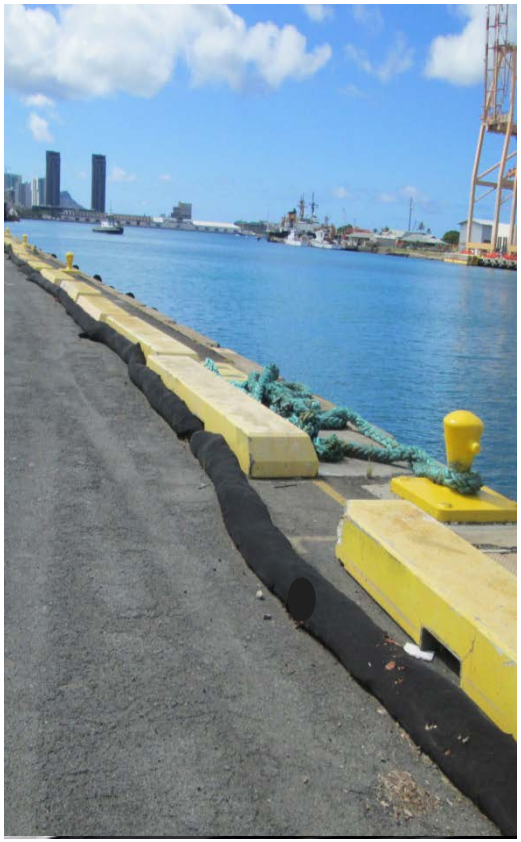
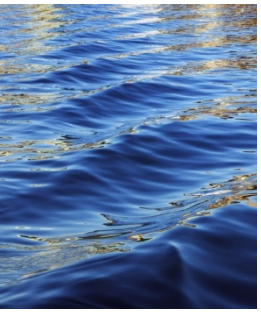


MĀLAMA I KE AWA KAI - PROTECT OUR HARBOR WATERS

DOT Harbors Construction and Post-Construction Training



Training Objectives

- Goals & Objectives
- Regulatory Background
- NPDES Permitting Program Overview
- Harbors Post-Construction Stormwater Management in New Development and Redevelopment Program
- Harbors Construction Site Runoff Control Program

Goals & Objectives

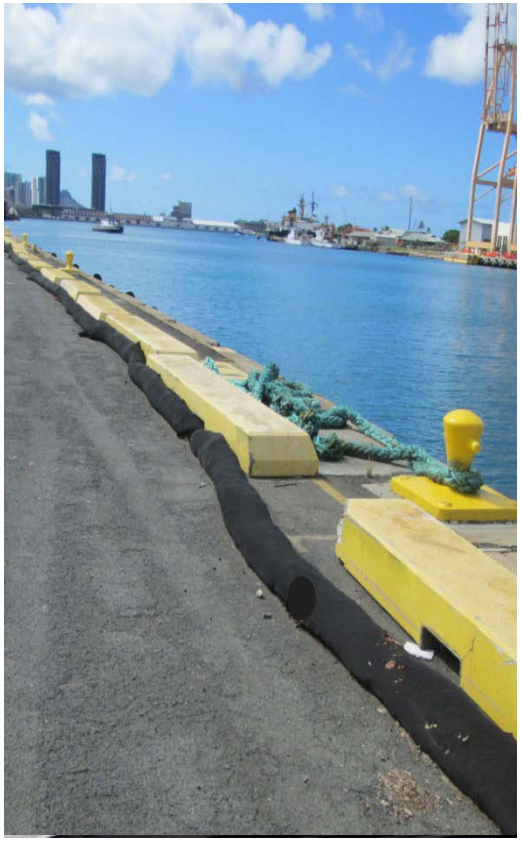
- To be good stewards of the environment
- To protect the environment
- Comply with environmental laws
  - National Pollutant Discharge Elimination System (NPDES) Permits
    - Municipal Separate Storm Sewer System (MS4) – HAR 11-55, Appendix K
    - General Permit Authorizing Discharges of Storm Water Associated with Construction Activity – HAR 11-55, Appendix C
  - Consent Decree

Regulatory Background

- 2003: NPDES permits from DOH for the storm drainage system at Honolulu Harbor and Kalaeloa Barbers Point Harbor.
  - Required to implement programs to minimize pollutants in runoff and the amount of runoff leaving the site.
- January 30, 2006: DOT entered into a consent decree with EPA and DOH.
  - Harbors was required to develop an EMS.
- November 5, 2014: DOT entered into a second consent decree with EPA and DOH.
  - Result is the requirement for increased vigilance in regards to implementation of stormwater programs.
- 2015: NPDES permit from DOH for Kahului Harbor
  - Required to implement programs to minimize pollutants in runoff and the amount of runoff leaving the site.

MĀLAMA I KE AWA KAI - PROTECT OUR HARBOR WATERS

NPDES Program



What is NPDES?

- The Clean Water Act includes the National Pollutant Discharge Elimination System (NPDES) program to regulate the discharge of pollutants from point sources to waters of the United States. Permitted discharges by DOH:
  - Hawaii Administrative Rules (HAR) 11-55:
    - **Appendix K** – NPDES General Permit Authorizing Discharges of Storm Water and Certain Non-Storm Water Discharges from Small Municipal Separate Storm Sewer Systems (MS4)
    - **Appendix C:** NPDES General Permit Authorizing Discharges of Storm Water Associated with Construction Activity

HAR 11-55, Appendix K

- General permit covers storm water and certain non-storm water discharges from small MS4s
- Develop, implement, and enforce a storm water management plan (SWMP)
- DOT Harbors – Small MS4 Permits
  - **HI 03KB482** Honolulu Harbor Permit
  - **HI 03KB488** Kalaeloa Barbers Point Harbor Permit
  - **HI 14KE352** Kahului Harbor Permit

What is an MS4?

- An MS4 is the drainage system that conveys stormwater to the receiving water, including:
  - Storm drain inlets, catch basins, and manholes.
  - Channels / canals.
  - Underground pipeline.
  - Outfalls.

- MS4s are classified based on population size or those located in an urbanized area as defined by the Bureau of Census.

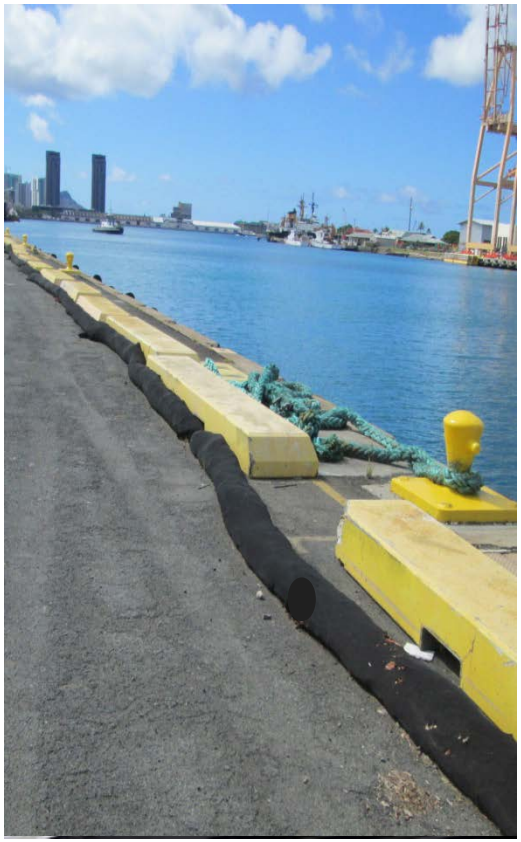
MS4 Permit Requirements

- The Stormwater Management Plan (SWMP) details how DOT Harbors will comply with the permit:
  - Public Education.
  - Public Involvement.
  - Illicit Discharge Detection & Elimination.
  - **Construction Site Runoff Control.**
  - **Post-Construction.**
  - Pollution Prevention / Good Housekeeping.

