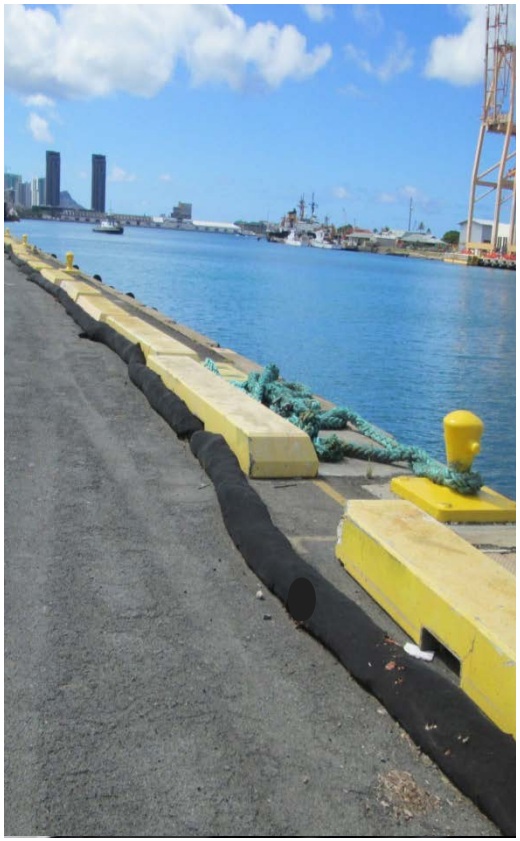
MĀLAMA I KE AWA KAI
PROTECT OUR
HARBOR WATERS



HDOT Harbors Construction and Post-Construction Training

Introduction: Environmental Protection

- To be good stewards of the environment.
  - For our own use.
  - For the local economy (e.g. tourism, fishing).
  - To protect the environment.
    - Coral reefs are sensitive to pollution.
    - Endemic species (found only in Hawaii).




Introduction: Environmental Protection

November 2014: Department of Transportation entered into a second Consent Decree with DOJ/EPA/DOH

Consent Decree available on Harbors website:

http://hidot.hawaii.gov/harbors/files/2013/01/Consent-Decree.pdf

Regulatory Background

- **Federal**
  - Clean Water Act
  - Code of Federal Regulations, Title 40, Part 122
- **State of Hawaii, Department of Health**
  - Hawaii Administrative Rules, HAR 11-54 and 11-55
  - Hawaii Revise Statutes, HRS 342 D
- **State of Hawaii, Department of Transportation, Harbors Division**
  - Honolulu Harbor permit no. **HI 03KB482**
  - Kalaeloa Barbers Point Harbor permit no. **HI 03KB488**
  - Kahului Harbor permit no. **HI 14KE674**

MS4 Permit Requirements

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

Stormwater Management Plan

- The updated SWMP is available online:
  - http://hidot.hawaii.gov/harbors/malamaikeawakai/
- Details procedures for complying with requirements of the Consent Decree and HAR 11-55, App K.
- Comments are appreciated.

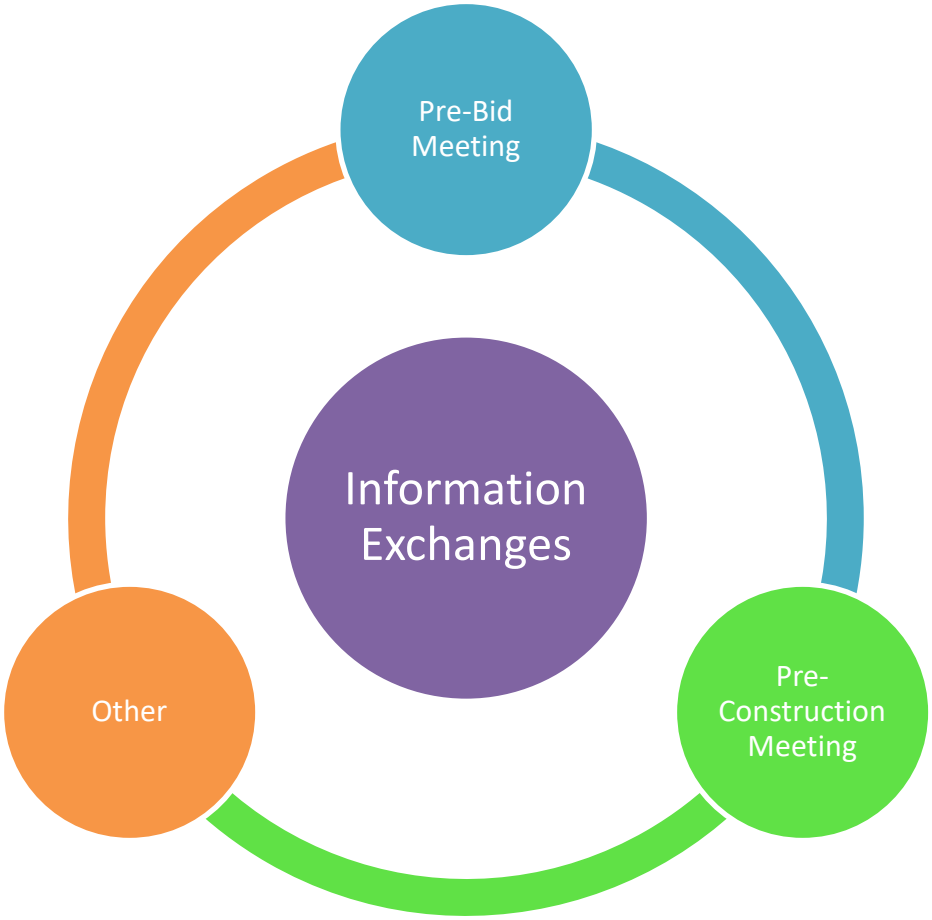
Training and Outreach Requirement

- Classroom Training:
  - General Program Management.
  - Construction Site BMP Inspections.
    - Conduct at least 3 construction site inspections.
  - Annual Refresher.

Training and Outreach Requirement (cont.)

- Compliance with **HDOH NPDES program** for construction:
  - **Statewide:** All construction projects that disturb 1 acre or more of land.
  - **Statewide:** All construction projects that disturb less than 1 acre but are part of a larger common plan of development.
- Compliance with **HDOT Harbors Construction Site Runoff Control Program**:
  - **Oahu and Maui:** All construction projects regardless of size, unless exempted.
- Compliance with **HDOT Harbors Post-Construction Stormwater Management Program**:
  - **Oahu and Maui:** Construction projects disturbing one acre or more of land area, unless exempted.

Training & Outreach Requirement (cont.)



