

# Storm Water Post-Construction Best Management Practices Manual



State of Hawaii  
Department of Transportation  
Highways Division  
February 2022

# Storm Water Post-Construction Best Management Practices Manual Updates

2024 Protect Our Water Conference  
November 13, 2024

Richard Price, P.E., CISEC

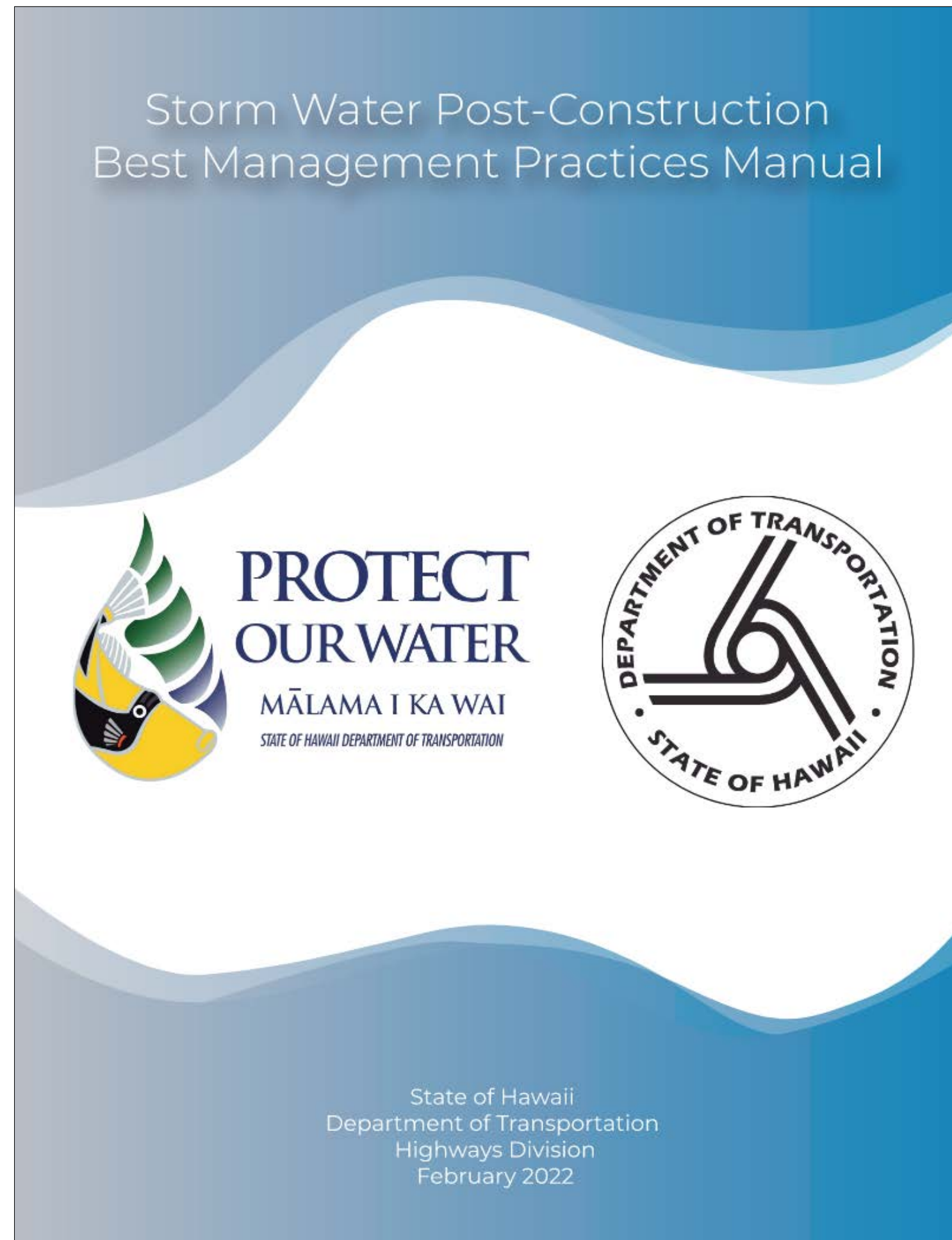


Jason Lau, P.E., CPESC



**PROTECT OUR WATER**  
- MĀLAMA I KA WAI -  
HDOT Highways Maui District

# MAIN DIFFERENCES BETWEEN 2015 AND 2022 POST-CONSTRUCTION BMP MANUALS



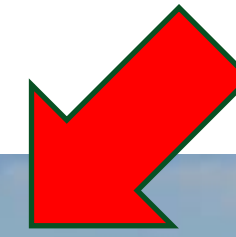
- Separate criteria for MS4 & non-MS4 Permit Areas
- Post-Construction BMP trigger based on disturbed area vs. impervious area
- Prioritizes LID BMPs
- Modified formula for Required Treatment Area
- Spreadsheets created for:
  - PC BMP Checklists
  - Compliance Tracking Spreadsheet
  - Variance Request Form



[www.stormwaterhawaii.com](http://www.stormwaterhawaii.com)

[www.stormwatermaui.com](http://www.stormwatermaui.com)

“Designers and Contractors”



PROTECT OUR WATER  
MĀLAMA I KA WAI  
HEI HOA IMAI I KA WAI

Home Storm Water Plan About Community **Designers And Contractors** Resources Contact Adopt-A-Highway Program Hawaii Storm Patrol

# You Can Protect Our Water

Learn more about the importance of reducing and preventing stormwater pollution and how you can help.



# 2022 Post-Construction BMP Workshop

To learn more about our Permanent BMP criteria, download the presentation from our 2022 Post-Construction BMP Workshop.

[DOWNLOAD 2022 POST-CONSTRUCTION BMP WORKSHOP PRESENTATION](#)

[DOWNLOAD 2022 POST-CONSTRUCTION BMP MANUAL Q&A SESSION](#)

[VIEW 2022 POST-CONSTRUCTION BMP MANUAL WORKSHOP PRESENTATION VIDEO](#)

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2022 Post-Construction (Permanent) Best Management Practices Materials (for projects initiated on or after July 1, 2022)

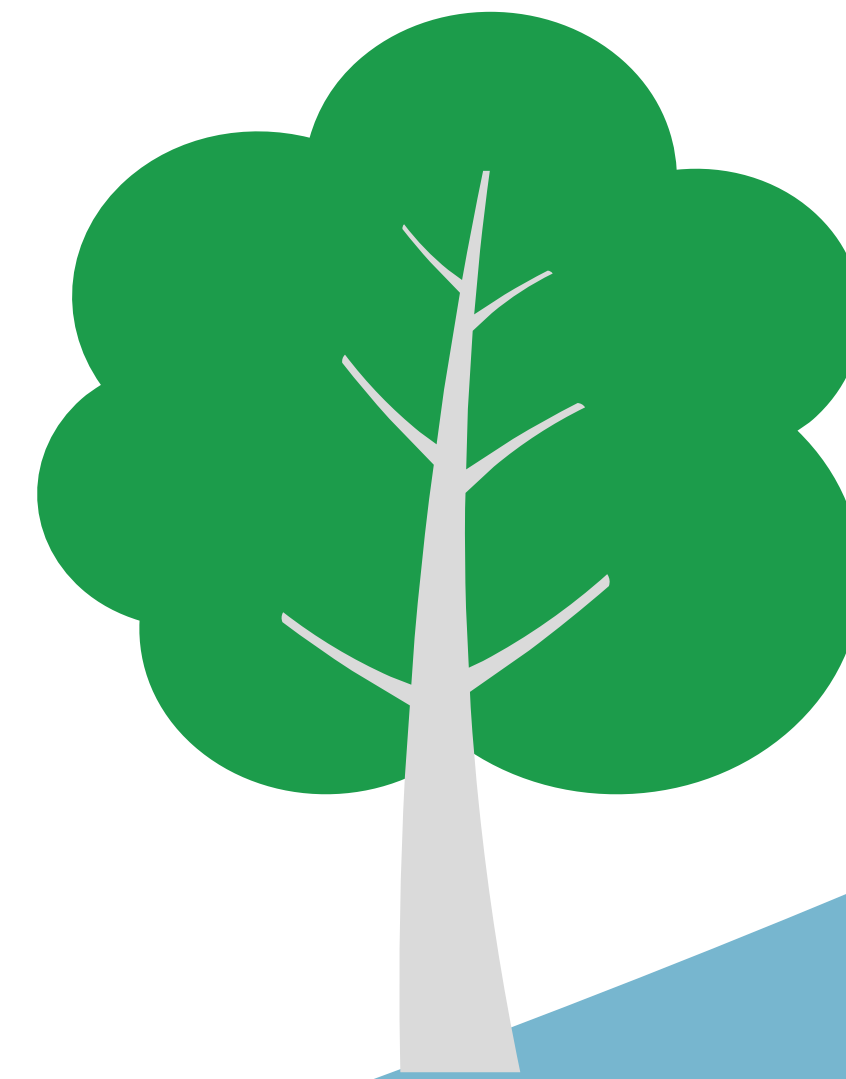
- [2022 Storm Water Post-Construction \(Permanent\) Best Management Practices Manual](#)
- [2022 Post Construction \(Permanent\) BMP Review Checklist for MS4 Areas](#)
- [2022 Post Construction \(Permanent\) BMP Review Checklist for Non-MS4 Areas](#)
- [2022 Post-Construction \(Permanent\) BMP Alternative Compliance Guide and Worksheet](#)

- [Post-Construction BMP Manual](#)
- [Post-Construction BMP Review Checklists](#)
- [Alternative Compliance Guide and Worksheet](#)
- [2022 Post-Construction BMP Workshop and Q&A Presentation](#)
- [Videos](#)



# POST-CONSTRUCTION BMP MANUAL UPDATE

- Updates to Post-Construction BMP Checklists
- Updates to Compliance Tracking Spreadsheet
- Local and nationwide trends





# GENERAL CHANGES TO POST-CONSTRUCTION BMP FILES

- Added “Overview” and “Guidance” tabs
- Combined the following into a single file:
  - PC BMP Checklists
  - Compliance Tracking Spreadsheet
  - Variance Request Form
- Created separate files for the design consultant and for HDOT reviewers



Overview

Guidance

MS4 Checklist

Non-MS4 Checklist

Compliance Tracking

Variance Request

Watersheds

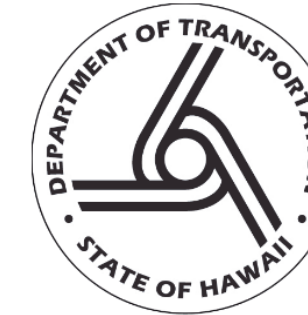
# "OVERVIEW" TAB

## HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION



### Storm Water Post-Construction Best Management Practices Manual

(Required for Projects initiated on or after July 1, 2022)



#### Overview

The design consultant shall complete and submit the Post-Construction BMP Checklist for all projects initiated on or after July 1, 2022 and submitted to the Hawaii Department of Transportation (HDOT) for review. Projects located within an MS4 Permit Area are also required to submit the Compliance Tracking Spreadsheet. The files are used by HDOT as a tool for ensuring that the Storm Water Management Program is in compliance with the MS4 Permit.

