase development projects to the maximum degree practicable and take into account seasonal work limitations.

b. Inspect, maintain and repair all BMPs as needed to assure continued performance of their intended function.

c. Maintain, update, and implement the Construction SWPPP.

d. Projects that disturb one or more acres must have site inspections conducted by a Certified Erosion and Sediment Control Lead (CESCL). Project sites disturbing less than one acre may have a CESCL or a person without CESCL certification conduct inspections. By the initiation of construction, the Construction SWPPP must identify the CESCL or inspector, who must be present on site or on-call at all times.

***Element 13: Protect Low Impact Development BMPs***

The primary purpose of On-Site Stormwater Management is to reduce the disruption of the natural site hydrology through infiltration. BMPs used to meet 4.5 Minimum Requirement #5: On-Site Stormwater Management (often called LID BMPs) are permanent facilities.

a. Protect all LID BMPs (including, but not limited to BMP T7.30: Bioretention, BMP T5.14A: Rain Gardens, and BMP T5.15: Permeable Pavements) from sedimentation through installation and maintenance of erosion and sediment control BMPs on portions of the site that drain into the LID BMPs. Restore the BMPs to their fully functioning condition if they accumulate sediment during construction. Restoring the BMP must include removal of sediment and any sediment-laden Bioretention/Rain Garden soils, and replacing the removed soils with soils meeting the design specification.

b. Maintain the infiltration capabilities of LID BMPs by protecting against compaction by construction equipment and foot traffic. Protect completed lawn and landscaped areas from compaction due to construction equipment.

c. Control erosion and avoid introducing sediment from surrounding land uses onto BMP T5.15: Permeable Pavements. Do not allow muddy construction equipment on the base material or pavement. Do not allow sediment-laden runoff onto permeable pavements or base materials.

d. Permeable pavement fouled with sediments or no longer passing an initial infiltration test must be cleaned using procedures from the local stormwater manual or the manufacturer's procedures.

e. Keep all heavy equipment off existing soils under LID BMPs that have been excavated to final grade to retain the infiltration rate of the soils.

## 4.3 Minimum Requirement #3: Source Control of Pollution

All known, available and reasonable Source Control BMPs must be required for all projects approved by the Permittee. Source Control BMPs must be selected in accordance with *III-1.1 Choosing Your Source Control BMPs*, and designed and maintained in accordance with Volume IV of the SWMMWW.

## 4.4 Minimum Requirement #4: Preservation of Natural Drainage Systems and Outfalls

Natural drainage patterns shall be maintained, and discharges from the Project Site shall occur at the natural location, to the maximum extent practicable. The manner by which runoff is discharged from the Project Site must not cause a significant adverse impact to downstream receiving waters and downgradient properties. All outfalls require energy dissipation.

## 4.5 Minimum Requirement #5: On-Site Stormwater Management

The Permittee must require Stormwater Management BMPs in accordance with the following thresholds, standards, and lists to infiltrate, disperse, and retain stormwater runoff on site to the extent feasible without causing flooding or erosion impacts.

### Compliance Options by Project Type

All projects that require Minimum Requirement #5 (as detailed in Section 3: Applicability of the Minimum Requirements) must employ Stormwater Management BMPs as detailed below. The compliance options for the project depend on the amount of improvements proposed, location of the project, size of the parcel the project is on, and whether or not the project is Flow Control exempt.

Note that the site may contain multiple parcels. The designer may choose different compliance methods for different parcels, depending on the proposed design and options for each parcel as detailed below.

***Projects that Trigger Only Minimum Requirements #1 - #5***

Projects that are not Flow Control exempt that trigger only Minimum Requirements #1 through #5 (per Section 3: Applicability of the Minimum Requirements) shall either:

- Use the LID BMPs from List #1 for all surfaces within each type of surface in List #1;

  ***or***
- Use any Flow Control BMP(s) desired to achieve the LID Performance Standard, and apply BMP T5.13: Post-Construction Soil Quality and Depth.

***Projects that Trigger Minimum Requirements #1 - #9***

Projects that are not Flow Control exempt that trigger Minimum Requirements #1 through #9 (per Section 3: Applicability of the Minimum Requirements) have the compliance options shown in Table 1: Minimum Requirement, #5 Compliance Options for Projects Triggering Minimum Requirements #1 - #9.

