**Template Instructions:**

Once this document is complete, select all (ctrl+a) and turn off the color.

HE/RE = information in blue usually provided by Hydraulic or Roadway Engineer

ENV = text with no shading to be completed by Environmental Staff

HE and ENV = text in gray to be discussed by the project Hydraulic Engineer and Environmental Staff and completed by Environmental Staff

[Text in brackets is instructive, to be deleted]

Text in boxes is informational, to be deleted

Boilerplate language is suggested text, but because projects differ, modifying/supplementing boilerplate will be necessary.

**Stormwater Management Plan**

**Project Name**

**County**

|  |  |
| --- | --- |
| **Date:** |  |
| **ODOT Key #:** |  |
| **Corps Project #:** |  |
| **DSL Project #:** |  |
| **Project Type:** |  |
| **Project Location:** |  |
| **Latitude/Longitude:** |  |
| **Plan Prepared By:** |  |
| **Designed by:** |  |
| **Stormwater manuals cited:** | [ODOT Hydraulic Design Manual](https://www.oregon.gov/odot/GeoEnvironmental/Pages/Hydraulics-Manual.aspx)[FAHP Programmatic User’s Guide](https://www.oregon.gov/odot/GeoEnvironmental/Pages/ESA.aspx)[Post-Construction SWMP Submission Guidelines](https://www.oregon.gov/deq/wq/wqpermits/Pages/Resources-for-401-Projects.aspx)[In cases where local jurisdictions prescribe standards described in additional manuals, add those here.] |

**PROJECT INFORMATION:**

Location:

[As applicable, include highway, city, county, mile post(s), bridge number, cross street(s), etc.. Include reference to Figure 1: Location Map.]

Project Description:

[Be brief. No need to discuss purpose and need or alternatives analysis. Be sure to include description of project elements potentially affecting water quality and hydrology.]

Climate:

[Include climate zone and average annual precipitation. Available in [TransGIS](https://gis.odot.state.or.us/transgis/).]

Soil permeability:

Soils at the site are classified as XXXX, Hydrologic Soil Group X (see Appendix B: Soil Survey Report). Group X soils are [describe soil type here]. [Also include any information from soil investigations that may have been conducted as part of the Geotechnical investigation.]

Land Use:

[Very brief characterization of land use in the project area as urban/suburban, rural, or undeveloped.]

Traffic Volume:

[Current ADT and if available, projected ADT]

Contributing Impervious Area:

The proposed project will result in a contributing impervious area (CIA) of x acres, of which x acres will be new.

Best Management Practices (BMPs):

[Include a VERY BRIEF description of the types of BMPs that will be employed.]

**POLLUTANTS OF CONCERN:**

Pollutants of concern typically expected in highway runoff are sediment, oil and grease, polycyclic aromatic hydrocarbons (PAH), and total and dissolved metals (such as copper and lead). [Discuss site-specific pollutant issues. Example text:]

* Because Highway x has a very low ADT, pollutant loads and concentrations are expected to be very low.
* Because Highway x has a high ADT, pollutant loads and concentrations are expected to be high.
* The main pollutant of concern for this project is sediment from sanding material.
* Because [WATERWAY] is listed for [PARAMETER] which can be found in highway runoff, [PARAMETER] is a pollutant of concern even though it’s source would not be the transportation system itself.

**STATUS OF RECEIVING WATERS:**

[Rivers, Streams and Lakes – Only include this subheading if wetlands occur in the project area.]

 [Describe all waterways that the project will discharge into. If there is more than one, use table below. Include 6th Field HUC and watershed area in acres. If waterways are not main stem rivers, also list river that waterways flow into.]

[If there are no wetlands…] There are no wetlands in the project area or that will receive runoff from the project area.

Table x: Waterway Information [Use this table if you are describing more than one waterway.]

|  |  |  |
| --- | --- | --- |
| Waterway  | 6th Field HUC | Watershed Area (acres) |
|  |  | [determine with GIS or StreamStats] |
|  |  |  |
|  |  |  |

[Wetlands – Only include this subheading if wetlands occur in the project area.]