#### References

"Storm Water Post-Construction Best Management Practices Manual", Hawaii Department of Transportation, Highways Division, February 2022.

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For projects on Maui, refer to the HDOT Maui District storm water website for more information at: <https://stormwatermaui.com/>

#### General Instructions

1. This file is password protected to maintain the integrity of the workbook and its data and formulas.
2. See the "Guidance" tab for general instructions on filling out the Post-Construction BMP Checklist and the Compliance Tracking Spreadsheet.
3. If the Project is located in a MS4 Permit Area, click on the "MS4 Checklist" tab to access the applicable checklist.
4. If the Project is located in a non-MS4 Permit Area, click on the "Non-MS4 Checklist" tab to access the applicable checklist.
5. Complete the "Compliance Tracking" tab only for MS4 Permit Area projects that are required to implement post-construction BMPs or for post-construction BMP projects which will result in a credit.
6. If the Project is requesting a Variance from storm water treatment requirements due to exceptional constraints, the "Storm Water Post-Construction BMP Variance Request Form" is also required.

Revision No.	Revision Date	Description
Original Document	April 2015	Original
1	December 2021	Revised Checklist based on updated criteria and added Compliance Tracking Spreadsheet.
2	February 2024	Revised Checklist and Compliance Tracking Spreadsheet to improve useability and address comments.
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Overview

Guidance

MS4 Checklist

Non-MS4 Checklist

Compliance Tracking

Variance Request

Watersheds

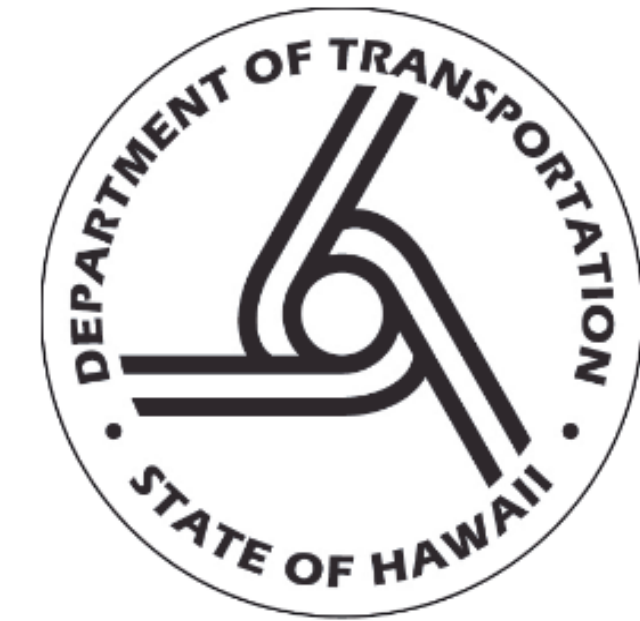
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# "GUIDANCE" TAB

## Guidance

### General

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= user-defined cell (editable)  = automatically populated cell (non-editable)

### Post-Construction BMP Checklists for MS4 and Non-MS4 Permit Areas

- The purpose of the Post-Construction BMP Checklists is to determine whether the Project is exempt from implementing post-construction BMPs and, if post-construction BMPs are required, whether the Required Treatment Area has been adequately met.
- Use the correct Post-Construction BMP Checklist depending on whether Project is located in a MS4 Permit Area or Non-MS4 Permit Area.
- Provide the project information in the top portion of the applicable checklist.
- "Disturbance Area" and "New Impervious Area" are for the entire Project and not just for the portion within HDOT right-of-way.
- Step 1 determines if the project is exempt from implementing post-construction BMPs based upon project type or proposed improvements. Click on checkboxes where applicable. Multiple checkboxes may be filled in depending on the type of project. If the project includes any non-exempt work not listed, post-construction BMPs may be required. Proceed to Step 2.
- Step 2: A "private" project is not under the authority (funding) of or administered by HDOT, is located within or adjacent to HDOT right-of-way, and drains to the HDOT right-of-way. Private projects are not necessarily privately-funded but also includes projects funded by the City and County of Honolulu and other counties.
- Step 3: Indicate whether Project results in one (1) acre or more of Disturbed Area.
- Step 4: A Priority Project has a higher potential for generating pollutant runoff due to the anticipated level of traffic or proposed land use such as parking lots, industrial baseyards, and maintenance facilities.
- Step 5: Sensitive receiving waters include designated Total Maximum Daily Load (TMDL) watersheds and 303(d)-listed water bodies. To determine whether the Project is located within or drains to sensitive receiving waters, refer to the "Watersheds" tab. Watersheds having a Priority of 3 or 4 are considered as being associated with a sensitive receiving water.
- Step 6: Indicate whether the Project treats the Required Treatment Area (refer to PC BMP Manual Section 7.1).
- Step 7: Complete the Compliance Tracking spreadsheet (for MS4 Permit Area Projects that are required to implement post-construction BMPs or for post-construction BMP projects which will result in a credit).
- Sign and date the form.

FIELD	DESCRIPTION
Project	Title of Project
Project Number	HDOT Project Number
Island	Island where project is located (select using pulldown menu)
Project Route Name(s)	Name(s) of HDOT roadways in which project is located.
MP Begin	Mile Post at beginning of project
MP End	Mile Post at end of project
Project Watershed(s)	Enter project watershed(s) in which the Project is located. If the Project is located in more than one watershed, list each watershed separated by commas. The watersheds in which the Project is located can be determined using the interactive GIS map located at this website: <a href="https://geoportals.hawaii.gov/datasets/HIStateGIS:watersheds/explore">https://geoportals.hawaii.gov/datasets/HIStateGIS:watersheds/explore</a>
Disturbance Area	Area of construction-related activity that results in the penetration, turning, or moving of soil including roadway construction, demolition, grading, grubbing, and reconstruction of pavement which exposes the underlying base course or bare soil. Area is for the entire Project and not just for the portion within HDOT right-of-way.
New Impervious Area	Area of new impervious surface constructed over existing pervious area such as asphalt and concrete pavements, bridge decks, sidewalks, walkways, concrete slabs, and roofs. Area is for the entire Project and not just for the portion within HDOT right-of-way.

### Compliance Tracking Spreadsheet

**\*Note: Compliance Tracking is only required for MS4 Permit Area projects that are required to implement post-construction BMPs or for projects which implement post-construction BMPs but are not required to do so.**

- The purpose of the Compliance Tracking spreadsheet is to determine the resulting credit or debit for the applicable Project.
- Provide the project information in Rows 4 to 7 of the Compliance Tracking spreadsheet.
- For MS4 Permit Area projects required to implement post-construction BMPs:**  
Fill in the "Project Watershed" (Column A) for the watershed in which the Project is located. The "Project Watershed Priority" (Column B) will automatically fill in. If the Project is located in multiple watersheds, fill in multiple rows.
- Fill in the boxes in the "New Development" columns indicating "Existing Impervious Area Removed" (Column C) and "New Impervious Area Added" (Column D). The "Required Treatment Area for New Development" (Column E) will be automatically calculated.
- Fill in the box for "Redevelopment Impervious Area" (Column F). The "Required Treatment Area for Redevelopment" (Column G) will be automatically calculated.
- Fill in the boxes in the "Existing Treatment" columns indicating "Existing Treatment of Redevelopment Area to Remain" (Column H) and "Existing Treatment of Redevelopment Area Lost" (Column I). HDOT will allow some credit for existing treatment on a case-by-case basis.
- The "Total Required Treatment Area" (Column J) will be automatically calculated and is the sum of the "Required Treatment Area for New Development" (Column E) and the "Required Treatment Area for Redevelopment" (Column G) minus any credit for Existing Treatment.
- Fill in the boxes in the "New Treatment Provided" columns indicating the "Primary BMP Treatment Type" (Column K) and "Impervious Area Treated" (Column L). The project's "Credit or Deficit" (Column M) will be automatically calculated. If this calculation equals zero (0) or greater, then the project meets the requirements for storm water treatment.
- For MS4 Permit Area projects in which post-construction BMPs are not required but are implemented to generate a credit:**  
Fill in the "Project Watershed" (Column A) for the watershed in which the Project is located. The "Project Watershed Priority" (Column B) will automatically fill in. If the Project is located in multiple watersheds, fill in multiple rows.
- Enter "0" for the "Total Required Treatment Area" (Column J).
- Fill in the boxes in the "New Treatment Provided" columns indicating the "Primary BMP Treatment Type" (Column K) and "Impervious Area Treated" (Column L). The project's "Credit or Deficit" (Column M) will be automatically calculated. If this calculation equals zero (0) or greater, then

FIELD	DESCRIPTION
Project	Title of Project
Proj. No.	HDOT Project Number
Island	Island where project is located
Project Type	Indicate whether project is "public" or "private". A "public" project is funded by HDOT, designed either by HDOT personnel or engineering consultant firms, and constructed by HDOT or a private contractor. A "private" project is not under the authority (funding) of or administered by HDOT, is located within or adjacent to HDOT right-of-way, and drains to the HDOT right-of-way. Private projects are not necessarily privately-funded but also includes projects funded by the City and County of Honolulu and other counties.

FIELD	COLUMN	DESCRIPTION
Project Watershed	A	Enter project watershed(s) in which the Project is located. If the Project is located in more than one watershed, provide the additional watershed(s) in the subsequent row(s) of the spreadsheet. The impervious and treatment areas will be calculated separately for each watershed. The watersheds in which the Project is located can be determined using the interactive GIS map located at this website: <a href="https://geoportals.hawaii.gov/datasets/HIStateGIS:watersheds/explore">https://geoportals.hawaii.gov/datasets/HIStateGIS:watersheds/explore</a>
Project Watershed Priority	B	Ranking of watershed based on identified sensitive receiving waters including 303(d)-listed water bodies and TMDL watersheds listed in the 2024 State of Hawaii Water Quality Monitoring and Assessment Report. <a href="https://health.hawaii.gov/cwb/files/2024/09/IR-2024-final-draft.pdf">https://health.hawaii.gov/cwb/files/2024/09/IR-2024-final-draft.pdf</a>
Existing Impervious Area Removed	C	Area of existing impervious surfaces removed (in acres).
New Impervious Area Added	D	Area of new impervious surface constructed over existing pervious area (in acres).
Required Treatment Area for New Development	E	Area required to be treated by post-construction BMPs attributed to "New Development" which is the difference between impervious surfaces added and removed (in acres).

