





**Revised Storm Water Post-Construction Best Management Practices(BMP) Manual** Workshop ABO

May 25, 2022

Hawaii State Department of Transportation, Highways Division





- What is the difference between a "MS4 Permit Area" and "Non-MS4 Permit Area"? • A "MS4 Permit Area" is an area authorized and governed by a MS4 Permit. The MS4 Permit Areas are the islands of Oahu and Maui.
  - A "Non-MS4 Permit Area" is an area that does not have an MS4 Permit. The Non-MS4 Permit Areas are the islands of Hawaii, Kauai, Lanai, and Molokai.

Why is the entire island of Maui classified as a "MS4 Permit Area"?

- Although only the urbanized areas of Kahului and Paia are covered by Maui's MS4 Permit, the entire island of Maui is considered an MS4 Permit Area to avoid confusion.

How does this manual define "Disturbance"?

and storage of materials and equipment on paved surfaces.

Does "Disturbed Area" include areas outside DOT-HWYS right-of-way? • The "Disturbed Area" includes the disturbed area for the entire project.

• Disturbance is defined as "Any 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. Disturbance does not include clearing that leaves soil intact nor does it include the operation of vehicles, staging,

If a project includes an exempt activity such as a new utility installation, can the area disturbed by the exempt activity be subtracted from the "Disturbed Area"? • No, if a project includes non-exempt activities, the entire disturbed area shall be used to determine whether it exceeds the 1-acre threshold.

If a project includes sidewalks or bike paths which are considered "non-vehicular" and "low pollutant generating", can those areas be excluded from the "Disturbed Area"?

Required Treatment Area.

• No, the entire disturbed area shall be used to determine whether it exceeds the 1-acre threshold. However, they are excluded from the calculation for the

### Which post-construction BMPs should be used on a project?

- Projects that require post-construction BMPs must prioritize via infiltration, bioretention, evapotranspiration, or rainwater harvesting.
  - Reduce runoff volumes
  - Maintain pre-development runoff
  - Groundwater recharge
  - Minimize treat and release
- Only if LID BMPs are deemed to be infeasible, non-LID BMPs that treat and release storm water will be allowed.

using Low Impact Development (LID) BMPs that favor treatment



Treatment Control BMP		Typical Targeted Pollutants for Removal						
		Sediment <sup>1</sup>	Nutrients <sup>1</sup>	0il & Grease <sup>2</sup>	Metals <sup>1</sup>	Trash <sup>2</sup>	Bacteria <sup>1</sup>	Notes
LID	Vegetated Buffer Strip	x		х		х		
	Vegetated Swale	х		х		х		
	Enhanced Swale	x	х	x	x	x		
	Infiltration Trench	х	х	х	х	x	х	
	Infiltration Basin	х	х	х	х	х	х	
	Bioretention Facility	x	х	х	х	x	х	
	Permeable Pavement	х	х	х	х		n/a	
	Pocket Wetland	х	varies	х	х	х	х	
	Rainwater Harvesting	varies	varies	n/a	varies	n/a	varies	Primarily for runoff reduction
	Tree Box Filter	x	x	x	n/a	x	х	
TRADITIONAL NON-LID	Wet Pond	x	х	х	x	x	х	
	Wet Extended Detention Pond	x	x	x	x	x	x	
	Sand Filter	x	varies	х	х	x		
PROPRIETARY NON-LID	Drain Inlet Filter	x				x		Results vary depending on type/model. Refer to manufacturer's data for targeted pollutant removal efficiencies.
	Modified Catch Basin	x				x		
	Oil/Grit Separator	x		х	n/a	х	n/a	
	Centrifugal Hydrodynamic Separator	х		x	х	x		
	Multi-Stage Hydrodynamic Separator	x		x	x	x		

## **TREATMENT CONTROL BMP SUMMARY MATRIX**

- Simplified to show general performance for pollutant removal
  - > Sediment
  - > Nutrients
  - Oil and Grease
    Bacteria
- > Metals
- ➤ Trash
- Low Impact Development •
- Traditional Non-LID
- Proprietary Non-LID



2

### **Does DOT-HWYS have a list of approved proprietary BMPs?**

- DOT-HWYS may allow other types of post-construction BMPs if the necessary.
- Proprietary devices must have a current verification from the New Ecology (TAPE), or a national testing and verification program.

No, DOT-HWYS does not maintain a list of approved proprietary BMPs.

consultant can demonstrate that it will fulfill the required treatment

Jersey Corporation for Advanced Technology (NJCAT), the State of Washington Department of Ecology Technology Assessment Protocol-



### Is ponding depth for the various post-construction BMPs based on the designer's judgement?

health, and safety.

### Pretreatment is assumed to be sized for 10% of the WQV. If a filtration device is used for pretreatment, is there also a reduction in the BMP size allowed?

• Since a filtration device does not provide storage of flows, no reduction in WQV is granted.

• Ponding depth should be designed based upon the designer's judgment based on several factors including impact to surrounding areas, public



### **Typical Drawdown Time is shown to be 48 hours. What is Drawdown** Time?

The time it takes for the BMP to drain from full

Total Volume Avg Discharge Rate

- can capture and manage.
- BMP can capture and manage.

• The BMP volume is a measure of how much of the first storm the BMP

• The Drawdown Time is a measure of how much of the next storm the



### Are underdrains required for BMP facilities?

- Underdrains may be included based upon the BMP design at the designer's discretion.
  - Infiltration rates
  - Size of facility
  - BMP location



# QUESTIONS?

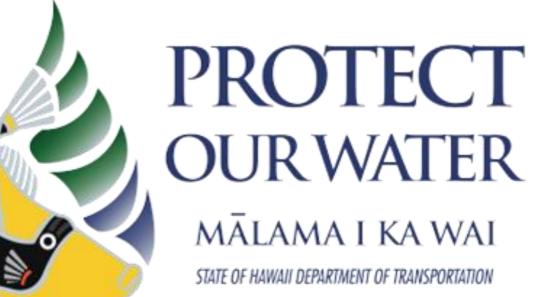
Jason Lau, P.E., CPESC (808) 596-7790 jason@tlcghawaii.com



and the second

THE LIMTIACO CONSULTING GROUP CIVIL ENGINEERING AND ENVIRONMENTAL CONSULTANTS





# PROTECT OUR WATER

HDOT Highways Division - Maui District

0.00000000