There are x wetlands in the project area, x of which will be impacted by the project. Wetland x located [LOCATION] AS SHOWN ON Figure 2 will receive treated stormwater runoff. [If more than one wetland will receive treated runoff, use a bullet list.] See Appendix E: Joint Permit Application for a description of the affected wetlands.

TMDLs and 303(d) listings: [Identify those related to highway runoff]

[Available from [DEQ’s 2018-2020 Integrated Report Database](https://www.oregon.gov/deq/wq/Pages/epaApprovedIR.aspx) (click on “online searchable database”). Describe only parameters with IR categories 4 and 5. If there are multiple waterways and listings, use the table below and follow with a discussion of the expected effects of this project on each parameter. If not, use a bullet list. Example text: ]

* [Temperature - TMDL approved. This project is not expected to increase the temperature of the receiving water.
* Dissolved oxygen - 303(d) listed, TMDL needed. Animal waste, leaves and twigs, and other organic matter may be carried off the roadway in stormwater runoff into surface water and can lead to reduced dissolved oxygen levels. The BMPs to be constructed for this project should address this concern.
* E. coli. - TMDL approved. Animal waste in highway runoff may also contribute to E. coli in surface water. Because leaking septic systems and confined animal feed lots are more significant sources of E. coli, the BMPs for this project are not designed to treat for bacteria.
* Phosphorous - TMDL approved. Soils in the xxx Basin are generally high in phosphorous. These soils accumulate as sediment on the road and can lead to increased levels of phosphorous in surface water. The BMPs for this project have been designed to treat for phosphorous.
* Sediment - TMDL approved. The BMPs for this project have been designed to retain sediment.
* Turbidity - TMDL approved. The BMPs for this project have been designed to minimize turbidity.]

Table x. Water Quality Parameters and Listing Status [Use this table if there are multiple waterways and listings.]

|  |  |  |
| --- | --- | --- |
| Waterway | Parameter | Listing Status |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |

Other Water Quality Issues:

Indicate whether the project location is found in a groundwater management area, drinking water source area, or sole source aquifer.

Groundwater Management Areas: There are three GWMAs in Oregon: the Lower Umatilla Basin GWMA, the Northern Malheur County GWMA, and the Southern Willamette Valley GWMA. These can be found on [DEQ’s Drinking Water Protection Program Interactive Map Viewer](https://hdcgcx2.deq.state.or.us/HVR291/index.html?viewer=drinkingwater).

Drinking Water Source Areas: These can also be found on [DEQ’s Drinking Water Protection Program Interactive Map Viewer](https://hdcgcx2.deq.state.or.us/HVR291/index.html?viewer=drinkingwater).

Sole Source Aquifer: There is one sole source aquifer in Oregon: the North Florence Sole Source Dunal Aquifer in Region 3. Its boundaries can be found on [EPA’s Sole Source Aquifer map](https://epa.maps.arcgis.com/apps/webappviewer/index.html?id=9ebb047ba3ec41ada1877155fe31356b&marker=-124.09941557602913%2C44.042721785642236%2C%2C%2C%2C&markertemplate=%7B%22title%22%3A82%2C%22longitude%22%3A-124.09941557602913%2C%22latitude%22%3A44.042721785642236%2C%22isIncludeShareUrl%22%3Atrue%7D&level=12).

Nearby NPDES Permits: List any permitted discharges within the project area, or on properties immediately adjacent to the project area, that may discharge to the same surface water or groundwater that receives the project area’s stormwater runoff. These can be found on [DEQ’s Facility Profiler mapping utility](https://hdcgcx1.deq.state.or.us/Html5viewer291/?viewer=FacilityProfilerLite). Note that the Facility Profiler includes air quality permits as well, which can be disregarded.

Environmental Cleanup Sites: List any environmental cleanup sites within the project area, or on properties immediately adjacent to the project area, that are listed in [DEQ’s Environmental Cleanup Site Information Database](https://www.deq.state.or.us/lq/ECSI/ecsiquery.asp?listtype=lis&listtitle=Environmental+Cleanup+Site%20Information+Database). To zero in on the search area as closely as possible, use minimum and maximum latitude/longitude coordinates. The “minimum” and “maximum” coordinates are the southeast and northwest corners of a rectangular search area, respectively.