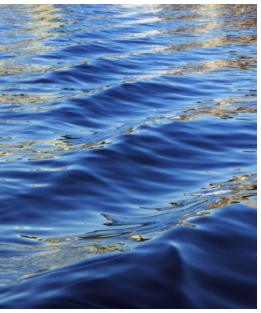
HAR 11-55, Appendix C

- General permit that covers discharges composed entirely of storm water runoff associated with construction activities
- Develop and implement a storm water pollution prevention plan (SWPPP)
- Construction sites
  - Includes sites that disturb 1 acre or more
  - Includes sites smaller than one acre that are part of a larger common plan of development

MĀLAMA I KE AWA KAI - PROTECT OUR HARBOR WATERS



DOT Harbors Post-Construction SW Management in New Development & Redevelopment Program



Post-Construction Stormwater Management Program

- Projects that result in a land disturbance of 1 acre or more (Regulated Projects) **must** consider the inclusion of post-construction BMPs.
  - Guidance Documents:
    - 2015 Stormwater Management Plan (SWMP)
    - Post-Construction Stormwater Management in New Development and Redevelopment, Honolulu and Kalaeloa Barbers Point Harbors, 2014 (Post-Construction Manual)
    - Storm Water BMP Guide (CCH, 2012; Harbors SWMP, Section D, Appendix C)
    - Rules Relating to Storm Drainage Standards (effective June 2013, CCH, 2000; Harbors SWMP, Section D, Appendix D)

SWMP Post–Construction Definitions

- Land Disturbance:
  - Penetration, turning, or moving of soil.
  - Resurfacing of pavement where the ground is exposed.
  - Grubbing where equipment is used to uproot vegetation.
  - Does NOT include:
    - Grass or weed cutting.
    - Bush or tree trimming that leaves the soil intact.

SWMP Post–Construction Definitions

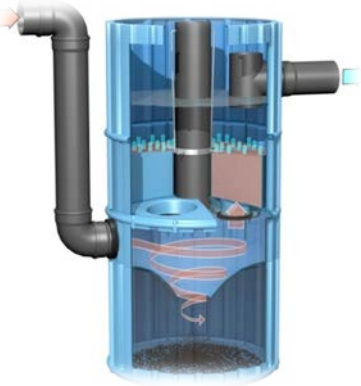
Exempted project examples (Post-Construction Manual, Section 1.2):

- Maintenance activities such as top-layer grinding, repaving (where all pavement is not removed) and reconfiguring surface parking lots.
- Reroofing.
- Interior remodeling and improvement.
- Routine maintenance to maintain original line and grade, hydraulic capacity, or original purpose of facility.
- Trenching and resurfacing associated with utility work.
- Replacement of damaged pavement.
- Emergency construction activities required to immediately protect public health and safety.

SWMP Post–Construction Definitions

- Post–Construction BMP:

  A BMP that will remain in place following construction to minimize the discharge of pollutants from activities on-site.

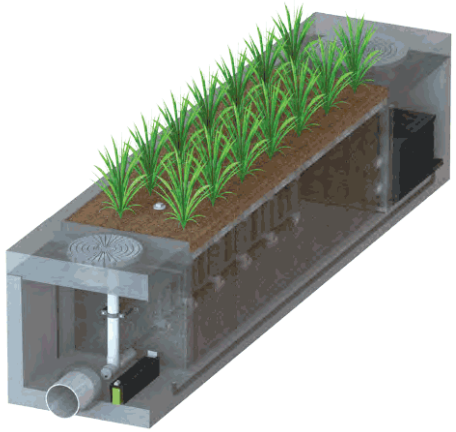


SWMP Post – Construction Definitions

- Low Impact Development (LID)

"…mimic predevelopment site hydrology by using site design techniques that store, infiltrate, evaporate, and detain runoff…"

(SWMP Section 3.4.1)



Post-Construction Stormwater Management Program

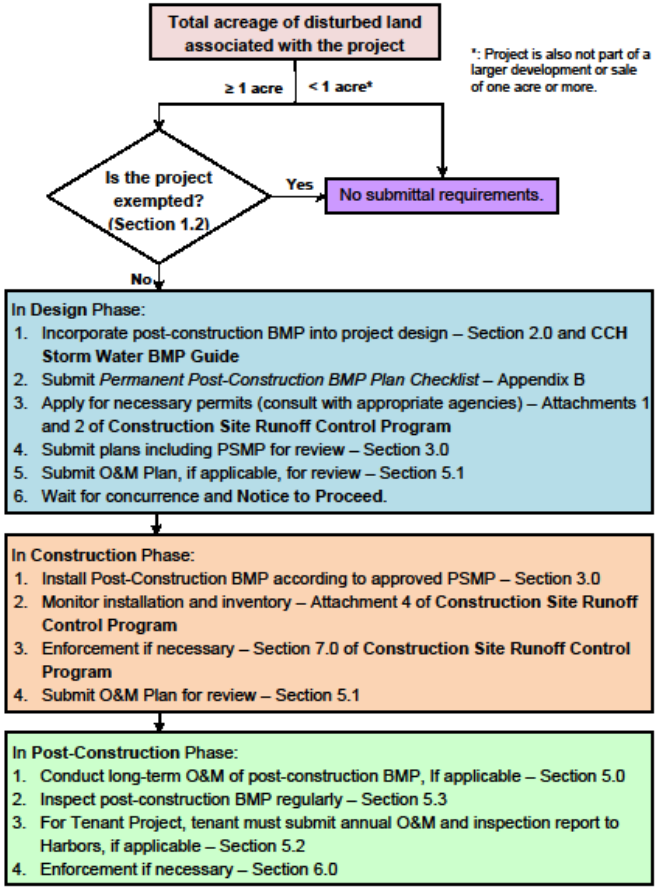
- Include in Design Review Submittal:
  - Post-Construction BMP Plan Checklist.

  <u>If PBMPs are required (Regulated Projects):</u>

  - Post-Construction Stormwater Mitigation Plan (PSMP).

Post-Construction Stormwater Management Program

Figure 1-1:
General Post-Construction Project Requirements Flow Chart



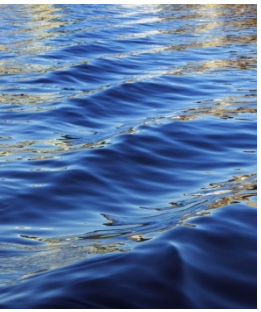
Permanent Post-Construction Design Checklist

Hawaii Department of Transportation – Harbors Division

Permanent Post-Construction Best Management Practice Plan Checklist

For a Harbors Project, please fill in this section	
Project Title:	
Project Location:	
Acreage of Site:	Harbors Project No.:
Name of Design Firm:	
Email:	Phone No.:

For a Tenant Improvement Project, please fill in this section	
Tenant Business Name:	Date:
Project Title:	
Project Location:	
Acreage of Site:	TMK No. (if any):



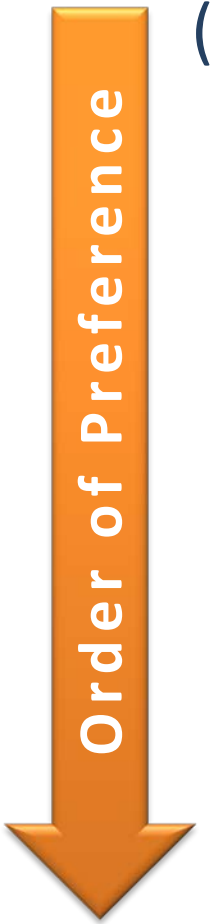
Post-Construction Stormwater Mitigation Plan (PSMP)

Drainage Study and Conditions of Concern → Identify potential pollutants → Identify post-construction BMPs → Complete PSMP

- Required for ”Regulated Projects.”
- Contents (Post-Construction Manual, Section 3.4):
  - Narrative of project.
  - Site map.
  - Description of potential pollutants.
  - Drainage study and conditions of concern.
  - Post-Construction BMPs.
  - Maintenance requirements.