**Table 1: Minimum Requirement #5 Compliance Options for Projects Triggering Minimum Requirements #1 - #9**

| Project Location and Parcel Size | Minimum Requirement #5 Compliance Options |
|---|---|
| Projects inside the UGA, on any size parcel | • Use the LID BMPs from List #2 for all surfaces within each type of surface in List #2;<br>or<br>• Use any Flow Control BMPs desired to achieve the LID Performance Standard, and apply BMP T5.13: Post-Construction Soil Quality and Depth. |
| Projects outside the UGA, on a parcel smaller than 5 acres | |
| Projects outside the UGA, on a parcel 5 acres or larger | Use any Flow Control BMPs desired to achieve the LID Performance Standard, and apply BMP T5.13: Post-Construction Soil Quality and Depth. |
| Note: This text refers to the Urban Growth Area (UGA) as designated under the Growth Management Act (GMA) (Chapter 36.70A RCW) of the State of Washington. If the project is located in a county that is not subject to planning under the GMA, the city limits shall be used instead. | |

### *Flow Control Exempt Projects*

Projects qualifying as Flow Control exempt in accordance with the TDA Exemption in 4.7 Minimum Requirement #7: Flow Control shall either:

- Use the LID BMPs from List #3 for all surfaces within each type of surface in List #3;

  **or**
- Use any Flow Control BMP(s) desired to achieve the LID Performance Standard, and apply BMP T5.13: Post-Construction Soil Quality and Depth.

If the project has multiple TDAs, all TDAs must be Flow Control exempt per the TDA Exemption in 4.7 Minimum Requirement #7: Flow Control for the project to use the options listed here.

## Compliance Methods

### *LID Performance Standard*

The LID Performance Standard compliance method for Minimum Requirement #5 requires modeling the proposed Flow Control BMPs to demonstrate the flow reduction as described below.

Stormwater discharges shall match developed discharge durations to pre-developed durations for the range of pre-developed discharge rates from 8% of the 2-year peak flow to 50% of the 2-year peak flow. Refer to the Flow Control Performance Standard Section in 4.7 Minimum Requirement #7: Flow Control, for information about the assignment of the pre-developed condition. Project sites that must also meet 4.7 Minimum Requirement #7 must match flow durations between 8% of the 2-year flow through the full 50-year flow.

Designers selecting this option cannot use BMP T5.14A: Rain Gardens to achieve the LID Performance Standard. They may choose to use BMP T7.30: Bioretention to achieve the LID Performance Standard.

### *The List Approach*

The List Approach compliance method for Minimum Requirement #5 requires evaluating the BMPs in Table 2: The List Approach for MR5 Compliance.

For each surface, evaluate the feasibility of the BMPs in the order listed, and use the first BMP that is considered feasible. The designer must document the site conditions and infeasibility criteria used to deem BMPs infeasible. Once a BMP is deemed feasible and used for a surface, no other BMP from the list is necessary for that surface.

If all BMPs in the list are infeasible, then the designer must document the site conditions and infeasibility criteria used to deem each BMP infeasible. This documentation will demonstrate compliance with Minimum Requirement #5.

Feasibility shall be determined by evaluation against:

- Design criteria, limitations, and infeasibility criteria identified for each BMP in Volume V of the SWMMWW; and
- Competing Needs Criteria as listed in *I-3.4.5 MR5: On-Site Stormwater Management* in the SWMMWW

**Table 2: The List Approach for MR5 Compliance**

| List #1<br>(For MR #1 - #5 Projects That Are Not Flow Control Exempt) | List #2<br>(For MR #1 - #9 Projects That Are Not Flow Control Exempt) | List #3<br>(For Flow Control Exempt Projects) |
|---|---|---|
| **Surface Type: Lawn and Landscaped Areas** | | |
| BMP T5.13: Post-Construction Soil Quality and Depth | BMP T5.13: Post-Construction Soil Quality and Depth | BMP T5.13: Post-Construction Soil Quality and Depth |
| **Surface Type: Roofs** | | |
| 1. BMP T5.30: Full Dispersion<br>or<br>BMP T5.10A: Downspout Full Infiltration | 1. BMP T5.30: Full Dispersion<br>or<br>BMP T5.10A: Downspout Full Infiltration | 1. BMP T5.10A: Downspout Full Infiltration |
| 2. BMP T5.14A: Rain Gardens<br>or<br>BMP T7.30: Bioretention Cells, Swales, and Planter Boxes | 2. BMP T7.30: Bioretention Cells, Swales, and Planter Boxes | 2. BMP T5.10B: Downspout Dispersion Systems |
| 3. BMP T5.10B: Downspout Dispersion Systems | 3. BMP T5.10B: Downspout Dispersion Systems | 3. BMP T5.10C: Perforated Stub-out Connections |
| 4. BMP T5.10C: Perforated Stub-out Connections | 4. BMP T5.10C: Perforated Stub-out Connections | |
| **Surface Type: Other Hard Surfaces** | | |
| 1. BMP T5.30: Full Dispersion | 1. BMP T5.30: Full Dispersion | 1. BMP T5.12: Sheet Flow Dispersion<br>or<br>BMP T5.11: Concentrated Flow Dispersion |
| 2. BMP T5.15: Permeable Pavements<br>or<br>BMP T5.14A: Rain Gardens<br>or<br>BMP T7.30: Bioretention Cells, Swales, and Planter Boxes | 2. BMP T5.15: Permeable Pavements | |
| 3. BMP T5.12: Sheet Flow Dispersion<br>or<br>BMP T5.11: Concentrated Flow Dispersion | 3. BMP T7.30: Bioretention Cells, Swales, and Planter Boxes | |
| | 4. BMP T5.12: Sheet Flow Dispersion<br>or<br>BMP T5.11: Concentrated Flow Dispersion | |