Defining Construction

- Construction:
  - Activities that result in land disturbance, including, but not limited to clearing, grading, and excavation.
  - Construction support activities, including:
    - Stockpiles
    - Borrow areas
    - Staging areas

Defining Land Disturbance

- 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.

Stormwater Discharges

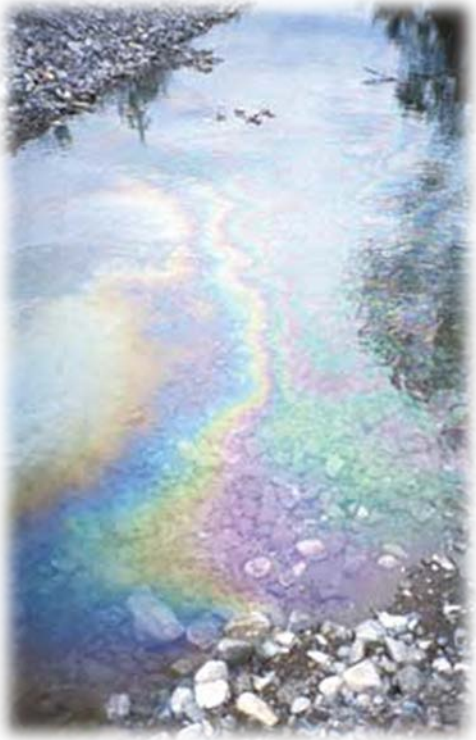
- Stormwater can carry pollutants generated during outdoor activities to the nearest storm drains or waterways.
- Stormwater is usually **not** treated before it is discharged to the Municipal Separate Storm Sewer System (MS4) or the adjoining harbors.
- It is vital to control and manage potential source of pollutants **before** they enter the storm drainage system.

What is an MS4?

- An MS4 is the drainage system that conveys stormwater to the receiving water body, 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.

Definition of Illicit Discharge

- Non-stormwater discharge that poses a risk to the environment.



Only Rain in the Storm Drain!

Common Pollutants

Vehicle Fluids

Aggregate

Littering

Chemicals

Sediment

Portable Toilet

Washouts

Potential Pollutant: Sediment

- Erosion:
  - Process by which the land surface is worn away by the action of water or wind.

- Sedimentation:
  - Movement and settling out of suspended soil particles.

Impacts from Construction Activities

Sedimentation

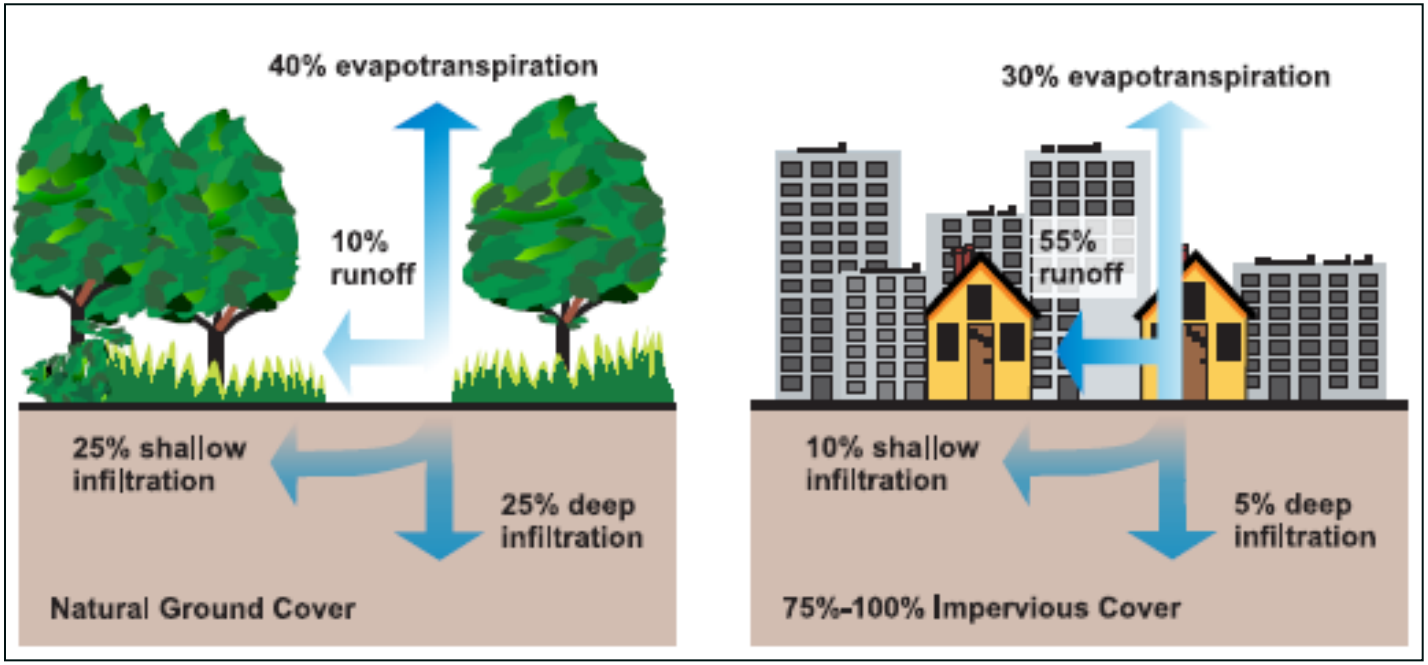
Unstabilized Construction Site		Forested Land / Grassy Areas
	VS	
Between **35-45 tons** of sediment per acre each year.		Approximately **1 ton** of sediment per acre each year.

Construction Impacts to Stormwater

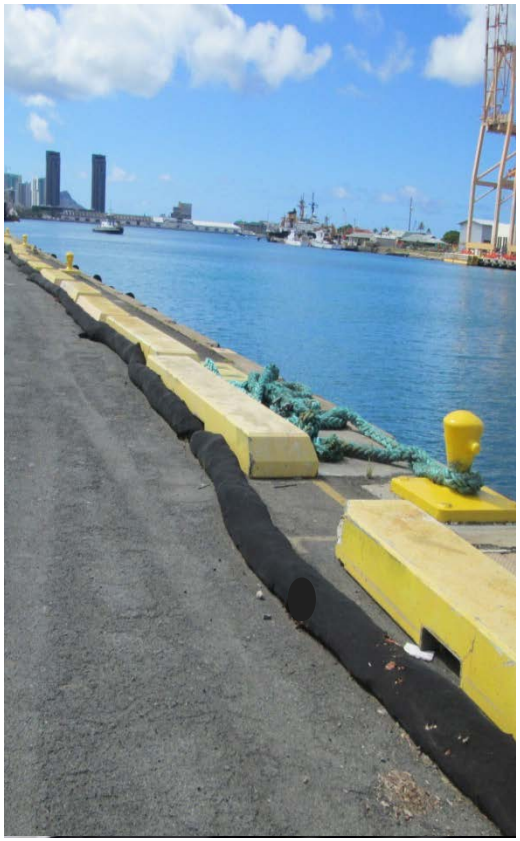
- Increase flooding
- Excess nutrients cause algae growth
- Sediment causes waters to become turbid which prevents sunlight from reaching vegetation while also reducing oxygen levels.
- Fish quality of life