PSMP – PBMP Selection

- Select from these categories (SWMP Section 3.3):
  - Low Impact Development (LID).
    - Goal = Keep the stormwater on-site and treat it as a resource instead of a waste.
    - Example = Conserve vegetated areas.
  - Source Control.
    - Goal = Keep potential pollutants from coming into contact with stormwater runoff.
    - Example = Covering a maintenance area.
  - Treatment Control.
    - Goal = Remove pollutants from stormwater runoff.
    - Example = Hydrodynamic separators.

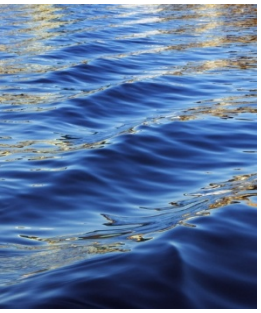


PSMP – PBMP Selection and Design

- Refer to City and County of Honolulu resources (Harbors SWMP 2015, Section D):
  - Post-Construction Stormwater Management in New Development and Redevelopment, Honolulu and Kalaeloa Barbers Point Harbors, 2014
  - Storm Water BMP Guide (CCH, 2012; Harbors SWMP, Section D, Appendix C)
  - Rules Relating to Storm Drainage Standards (effective June 2013, CCH, 2000; Harbors SWMP, Section D, Appendix D)

PBMP Installation and Tracking

- Construction Inspection (SWMP Section 4.0)
  - Prior to construction
  - During construction
  - Final Inspection
- Maintenance, Inventory and Recordkeeping (SWMP Section 5.0)
  - Site-specific Operation and Maintenance Plan, guidance provided in CCH Stormwater BMP Guide, or from product manufacturer.
  - PBMPs should be inspected at least annually or as specified in site-specific O&M plan.
  - PBMPs are tracked in Harbor's AMS (Cityworks).



Enforcement

- Oral or Verbal Warning
- Written Warning
- Notice of Apparent Violation (NAV)
- Notice and Finding of Violation Order (NFVO)
- Stop Work Orders (as applicable) e.g. Issuance of Summons or Citation, including fines

Permanent BMP Options

- Conserve Natural Areas, Soils, and Vegetation:
  - Conduct construction activities such that disturbance to existing vegetated areas is minimized, in particular trees.
  - Refer to CCH Storm Water BMP Guide, pg 4.

Implementation:
- In areas where there is existing vegetation

Permanent BMP Options

- Vegetated Swale:
  - Broad earthen channel vegetated with erosion resistant and flood tolerant grasses.
  - Runoff is typically conveyed through channel, which allows for infiltration and treatment.
  - Refer to CCH BMP Guide, pg 86.

Implementation:
- Along streets and parking lots, when space is available.

Permanent BMP Options

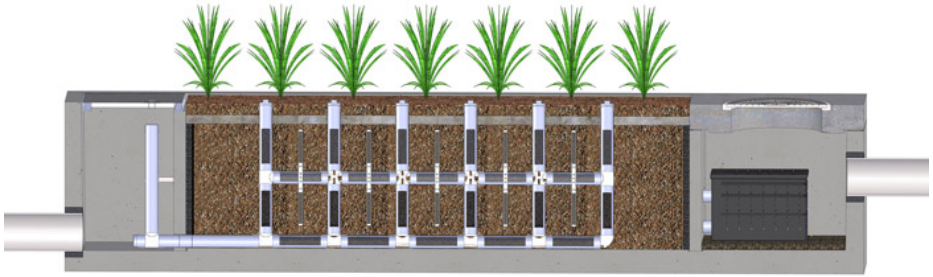
- Permeable Pavement
  - Paved surfaces that infiltrate, treat, and/or store rainwater where it falls.
  - Refer to CCH BMP Guide, Pg 57.

Implementation:
• Driveways and parking lots.
• Areas where flooding is a problem.

Permanent BMP Options

- Modular Wetlands
  - A treatment system designed to look and function more naturally.
  - Engineered media targets pollutants of concern.
  - Proprietary device, not covered in CCH BMP Guide.
  - Requires adequate grade drop.

Implementation:
• Driveways and parking lots.
•Areas that have drain piping and receive surface flow.

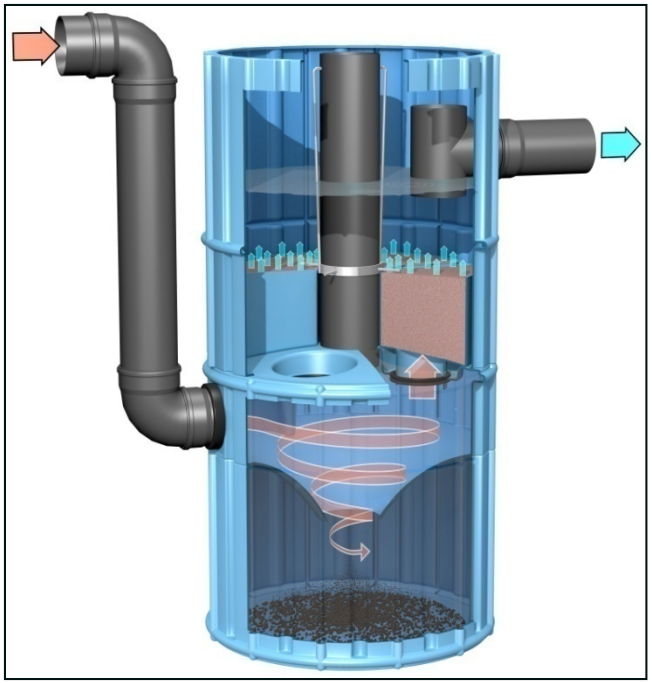


Permanent BMP Options

- Hydrodynamic Separators
  - Flow through structures with a settling or separation unit to remove sediments and other pollutants.
  - Refer to CCH BMP Guide, pg 104.

Implementation:

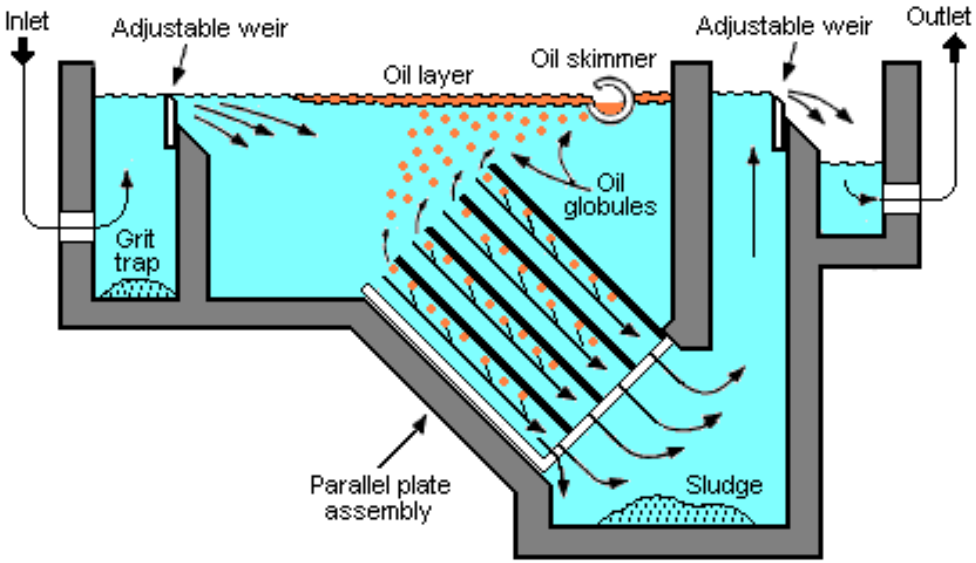
•Areas where materials to be removed from runoff are heavy particulates – which can be settled – or floatables –which can be captured, rather than fine particles with poor or dissolved pollutants.