Existing Treatment of Redev Area to Remain	H	Area treated by existing post-construction BMPs to remain (in acres).
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Overview

Guidance

MS4 Checklist

Non-MS4 Checklist

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Variance Request

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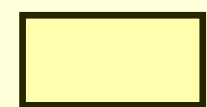


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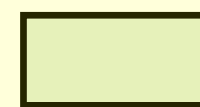
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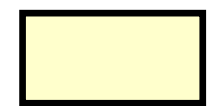
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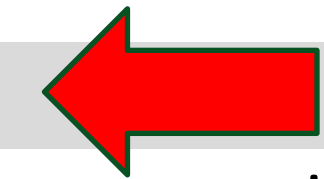


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Project Number	HDOT Project Number



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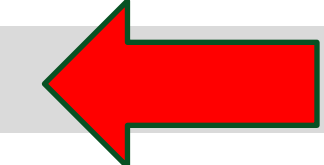
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**For MS4 Permit Area projects in which post-construction BMPs are not required but are implemented to generate a credit:**

9. Fill in the "Project Watershed" (Column A) for the watershed in which the Project is located. The "Project Watershed Priority" (Column B) will automatically fill in. If the Project is located in multiple watersheds, fill in multiple rows.
10. Enter "0" for the "Total Required Treatment Area" (Column J).
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<b>FIELD</b>	<b>DESCRIPTION</b>
Project	Title of Project



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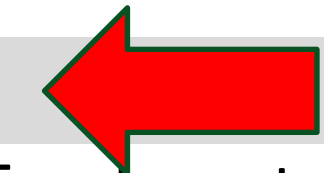
<b>FIELD</b>	<b>COLUMN</b>	<b>DESCRIPTION</b>
Project Watershed	A	Enter project watershed(s) in which the Project is located. If the Project is located in more than one watershed, provide the additional watershed(s) in the subsequent rows(s) of the spreadsheet. The impervious and treatment areas will be calculated separately for each watershed. The watersheds in which the Project is located can be determined using the interactive GIS map located at this website: <a href="https://geoportal.hawaii.gov/datasets/HiStateGIS::watersheds/explore">https://geoportal.hawaii.gov/datasets/HiStateGIS::watersheds/explore</a>
Project Watershed Priority	B	Ranking of watershed based on identified sensitive receiving waters including 303(d)-listed water bodies and TMDL watersheds listed in the 2024 State of Hawaii Water Quality Monitoring and Assessment Report. <a href="https://health.hawaii.gov/cwb/files/2024/09/IR-2024-final-draft.pdf">https://health.hawaii.gov/cwb/files/2024/09/IR-2024-final-draft.pdf</a>
Existing Impervious Area Removed	C	Area of existing impervious surfaces removed (in acres).
New Impervious Area Added	D	Area of new impervious surface constructed over existing pervious area (in acres).

Required Treatment Area for New Development	E	Area required to be treated by post-construction BMPs attributed to "New Development" which is the difference between impervious surfaces added and removed (in acres).
Redevelopment Impervious Area	F	Area of any construction, reconstruction, alteration, or improvement performed on existing impervious area in which the underlying soil or pervious subgrade is exposed, penetrated, or replaced during construction (in acres).
Required Treatment Area for Redevelopment	G	Area required to be treated by post-construction BMPs attributed to "Redevelopment" (in acres).
Existing Treatment of Redev Area to Remain	H	Area treated by existing post-construction BMPs to remain (in acres).
Existing Treatment of Redev Area Lost	I	Area treated by existing post-construction BMPs to be removed (in acres).
TOTAL REQUIRED TREATMENT AREA	J	Total area required to be treated by post-construction BMPs for the project taking into consideration New Development, Redevelopment, and existing post-construction BMPs (in acres).
Primary BMP Type Used for Treatment	K	Enter primary type of post-construction BMP proposed to meet the Required Treatment Area by using the drop down options.
Impervious Area Treated	L	Enter the amount of impervious area treated by all proposed post-construction BMPs (in acres).
CREDIT OR DEFICIT	M	The resulting credit or deficit calculated for each watershed.



Existing Treatment of Redev Area Lost	I	Area treated by existing post-construction BMPs to be removed (in acres).
TOTAL REQUIRED TREATMENT AREA	J	Total area required to be treated by post-construction BMPs for the project taking into consideration New Development, Redevelopment, and existing post-construction BMPs (in acres).
Primary BMP Type Used for Treatment	K	Enter primary type of post-construction BMP proposed to meet the Required Treatment Area by using the drop down options.
Impervious Area Treated	L	Enter the amount of impervious area treated by all proposed post-construction BMPs (in acres).
CREDIT OR DEFICIT	M	The resulting credit or deficit calculated for each watershed.

### Variance Request Form



1. A Variance Request Form is required for projects in both MS4 and non-MS4 Permit areas that do not treat the full Required Treatment Area.
2. Provide the project information in the top portion of the Variance Request Form.
3. For Step 1, click on the applicable checkboxes to indicate the contributing reason(s) for incurring an overall debit in water quality treatment. Multiple checkboxes may be filled in depending on the project site conditions.
4. For Step 2, provide any other supporting information to justify why full treatment cannot be met using post-construction BMPs.
5. Indicate what type of information will be provided in support of the variance request in Step 3.
6. Sign and date the form in Step 4.



# POST-CONSTRUCTION BMP DESIGN CHECKLIST

- Required for all projects initiated on or after July 1, 2022 and subject to HDOT review
- Separate checklist for MS4 and non-MS4 Permit areas





# CHECKLIST FOR MS4 PERMIT AREAS

STORM WATER POST-CONSTRUCTION BMP CHECKLIST FOR MS4 PERMIT AREAS		<input type="checkbox"/> New Submittal
		<input type="checkbox"/> Resubmittal
<b>Project Information</b>		
Project:		
Project Number:		Island: Maui
Project Route Name(s):		MP Begin: MP End:
Project Watershed(s):		
<i>(To identify watershed(s), refer to: <a href="https://geoportals.hawaii.gov/datasets/HiStateGIS:watersheds/explore">https://geoportals.hawaii.gov/datasets/HiStateGIS:watersheds/explore</a> )</i>		
Disturbance Area* (acres):		New Impervious Area* (acres):
<i>(*Note: Areas are for the entire Project and not just for the portion within HDOT right-of-way.)</i>		
Applicant Name:		Company:
Email Address:		Telephone:
<b>Applicability and Exemptions</b>		
1. Check "Yes" if project entirely consists of one or more of the following activities or conditions below. The project may be exempt from Post-Construction BMPs if it includes these exempted activities <b>ONLY</b> . Otherwise, if the project includes other types of improvements not listed below, continue to Step 2.		Yes
a. Project does not result in discharge into the HDOT MS4 or state waters		<input type="checkbox"/>
b. Operations and Maintenance activities		
b.1. Structural repairs		<input type="checkbox"/>
b.2. Baseyard maintenance and repairs		<input type="checkbox"/>
b.3. Installation or replacement of pavement striping and pavement markers		<input type="checkbox"/>
b.4. Other		<input type="checkbox"/>
c. Pavement Preservation Treatment which does not expose or disturb underlying aggregate or subgrade layer		<input type="checkbox"/>
d. Guardrail and Underground Utility Projects		
d.1. Guardrail installation or replacement		<input type="checkbox"/>
d.2. Utility installation or relocation		<input type="checkbox"/>
d.3. Culvert rehabilitation or replacement		<input type="checkbox"/>
e. Water Quality Improvements or Preservation		
e.1. Shoreline protection		<input type="checkbox"/>
e.2. Landscaping		<input type="checkbox"/>
e.3. Installation of Post-Construction BMPs		<input type="checkbox"/>
e.4. Erosion and sediment control		<input type="checkbox"/>
e.5. Rockfall mitigation		<input type="checkbox"/>
f. Pedestrian walkways or bicycle paths		<input type="checkbox"/>
g. Bridges or roads constructed above or below existing impervious areas		<input type="checkbox"/>
h. "Minor" Disturbance Project (i.e., signage, ADA ramps, etc.)		<input type="checkbox"/>
i. Emergency project		<input type="checkbox"/>
j. Temporary project		<input type="checkbox"/>
k. Federally-aid city or county project (provide documentation showing city or county approval)		<input type="checkbox"/>

# CHECKLIST FOR MS4 PERMIT AREAS

## STORM WATER POST-CONSTRUCTION BMP CHECKLIST FOR MS4 PERMIT AREAS

 New Submittal  
 Resubmittal

### Project Information

Project:			
Project Number:		Island:	Maui
Project Route Name(s):		MP Begin:	
Project Watershed(s):			

*(To identify watershed(s), refer to: <https://geoportal.hawaii.gov/datasets/HiStateGIS::watersheds/explore> )*

Disturbance Area* (acres):		New Impervious Area* (acres):	
----------------------------	--	-------------------------------	--

*(\*Note: Areas are for the entire Project and not just for the portion within HDOT right-of-way.)*

Applicant Name:		Company:	
Email Address:		Telephone:	