[If there are no other known water quality issues, use the following text.]

The project area is not within one of a groundwater management area, drinking water source area, or sole source aquifer area. There are no known NPDES permits or cleanup sites in the immediate project vicinity.

**CONTRIBUTING IMPERVIOUS AREA:**

The total acreage of the contributing impervious area (CIA) for this project is x.xx acres, of which x.xx acres will be new impervious surface (see Table x below and Figure 2: Sub-basin Map).

Table x:

Impervious Surface Area and Stormwater Treatment BMP by Sub-basin

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Drainage Segment | Receiving Water | From Station | To Station | Pre-Project Impervious Area (acres) | Post-Project Impervious Area (acres) | New Impervious Area (acres) | BMP |
| A |  |  |  |  |  |  |  |
| B |  |  |  |  |  |  |  |
| C |  |  |  |  |  |  |  |
| D |  |  |  |  |  |  |  |
| E |  |  |  |  |  |  |  |
| F |  |  |  |  |  |  |  |
| G |  |  |  |  |  |  |  |
| H |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
| Total |  |  |  |  |  |  |  |

**STORMWATER MANAGEMENT PLAN NARRATIVE:**

FYI: Low Impact Development (LID) is a stormwater management strategy of mimicking natural hydrology and utilizing vegetation and infiltration to reduce the rate and quantity of runoff, filter out pollutants, and facilitate infiltration, detention, and evapotranspiration of stormwater. LID BMPs are designed not to concentrate flows or transport flows for long distances.

[If your project will use LID BMPs, use the following:] Treatment of stormwater from the CIA will be accomplished using Low Impact Development (LID) techniques including [list LID BMP types here].

[If your project will use non-LID BMPs, use the following:] Other BMPs proposed for this project include [list other BMP types here].

These treatment best management practices (BMPs) were selected as part of ODOT’s stormwater treatment design process, which includes the BMP Selection Tool. The treatment techniques selected for this project [“are” or “are not”] recognized as preferred BMPs. These BMPs were designed in accordance with the guidance in ODOT’s 2011 Hydraulics Manual.

[Discuss BMP design deviations here.]

This project will treat xx% of the impervious area of this project.

**CONSTRAINTS/ATTEMPTS TO OVERCOME CONSTRAINTS:**

[IMPORTANT: If your project will treat 100% of the CIA on-site with preferred BMPS, do not include this section.]

[Discuss any project constraints including physical constraints such as topography or soil type, conflicting resources such as wetlands or historical resources, maintenance constraints etc..]

[Discuss attempts to overcome those constraints.]

**WATER QUALITY AND FLOW-CONTROL DESIGN STORMS:**

The project is located in climate zone x, with a water quality design storm of x.xx inches for the project area (xx% of the cumulative rainfall from the 2-year, 24-hour event, which is x.xx inches).

[See the following links:

* To determine percentage, see Chapter 14 of the [ODOT Hydraulic Design Manual](https://www.oregon.gov/ODOT/GeoEnvironmental/Pages/Hydraulics-Manual.aspx).
* To determine 2-yr, 24-hour event, ODOT users should use [TransGIS](https://gis.odot.state.or.us/transgis/).

[Flow control is not necessary for your project if: 1) the receiving water is a large river, lake, reservoir or estuary, or 2) the increase in discharge to surface waters is less than 0.5 cfs for the 10 year 24 hour storm. If this is the case, choose one of the following sentences:]

Because the proposed project will discharge into a main stem river (the [NAME OF RIVER], considered a major water body), it is excluded from the requirement to detain the flow control (or water quantity) design storm.

How to decide if a waterbody is a “main stem river” - The state of Washington uses a drainage basin of 100 square miles or greater to categorize a waterway as such. Here in Oregon, we don't have a specific number, but you can generally use 100 square miles (along with your best professional judgment) as a rule of thumb.

OR

Because the increase in discharge to surface waters for the proposed project is less than 0.5 cfs for the 10-year, 24-hour storm event, the project is excluded from the requirement to detain the flow control (or water quantity) design storm.

