OREGON DEPARTMENT OF TRANSPORTATION **TECHNICAL SERVICES**

Environmental and Hydraulic Engineering

BULLETIN

SUBJECT	FINAL NUMBER	EFFECTIVE DATE	VALIDATION DATE	SUPERSEDES or RESCINDS
Stormwater Operation and Maintenance (O&M) Manuals - Update	GE16-02(B)	05/01/2016	5/4/2020	New
	WEB LINK(S) https://www.oregon.gov/ODOT/Engineering/Pages/Technical-Guidance.aspx			
TOPIC/PROGRAM Hydraulics Design Manual	APPROVED SIGNATURE Original signed by: Susan Haupt Environmental and Hydraulics Engineer Section Manager			

PURPOSE

The submittal and review requirements for Stormwater Operation and Maintenance (O&M) manuals as discussed in Chapter 4, Section 4.6.6 of ODOT's Hydraulics Manual is updated to instruct project delivery teams (in-house and outsourced) of the required deliverables to be submitted to ODOT Geo-Environmental.

Link to ODOT's Hydraulics Manual: Hydraulics Manual

GUIDANCE

The revised submittal and review requirements are to be implemented for **all** ODOT design projects that are constructing stormwater treatment or detention/storage facilities

Local agencies utilizing federal funds through ODOT's federal aid program for transportation-related projects that include constructing stormwater features must complete and implement O&M manuals. Local agencies without an established operation and maintenance program should utilize ODOT's O&M manual guidelines.

DEFINITIONS

Drainage Facility ID (DFI) – A unique "DFI" is assigned to all ODOT stormwater treatment and storage facilities. It is used to associate or link the stormwater facility to an O&M manual and asset management systems. The DFI numbers are assigned by contacting ODOT's Hydraulic Engineering Program Lead to obtain a unique "DFI". The project hydraulic designer requests drainage facility IDs during the project's PE phase as discussed in Chapter 17 of ODOT's Hydraulics Manual.

BACKGROUND/REFERENCE

The purpose of O&M manuals are to:

- Support maintenance,
- Protect water quality, and
- Ensure compliance with permit commitments.

ODOT requires preparing O&M manuals for every stormwater facility during the preliminary engineering phase and providing a review opportunity to the maintenance office responsible for maintaining the facility prior to PS&E.

An O&M Manual:

- Describes the type of facility and how it operates,
- Outlines an inspection schedule, and
- Summarizes maintenance actions.

Guidance on preparing O&M Manuals is outlined in Hydraulics Manual, Chapter 4, and Section 4.6.6.

Notes:

- **Every O&M manual must include a CAD drafted operational plan, profile, and details.**
- **A separate O&M manual and operational plan should be prepared for each stormwater facility. Concurrence needs to be obtained from ODOT's Hydraulics Engineering Program Lead prior to including more than one facility within a single O&M manual and operational plan.**
- **Any disagreements or non-concurrences will be resolved by the Region Tech Center Manager. In order to ensure communication lines stay open, the expectation is that the Region's submittals to Technical Services for review and concurrence, and the Hydraulics Engineering Program Lead responses back to the Regions will be completed in a timely manner.**

An operational plan is included in every O&M Manual, and required content of the operational plan includes:

- Location (e.g. mile points, left or right side of highway), footprint, and type of facility
- Location of facility components such as flow splitter manhole, forebay, pollution control manhole, flow spreaders, outlet flow control structure, and outfall
- Facility component details (e.g. flow splitter manhole, flow control manhole, forebay) with notes explaining operational functions and how the stormwater

drains in and out, flow arrows that illustrate stormwater drainage paths, and any other operational notes needed to assist personnel who maintain the facility

- Location of maintenance access to facility, and
- Footprint of drainage piping and stormwater flow path into and out of the facility.

EXPLANATION/RESPONSIBILITIES

Local Agency Projects

1. Local agencies with an established operation and maintenance program provide ODOT documentation demonstrating their agency O&M program guidelines have been followed.
2. Local agencies without an established operation and maintenance program should utilize ODOT's O&M manual guidelines and provide ODOT documentation demonstrating the guidelines have been followed.

ODOT Projects

1. The following O&M tasks are to be performed during a project's **preliminary engineering (PE) phase**:

   Project drafter:

   - Drafts final operational plan.