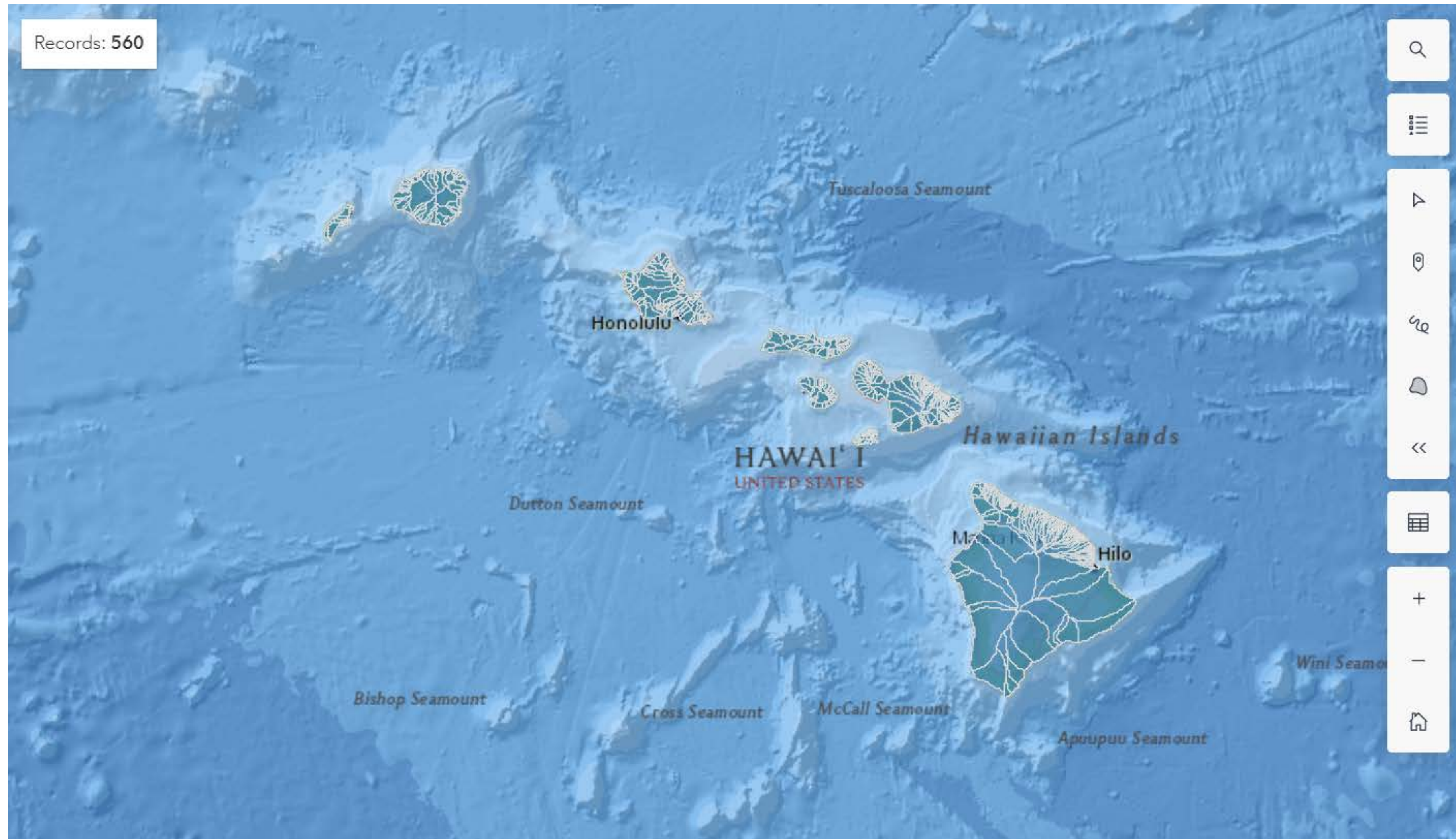
### Applicability and Exemptions

1. Check "Yes" if project entirely consists of one or more of the following activities or conditions below. The project may be exempt from Post-Construction BMPs if it includes these exempted activities <b>ONLY</b> . Otherwise, if the project includes other types of improvements not listed below, continue to Step 2.	Yes
---	-----

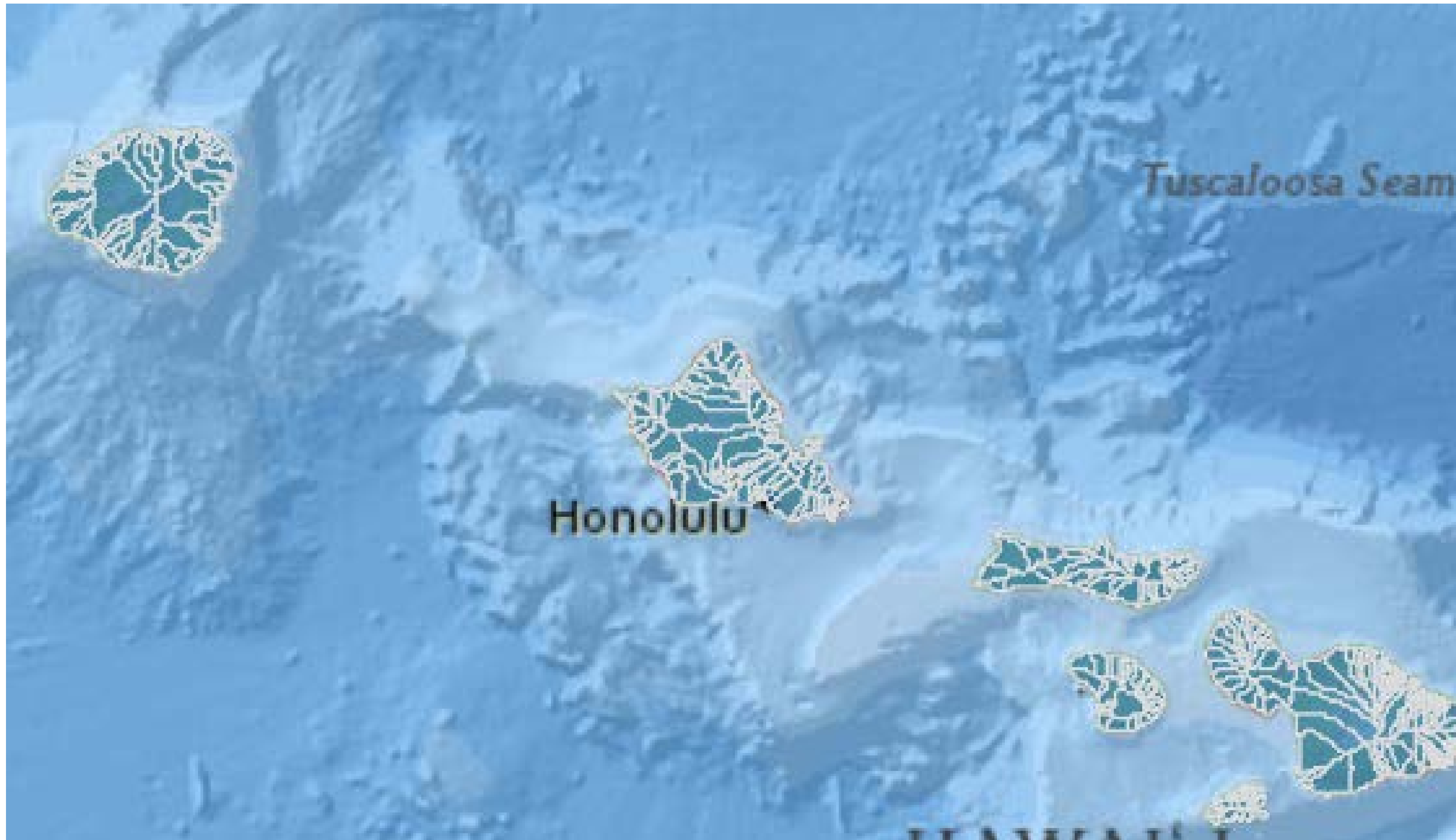
a. Project does not result in discharge into the HDOT MS4 or state waters	<input type="checkbox"/>
---	--------------------------



# IDENTIFYING THE PROJECT WATERSHED



# IDENTIFYING THE PROJECT WATERSHED





# IDENTIFYING THE PROJECT WATERSHED



Email Address:

Telephone:

### Applicability and Exemptions

1. Check "Yes" if project entirely consists of one or more of the following activities or conditions below. The project may be exempt from Post-Construction BMPs if it includes these exempted activities <b>ONLY</b> . Otherwise, if the project includes other types of improvements not listed below, continue to Step 2.	Yes
a. Project does not result in discharge into the HDOT MS4 or state waters	<input type="checkbox"/>
b. Operations and Maintenance activities	
b.1. Structural repairs	<input type="checkbox"/>
b.2. Baseyard maintenance and repairs	<input type="checkbox"/>
b.3. Installation or replacement of pavement striping and pavement markers	<input type="checkbox"/>
b.4. Other	<input type="checkbox"/>
c. Pavement Preservation Treatment which does not expose or disturb underlying aggregate or subgrade layer	<input type="checkbox"/>
d. Guardrail and Underground Utility Projects	
d.1. Guardrail installation or replacement	<input type="checkbox"/>
d.2. Utility installation or relocation	<input type="checkbox"/>
d.3. Culvert rehabilitation or replacement	<input type="checkbox"/>
e. Water Quality Improvements or Preservation	
e.1. Shoreline protection	<input type="checkbox"/>
e.2. Landscaping	<input type="checkbox"/>
e.3. Installation of Post Construction BMPs	<input type="checkbox"/>
e.4. Erosion and sediment control	<input type="checkbox"/>
e.5. Rockfall mitigation	<input type="checkbox"/>
f. Pedestrian walkways or bicycle paths	<input type="checkbox"/>
g. Bridges or roads constructed above or below existing impervious areas	<input type="checkbox"/>
h. "Minor" Disturbance Project (i.e., signage, ADA ramps, etc.)	<input type="checkbox"/>
i. Emergency project	<input type="checkbox"/>
j. Temporary project	<input type="checkbox"/>
k. Federal-aid city or county project (provide documentation showing city or county approval)	<input type="checkbox"/>

Does project ONLY consist of exempt activities listed above?

Yes, proceed to Step 8.

No, continue to Step 2.

### STEP 1

- Determines whether project is exempt from Post-Construction BMPs
- MS4 includes swales, gutters, ditches, runoff into HDOT right-of-way
- Only select an item if project only consists of work type shown
- If project is not exempt, continue with Step 2
- Otherwise, go to Step 8



2. Is project a private construction project?

**Yes;** project is entirely outside the HDOT right-of-way. Post-Construction BMPs must comply with the applicable county storm water requirements. Identify any county-required documentation below. Continue to Step 7.

**Yes;** project is within or partially within HDOT right-of-way. Post-Construction BMPs may be required if project has the potential to discharge storm water to the HDOT right-of-way. Continue to Step 3.

**No;** Continue to Step 3.

---

3. Does project result in one (1) acre or more of Disturbed Area?

**Yes;** LID BMPs are required. Continue to Step 6.

**No;** continue to Step 4.

---

4. Is project a Priority Project with a high potential for pollutant discharge? (i.e. high-volume or industrial)

**Yes;** Post-Construction BMPs may be required at the discretion of HDOT regardless of the amount of Disturbed Area. Continue to Step 6.