[If flow control is required, the Lower and Upper Discharge End-Points are specified in Chapter 12 of the [ODOT Hydraulic Design Manual](https://www.oregon.gov/ODOT/GeoEnvironmental/Pages/Hydraulics-Manual.aspx).]

**TREATMENT CAPACITY:**

[If there are multiple BMPs with different treatment capacities, use the table below.]

[For infiltration into native soils, use the following text.]

For Sub-basin X, the water quality design storm flow of x.xx cfs will infiltrate into native soils.

[For flow through facilities, use the following text.]

The [BMP] will receive runoff from Sub-basin(s) X and Y (xxx square feet of impervious surface). The [BMP] will treat the peak flow of the water quality design storm which is x cubic feet per second. The [BMP] has been designed to provide a minimum residence time of x minutes. See calculations in Appendix F.

 [For detention/retention facilities, use the following text.]

The [BMP] will receive runoff from Sub-basin(s) X and Y (xxx square feet of impervious surface). The [BMP] will treat the volume of the water quality design storm which is x cubic feet. The maximum capacity of the [BMP] is estimated to be x cubic feet. See calculations in Appendix F.

Table x:

BMP Water Quality Flow Rates and Volumes

|  |  |  |  |
| --- | --- | --- | --- |
| Drainage Segment | BMP Type | WQDS peak (cfs) | WQDS volume(cf) |
| A |  |  |  |
| B |  |  |  |
| C |  |  |  |
| D |  |  |  |
| E |  |  |  |
| F |  |  |  |
| G |  |  |  |
| H |  |  |  |

Notes:

WQDS - water quality design storm

cfs – cubic feet per second

cf – cubic feet

Table x:

BMP Flow Control Flow Rates and Volumes

[If Flow Control is not required for the project, delete this table.]

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Drainage Segment | BMP Type | Pre-Project | Post-Project | FCDS total volume (cf) | Change in FCDS LE (cfs) | Change in FCDSUE(cfs) |
| FCDS LE (cfs) | FCDS UE (cfs) | FCDS LE (cfs) | FCDS UE (cfs) |
| A |  |  |  |  |  |  |  |  |
| B |  |  |  |  |  |  |  |  |
| C |  |  |  |  |  |  |  |  |
| D |  |  |  |  |  |  |  |  |
| E |  |  |  |  |  |  |  |  |
| F |  |  |  |  |  |  |  |  |
| G |  |  |  |  |  |  |  |  |
| H |  |  |  |  |  |  |  |  |

Notes:

FCDS – flow control design storm

LE – lower endpoint

UE – upper endpoint

cfs – cubic feet per second

cf – cubic feet

**BMP EFFECTIVENESS**:

According to Table 3 of the Stormwater Treatment Program - BMP Selection Tool (ODOT 2008), the key treatment mechanisms for a [BMP] are [KEY TREATMENT MECHANISMS]. Associated treatment mechanisms for a [BMP] are [ASSOCIATED TREATMENT MECHANISMS]. The [BMP] will have a high capability to remove [HIGH CAPABILITY TARGET POLLUTANTS]; and a moderate capability to remove [MODERATE CAPABILITY TARGET POLLUTANTS].

[For infiltration into native soils, use the following text.]

The key treatment mechanisms for infiltration into native soils are hydrologic attenuation, sorption and filtration. The infiltration area will have a high capability to remove suspended solids and particulate and dissolved metals; and a moderate capability to remove nutrients, oil and grease, and polycyclic aromatic hydrocarbons.

[If your BMPs are not listed on Table 3, the Hydraulic Engineer and Environmental Staff should discuss the treatment mechanisms and target pollutants.]

**BMP DIMENSIONS AND DETAILS**:

BMP dimensions are provided in Table X.

[If your project includes amended soils, include the following.]

The amended soil mix is provided in Appendix x. The infiltration rate for the amended soils is expected to be x.

[If your BMP will be vegetated, include the following.]

The seed mix for the [BMP] is provided in Appendix x.