Post-Construction Impacts

Construction Activities → Increased Impervious Surface → Increased Stormwater Runoff → Increased Pollutant Discharge



Source: EPA 841-F-03-003



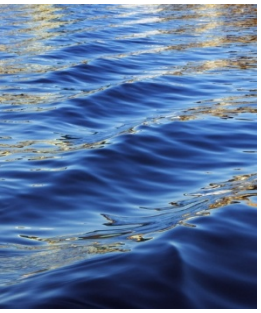
MĀLAMA I KE AWA KAI
PROTECT OUR
HARBOR WATERS

NPDES Program Requirements for Construction Activities

DEPARTMENT OF TRANSPORTATION
STATE OF HAWAII

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 HDOH:
  - Hawaii Administrative Rules (HAR) 11-55:
    - **Appendix C: Construction**
      - Includes sites that disturb **1 acre or more**.
      - Includes sites smaller than one acre that are part of a larger common plan of development.



NPDES Construction Program Requirements

- Submit a Notice of Intent (NOI) Form C and develop a Stormwater Pollution Prevention Plan (SWPPP) **30** days prior to the start of activities.
- Notify the HDOH **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

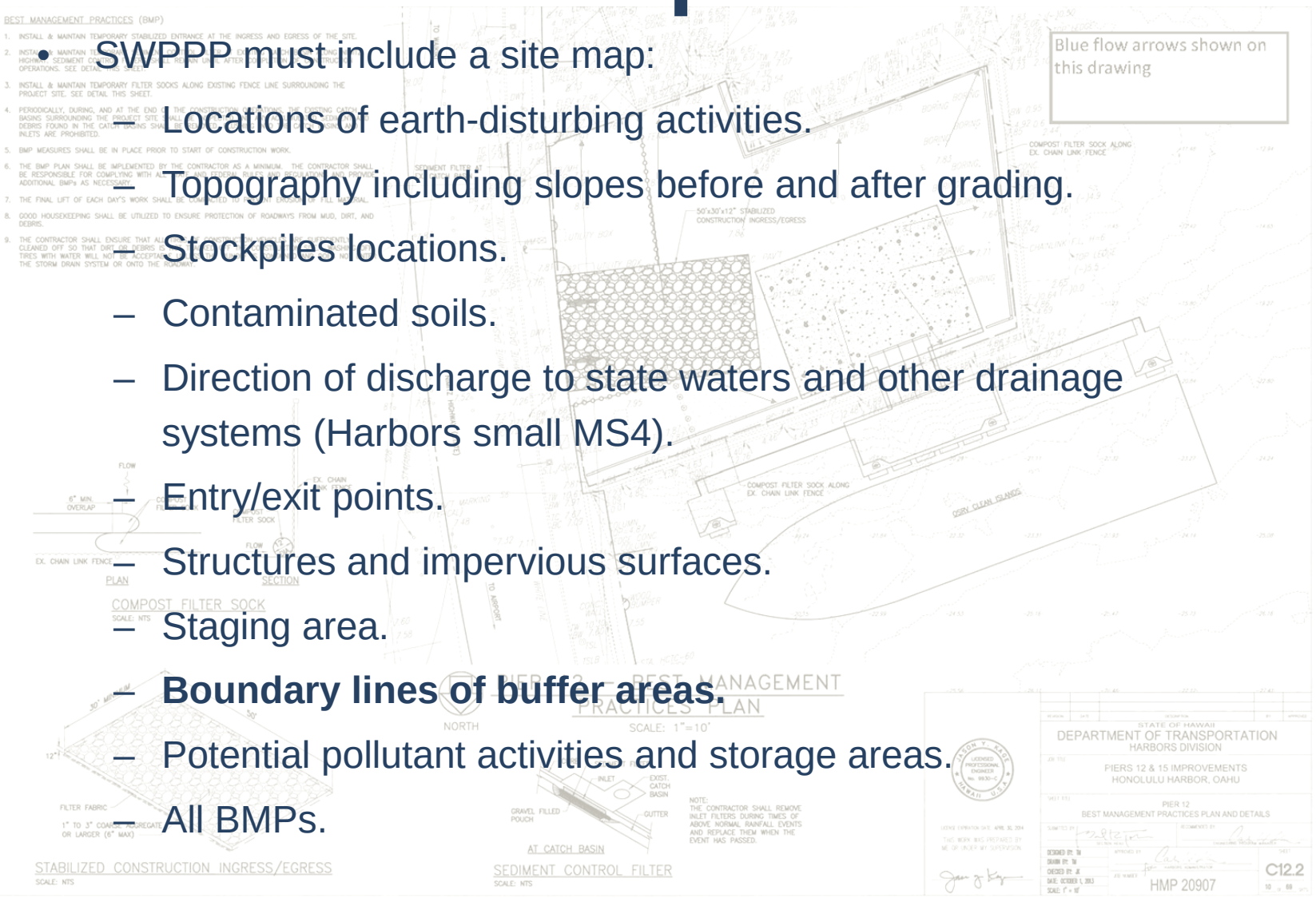
- NOI to be submitted via e-permitting website.
- Permittee must complete and keep on-site:
  - o SWPPP.
  - o Record of changes to the SWPPP (complete in 7 days).
  - o **Monthly compliance reports.**
  - o BMP Inspection reports (within 48 hours).
  - o Corrective action reports (start within 24 hours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

HAR 11-55 – App C SWPPP Requirements

- 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.

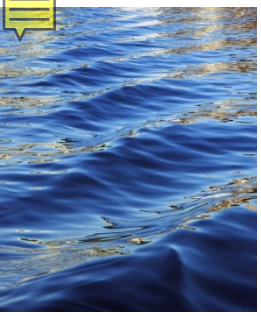
HAR 11-55 – App C SWPPP Requirements

- 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 small 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

- Natural Buffers:
  - Required when a state water is within 50 feet of ground disturbance.
  - Options:
    - Maintain a 50-foot undisturbed vegetated buffer.
    - If the buffer is less than 50 feet, also provide a double sediment control spaced 5 feet apart.
    - If there is no buffer, maintain a double sediment control spaced 5 feet apart and complete stabilization within 7 calendar days.
  - Delineate with flags, tape, or other marking.