**No;** continue to Step 5.

---

5. Is project located within or drain to sensitive receiving waters? (*refer to "Watersheds" tab*)

**Yes;** Post-Construction BMPs may be required at the discretion of HDOT regardless of the amount of Disturbed Area. Continue to Step 6.

**No;** continue to Step 7.

---

6. Does project treat the full Required Treatment Area?

**Yes;** continue to Step 7.

**No;** acceptance of water quality treatment to be determined pending HDOT review. Submit a Variance Request Form ("Variance Request" tab must be completed). Continue to Step 7.

---

7. Prepare and submit Compliance Tracking Spreadsheet ("Compliance Tracking" tab). Continue to Step 8.

---

8. Provide signature and date below.

**Signature** \_\_\_\_\_ **Date:** \_\_\_\_\_

---

*For Department Use Only:*

**Does the project adequately address Post-Construction BMP requirements?**

**Yes;** the project treats the full Required Treatment Area or is designed to the MEP. The designer is required to submit the Compliance Tracking Spreadsheet.

**Yes;** the project is exempt from post-construction BMPs. The Compliance Tracking Spreadsheet is not required except for Post-Construction BMP projects which will result in a credit.

**No;** the project is not designed to the MEP. Provide additional Post-Construction BMPs.

**No;** the project will result in a debit for water quality treatment and Alternative Compliance\* will be required for the remainder of the Required Treatment Area. The designer is required to submit the Compliance Tracking Spreadsheet. (\*Note: Private projects are not eligible Alternative Compliance.)

---

**Reviewed By (HDOT PM):** \_\_\_\_\_ **Date:** \_\_\_\_\_

**Approved By (HDOT Branch Head):** \_\_\_\_\_ **Date:** \_\_\_\_\_



2. Is project a private construction project?

- Yes;** project is entirely outside the HDOT right-of-way. Post-Construction BMPs must comply with the applicable county storm water requirements. Identify any county-required documentation below. Continue to Step 7.
- Yes;** project is within or partially within HDOT right-of-way. Post-Construction BMPs may be required if project has the potential to discharge storm water to the HDOT right-of-way. Continue to Step 3.
- No;** Continue to Step 3.

3. Does project result in one (1) acre or more of Disturbed Area?

- Yes;** LID BMPs are required. Continue to Step 6.
- No;** continue to Step 4.

4. Is project a Priority Project with a high potential for pollutant discharge? (i.e. high-volume or industrial)

- Yes;** Post-Construction BMPs may be required at the discretion of HDOT regardless of the amount of Disturbed Area. Continue to Step 6.
- No;** continue to Step 5.

5. Is project located within or drain to sensitive receiving waters? (*refer to "Watersheds" tab*)

- Yes;** Post-Construction BMPs may be required at the discretion of HDOT regardless of the amount of Disturbed Area. Continue to Step 6.
- No;** continue to Step 7.

6. Does project treat the full Required Treatment Area?

- Yes;** continue to Step 7.
- No;** acceptance of water quality treatment to be determined pending HDOT review. Submit a Variance Request Form ("Variance Request" tab must be completed). Continue to Step 7.



# SENSITIVE RECEIVING WATERS

OAHU WATERSHEDS					
Watershed	Priority	Watershed	Priority	Watershed	Priority
Aiea	1	Keaau	0	Waianu	0
Ala Wai	1	Keamanea	1	Waiawa	1
Anahulu	1	Keehi	0	Waikane	1
Diamond Head	0	Kiikii	4	Waikele	4
Hahaione	0	Koko Crater	0	Wailele	0
Haiamoa	0	Koloa	0	Wailupe	0
Hakipuu	0	Kualoa	0	Waimalu	1
Halawa	1	Kuliouou	1	Waimanalo	4
Halehaa	0	Loko Ea	0	Waimea	0
Hanauma	0	Maakua	0	Waipio	0
Heeia	1	Mailili	0	Waipuhi	0
Honouliuli	0	Makaha	0		
Kaaawa	1	Makaiwa	0		
Kaalaea	1	Makaleha	0		
Kaelepulu	3	Makapuu	0		
Kahaluu	1	Makaua	0		
Kahana	1	Makua	0		
Kahawai	0	Malaekahana	0		
Kahawainui	1	Manini	0		
Kaipapau	0	Manuwai	0		

WATERSHED PRIORITIES	
None	0
Low	1
Medium	2
High	3
TMDLs approved	4

“Sensitive Receiving Waters”  
 = Priority “3” or “4”

# SENSITIVE RECEIVING WATERS

- Based upon the "2024 State of Hawaii Water Quality Monitoring and Assessment Report"
- Includes TMDL watersheds and 303(d)-listed water bodies

<https://health.hawaii.gov/cwb/files/2024/09/IR-2024-final-draft.pdf>

- Summarized in "Watersheds" tab

## 2024 STATE OF HAWAII WATER QUALITY MONITORING AND ASSESSMENT REPORT:

Integrated Report to the U.S. Environmental Protection Agency and the U.S. Congress  
Pursuant to §303(d) and §305(b), Clean Water Act (P.L. 97-117)



The Hawaii State Department of Health  
Clean Water Branch  
Honolulu, Hawaii  
April 8, 2024  
Final



7. Prepare and submit Compliance Tracking Spreadsheet ("Compliance Tracking" tab) Continue to Step 8

8. Provide signature and date below.

Signature

Date:

*For HDOT Department Use Only:*

**Does the project adequately address Post-Construction BMP requirements?**

- Yes;** the project requires post-construction BMPs and treats the full Required Treatment Area or is designed to the MEP. The designer is required to submit the Compliance Tracking Spreadsheet.
- Yes;** the project does not require post-construction BMPs but will generate a credit. The designer is required to submit the Compliance Tracking Spreadsheet.
- No;** the project requires post-construction BMPs but is not designed to the MEP. Provide additional Post-Construction BMPs.
- No;** the project requires post-construction BMPs but will result in a debit for water quality treatment and Alternative Compliance\* will be required for the remainder of the Required Treatment Area. The designer is required to submit the Compliance Tracking Spreadsheet. (\*Note: Private projects are not eligible Alternative Compliance.)

Reviewed By (HDOT PM):

Date:

Approved By (HDOT Branch Head):

Date:

# POST-CONSTRUCTION BMP COMPLIANCE TRACKING

## COMPLIANCE TRACKING SPREADSHEET

Project : \_\_\_\_\_  
 Proj. No.: \_\_\_\_\_  
 Island: Maui Project Type: \_\_\_\_\_  
 PC BMP Checklist Filing Date: \_\_\_\_\_ ("Public" or "Private")

**FOR MS4 TRACKING PURPOSES:**  
 Required Treatment Area due to New Development (acres) = 0.00  
 Required Treatment Area due to Redevelopment (acres) = 0.00  
 Net Credit/Debit to WQ Bank (acres) = 0.00

Complete all columns for projects located in a MS4 Permit Area that are required to implement post-construction BMPs.  
 For projects not required to implement post-construction BMP projects but will generate a credit, fill in columns A-B and J-M only.

Project Watershed	Project Watershed Priority	NEW DEVELOPMENT			REDEVELOPMENT		EXISTING TREATMENT		TOTAL REQUIRED TREATMENT AREA (acres)	NEW TREATMENT PROVIDED		CREDIT OR DEFICIT (acres)
		Existing Impervious Area Removed (acres)	New Impervious Area Added (acres)	Required Treatment Area for New Development (acres)	Redevelopment Impervious Area (acres)	Required Treatment Area for Redevelopment (acres)	Existing Treatment of Redev Area to Remain (acres)	Existing Treatment of Redev Area Lost (acres)		Primary BMP Type Used for Treatment	Impervious Area Treated (acres)	
		A	B	$(B-A) = C$	D	$(D * 0.25) = E$	F	G	H		I	$(I-H) = J$



# POST-CONSTRUCTION BMP COMPLIANCE TRACKING

## COMPLIANCE TRACKING SPREADSHEET

Project : \_\_\_\_\_  
 Proj. No.: \_\_\_\_\_  
 Island: Maui Project Type: \_\_\_\_\_  
 PC BMP Checklist Filing Date: \_\_\_\_\_ ("Public" or "Private")

FOR M  
 Requir  
 Requir  
 Net Cr

*Complete all columns for projects located in a MS4 Permit Area that are required to implement post-construction BMPs.  
 For projects not required to implement post-construction BMP projects but will generate a credit, fill in columns A-B and J-M only.*

Project Watershed	Project Watershed Priority	NEW DEVELOPMENT			REDEVELOPMENT		EXISTING TREATMENT	
		Existing Impervious Area Removed (acres)	New Impervious Area Added (acres)	Required Treatment Area for New Development (acres)	Redevelopment Impervious Area (acres)	Required Treatment Area for Redevelopment (acres)	Existing Treatment of Redev Area to Remain (acres)	Ex Treatment Red (a
		A	B	$(B-A) = C$	D	$(D * 0.25) = E$	F	

# POST-CONSTRUCTION BMP VARIANCE REQUEST

STORM WATER POST-CONSTRUCTION BMP VARIANCE REQUEST FORM	
Project Information	
Project: _____	
Project Number: _____	Island: _____
Project Route Name(s): _____	MP Begin: _____ MP End: _____
Project Watershed(s): _____	
<i>(To identify watershed(s), refer to: <a href="https://geoportal.hawaii.gov/datasets/HiStateGIS::watersheds/explore">https://geoportal.hawaii.gov/datasets/HiStateGIS::watersheds/explore</a>)</i>	
Required Treatment Area (acres): _____	Provided Treatment Area (acres): _____
Applicant Name: _____	Company: _____
Email Address: _____	Telephone: _____
Justification for Project Water Quality Debit	
1. Check "Yes" for any applicable project conditions below which will incur a debit(s).	
a. Where Low Impact Development (LID) BMPs are required, the designer shall implement LID BMPs to the Maximum Extent Practicable. Indicate any site constraints that will result in providing less than the required water quality treatment. Refer to Section 5.2 of the manual for further descriptions of the various types of constraints.	Yes <input type="checkbox"/>
a.1. Hydrogeological Constraint	<input type="checkbox"/>
a.2. Physical Constraint	<input type="checkbox"/>
a.3. Operational Constraint	<input type="checkbox"/>
a.4. Environmental/Cultural Constraint	<input type="checkbox"/>
a.5. Other Constraint Type	<input type="checkbox"/>
b. Project results in an increase in impervious area	<input type="checkbox"/>
c. Project will remove an existing post-construction BMP or reduce the treatment effectiveness of an existing post-construction BMP (reduction in associated WQV or WQFR)	<input type="checkbox"/>
d. Other	<input type="checkbox"/>
2. Provide detailed information regarding the resulting project debits and indicate why full treatment cannot be met by using post-construction BMPs.	
3. Indicate other information that will be provided to evaluate the justification of this variance request.	
a. Design drawings or details	<input type="checkbox"/> Yes <input type="checkbox"/> No
b. Calculations	<input type="checkbox"/> Yes <input type="checkbox"/> No
c. Photos	<input type="checkbox"/> Yes <input type="checkbox"/> No
d. Other	<input type="checkbox"/> Yes <input type="checkbox"/> No
4. Applicant signature and date	
Signature: _____	Date: _____
<i>For Department Use Only:</i> <input type="checkbox"/> Variance Approved <input type="checkbox"/> Variance Denied	
Notes:	
Reviewed By (HDOT PM): _____	Date: _____
Reviewed By (HDOT Branch Head): _____	Date: _____