Notes for using the List Approach:

1. Size BMP T5.14A: Rain Gardens and BMP T7.30: Bioretention used in the List Approach to have a minimum horizontal projected surface area below the overflow which is at least 5% of the area draining to it.
2. When the designer encounters BMP T5.15: Permeable Pavements in the List Approach, it is not a requirement to pave these surfaces. Where pavement is proposed, it must be permeable to the extent feasible unless BMP T5.30: Full Dispersion is employed.

## 4.6 Minimum Requirement #6: Runoff Treatment

The Permittee must require Runoff Treatment BMPs in accordance with the following thresholds, standards, and requirements to remove pollutants from stormwater runoff.

### TDA Thresholds

Each TDA within a project that requires Minimum Requirement #6 (as detailed in Section 3: Applicability of the Minimum Requirements) must be reviewed to determine if Runoff Treatment BMPs are required for the TDA to be in compliance with Minimum Requirement #6.

Note that it is possible for a project that requires Minimum Requirement #6 with multiple TDAs to not need Runoff Treatment BMP(s) in one or more individual TDAs. If a TDA does not trigger the TDA threshold for Runoff Treatment BMPs, then the designer must document the areas within the TDA used to determine that the TDA threshold was not met. This documentation will demonstrate compliance with Minimum Requirement #6 for the TDA.

When assessing a TDA against the following thresholds, only consider the types of surfaces (e.g. new hard surfaces, replaced hard surfaces, converted vegetation areas) that are subject to Minimum Requirement #6, per the Project Thresholds in Section 3: Applicability of the Minimum Requirements.

The following TDAs require construction of Runoff Treatment BMPs. If a TDA meets any of the following thresholds, Runoff Treatment BMPs are required. The project proponent must demonstrate that the TDA does not meet either of the following thresholds for Runoff Treatment BMPs to not be required for that TDA.

- TDAs that have a total of 5,000 square feet or more of pollution-generating hard surface (PGHS), ***or***
- TDAs that have a total of 3/4 of an acre or more of pollution-generating pervious surfaces (PGPS) – not including permeable pavements, and from which there will be a surface discharge in a natural or man-made conveyance system from the site.

### Runoff Treatment Performance Goal Thresholds

#### *1. Oil Control*

Oil Control BMPs are required for areas that typically generate high concentrations of oil due to high traffic turnover or the frequent transfer of oil. These types of areas include:

- An area of a commercial or industrial site subject to an expected average daily traffic (ADT) count equal to or greater than 100 vehicles per 1,000 square feet of gross building area, or 300 total trip ends per day.
- An area of a commercial or industrial site subject to petroleum storage and transfer in excess of 1,500 gallons per year, not including routinely delivered heating oil.
- An area of a commercial or industrial site subject to parking, storage or maintenance of 25 or more vehicles that are over 10 tons gross weight (trucks, buses, trains, heavy equipment, etc.).
- A road intersection with a measured ADT count of 25,000 vehicles or more on the main roadway and 15,000 vehicles or more on any intersecting roadway, excluding projects proposing primarily pedestrian or bicycle use improvements.

***2. Phosphorus Treatment***

Phosphorus Treatment BMPs are required for projects (or portions of projects) within watersheds that have been determined by local governments (e.g. through a lake management plan), Ecology (e.g. through a TMDL waste load allocation), or the USEPA to be sensitive to phosphorus and are being managed to control phosphorus. The following are examples of sources that the local government can use for determining whether a water body is sensitive to phosphorus:

- Those waterbodies reported under section 305(b) of the Clean Water Act, and designated as not supporting beneficial uses due to phosphorous or other water quality criteria related to excessive phosphorus;
- Those listed in Washington State's Nonpoint Source Assessment required under section 319(a) of the Clean Water Act due to nutrients.