Permanent BMP Options

- Oil Water Separators
  - Separates oil from water before discharge.
  - Refer to CCH BMP Guide pg. 15, Vehicle Cleaning.

Implementation:
•Areas where vehicle repairs or washing take place.
•Areas prone to oil and grease runoff.



Permanent BMP Options

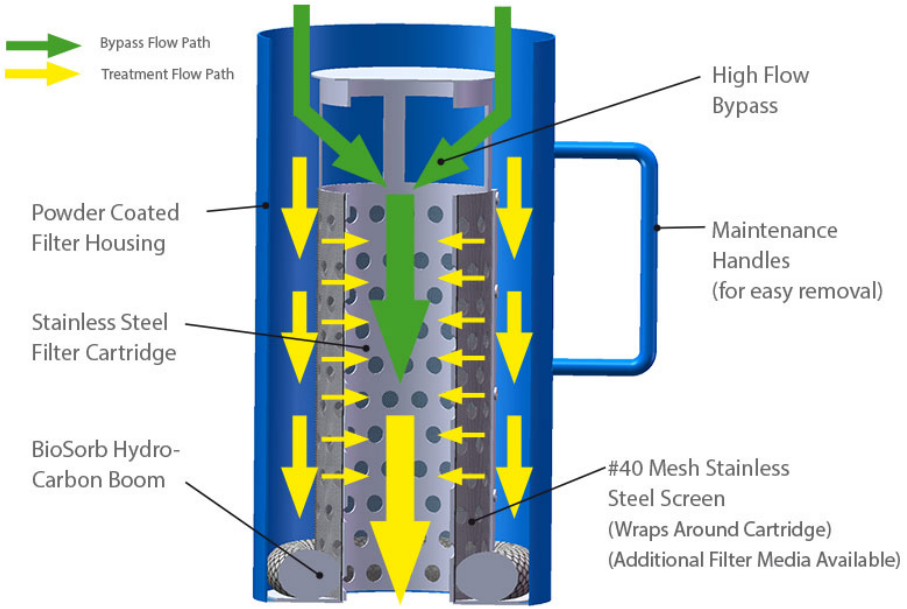
- Trench Drain Filter
  - Designed to absorb high levels of hydrocarbon, oils and grease.
  - Ideal for maintenance yards.
  - Easy to install and replace.

Implementation:
•Maintenance yards with existing trench drains.
•New development where trench drains are appropriate.

Permanent BMP Options

- Downspout Filter
  - Canister installed in downspout piping.
  - Water is directed outside of the Mesh Stainless Steel Filter Cartridge & Filter.
  - Best for drainage areas with low pollutant loads.

Implementation:
•Roof drain downspouts.



Permanent BMP Options

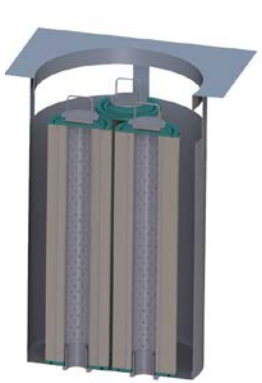
- Curb Inlet Screen
  - Blocks larger debris and trash from entering curb inlet structures.
  - Some systems automatically retract during higher flows.
  - Can be used with basket insert.

Implementation:
•At existing curb inlets, or new curb inlets.

Permanent BMP Options

- Grate Inlet Filter
  - Catch basin insert can be custom sized to fit almost any inlet.
  - Includes oil boom for hydrocarbon removal.
  - Can include media filter, if needed.
  - Fairly easy to install and maintain.

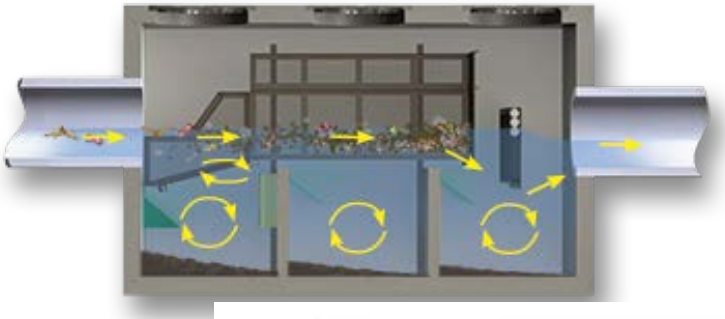
Implementation:
•Grated catch basin inlet where pollutant removal is needed.

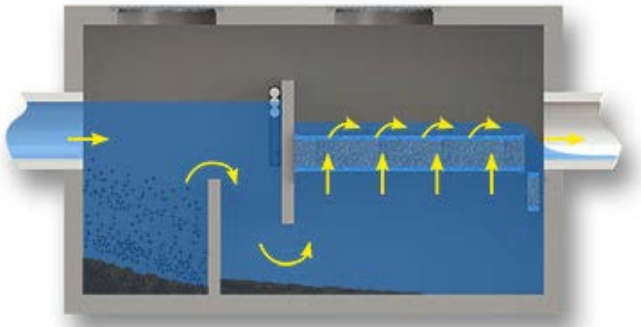


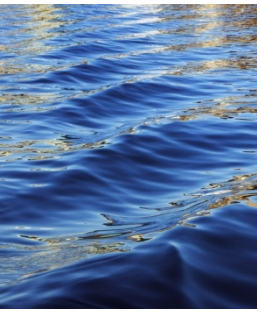
Permanent BMP Options

- Baffle Box
  - Flow through structure with settling chambers that trap sediment.
  - Includes basket system to trap floatables, and an oil boom to remove hydrocarbons.
  - Can include media filter for fine and dissolved nutrients.

Implementation:
•Treating higher flow volumes at the end of a drainage system.
•Areas with low grade drop





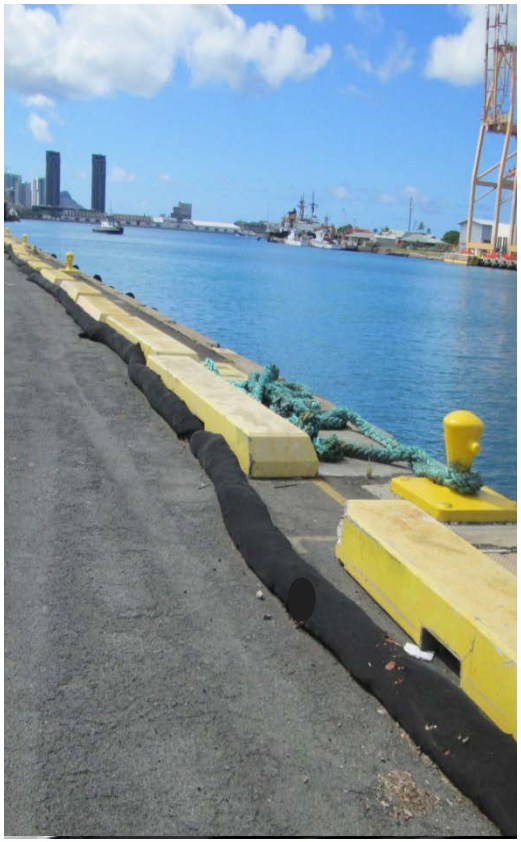


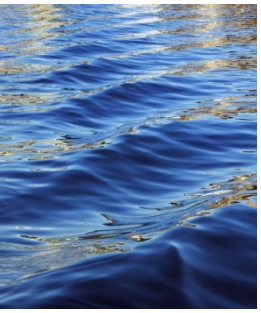
Take Away

- All projects must be reviewed to ensure that they comply with Post-Construction BMP requirements.
- Projects that result in a land disturbance of 1 acre or more must consider the inclusion of post-construction BMPs.
- **Be familiar with City and County of Honolulu BMP manual, Harbor's SWMP programs, Consent Decree, and construction documents.**