# POST-CONSTRUCTION BMP VARIANCE REQUEST

STORM WATER POST-CONSTRUCTION BMP VARIANCE REQUEST FORM	
Project Information	
Project: <input type="text"/>	
Project Number: <input type="text"/>	Island: <input type="text"/>
Project Route Name(s): <input type="text"/>	MP Begin: <input type="text"/> MP End: <input type="text"/>
Project Watershed(s): <input type="text"/>	
<i>(To identify watershed(s), refer to: <a href="https://geoportal.hawaii.gov/datasets/HiStateGIS::watersheds/explore">https://geoportal.hawaii.gov/datasets/HiStateGIS::watersheds/explore</a>)</i>	
Required Treatment Area (acres): <input type="text"/>	Provided Treatment Area (acres): <input type="text"/>
Applicant Name: <input type="text"/>	Company: <input type="text"/>
Email Address: <input type="text"/>	Telephone: <input type="text"/>
Justification for Project Water Quality Debit	
1. Check "Yes" for any applicable project conditions below which will incur a debit(s).	
a. Where Low Impact Development (LID) BMPs are required, the designer shall implement LID BMPs to the Maximum Extent Practicable. Indicate any site constraints that will result in providing less than the required water quality treatment. Refer to Section 5.2 of the manual for further descriptions of the various types of constraints.	Yes
a.1. Hydrogeological Constraint	<input type="checkbox"/>
a.2. Physical Constraint	<input type="checkbox"/>
a.3. Operational Constraint	<input type="checkbox"/>
a.4. Environmental/Cultural Constraint	<input type="checkbox"/>
a.5. Other Constraint Type	<input type="checkbox"/>
b. Project results in an increase in impervious area	<input type="checkbox"/>
c. Project will remove an existing post-construction BMP or reduce the treatment effectiveness of an existing post-construction BMP (reduction in associated WQV or WQFR)	<input type="checkbox"/>
d. Other	<input type="checkbox"/>
2. Provide detailed information regarding the resulting project debits and indicate why full treatment cannot be met by using post-construction BMPs.	
<input type="text"/>	

- Only required for projects that do not meet the Required Treatment Area
- Applicable to both MS4 and non-MS4 Permit Area projects
- For "public" construction projects only







# Storm Water Post-Construction Best Management Practices Manual



State of Hawaii  
Department of Transportation  
Highways Division  
February 2022

# Storm Water Post-Construction Best Management Practices: Trends in Permit Requirements

2024 Protect Our Water Conference  
November 13, 2024

Richard Price, P.E., CISEC



Jason Lau, P.E., CPESC



**PROTECT OUR WATER**  
- MĀLAMA I KA WAI -  
HDOT Highways Maui District

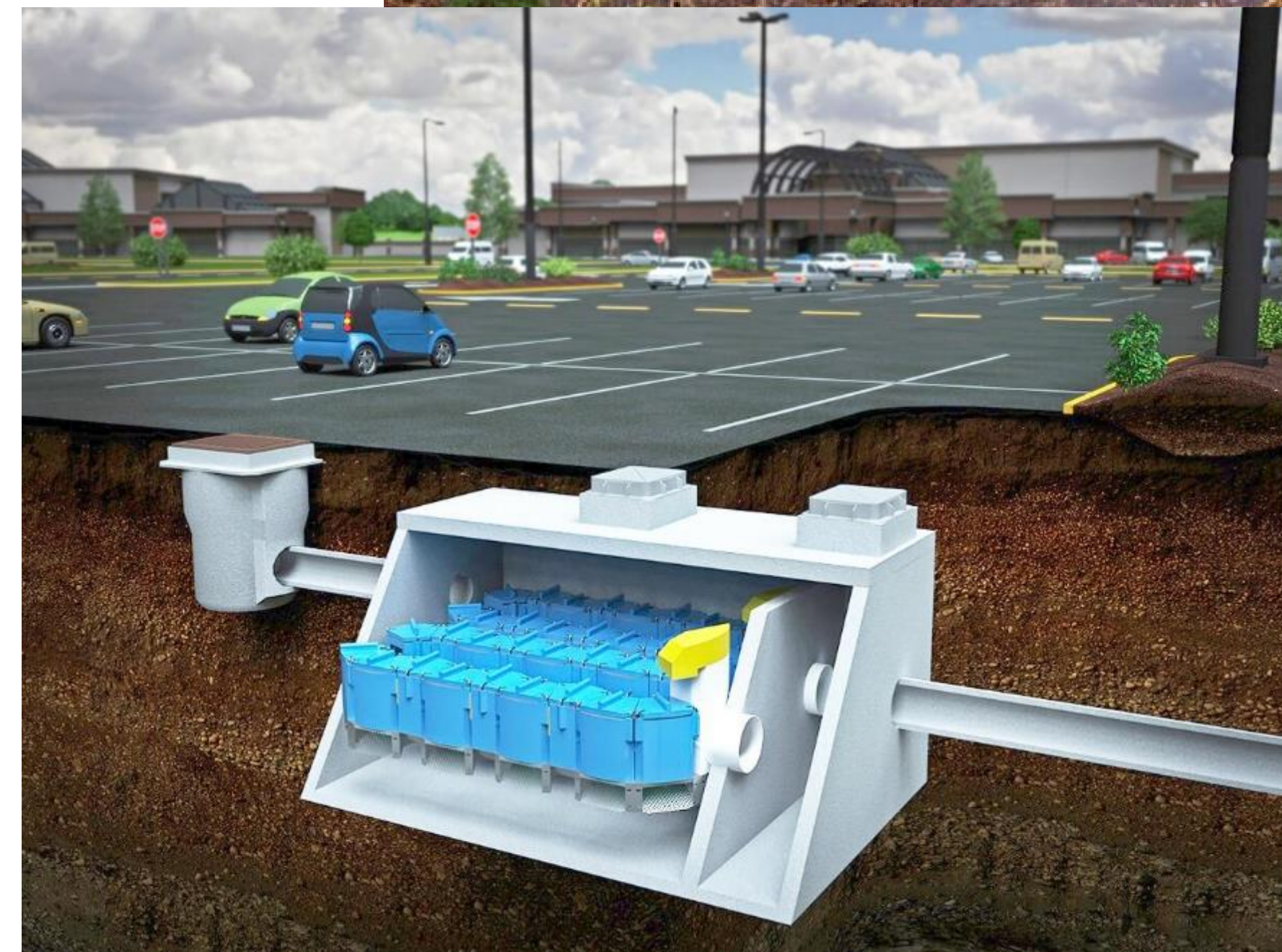


# Post Construction BMPs in Highway NPDES Permits Overview

Requirements vary state-to-state

Typically, three approaches for DOTs:

- Regulating agency develops a comprehensive SW manual
  - DOT addresses requirements in their design/drainage manual
- DOT creates their own manual
- Hybrid of the two





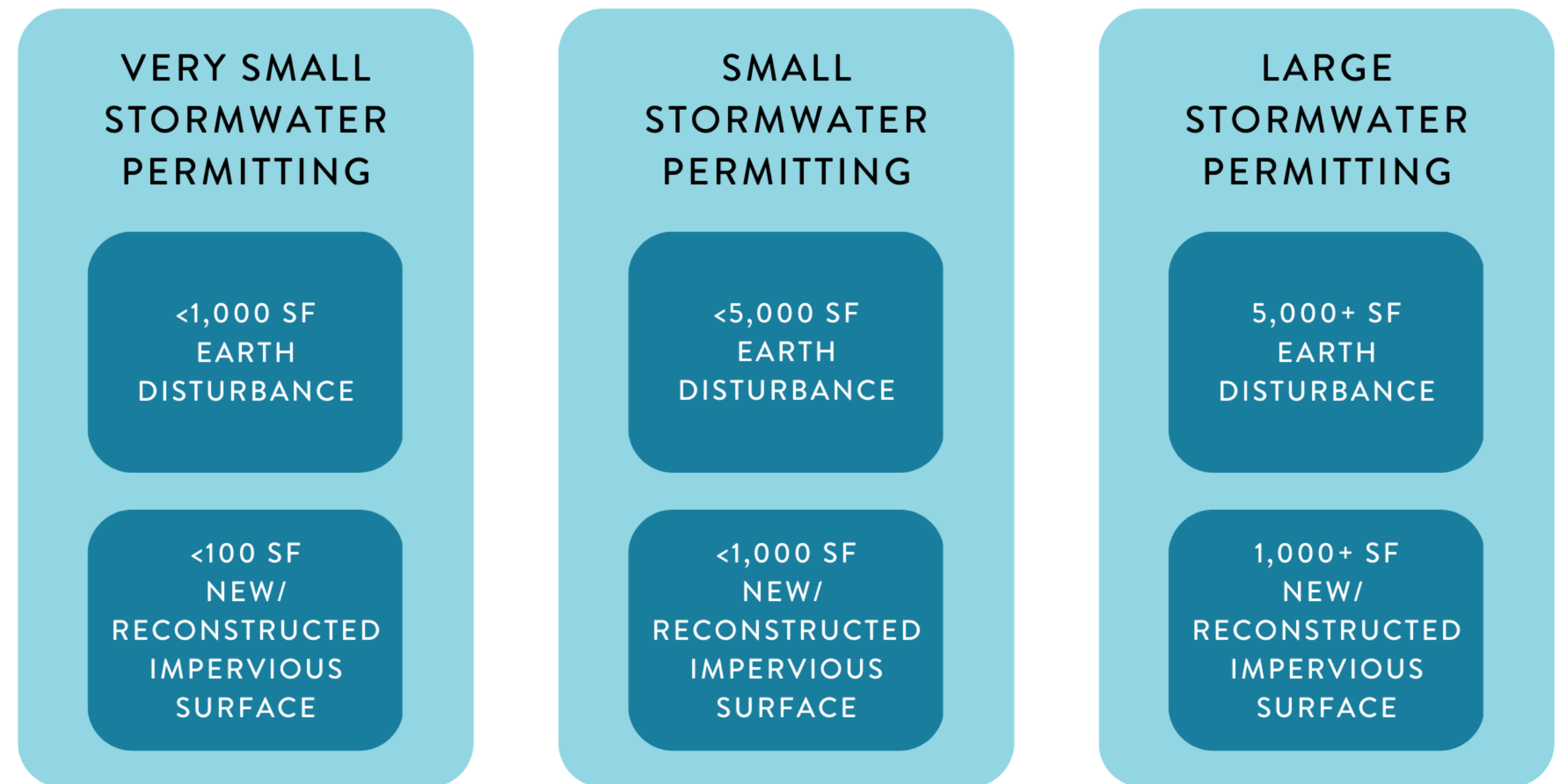
# Trends in Post Construction BMPs: Tightening the Screw...