***3. Enhanced Treatment***

Enhanced Treatment BMPs are required for the types of project sites listed below that:

a. Discharge directly to fresh waters designated for aquatic life use or that have an existing aquatic life use; or

b. Discharge to conveyance systems that are tributary to fresh waters designated for aquatic life use or that have an existing aquatic life use; or

c. Infiltrate stormwater within ¼ mile of a fresh water designated for aquatic life use or that has an existing aquatic life use.

The types of project sites are:

- Industrial project sites,
- Commercial project sites,
- Multifamily residential project sites, and
- High AADT roads as follows:
    - Within Urban Growth Areas:
        - Fully controlled and partially controlled limited access highways with Annual Average Daily Traffic (AADT) counts of 15,000 or more;
        - All other roads with an AADT of 7,500 or greater.
    - Outside of Urban Growth Areas:
        - Roads with an AADT of 15,000 or greater unless the site discharges to a 4th Strahler order stream or larger;
        - Roads with an AADT of 30,000 or greater if the site discharges to a 4th Strahler order stream or larger (as determined using 1:24,000 scale maps to delineate stream order).

The following areas of the above-listed project sites do not require Enhanced Treatment BMPs:

- Areas that discharge directly, or indirectly through a municipal separate storm sewer system, to a water listed in Appendix III-A: *Basic Treatment Receiving Waters* in the SWMMWW.
- Landscaped areas of industrial, commercial, and multi-family project sites that do not involve any other pollution-generating sources (e.g., industrial activities, customer parking, storage of erodible or leachable material, wastes or chemicals).

- Parking lots of industrial and commercial project sites, dedicated solely to parking of employees' private vehicles that do not involve any other pollution-generating sources (e.g., industrial activities, customer parking, storage of erodible or leachable material, wastes or chemicals).

For TDAs with a mix of land use types, Enhanced Treatment BMPs are required when the runoff from the areas subject to the Enhanced Treatment Performance Goal comprises 50% or more of the total runoff from the TDA.

***4. Basic Treatment***

Areas that must provide Phosphorus Treatment BMPs or Enhanced Treatment BMPs do NOT have to provide additional Basic Treatment BMPs to meet the Basic Treatment Performance Goal.

If Phosphorus Treatment BMPs or Enhanced Treatment BMPs are not provided, Basic Treatment BMPs are required before discharging runoff off site through either infiltration or surface flow.

For TDAs with a mix of land use types, Basic Treatment BMPs are required when the runoff from the areas subject to the Basic Treatment Performance Goal comprises 50% or more of the total runoff from the TDA.

## Runoff Treatment BMP Sizing

Size Runoff Treatment BMPs for the entire area that drains to them, even if some of those areas are not pollution-generating, or were not included in the Project Thresholds decisions (See Section 3: Applicability of the Minimum Requirements) or the TDA Thresholds decisions of this Minimum Requirement.

Runoff Treatment BMPs are sized by using either a volume (the Water Quality Design Volume) or a flow rate (the Water Quality Design Flow Rate), depending on the Runoff Treatment BMP selected. Refer to the selected Runoff Treatment BMP to determine whether the BMP is sized based on a volume or a flow rate. See below for details about the Water Quality Design Volume and the Water Quality Design Flow Rate used to size Runoff Treatment BMPs.

***Water Quality Design Volume***

The Water Quality Design Volume may be calculated by either of the following methods:

- *Continuous Simulation Method:* Using an approved continuous runoff model, the Water Quality Design Volume shall be the simulated daily volume that represents the upper limit of the range of daily volumes that accounts for 91% of the entire runoff volume over a multi-decade period of record.
- *Single Event Hydrograph Method:* The Water Quality Design Volume shall be the volume of runoff predicted by the Natural Resource Conservation Service (NRCS) curve number equations (as detailed in *III-2.3 Single Event Hydrograph Method* in the SWMMWW). The precipitation depth used in the equations shall be as predicted from a 24-hour storm with a 6-month return frequency (a.k.a., 6-month, 24-hour storm).

***Water Quality Design Flow Rate***

The Water Quality Design Flow Rate is dependent on the location of the Runoff Treatment BMP relative to Detention BMP(s):

- *Upstream of Detention BMPs or when there are no Detention BMPs:* The Water Quality Design Flow Rate shall be the flow rate at or below which 91% of the total runoff volume, as estimated by an approved continuous runoff model, will be treated.