MĀLAMA I KE AWA KAI - PROTECT OUR HARBOR WATERS

DOT Harbors Construction Site Runoff Control Program





Construction Site Runoff Control Program Training

- NPDES Small MS4 Permit
- Consent Decree
- NPDES Construction General Permit
- Stormwater pollution prevention practices
- City and County of Honolulu Best Management Practice Manual for Construction

MS4 Permit
Stormwater Management Plan

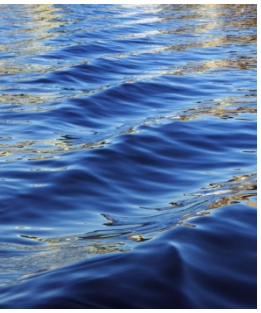
- SWMP for Honolulu and KBPH is available online:
  - http://hidot.hawaii.gov/harbors/malamaikeawakai/
- SWMP for Kahului Harbor covered under the Kahului, Highways Division, Maui Division SWMP
  - http://stormwatermaui.com/
- Details procedures for complying with requirements of HAR 11-55, App K and the Consent Decree.
- Minimum Control Measure: *Construction Site Runoff Control Program*

All three harbors are subject to the requirements of the Harbor's Construction Site Runoff Control Program

MS4 Permit
SWMP Definitions

- Construction:
  - Activities that result in land disturbance, including:

  - Construction related activities, including:
    - Stockpiles.
    - Borrow areas.
    - Staging areas.



MS4 Permit
SWMP Definitions

- Land Disturbance:
  - Penetration, turning, or moving of soil.
  - Resurfacing of pavement where the ground is exposed.
  - Grubbing where equipment is used to uproot vegetation.
  - Does NOT include:
    - Grass or weed cutting.
    - Bush or tree trimming that leaves the soil intact.

MS4 Permit
SWMP Definitions

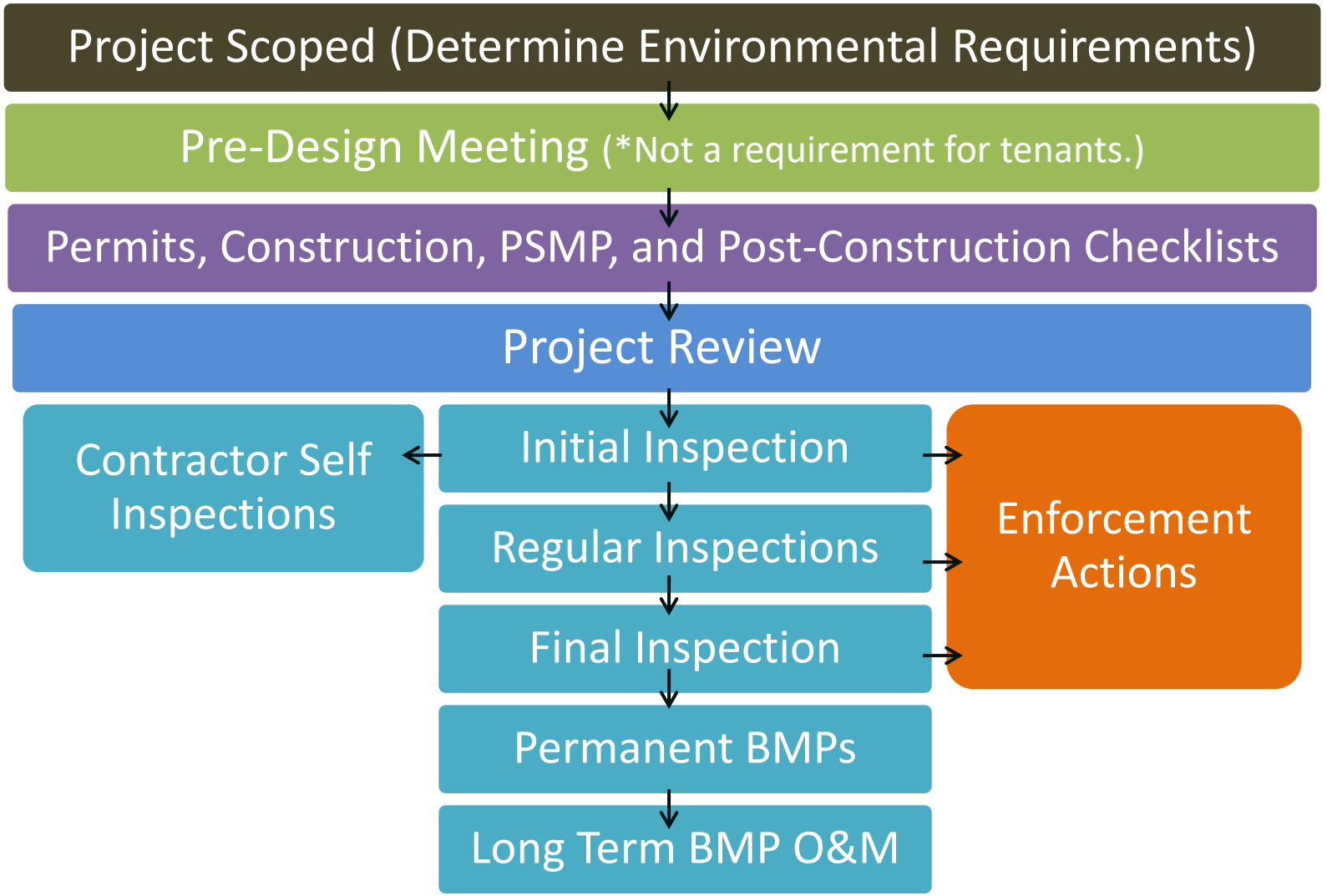
- Exempted projects:
  - Minor land disturbance on a single lot (e.g., minor landscaping activities).
  - Post, pole, sign, and fencing installation.
  - Utility repair work.
  - Parking lot, driveway, and other paved surface repair.
  - Repair and maintenance activities.



MS4 Permit
SWMP Definitions

- Best Management Practice (BMP):
  - Practice or device used to mitigate the discharge of potential pollutants.

Harbor's Construction Process



Consent Decree Requirements

- Construction Site Runoff Control Program elements:
  - Plan Review Procedures.
    - Design Review Checklist.
  - BMP Standards and Technical Specifications.
    - Refer to SWMP Construction Program, Att 6.
  - Construction and Post-Construction BMP inspections.
  - Training program for plan reviewer and inspectors.

Construction Design Review

- Pre-Design Meeting.
- Documentation:
  - Notification Form for Project Less Than One Acre with BMP plan.

OR

  - Construction Design Review Checklist.
  - Completed NPDES applications.
  - Construction BMP plan sheets and details.
  - Stormwater Pollution Prevention Plan.