HAR 11-55 – App C

- Contractor Self-Inspection frequency:
  - For sites that are discharging 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!
  - For sites that do NOT discharge to impaired waters (e.g. Kalaeloa Barbers Point Harbor):
    - At least once every 7 days; **OR**
    - Every 14 days with additional inspections conducted 24 hours of any rain event of 0.25 inches or more within a 24-hour period.
      - Keep a rain gauge on-site!
  - Conducted by a qualified person.

HAR 11-55 – App C

- **Corrective Actions:**
  - Only for actions to **stop or prevent** a violation of water quality (HAR 11-54).
  - Fix the problem immediately (start the same day).
  - Significant repairs – complete within 7 days.
- Corrective Action Report:
  - Within **24 hours**: condition identified, date, time, and how it was identified.
  - Within **7 days:** follow-up actions taken, summary of BMP modifications.

HAR 11-55 – App C

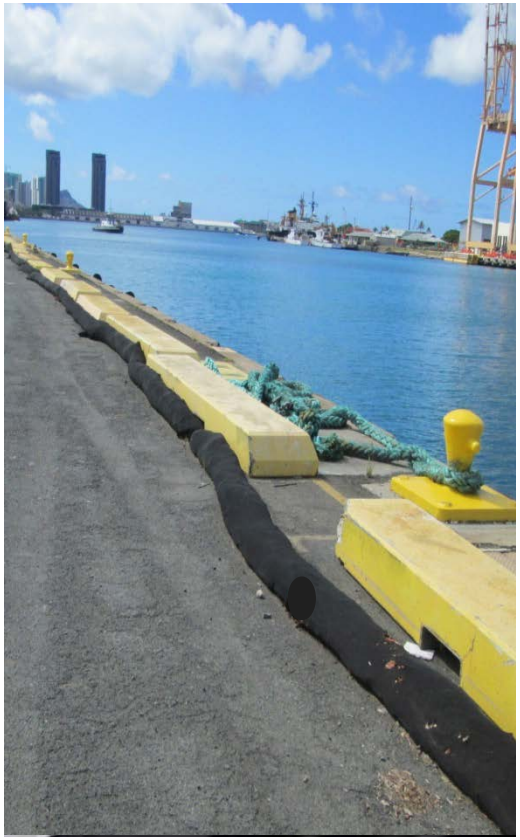
- Stabilization is required:
  - Immediately (by next day) whenever earth disturbing activities have ceased.
    - Temporarily ceased means no activities within **14 calendar days** or more.
  - Deadline for completion: ASAP but no later than **14 calendar days** after initiation.
  - Deadline for sites discharging to impaired waters: **7 calendar days** from the temporary or permanent cessation of earth disturbance.

HAR 11-55 – App C

- Types of initiation of stabilization:
  - Prepping the soil for vegetation or non-vegetation stabilization.
  - Applying mulch.
  - Seeding and planting.
  - Making the arrangements for stabilization.
- Criteria for stabilization:

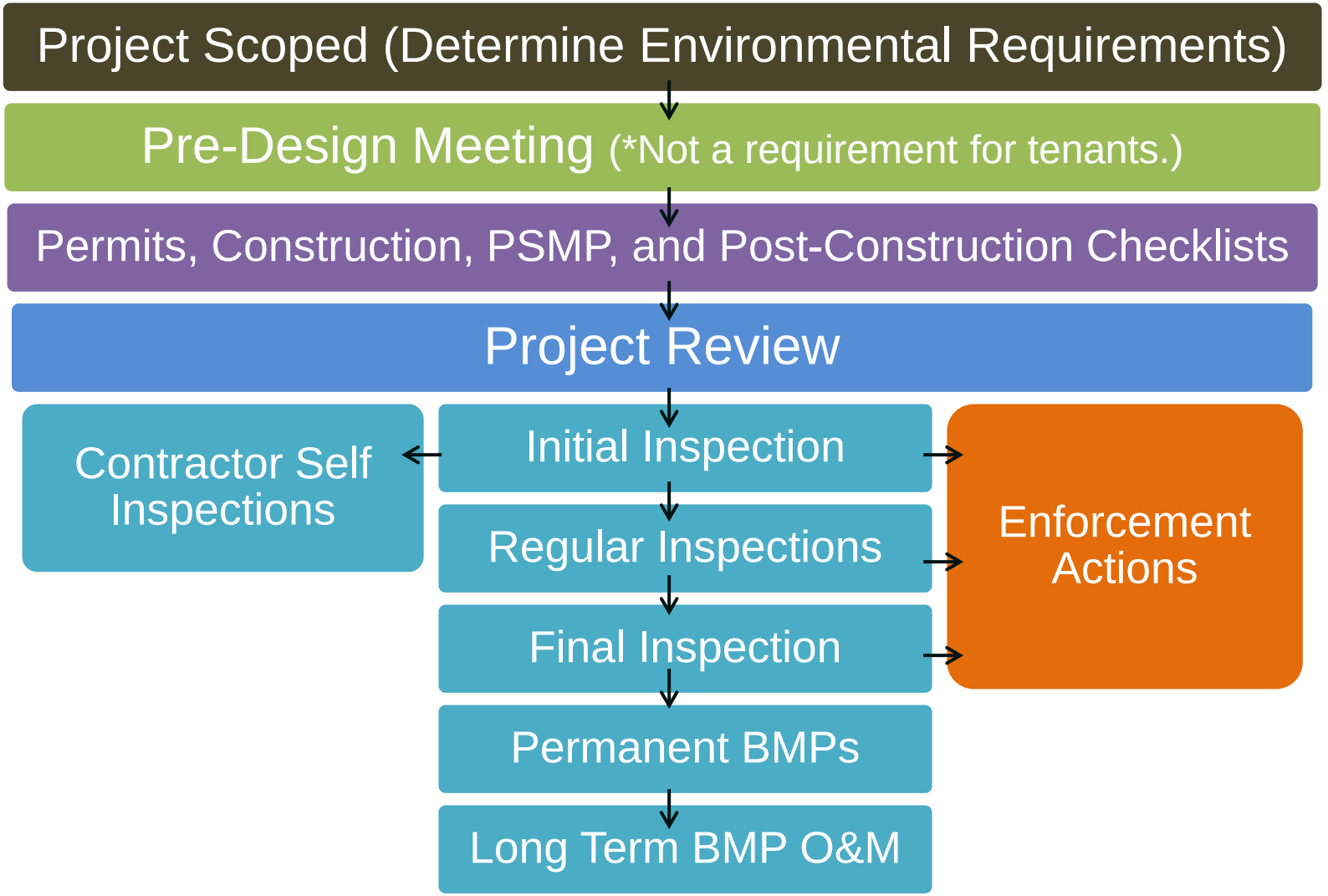
  - Vegetation evenly distributed that provides **70%** or more of density that was previously there.
  - Non-vegetative controls (e.g. pavement).