Ecology has assigned design criteria for Runoff Treatment BMPs to achieve the BMP's Runoff Treatment Performance Goal (e.g., Basic Treatment Performance Goal, Enhanced Treatment Performance Goal, etc.) at the Water Quality Design Flow Rate. At a minimum, 91% of the total runoff volume, as estimated by an approved continuous runoff model, must pass through Runoff Treatment BMP(s) at or below the approved hydraulic loading rate for the BMP(s).

- *Downstream of Detention BMPs:* The Water Quality Design Flow Rate shall be the full 2-year release rate from the Detention BMP.

**Runoff Treatment BMP Selection, Design, and Maintenance**

Runoff Treatment BMPs shall be:

- Selected in accordance with the process identified in *III-1.2 Choosing Your Runoff Treatment BMPs* in the SWMMWW,
- Designed in accordance with the design criteria in Volume V of the SWMMWW, and
- Maintained in accordance with the maintenance criteria in Volume V of the SWMMWW.

**Additional Requirements**

The (direct or indirect) discharge of untreated stormwater from pollution-generating hard surfaces to groundwater must not be authorized by the Permittee, except for infiltration or dispersion of runoff through LID BMPs per The List Approach in 4.5 Minimum Requirement #5: On-Site Stormwater Management.

## 4.7 Minimum Requirement #7: Flow Control

The Permittee must require Flow Control BMPs in accordance with the following thresholds, standards, and requirements to reduce the impacts of stormwater runoff from hard surfaces and land cover conversions.

**TDA Exemption**

Flow Control is not required for TDAs that discharge directly to, or indirectly through an MS4 to a water listed in *Appendix I-A: Flow Control Exempt Receiving Waters* in the SWMMWW, subject to all of the following restrictions:

- Direct discharge to the exempt receiving water does not result in the diversion of drainage from any perennial stream classified as Types 1, 2, 3, or 4 in the State of Washington Interim Water Typing System, or Types “S”, “F”, or “Np” in the Permanent Water Typing System, or from any category I, II, or III wetland.
- If flow splitters or conveyance elements are applied to route natural runoff volumes from the TDA to any downstream Type 5 stream or category IV wetland, then:
    - Design of the flow splitters or conveyance elements must be based on approved continuous simulation modeling analysis. The design must assure that flows delivered to Type 5 stream reaches will approximate, but in no case exceed, durations ranging from 50% of the 2-year to the 50-year peak flow.
    - Flow splitters or conveyance elements that deliver flow to category IV wetlands must also be designed using approved continuous simulation modeling to preserve pre-project wetland hydrologic conditions unless specifically waived or exempted by regulatory agencies with

permitting jurisdiction.

- The TDA must be drained by a conveyance system that is comprised entirely of manmade conveyance elements (e.g., pipes, ditches, outfall protection) and extends to the ordinary high water line of the exempt receiving water.
- The conveyance system between the TDA and the exempt receiving water shall have sufficient hydraulic capacity to convey discharges from future build-out conditions (under current zoning) from contributing areas of the Site, and the existing condition from contributing off-site areas.
- Any erodible elements of the manmade conveyance system must be adequately stabilized to prevent erosion under the conditions noted above.

Permittees may petition Ecology to exempt projects in additional areas. A petition must justify the proposed exemption based upon a hydrologic analysis that demonstrates that the potential stormwater runoff from the exempted area will not significantly increase the erosion forces on the stream channel nor have near field impacts. See *Appendix I-A: Flow Control Exempt Receiving Waters* in the SWMMWW for details

**TDA Thresholds**

Each TDA within a project that requires Minimum Requirement #7 (as detailed in Section 3. Applicability of the Minimum Requirements) must be reviewed to determine if Flow Control BMPs are required for the TDA to be in compliance with Minimum Requirement #7.

Note that it is possible for a project that requires Minimum Requirement #7 with multiple TDAs to not need Flow Control BMP(s) in one or more individual TDAs. If a TDA does not trigger the TDA thresholds for Flow Control BMPs, then the designer must document the areas within the TDA used to determine that the TDA thresholds were not met. This documentation will demonstrate compliance with Minimum Requirement #7 for the TDA.

When assessing a TDA against the following thresholds, only consider the types of surfaces (e.g. new hard surfaces, replaced hard surfaces, converted vegetation areas) that are subject to Minimum Requirement #7, per the Project Thresholds in Section 3. Applicability of the Minimum Requirements.

The following TDAs require construction of Flow Control BMPs to achieve the Flow Control Performance Standard. If a TDA meets any of the following thresholds, Flow Control BMPs are required. The project proponent must demonstrate that the TDA does not meet any of the following thresholds for Flow Control BMPs to not be required for that TDA.