Design Review Checklist

Hawaii Department of Transportation – Harbors Division

Construction Site Design Review Checklist

Project Description	
Project Title:	
Project Job No:	Acreage of Site:
Name of Design Firm:	
Projected Construction Timeframe:	
Description of Project:	

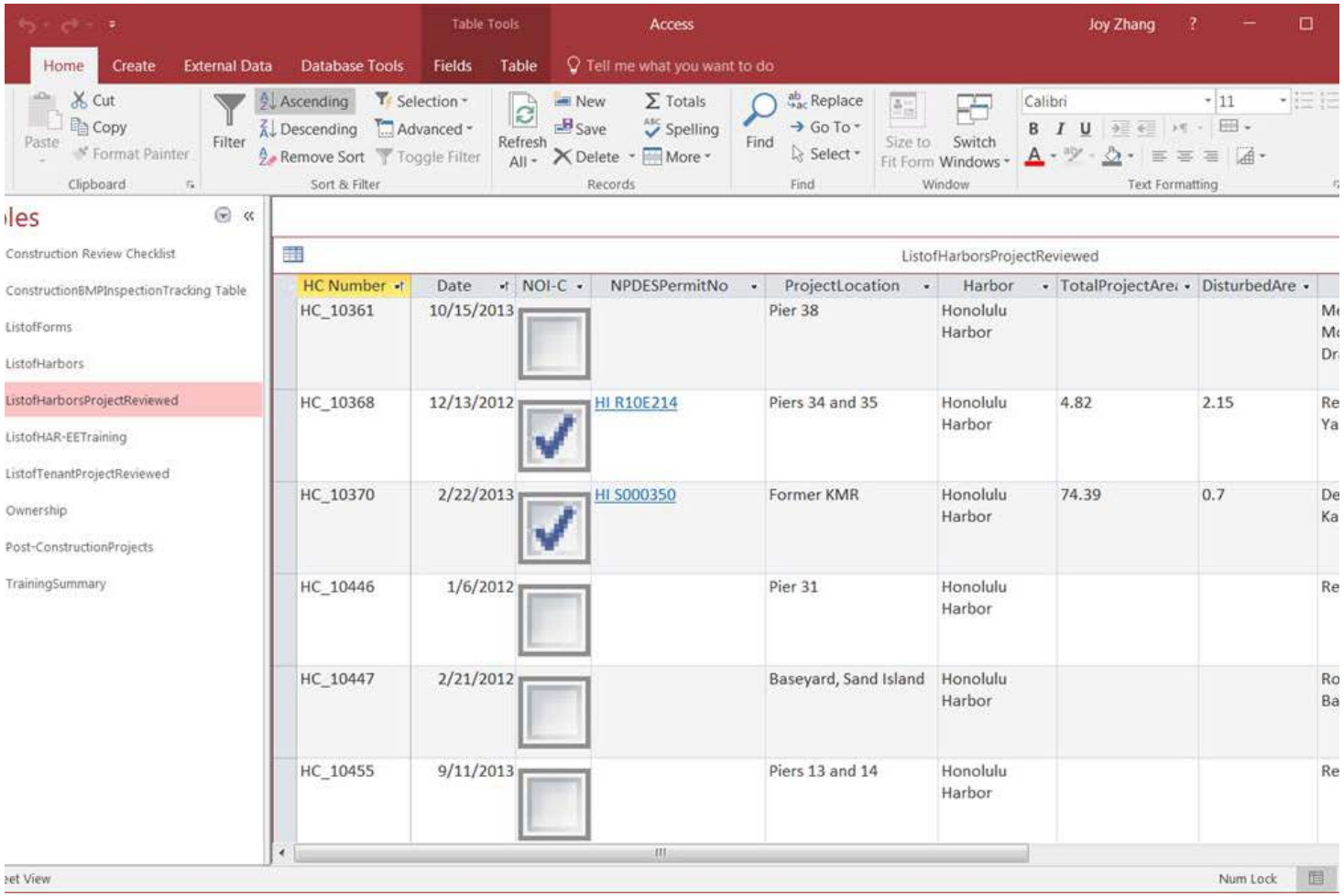
Site Information
Construction Site Location:

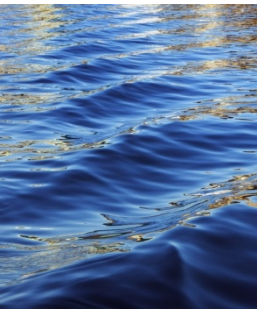
Signature and Certifications	
Designer: I certify that the design is complete, accurate, and addresses the items on this checklist to the best of my knowledge.	
Print Name:	Job Title:
Signature:	Date:
Review: HDOT Harbors Project Manager and Environmental Section.	
Harbors Project Manager Signature:	Print Name: Date:
Harbors Environmental Section Signature:	Print Name: Date:

Construction Review

- Project review after contract award:
  - Contractor completes Stormwater Pollution Prevention Plan and provides to the Construction Manager (CM).
  - CM will submit to Environmental Section (EE).
  - EE will send their comments to the CM through memorandum.
  - Harbors Division will issue Notice to Proceed to the contractor, specifying:
    - First work order is the installation of BMPs.
    - BMPs must be inspected prior to the start of any other work.
  - EE maintains an inventory of construction sites.

Inventory of Construction Sites





Reviewing Plans

- When conducting a plan review:
  - Identify location and size.
  - Identify where storm water will flow.
  - Identify locations of potential pollutant source.
- Determine the scheduling/phasing
- Identify responsible parties (inspections, maintenance, recordkeeping, etc.)
- Have potential pollutants been addressed?
- Ensure there is a plan for stabilization.
- Does design include a PBMP?
- Have the necessary permits been applied for?

Consent Decree Requirements

- Use the City and County of Honolulu Stormwater BMP Manual – Construction. When applicable, all projects should include:

Erosion Controls	Scheduling
	Preservation of Existing Vegetation
	Slope Protection
	Run-on Diversion
Sediment Controls	Silt Fence
	Storm Drain Inlet Protection
	Sand Bag Barrier
	Stabilized Construction Site Entrance/Exit
Non-Stormwater Management	Water Conservation Practices
	Dewatering Operations
Waste Management	Material Delivery and Storage
	Stockpile Management
	Spill Prevention and Control
	Solid Waste Management
	Concrete Waste Management
	Sanitary/Septic Waste Management

Consent Decree Requirements

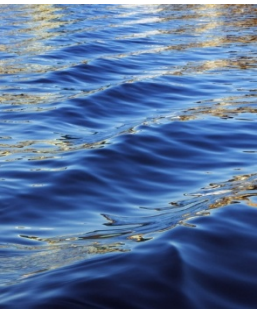
- Sites Disturbing 1 Acre or More:

Erosion Controls	Hydraulic Mulch
	Hydroseeding
	Soil Binders
	Geotextiles and Mats
	Wood Mulching
	Slope Drains
Sediment Controls	Silt Fence
	Fiber Rolls
	Sediment Basin
	Gravel Bag Berm
	Street Sweeping and/ or Vacuum
	Sand Bag Barrier
	Storm Drain Inlet Protection
	Scheduling
	Check Dam

Consent Decree Requirements

- Sites Disturbing 1 Acre or More:

Additional Controls	Wind Erosion Controls
	Stabilized Construction Entrance/ Exit
	Stabilized Construction Roadway
	Entrance/ Exit Tire Wash
	Advanced Treatment Systems
Non-Stormwater Management	Water Conservation Practices
	Dewatering Operations (Groundwater dewatering only under National Pollutant Discharge Elimination System Permit No. (TBD)
	Vehicle and Equipment Washing
	Vehicle and Equipment Fueling
	Vehicle and Equipment Maintenance
Waste Management	Material Delivery and Storage
	Stockpile Management
	Spill Prevention and Control
	Solid Waste Management



Consent Decree Requirements

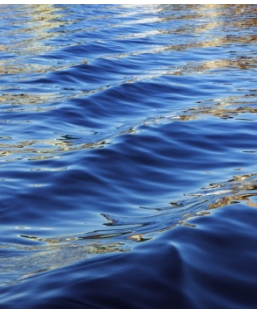
- Roadway Paving or Repair:

1.	Restrict paving and repaving activity to **exclude periods of rainfall** or predicted rainfall unless required by emergency conditions.
2.	**Install gravel bags and filter fabric** or other equivalent inlet protection at all susceptible storm drain inlets and at manholes to prevent spills of paving products and tack coat.
3.	Prevent the discharge of release agents including soybean oil, other oils, or diesel to the stormwater drainage system or receiving waters.
4.	Minimize non-stormwater runoff from water use for the roller and for evaporative cooling of the asphalt.
5.	Clean equipment over absorbent pads, drip pans, plastic sheeting or other material to capture all spillage and dispose of properly.
6.	**Collect liquid waste in a container**, with a secure lid, for transport to a maintenance facility to be reused, recycled or disposed of properly.