MĀLAMA I KE AWA KAI
PROTECT OUR
HARBOR WATERS



HDOT Harbors Construction Process

Harbors Construction Process



Design Review

- Pre-Design Meeting.
- Documentation:
  - Notification Form for Project Less Than One Acre with BMP plan.
  - Drainage connection or discharge permit.

OR

  - Construction Design Review Checklist.
  - Completed NPDES applications.
  - Drainage connection or discharge permit.
  - Construction BMP plan sheets and details.
  - Stormwater Pollution Prevention Plan.

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.



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 and issuance of NTP letter:
  - Contractor completes Stormwater Pollution Prevention Plan and provides to the Harbors Project Manager (PM) or Project Engineer.
  - PM will submit to Environmental Section (HAR-EE).
  - HAR-EE will send their comments to the PM through memorandum.
  - Upon acceptance, Contractors will start the installation of the project-specific BMPs, which must be inspected prior to the start of any other work.
  - HAR-EE maintains an inventory of construction sites.

Review BMP Plan

- When conducting a BMP plan review:
  - Identify location and size.
  - Identify where storm water will flow.
    - Identify waterways (e.g. coastline, canals) and storm drains.
    - Identify topography.
    - Identify ground cover and soil type.
  - Identify locations of potential pollutants.
    - Land disturbance activities.
    - Staging areas.
    - Non-storm water.

Review BMP Plan (Cont.)

- Determine the scheduling / phasing.
  - Is the main land disturbance activity planned for the dry season (i.e., Apr – Sep)?
  - Have there been efforts to minimize the disturbed area?
- Responsible parties.
  - Does the Stormwater Pollution Prevention Plan include the names or titles of parties responsible for:
    - Inspections?
    - Maintenance?
    - Recordkeeping?
    - Rain gauge monitoring?
    - Incident reporting?

Review BMP Plan (Cont.)

- Have potential pollutants been addressed via BAT / BCT?
- Ensure there is a plan for final stabilization.
- Does the design include permanent BMP?
  - Non-exempt projects one acre and larger.
  - Does the project include LID?
  - How is ongoing maintenance addressed in the plan?
- Have the necessary permits been applied for?

Review SWPPP

- If greater than or equal to 1 acre, determine whether BMPs adequately address potential pollutants and the requirements of HAR 11-55-C.
  - SWPPP should be based on expected amount, frequency, intensity, and duration of rain events in the area. (Typically: 2 yr, 24 hr storm).
  - Refer to the City and County of Honolulu, Storm Water BMP Manual for Construction.

Construction
Best Management Practice

- Practice or device used to mitigate the discharge of potential stormwater pollutants during Construction Phase.

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

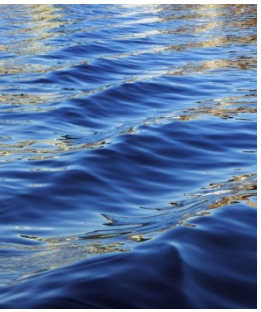
- Sites Disturbing 1 Acre or More:

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

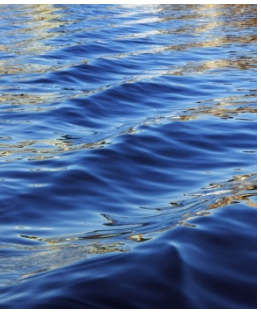
- Roadway Paving or Repair BMPs:

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

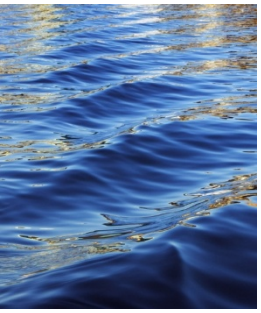
- Roadway Paving or Repair BMPs:

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 Review: NPDES Permit Minimum Measures

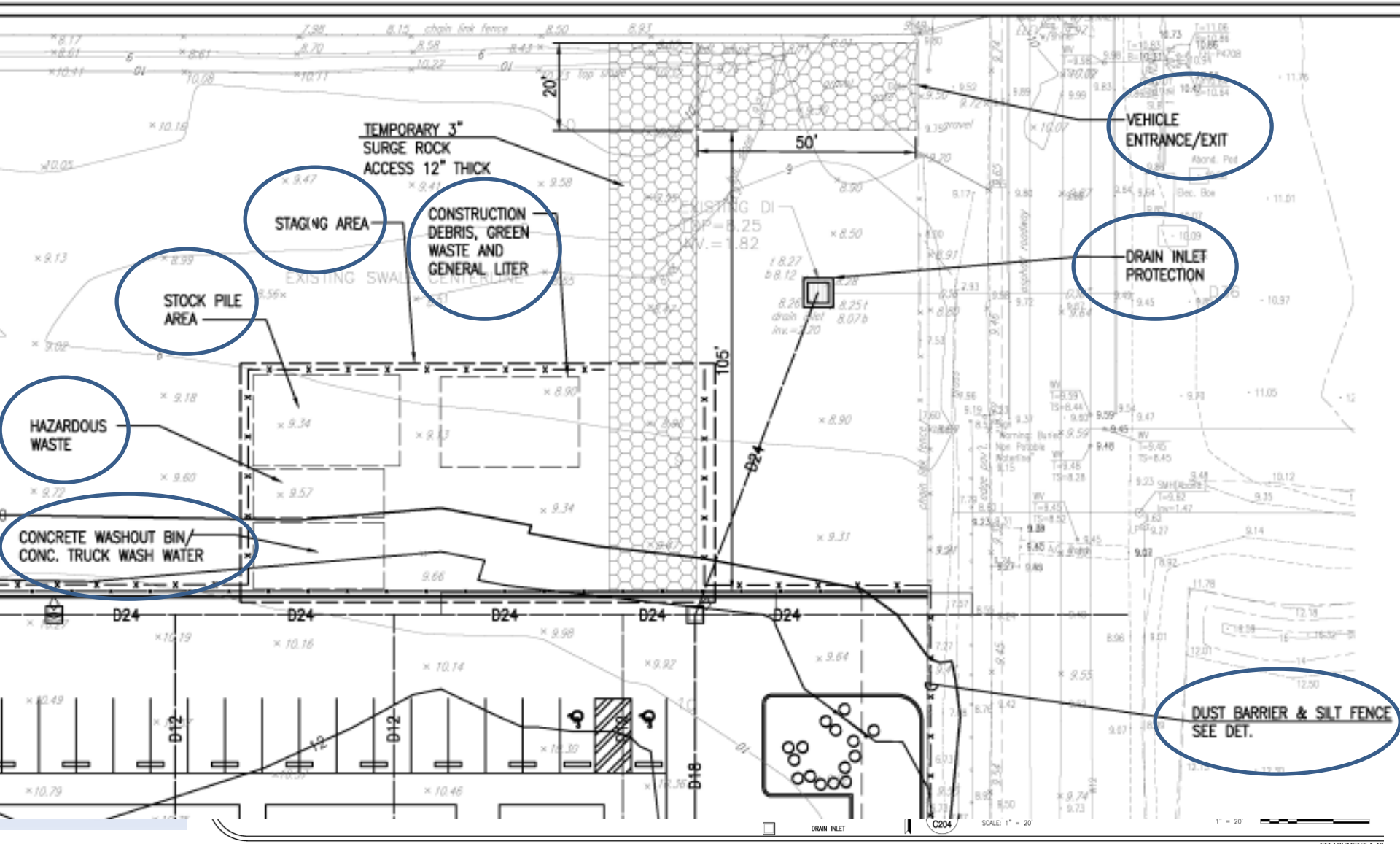
- Provide natural buffer if within 50’ of state water.
  - Alternatives or exemptions may be applied based on site conditions.
- Install perimeter controls where water will flow.
- Minimize track-out.
  - Has a designated exit.
- Control stockpiles.
  - Use a temporary perimeter BMP or stabilize.
- Minimize dust.
- Minimize land disturbance on slopes.
  - Attempt to limit grading to less than 15% slopes.
- Minimize soil compaction.
  - Restrict vehicle and equipment use.
  - Condition the soil prior to seeding.