- TDAs that have a total of 10,000 square feet or more of effective impervious surfaces, or
- TDAs that convert ¾ acres or more of native vegetation, pasture, scrub/shrub, or unmaintained non-native vegetation to lawn or landscape, or convert 2.5 acres or more of native vegetation to pasture, and from which there is a surface discharge in a natural or man-made conveyance system from the TDA, or
- TDAs that through a combination of effective hard surfaces and converted vegetation areas cause a 0.15 cubic feet per second (cfs) or greater increase in the 100-year flow frequency as estimated using an approved continuous simulation model and 15-minute time steps.

  The 0.15 cfs increase should be a comparison of the post project runoff to the existing condition runoff. For the purpose of applying this threshold, the existing condition is either the pre-project land cover, or the land cover that existed at the site as of a date when the local jurisdiction first

adopted Flow Control requirements into code or rules.

**Flow Control Performance Standard**

Stormwater discharges shall match developed discharge durations to pre-developed durations for the range of pre-developed discharge rates from 50% of the 2-year peak flow up to the full 50-year peak flow. The pre-developed condition to be matched shall be a forested land cover unless:

- Reasonable, historic information is provided that indicates the site was prairie prior to settlement (modeled as pasture in the approved continuous simulation model); or,
- The drainage area of the immediate stream and all subsequent downstream basins have had at least 40% total impervious area (TIA) since 1985. In this case, the pre-developed condition to be matched shall be the existing land cover condition. *Figure I-3.4: Basins with 40% Total Impervious Area as of 1985* in the SWMMWW depicts those areas which meet this criterion. Where basin-specific studies determine a stream channel to be unstable, even though the above criterion is met, the pre-developed condition assumption shall be the "historic" land cover condition, or a land cover condition commensurate with achieving a target flow regime identified by an approved basin study.

**Alternative Flow Control Performance Standard**

An alternative Flow Control Performance Standard may be established through application of watershed-scale hydrologic modeling and supporting field observations. Possible reasons for an alternative Flow Control Performance Standard include:

- Establishment of a stream–specific threshold of significant bedload movement other than the assumed 50% of the 2-year peak flow;
- Zoning and Land Clearing Ordinance restrictions that, in combination with an alternative Flow Control Performance Standard, maintain or reduce the naturally occurring erosive forces on the stream channel; or
- A duration control standard is not necessary for protection, maintenance, or restoration of designated and existing beneficial uses or Clean Water Act compliance.

See the SWMMWW for details on how an Alternative Flow Control Performance Standard may be established.

**Additional Requirement**

Flow Control BMPs shall be selected in accordance with *III-1.3 Choosing Your Flow Control BMPs*, and designed and maintained in accordance with Volume V of the SWMMWW.

## 4.8 Minimum Requirement #8: Wetlands Protection

The Permittee must require Stormwater Management BMPs in accordance with the following thresholds, standards, and requirements to reduce the impacts of stormwater runoff to wetlands.

**TDA Thresholds**

This Minimum Requirement applies only to TDAs whose stormwater discharges into a wetland, either directly or indirectly through a conveyance system.

Each TDA within a project that requires Minimum Requirement #8 (as detailed in Section 3: Applicability of the Minimum Requirements), must be reviewed to determine what Level(s) of Wetland Protection must be applied to the TDA to comply with Minimum Requirement #8. The Level(s) of Wetland Protection that must be applied are dependent upon:

- The category of wetland that the TDA is discharging to,
- Whether or not the TDA triggers the requirement for Flow Control BMPs per the TDA Thresholds in 4.7 Minimum Requirement #7: Flow Control,
- Whether or not the wetland is a depressional or impounded wetland,
- Whether or not the project proponent has legal access to the wetland,
- The wetland habitat score,
- Whether or not the wetland provides habitat for rare, endangered, threatened, and/or sensitive species, and
- Presence of a breeding population of native amphibians.

Refer to Figure 5: Flow Chart for Determining Wetland Protection Level Requirements, to determine what Level(s) of Wetland Protection must be applied to comply with Minimum Requirement #8.

### Levels of Wetland Protection

The following Levels of Wetland Protection are further explained in *Appendix I-C: Wetland Protection Guidelines* in the SWMMWW.

#### *General Protection*

General Protection includes general practices that benefit wetlands of all types.

#### *Protection from Pollutants*

Protection from Pollutants includes measures to protect the wetland from pollutants in stormwater runoff. Measures of protection include Construction Stormwater BMPs, Source Control BMPs, LID practices and principles, and Runoff Treatment BMPs.