Consent Decree Requirements

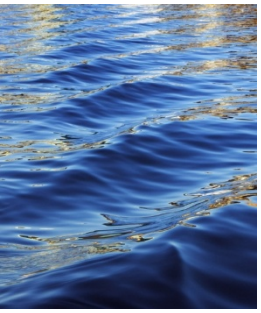
- Roadway Paving or Repair:

7.	Collect solid waste by vacuuming or sweeping and securing in an appropriate container for transport to a maintenance facility to be reused, recycled or disposed of properly.
8.	**Cover the "cold-mix" asphalt** (i.e., pre-mixed aggregate and asphalt binder) with protective sheeting during a rainstorm.
9.	**Cover loads** with tarp before haul-off to a storage site, and do not overload trucks.
10.	Minimize airborne dust by using water spray or other approved dust suppressant during grinding.
11.	Avoid stockpiling soil, sand, sediment, asphalt material and asphalt grinding materials or rubble in or near stormwater drainage system or receiving waters.
12.	Protect stockpiles with a **cover or sediment barriers during a rain**.



Plan Reviews: NPDES Permit Minimum Measures

- Provide natural buffer if within 50’ of state water.
- Install perimeter controls where water will flow.
- Minimize track-out.
- Control stockpiles.
- Minimize dust.
- Minimize land disturbance on slopes.
- Minimize soil compaction.
- Protect drain inlets.
- Contaminated stockpiles.
- Ensure non-storm water is contained (e.g. dewatering, concrete washout, vehicle washing).
- Written narrative for potential pollutant generating activities



Harbor's Inspections

- Initial Inspection:
  - Verify all BMPs are installed appropriately.
  - Deficiencies must be corrected prior to the start of other construction work.
- Regular Inspection:
  - Deficiencies must be corrected or enforcement will commence.
  - Inspector will provide the contractor with report in five (5) calendar days.
- Final Inspection:
  - When all the following conditions are met:
    - Construction is completed.
    - Exposed soil has been stabilized.
    - Remaining activities have minimal impact on stormwater runoff.
  - Document the conditions are met in the *Additional Notes* portion of the report.
  - Ensure that permanent BMPs are properly installed, if applicable.
  - Deficiencies must be corrected prior to issuance of final payment.

Harbor's Inspections

- Review completed Contractor Self Inspections:
  - For sites with NPDES permit:
    - Contractor's self inspections weekly AND within 24 hours of a 0.25 inch rainfall.
    - Signed by duly authorized representative.
  - Ensure contractor has completed or has a plan for completion of maintenance and repair of BMPs.
  - Any changes to BMPs must be documented.

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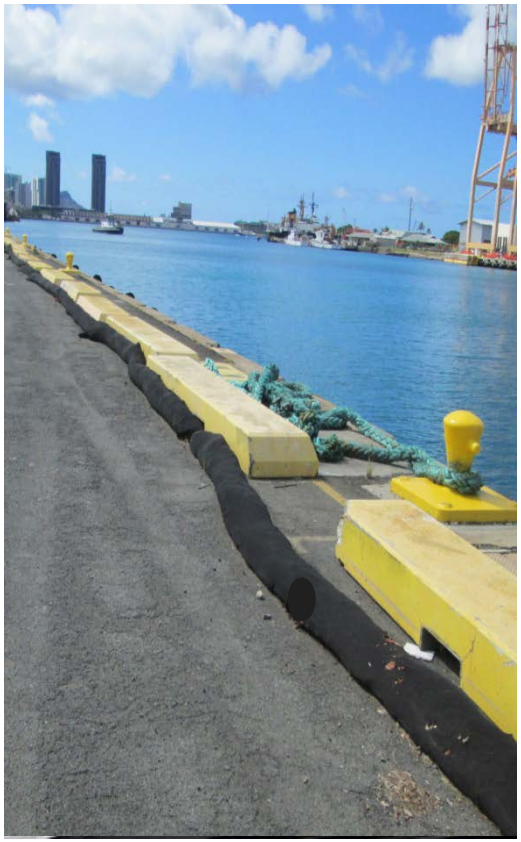
NPDES Construction General Permit



HAR 11-55, App C

- Submit a Notice of Intent and develop a Stormwater Pollution Prevention Plan (SWPPP) 30 days prior to the start of activities.
- Notify the DOH 7 days prior to start.
- Train personnel on BMPs.
- Install, inspect, and repair BMPs as necessary.
- Update SWPPP and maintain on-site.
- Submit a Notice of Cessation when area has been stabilized.

HAR 11-55, App C

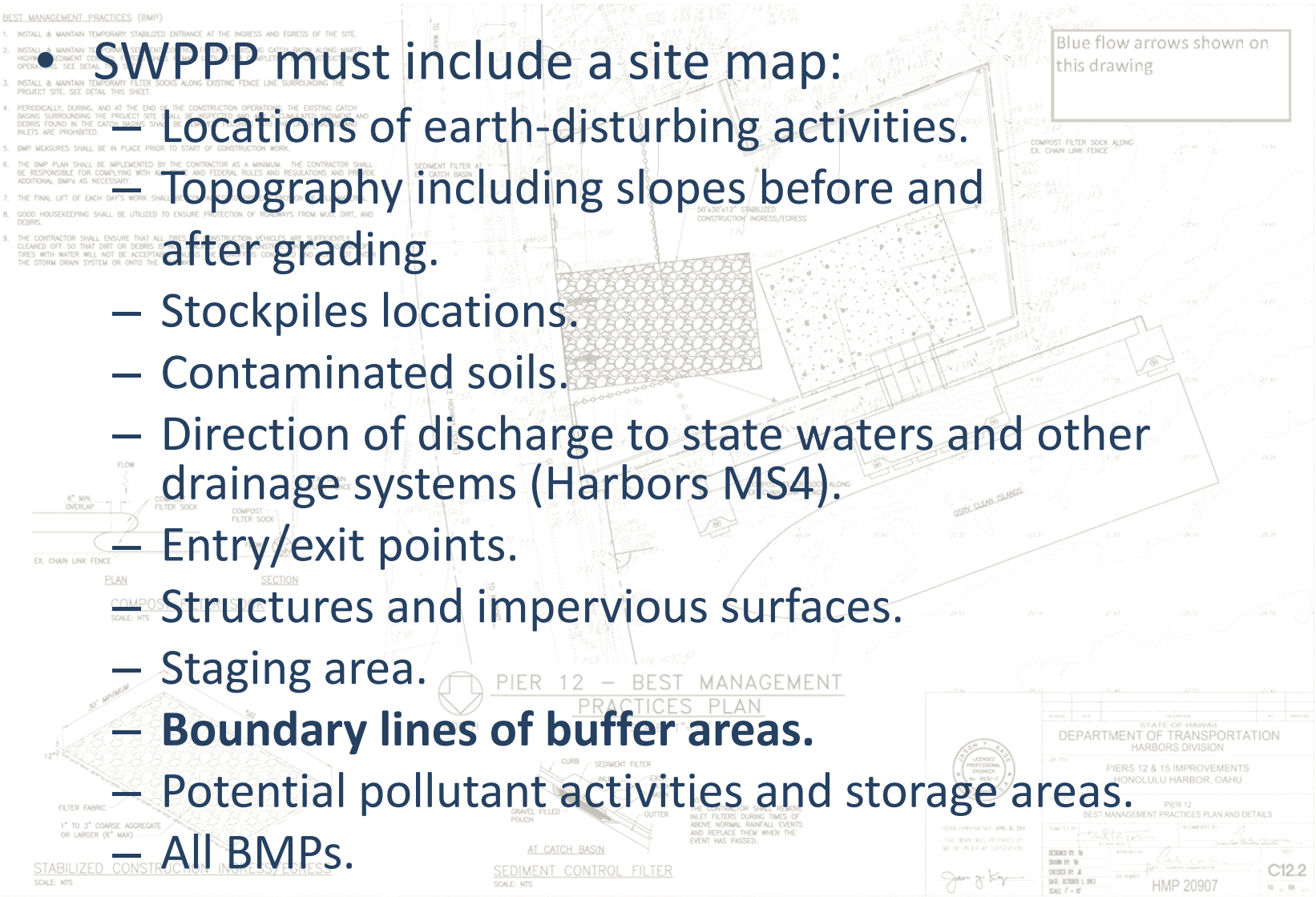
- General Permit Requirements.
  - NOI submitted via e-permitting website.
  - Permittee must complete and keep on-site:
    - SWPPP.
    - Record of changes to the SWPPP (complete in 7 days).
    - Monthly compliance reports.
    - Inspection reports (within 48 hours).
    - Corrective action reports (start within 24 hours and finish with 7 days).
  - All documents must be signed by certifying person or duly authorized representative.