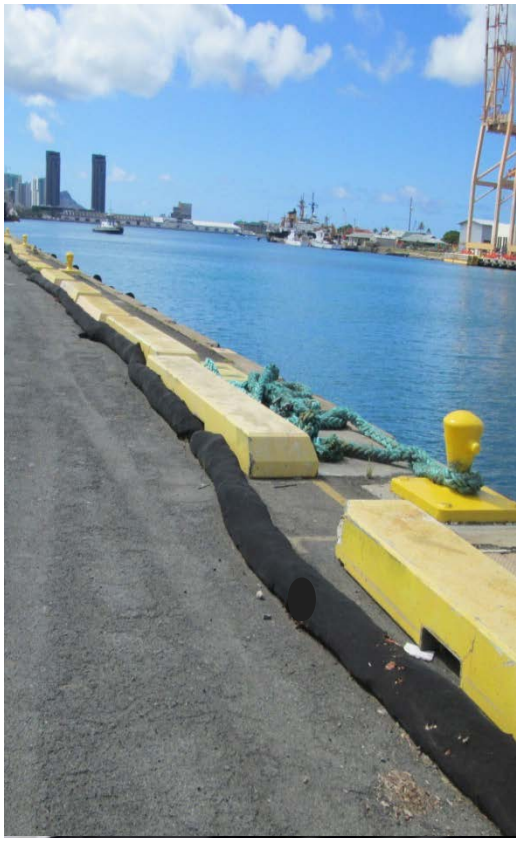


Plan Reviews: NPDES Permit Minimum Measures

- Protect drain inlets.
  - Only required when storm water is not properly managed with another method.
- Contaminated stockpiles.
  - Prevent storm water from impacting stockpile. OR
  - Prevent discharge of storm water from the area.
- Ensure non-storm water is contained (e.g. dewatering, concrete washout, vehicle washing).
- Written narrative for potential pollutant generating activities such as:
  - Vehicle and equipment fueling.
  - Washing vehicles and paint applicators.
  - Storage, handling, and disposal of construction materials, products, and wastes.

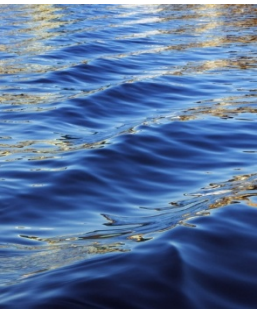
Example of Plan





MĀLAMA I KE AWA KAI
PROTECT OUR
HARBOR WATERS

HDOT Harbors Construction Inspection Process



Harbors Stormwater BMP Inspections

- Initial Inspection:
  - Verify all BMPs are installed appropriately.
  - Deficiencies must be corrected prior to the start of other construction work.
- Regular Inspection:
  - October to March: Every two weeks.
  - April to September: Every two months.
  - Deficiencies must be corrected or enforcement will commence.
  - Inspector will provide the contractor with report in five (5) calendar days.

Harbors Stormwater BMP Inspections

- 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.

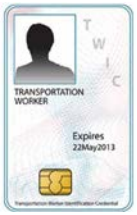
Harbors Stormwater BMP Inspections

- Review completed Contractor Self-Inspection Records:
  - 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.

Pre-Inspection Preparation

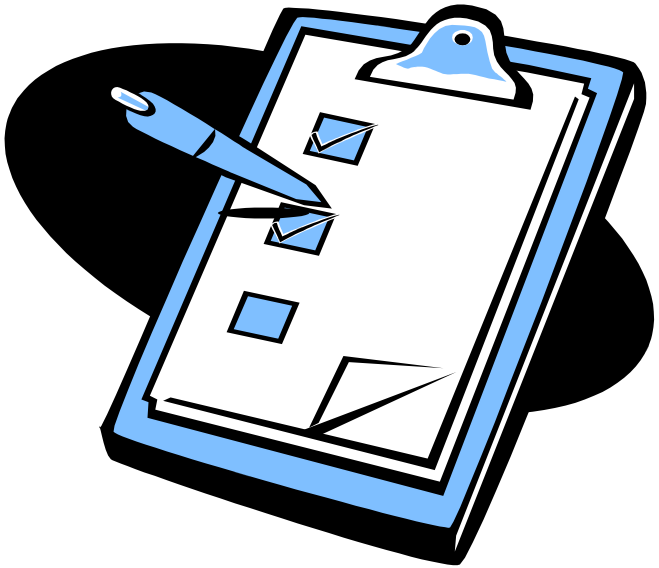
- Gather background data:
  - Construction plan review.
  - NPDES or MS4 connection permits.
  - Stormwater Pollution Prevention Plan and site map.
  - Harbors area drainage map.
  - Past inspection reports, if available.
  - Past enforcement correspondence, if applicable.
- Determine the stormwater drainage from the facility.
  - Receiving water.
  - Storm drain locations.
- Identify applicable BMPs.
- Identify special safety or scheduling concerns.