#### *Wetland Hydroperiod Protection*

Wetland Hydroperiod Protection includes measures to avoid excessive hydrologic alteration of existing wetlands from development. There are two methods within Wetland Hydroperiod Protection:

- **Method 1: Monitoring and Wetland Stage Modeling**

  This method requires data collection specific to the wetland, as well as continuous simulation modeling to demonstrate that the proposed project will not negatively alter the wetland hydrology.

- **Method 2: Site Discharge Modeling**

  This method requires continuous simulation modeling of the runoff from the TDA to demonstrate that the changes in total discharge volume to the wetland will remain similar to the pre-development condition.

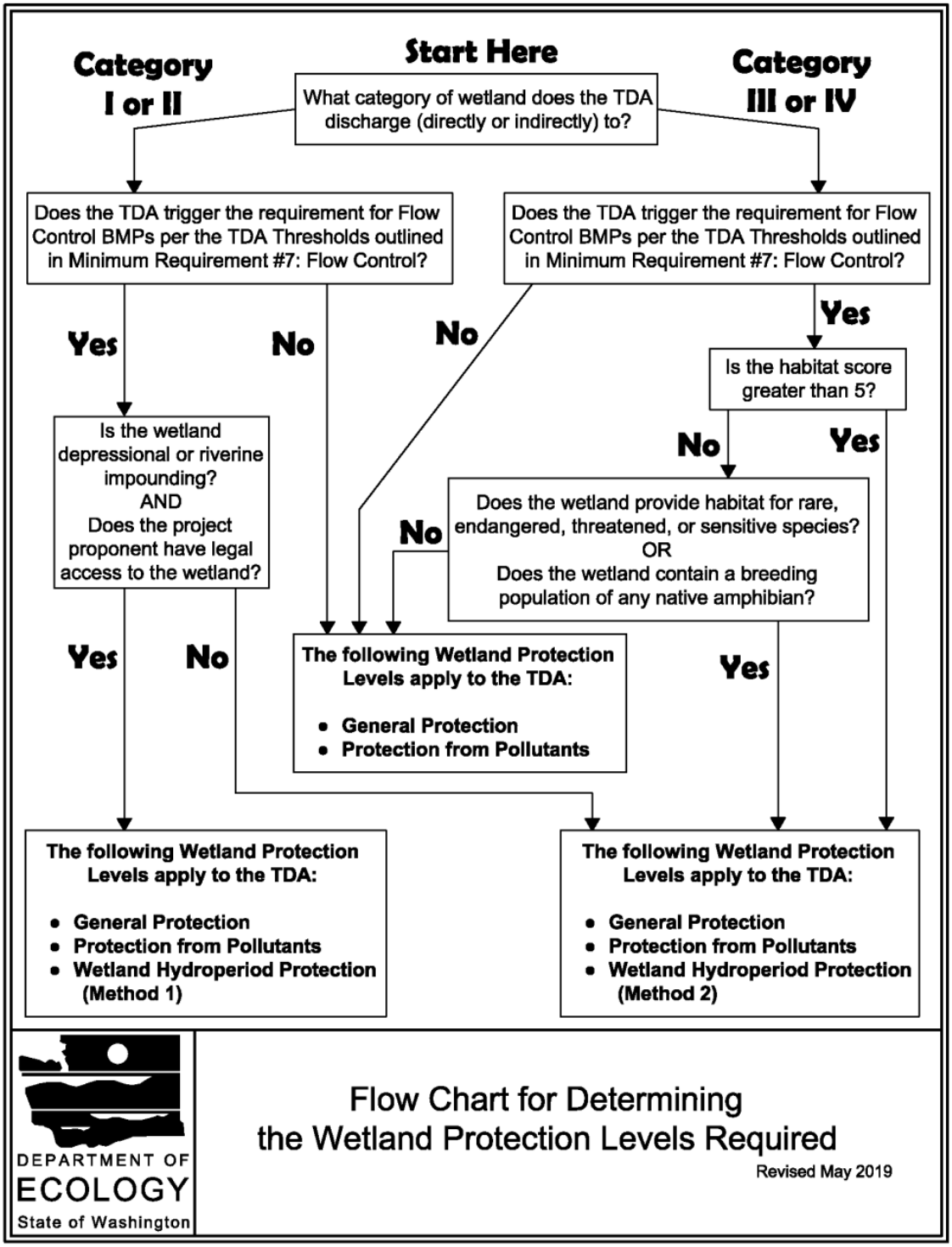
### Additional Requirements

Stormwater Management BMPs shall not be built within a wetland or its buffer, except for:

- Necessary conveyance systems as approved by the Permittee; or

- As allowed in *I-C.6 Compensatory Mitigation of Wetlands* in the SWMMWW.