Table X:

BMP Specifications

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Drainage Segment | BMP Type | Length | Width | Depth | Longitudinal Slope |
| A |  |  |  |  |  |
| B |  |  |  |  |  |
| C |  |  |  |  |  |
| D |  |  |  |  |  |
| E |  |  |  |  |  |
| F |  |  |  |  |  |
| G |  |  |  |  |  |
| H |  |  |  |  |  |
| I |  |  |  |  |  |

**OPERATION SUMMARY**:

[Discussion in this section will be site-specific. Example language below may not be applicable.]

Flow routes:

Flow routes for the project are shown on Figure 2: Sub-basin Map (arrows indicate direction of flow). The project consists of x drainage Sub-basins (A through x).

Collection Features:

Runoff from Sub-basins x and y will be collected by curbs and pipes and discharged to the [BMP]. Sheet flow from Sub-basins a and b will be treated by infiltration into native soils.

Outfall:

The outlet of the [BMP] will discharge treated water into [WATERWAY]. The outfall will be protected with an energy-dissipating structure [refer to a specific plan drawing] to prevent localized scour.

High Flow Operation:

During high flow events, the [BMP] will function like a conventional ditch and convey water into [WATERWAY]. Due to the [LOW/MODERATE/HIGH] gradient of the [BMP], a [HIGH/MODERATE/LOW] amount of treatment will still occur at high flows.

**MAINTENANCE PLAN**:

Responsible Party:

[Use the following text for ODOT projects. For local agency projects, amend as appropriate.]

ODOT staff will provide oversight during project construction to ensure that the water quality and stormwater management elements of the project are properly constructed following project plans and specifications. [Discuss establishment period for plantings and/or seedings.] During this post-construction period, ODOT construction inspection staff will conduct inspections to determine if the water quality and stormwater management swales are vegetated according to specifications and treatment needs. After construction, ODOT maintenance staff will review the facilities at intervals sufficient to ensure continued functioning as designed. The responsible party for the long term maintenance of [BMP] will be Region X, District X maintenance forces.

Routine Maintenance Actions and Schedules:

After the facilities have been constructed, a comprehensive Operations & Maintenance Manual will be prepared for each facility using standards described in the ODOT Hydraulics Manual. [Copy from the Operations & Maintenance Manual(s) or reference the appropriate [Stormwater Facility Maintenance Tables](https://www.oregon.gov/ODOT/GeoEnvironmental/Pages/Stormwater.aspx).]

Contingency and repair plan:

In the event of hazmat spills, crashes, or uprooted or fallen trees, inspect [BMPs] for contamination or damage. Repair or reconstruct the facility to conform to original design specifications as required. Handle and dispose of contaminated materials using only approved methods, equipment, and sites.

**CONCLUSION:**

Stormwater treatment on this project will achieve pollutant removal to the maximum extent practicable by treating runoff from x% of the CIA with preferred BMPs [summarize BMPs; if the project uses FAHP credits or offsite treatment, this should be described as “equivalent to 100% of the CIA”]. Erosion and sediment control BMPs will be in place throughout construction to prevent runoff from disturbed areas discharging to waterways.

APPENDIX LIST

APPENDIX A: FIGURES AND TABLES

Figure 1: Location Map

Figure 2: Sub-basin Map [This map should include the following:]

* CIA
* Drainage segments
* BMP locations
* Outfall locations
* Receiving water name and flow direction
* Wetlands
* Drainage flow path (post-project)
* Topography (often on the Erosion Control plan sheets)
* Locations of any cross sections

[You may need additional figures to represent these features. Also include detail drawings of BMPs if not already included in project plans.]

APPENDIX B: SOIL SURVEY REPORT

APPENDIX C: PROJECT PLAN SHEETS

[Only relevant sheets which may include the following as applicable:

* Cover page
* Index of sheets
* Typical sections
* Alignment
* General construction
* Drainage & utilities
* Drainage profile
* Erosion control plan
* Erosion control details
* Water quality details
* Roadside development details
* Roadside development plan]

APPENDIX D: [Relevant] PROJECT SPECIFICATIONS AND SPECIAL PROVISIONS

[Including planting plan, seed mix, amended soil mix, etc.]

APPENDIX E: JOINT PERMIT APPLICATION

APPENDIX F: STORMWATER CALCULATIONS

APPENDIX G: BMP MAINTENANCE TABLES