HAR 11-55, App C

- SWPPP must include:
  - **Personnel on the stormwater team**.
  - Contractor and sub-contractor information.
  - Nature and sequence of construction activities.
  - Description of sources of non-stormwater.
  - Potential sources of stormwater pollution and measures to reduce or eliminate.
  - Description of buffer option implemented.
  - **Description stabilization practices and post-construction BMPs.**
  - Inspection, maintenance, and corrective action procedures.
  - Training documentation.
  - NGPC and other permits.
  - Documentation of UIC well requirements, if applicable.

HAR 11-55, App C

- SWPPP must include a site map:
  - Locations of earth-disturbing activities.
  - Topography including slopes before and after grading.
  - Stockpiles locations.
  - Contaminated soils.
  - Direction of discharge to state waters and other drainage systems (Harbors MS4).
  - Entry/exit points.
  - Structures and impervious surfaces.
  - Staging area.
  - **Boundary lines of buffer areas.**
  - Potential pollutant activities and storage areas.
  - All BMPs.



HAR 11-55, App C

- Contractor Self-Inspection frequency:
  - For sites that are NOT discharging to impaired waters:
    - At least once every 7 days; **OR**
    - Once every 14 days and within 24 hours of a 0.25 inch rain event.
  - For sites that do discharge to impaired waters:
    - At least once every 7 days; **AND**
    - Within 24 hours of a 0.25 inch rain event and prolonged rain events.
      - Keep a rain gauge on-site!
  - Conducted by a qualified person.

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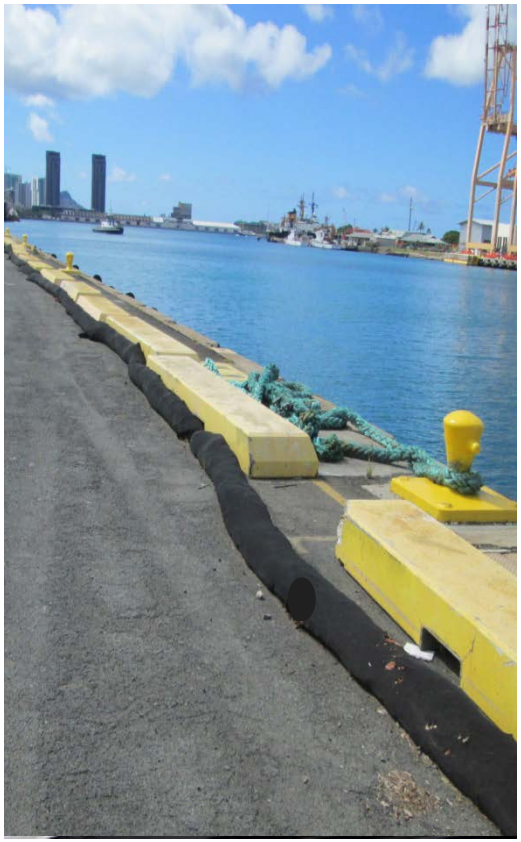


Stormwater Pollution Prevention Practices

Common Pollutants

Vehicle Fluids.

Aggregate.

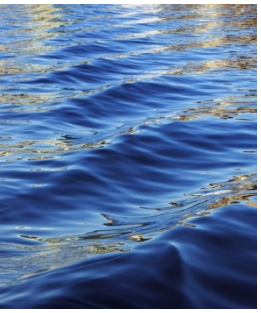
Trash.

Chemicals.

Sediment.

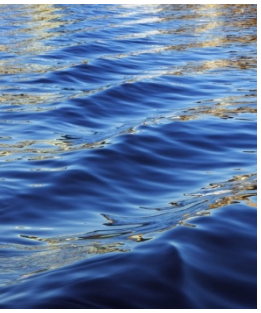
Portable Toilet.

Washouts.



Types of BMPs

- **Erosion Control** - Any source control practice that protects the soil surface and prevents soil particles from being detached by rainfall, flowing water, or wind. (*CCH BMP Manual: Table 3-1)*
- **Sediment Control** - Any practice that traps soil particles after they have been detached and moved by rain, flowing water, or wind. (*CCH BMP Manual: Table 3-1)*
- **Wind Erosion Control** - Applying water or other dust palliatives to prevent or alleviate dust nuisance. *(CCH BMP Manual: Table 3-3)*
- **Tracking Control** - Preventing or reducing the tracking of sediment off-site by vehicles leaving the construction area. *(CCH BMP Manual: Table 3-4)*
- **Non-Storm Water Mgmt.** - Source control BMPs that prevent pollution by limiting or reducing potential pollutants at their source or eliminating off-site discharges. *(CCH BMP Manual: Table 4-1)*
- **Waste Mgmt. & Materials Pollution Control** - Source control BMPs that prevent pollution by limiting or reducing potential pollutants at their source before they come in contact with storm water. *(CCH BMP Manual: Table 4-2)*



BMP Installation, Inspection, and Maintenance

- **Implementation/Installation**
  - Refer to BMP Manual
  - Follow manufacturer specifications
- **Inspection**
  - Refer to BMP Manual
  - Routine inspections
  - Permit required inspections
- **Maintenance**
  - Performed required maintenance
  - Repair or replace when necessary

Proper BMP installation, conducting routine inspections, and performing on-going maintenance is needed for all temporary BMPs!

Common BMPs
Install, Inspect, Maintain

- **Erosion Control**
  - Preservation of Existing Vegetation (EC-2)
  - Soil Binders (EC-5)
  - Geotextiles & Mats (EC-7)
- **Sediment Control**
  - Silt Fence (SE-2)
  - Fiber Rolls (SE-5)
  - Storm Drain Inlet Protection (SE-10)
- **Temporary Tracking Control**
  - Stabilized Construction Entrance/Exit (TR-1)
- **Waste Mgmt. & Materials Pollution Control**
  - Material Delivery & Storage (WM-1)
  - Stockpile Management (WM-3)

Take Away

- All projects must be reviewed prior to start.
- Projects over 1 acre must include post-construction BMPs.
- Inspections are required by Consent Decree and NPDES permits.
  - Inspections are an important tool to catch problems before they result in regulatory enforcement.
- Main goal is to ensure that pollutants are not contaminating receiving waters or MS4.
  - Best if potential pollutants can be kept on-site!
- It is cheaper to implement BMPs than pay the regulatory fine.
- **Be familiar with City and County of Honolulu BMP manual, Harbor's SWMP programs, Consent Decree, and construction documents.**

Questions

- Harbor's Website: http://hidot.hawaii.gov/harbors/malamaikeawakai

- Harbor's Contacts:
  - Stormwater Reporting Hotline: 587-1962.
  - Joy Zhang, PE: 587-1960, ying.j.zhang@hawaii.gov.

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