**Figure 5: Flow Chart for Determining Wetland Protection Level Requirements**



### 4.9 Minimum Requirement #9: Operation and Maintenance

Permittees must require an operation and maintenance manual that is consistent with the provisions in Volume V of the SWMMWW for proposed Runoff Treatment and Flow Control BMPs. The party (or parties) responsible for maintenance and operation shall be identified in the operation and maintenance manual. For private facilities approved by the Permittee, a copy of the operation and maintenance manual shall be retained on site or within reasonable access to the site, and shall be transferred with the property to the new owner. For public facilities, a copy of the operation and maintenance manual shall be retained in the appropriate department. A log of maintenance activity that indicates what actions were taken shall be kept and be available for inspection by the local government.

## SECTION 5. ADJUSTMENTS

Adjustments to the Minimum Requirements may be granted by the Permittee provided that written findings of fact are prepared that address the following:

- The adjustment provides substantially equivalent environmental protection.
- Based on sound Engineering practices, the objectives of safety, function, environmental protection, and facility maintenance are met.

## SECTION 6. EXCEPTIONS/VARIANCES

Exceptions/variances (exceptions) to the Minimum Requirements may be granted by the Permittee following legal public notice of an application for an exception or variance, legal public notice of the Permittee's decision on the application, and written findings of fact that document the Permittee's determination to grant an exception. Permittees shall keep records, including the written findings of fact, of all local exceptions to the Minimum Requirements.

Project-specific design exceptions based on site-specific conditions do not require prior approval from Ecology. The Permittee must seek prior approval from Ecology for any jurisdiction-wide exception.

The Permittee may grant an exception to the Minimum Requirements if such application imposes a severe and unexpected economic hardship. To determine whether the application imposes a severe and unexpected economic hardship on the project applicant, the Permittee must consider and document, with written findings of fact, the following:

- The current (pre-project) use of the Site, and
- How the application of the Minimum Requirement(s) restricts the proposed use of the Site compared to restrictions that existed prior to the adoption of the Minimum Requirements; and
- The possible remaining uses of the Site if the exception were not granted; and
- The uses of the Site that would have been allowed prior to the adoption of the Minimum Requirements; and
- A comparison of the estimated amount and percentage of value loss as a result of the Minimum Requirements versus the estimated amount and percentage of value loss as a result of requirements that existed prior to adoption of the Minimum Requirements; and

- The feasibility for the owner to alter the project to apply the Minimum Requirements.

In addition, any exception must meet the following criteria:

- The exception will not increase risk to the public health and welfare, nor be injurious to other properties in the vicinity and/or downstream, and to the quality of waters of the state; and
- The exception is the least possible exception that could be granted to comply with the intent of the Minimum Requirements.

## SECTION 7. ALTERING THE MINIMUM REQUIREMENTS WITH BASIN PLANS

Basin Plans provide a mechanism by which the Minimum Requirements and implementing BMPs can be evaluated and refined based on an analysis of a basin or watershed. Basin Plans may be used to develop control strategies to address impacts from future development and to correct specific problems whose sources are known or suspected. Basin Plans can be effective at addressing both long-term cumulative impacts of pollutant loads and short-term acute impacts of pollutant concentrations, as well as hydrologic impacts to streams, wetlands, and groundwater resources.

Basin Plans may be used by the Permittee to revise the default standards of the following Minimum Requirements:

- 4.5 Minimum Requirement #5: On-Site Stormwater Management,
- 4.6 Minimum Requirement #6: Runoff Treatment,
- 4.7 Minimum Requirement #7: Flow Control, and/or
- 4.8 Minimum Requirement #8: Wetlands Protection.

In order for a Basin Plan to serve as a means of revising the standards of one or more of the Minimum Requirements listed above, the following conditions must be met:

- The Basin Plan must be formally adopted by all jurisdictions with responsibilities under the plan;
- All ordinances or regulations called for by the Basin Plan must be in effect; and
- The Basin Plan must be reviewed and approved by Ecology.

Basin Plans may also be used to demonstrate an equivalent level of Runoff Treatment, Flow Control, and/or wetland protection through the construction and use of regional stormwater facilities.

Basin Plans will require the use of continuous runoff computer models and field work to verify and support the models. Permittees who are considering the use of Basin Plans to revise the default standards of one or more of the Minimum Requirements are encouraged to contact Ecology early in the planning stage.

Some examples of how Basin Plans can alter the Minimum Requirements are given in within the guidance for each Minimum Requirement in the SWMMWW. See *I-3.4 Minimum Requirements (MRs)* in the SWMMWW.