## Reducing project size triggers:

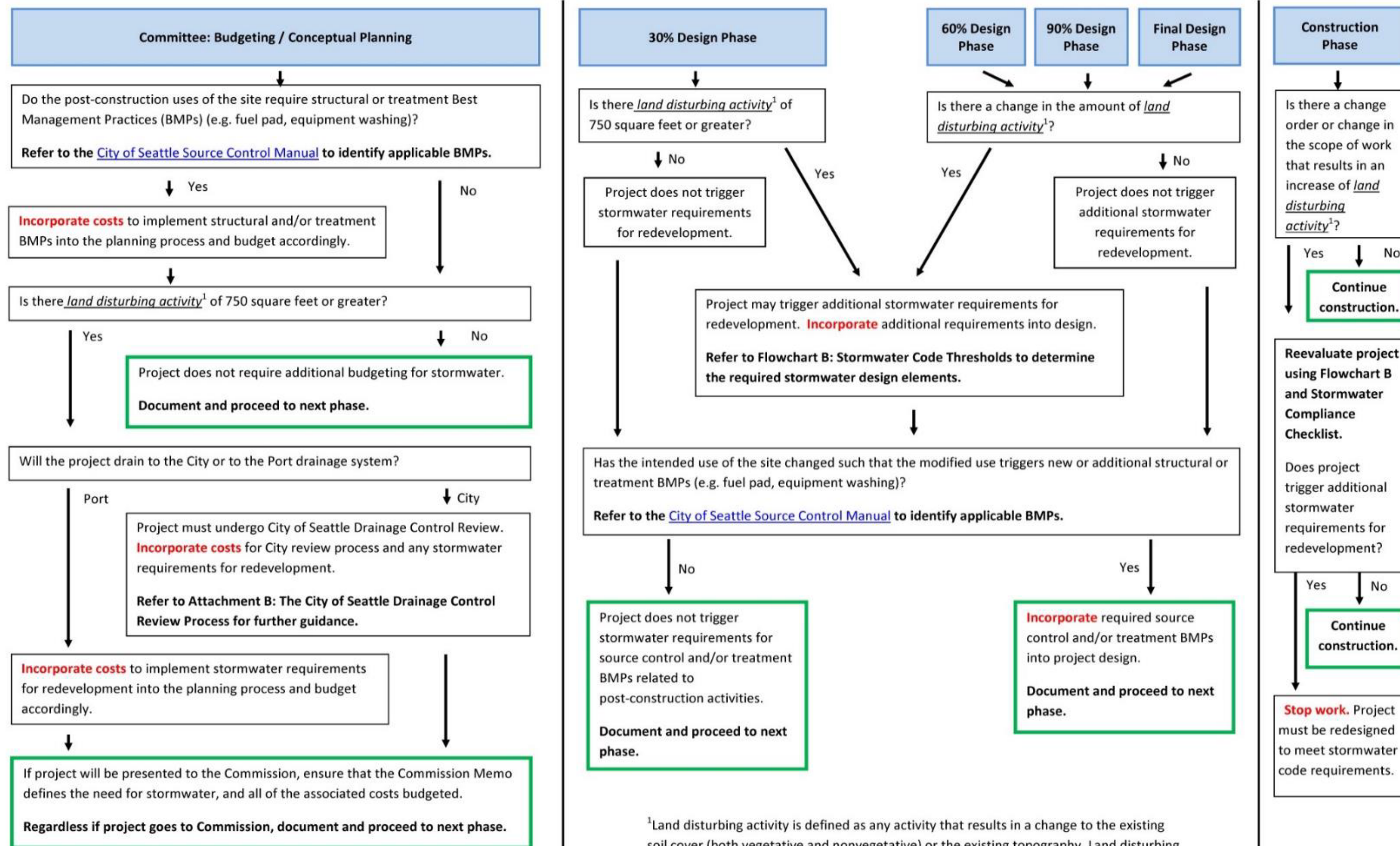
- City of Seattle requires drainage review for 750 ft<sup>2</sup> new or replaced hard surface.

- **Multiple trigger requirements:**

- Disturbed area.
- New or replaced hard surface.
- Pollutant generating hard surface.
- Vegetation conversion.
- Intended use.



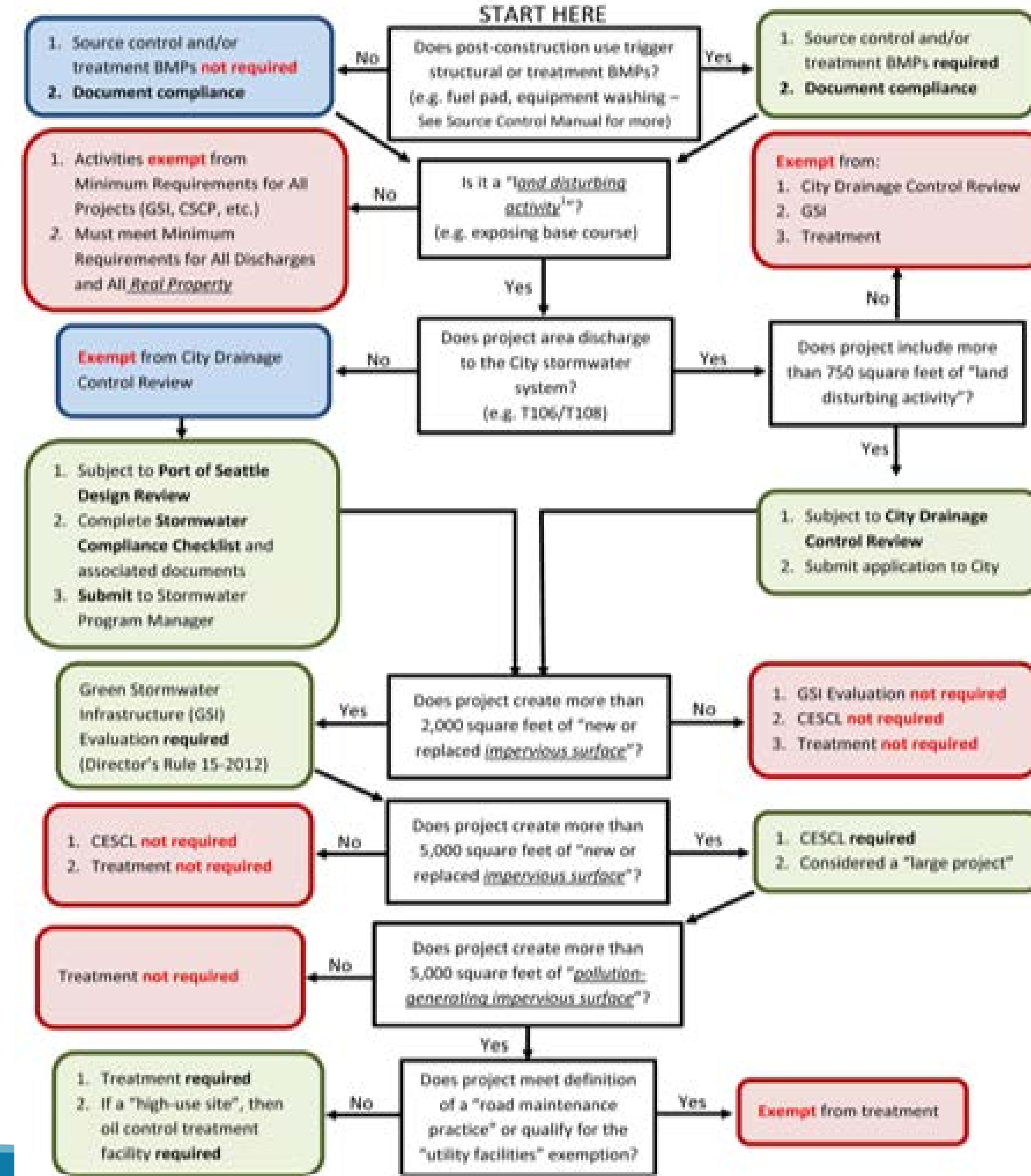
# Trends in Post Construction BMPs: Complexity...



<sup>1</sup>Land disturbing activity is defined as any activity that results in a change to the existing soil cover (both vegetative and nonvegetative) or the existing topography. Land disturbing activities include, but are not limited to clearing, grading, filling and excavation.