Bring to the Inspection Site



- Construction Inspection Checklist.
- Field book for notes and sketches.
- TWIC Badge.
- PPE – steel toed boots, hard hat, safety glasses, safety vest.
- Digital camera with charged batteries.
- Cell phone and contractor’s contact number.
- Map with storm drain connections.

Construction Inspection Checklist



- All inspections must be documented on the Construction Site BMP Inspection Checklist.
  - Included in the Construction Site Runoff Control Manual, Attachment 4.
  - Copy provided to CM and Environmental Section for recordkeeping.
  - Keep a copy for your files.

Construction Inspection Checklist

Construction Site Best Management Practices Inspection Checklist

Date of Inspection:		**Project Title:**						
Contractor:		**Project Job No.:**					**NPDES No.:**	
Inspector:		**SWPPP Updated and Onsite:** ☐ Yes ☐ No					**Photographs Attached:** ☐ Yes ☐ No	
Inspection Type: ☐ Initial ☐ Recurring ☐ Final ☐ Other								
Weather:			**Control Device(s) Properly Installed**		**Require Maintenance**			
AC: Adequate Containment ACoC: Adequate Cover or Containment		**N/A**	**Yes**	**No**	**Yes**	**No**	**Description of Any Findings**	**Notes**
1.	Stabilized Construction Ingress/Egress?	☐	☐	☐	☐	☐		
	Vehicular Tracking	☐	☐	☐	☐	☐		
2.	Erosion Control Device(s) - Slopes/Exposed Area	☐	☐	☐	☐	☐		
	Sediment Control (Silt fence, Perimeter sock)	☐	☐	☐	☐	☐		
	Storm Drain Inlet Protection (Fabric filter, Witch's hat)	☐	☐	☐	☐	☐		
3.	Dust Control/Suppressant - Sawcutting/Demolition	☐	☐	☐	☐	☐		
	Concrete Washout Area (AC)	☐	☐	☐	☐	☐		
4.	Vehicle/Equipment Maintenance Area (ACoC)	☐	☐	☐	☐	☐		
	Vehicle/Equipment Cleaning Area (AC)	☐	☐	☐	☐	☐		
	Vehicle/Equipment Fueling Area (AC)	☐	☐	☐	☐	☐		
	Vehicle/Equipment Storage Area (AC)	☐	☐	☐	☐	☐		
5.	Construction Material Storage Area (ACoC)	☐	☐	☐	☐	☐		
	Stockpiles of Aggregate (ACoC)	☐	☐	☐	☐	☐		
6.	Flammable/Fuel Storage Area (ACoC)	☐	☐	☐	☐	☐		
	Hazardous Material Storage (ACoC)	☐	☐	☐	☐	☐		
	Waste Storage Area (ACoC)	☐	☐	☐	☐	☐		
7.	Good Housekeeping Practices (Is project generally free of litter, sediment, etc.?)	☐	☐	☐	☐	☐		
8.	Spill Prevention/Control - Spill Kit	☐	☐	☐	☐	☐		

Major Site Activities (please check any if applicable):
☐ Demolition ☐ Paving ☐ Excavation ☐ Hauling Materials ☐ Concrete Pouring ☐ Other, please specify:

If any of the item listed below checked "Yes", please provide detailed information under Additional Notes.
A. Is contaminated soil present? ☐ Yes ☐ No
B. Is sediment basin(s) present? ☐ Yes ☐ No
C. Is any illicit discharge present? ☐ Yes ☐ No
D. Dewatering and/or Hydrotesting - Is this project in compliance with these NPDES storm water permitting requirements? ☐ Yes ☐ No ☐ N/A

Verified By (HDOT Project Inspector/Engineer's Signature) **Date**

Construction Inspection Checklist

Construction Site Best Management Practices Inspection Checklist

Permanent Post-Construction BMP Inspection			
Please indicate inspection status here:	☐ Initial Inspection	☐ Inspection During Construction Phase	☐ Final Inspection after Installation
Post-construction BMPs are being installed in accordance with construction plans.	☐ Yes	☐ No	☐ N/A
Notes:			

Additional Notes:

A. Management of Contaminated Soil: _____

B. Control and Maintenance Related to Sediment Basin(s): _____

C. Evidence of Discharge of Pollutant(s) to State Receiving Waters: _____

D. Summary of Dewatering and/or Hydrotesting Activity (please list permit numbers and verify compliance): _____

E. _____

F. _____

G. _____

Remarks: This checklist is to be completed before commencement of grading or site-work and then every two weeks from October through March, otherwise, bimonthly. State of Hawaii Department of Transportation Harbors Division will not allow construction activities to commence until the project engineer or qualified project inspector have inspected the construction site and determined that the site-specific BMPs and pollution prevention control measures are implemented properly.

State of Hawaii
Department of Transportation
Harbors Division

Arriving On-Site

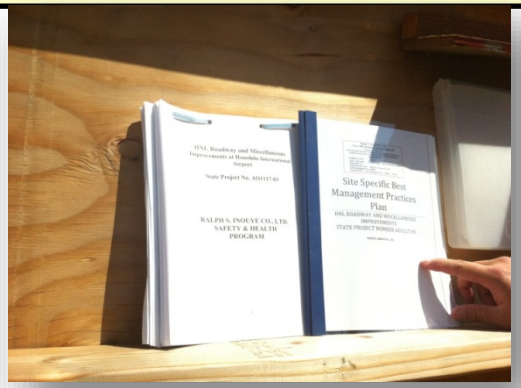
- Announce your presence to the contractor.
- Convene a pre-inspection meeting with the contractor.
- Ask for applicable paperwork:
  - Permits.
  - Training records.
  - Self-inspections.
  - Corrective action reports.
  - Monthly compliance reports.
  - Updated SWPPP.

Walking the Site

- Carry the Stormwater Pollution Prevention Plan and site map to verify that BMPs match what is found in the field.
- Inspect all drains, canals, and receiving waters for discharges.
- Inspect site perimeter for discharges or sedimentation.
- Query workers about their knowledge of site BMPs.

Common Inspection Findings

BMP Plan was not available/updated.



- The BMP Plan is a living document.
  - The plan should be continually updated to reflect current site conditions.
  - Changes should be signed by certifying person or duly authorized representative.
  - The plan should be readily available to inspectors and workers on site.