   Project Hydraulic Engineer:

   - Prepares preliminary operational plan
   - Prepares the O&M Manual
   - Seeks input from maintenance office responsible for maintaining the facility.
   - Incorporates final operational plan into the O&M Manual

Note: Region QC review is performed on all prepared O&M manuals (in-house and outsourced projects)

ODOT Hydraulic Engineering Program Lead:

- Performs QA review of ODOT O&M Manuals and provides feedback to the Project Hydraulic Engineers
- Performs QC review of ODOT O&M Manuals as requested

2. The following O&M tasks are to be performed prior to the project's **PS&E** project milestone date:

Project Hydraulic Engineer:

- Submit the following three documents for each facility to the ODOT Hydraulic Engineering *Program* Lead (or Local Agency representative):

Submittal documents:

- One copy of the final O&M Manual in Microsoft Word format
- One copy of the final O&M Manual in Adobe "pdf" format. Note that the operational plan, manual report in MS Word format, and construction plans will need to be converted to "pdf" format and merged to form one "pdf" file
- Microstation CAD file of each operational plan

Consultant Project Managers:

- Submits the three documents provided (see above) for each facility to ODOT's Hydraulic Engineering *Program* Lead (or Local Agency representative).

Geo-Environmental Hydraulic Engineering Program Lead:

- Logs submitted ODOT manuals into the stormwater O&M master inventory

3. The following O&M tasks are to be performed during a project's **Construction Engineering (CE) phase** and no later than 60 days after a project receives second notification by the construction project manager:

Project Hydraulic Engineer or other assigned Region or Area staff:

- Submits as-built package in Adobe "pdf" format consisting of: (1) post-construction photos and (2) copy of the stormwater as-built sheets to ODOT's Hydraulic Engineering *Program* Lead (or Local Agency representative).

Recommended photos based on facility type:

Ponds: photo numbers 1or 2, and 3 to 8

Swales: photo numbers 1 or 2, 3, 5, 7, and 8

Underground facilities: photo numbers 1 or 2, 4, 6, and 8

Filter strips and bioslopes: photo numbers 1 or 2, 3, and 8

Note: Post-construction photos for outsourced projects will be taken by ODOT Region or Area staff or consultant staff under contract or by Geo-Environmental at the request by region. Post-construction photos for Local

Agency projects will be taken by Local Agency representatives or their designees.

ODOT Hydraulic Engineering Program Lead:

- Merge as-built package into ODOT O&M manual prepared in Step (2) as an appendix
- Uploads ODOT O&M manual to ODOT's TransGIS website within 30 days of receiving a complete as-built package

  Link to ODOT's TransGIS is provided below. Select the "stormwater management facilities layer" to view ODOT's stormwater facility inventory and completed manuals: ODOT TransGIS
- Notifies the appropriate ODOT Maintenance Districts of completed O&M manuals quarterly or more frequently as needed
- Provides a bi-annual status report by region summarizing ODOT asset management data (e.g., number of DFI(s) assigned, and the number of submitted manuals and as-built packages)
- Performs QA review of ODOT O&M manuals and provides feedback annually or more frequently to the Project Hydraulic Engineers

Note: Post processing of as-built package, construction photos, manual distribution & notification, and reporting, for Local Agency projects will be conducted by Local Agency representatives or their designees.

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O&M DOCUMENTS SUBMITTAL LINK

Submit documents to ODOT's Hydraulics Engineering Program Lead using the following online form. Link to form: submittal form. Select the hyperlink titled "Project report – submittal form". Complete the form and attach the appropriate documents to the email.

Table A

PHOTO NUMBER	PHOTOS
1	Highway, looking toward increasing mile point with facility in photo (include surrounding area, nearby bridge, waterway, cross streets, etc.)
2	Highway, looking toward decreasing mile point with facility in photo (include surrounding area, nearby bridge, waterway, cross streets, etc.)
3	Facility footprint (get the entire facility in the photo along with the access point and surrounding area)
4	Facility inlet including inlet pipe, forebay, pretreatment structure/manhole, energy dissipator, flow splitter manhole, etc. Remove manhole lids from pretreatment and/or flow splitter manhole and take photos of riser pipe or weir plate.
5	Facility inlet, looking upstream
6	Facility outlet including outlet pipe, outfall point when draining into a nearby waterbody, outlet drainage structure such as a type “D” inlet, auxiliary outlet, flow control structure, etc. Remove manhole lids from flow control structure and take photos of riser pipe or weir plate.
7	Facility outlet, looking downstream
8	Facility access point, access pad, access gate

Below are photo examples according to table A:

Example of photo 1 or 2
Highway looking toward increasing or decreasing mile point.
(facility located between guardrail and fence)

Example of photo 3
Facility foot print

Example of photo 4
Facility inlet
(inlet pipe located at bottom of photo)

Example of photo 4A
Flow splitter manhole
(manhole located at the west corner of facility)

example of photo 5
upstream roadside channel that drains into stormwater facility

Example of photo 6
Facility outlet structure
(outlet structure located at the middle of photo)

Example of photo 6A
Flow control structure
(flow control manhole located at east end of pond)

Example of photo 7
Facility outlet/outfall
(outlet channel from pond drains to nearby creek)

example of photo 8
facility access pad
(concrete pad next to underground stormwater vault)

Example of photo 8
Facility access gate
(access facility from 32nd Ave SE)