# Trends in Post Construction BMPs: Complexity 2...



# Trends in Post Construction BMPs: Regional Treatment Facilities



**Photograph of a Typical Detention Multi-Benefit Trash Treatment System**



# Trends in Post Construction BMPs:

Provides stormwater treatment and visual interest in a park

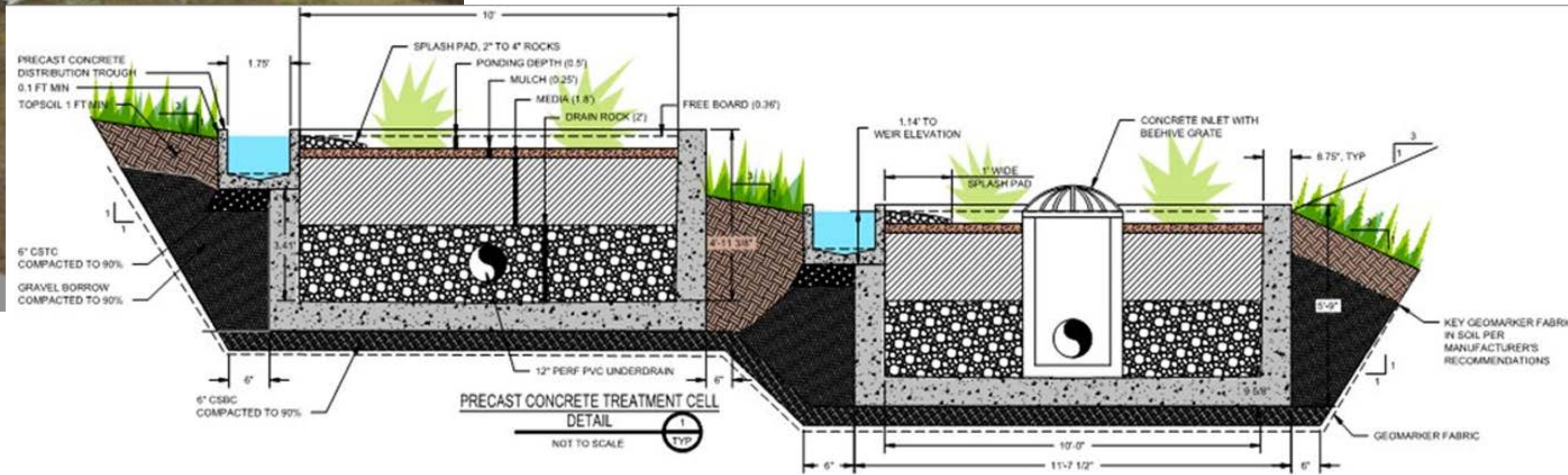
2015

5,500 square feet

754 acres, 8 million gallons per day

## City of Tacoma: Point Defiance Stormwater Treatment Facility

- Provides SW treatment and visual interest in park
- Facility size: 5,500 square feet
- Drainage Basin Area: 754 acres
- Treatment: 8 million gallons per day





# Trends in Post Construction BMPs: New Requirements/Emerging Contaminants

## New requirements:

- PCBs:
  - Caulk
  - Paint
  - Building materials
- TMDLs
- Trash reduction
  
- **Multiple trigger requirements:**
  - Polyfluoroalkyl substances (PFAS)
  - 6PPD-quinone





# Trends in Post Construction BMPs: New BMPs

## Oyster Shells

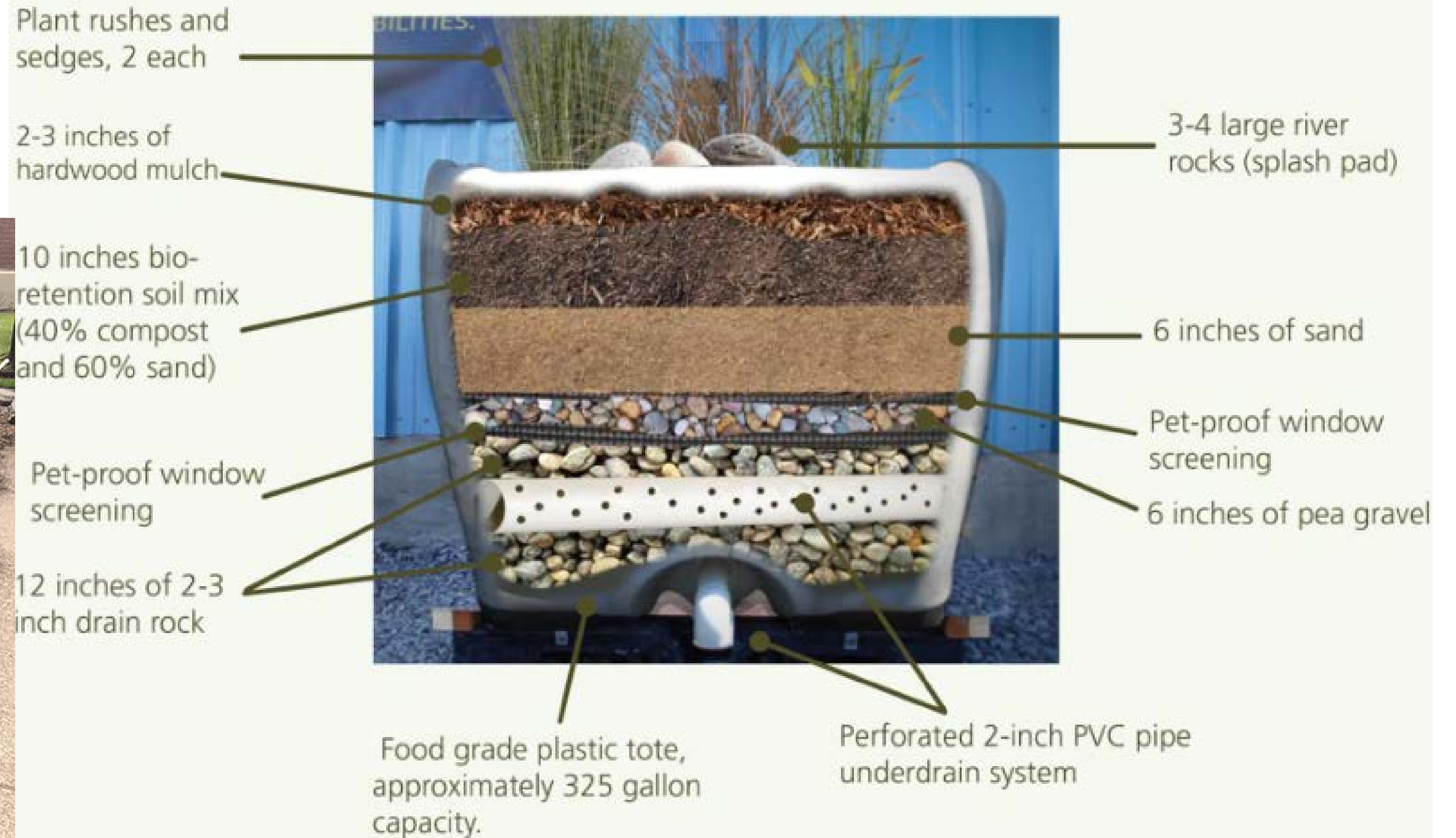


# Trends in Post Construction BMPs: New BMPs

## Grattix Box



### Cross Section of a Grattix

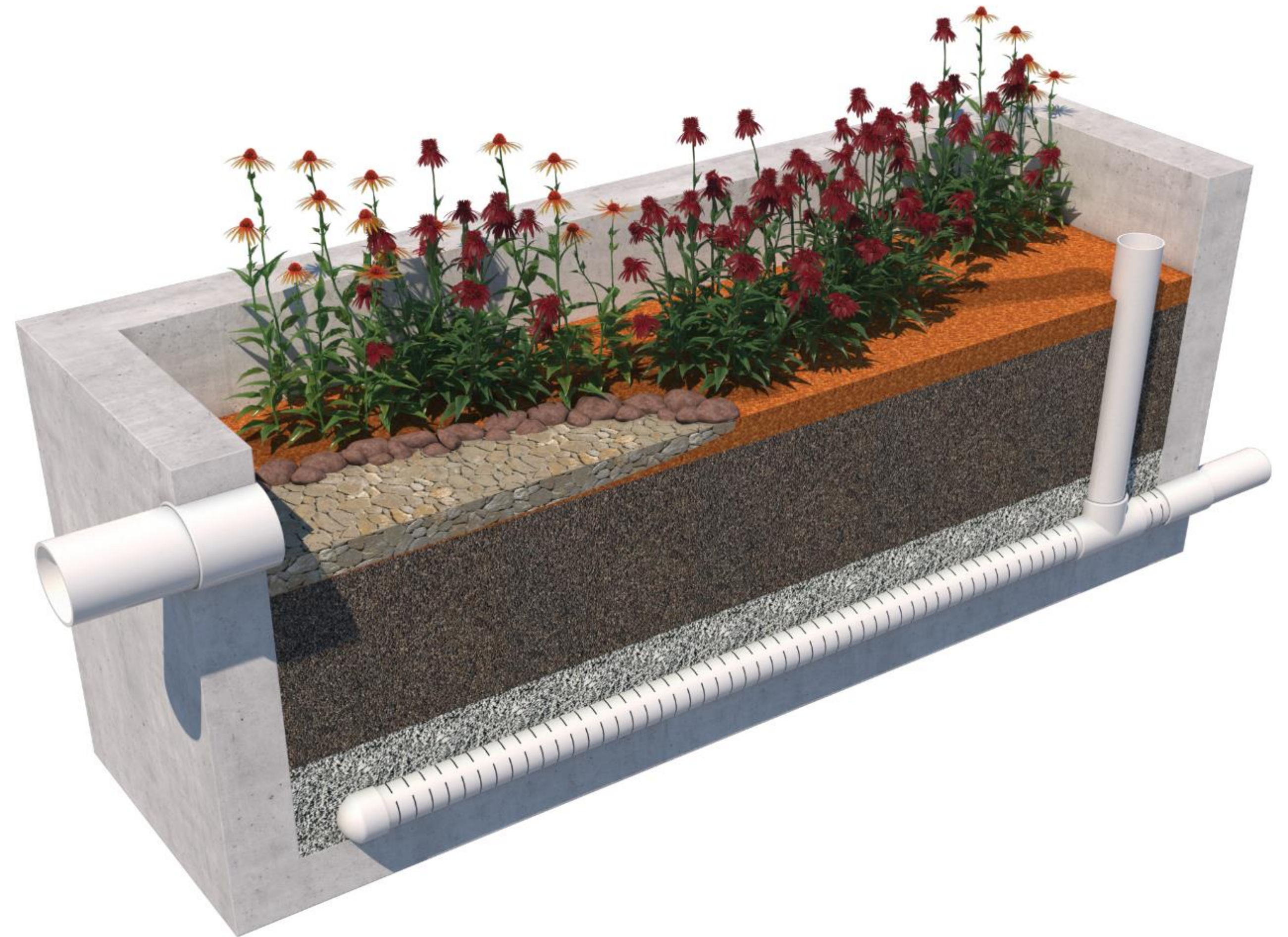




# Trends in Post Construction BMPs: New BMPs

## Custom Filter Media Mixes

- Mulch
- Sand
- Bioretention mix
- BioChar
- Compost
- Oyster shells





# Questions?

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