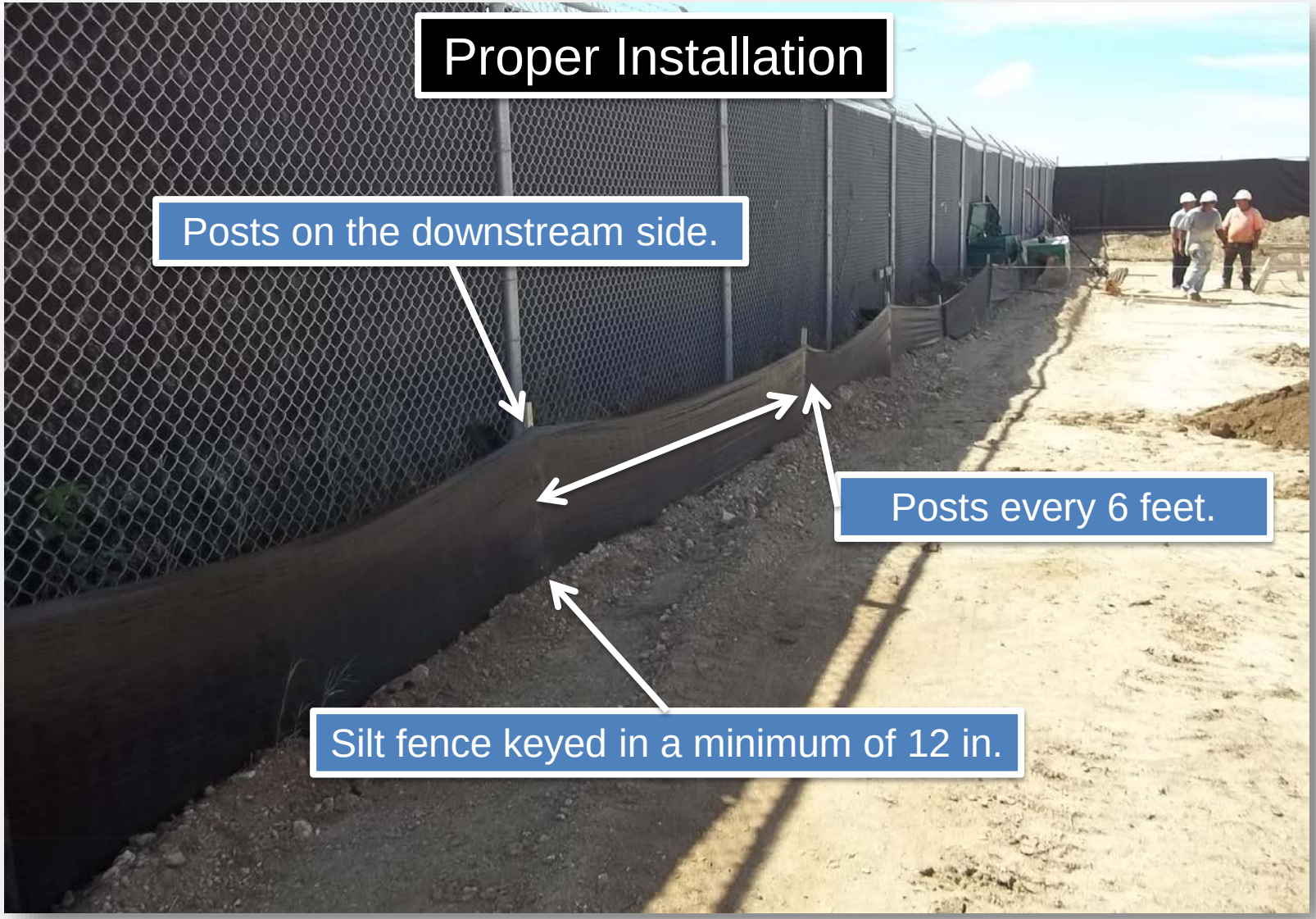
Common Inspection Findings

Stabilized Construction Entrance (TR-1)

- Prevents tracking.
  - Grade to prevent runoff.
  - Use 3-6 in diameter stones.
  - Minimum 12 in depth.
  - A minimum area of 50 ft length and 30 ft width.
  - Remove aggregate if it is clogged with sediment.
  - Combine with tire washing and/or street sweeping.

Common Inspection Findings

Silt Fence (SE-1)



Silt Fence (SE-1)

Photo Source: City of Lincoln

Join segments by twisting or overlap by 6 inches.

End segments with a J-hook.

Maintenance is required when sediment accumulation is 1/3 the height of the barrier.

Manufacturer's BMPs

Hard Surface Guard

- Sediment control.
- Provides some filtering capacity.
- Reduces stormwater flow velocity.
- Designed to handle traffic conditions.
- Reusable.
- Ensure proper seal to the ground.

Common Inspection Findings

Improper installation / maintenance of perimeter berms.

Compost Socks and Berms (SE-16)

- Ensure berm is filled.
- Place on level slope.
- Ensure close contact with ground surface.
- Overlap ends of socks by 6 inches.
- Turn ends of socks up slope.
- Remove sediment when it is 1/3 height of the berm.
- Replace or repair damaged sections of the berms.

Common Inspection Findings

Improper installation of erosion control matting.

Geotextiles and Mats (EC-7)

- Ensure good contact with the soil.
  - Remove rocks and other obstructions.
- Properly anchor.
  - U-shaped staples, stake pins, or wooden stakes.
  - At the top of the slope, backfill in 6-in trench.
  - Unroll blanket in direction of water flow.
  - Overlap 2-3 inches.
  - Staple every 3 ft.

Common Inspection Findings

Drain inlet protection not properly maintained.

Remove sediment.

Replace torn filter fabric.

Position berms to form a barrier by overlapping them.

SE-10: Maintenance is required when sediment accumulation is 1/3 the height of the barrier.

Common Inspection Findings

Improper management of saw cutting wastes.

Vacuuming fines without a filter.

Wet saw cutting not vacuumed.

Improper disposal of fines.

Paving and Grinding Operations (NS-3)

- Shovel or vacuum saw-cut slurry and remove from the site.
- Saw-cut fine particles if re-suspended in water or in wet slurry must follow the concrete washout BMPs.
- Properly dispose of fines.
- Control dust while saw cutting.

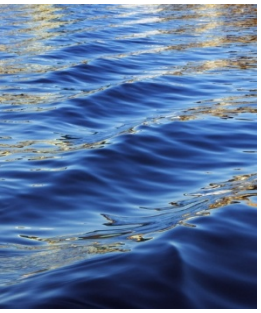
Common Inspection Findings

Improper concrete washout.

Kiddy pools degrade quickly due to corrosive wash water.

Cover / dispose when full.

Pits must be lined with a continuous sheet.



Concrete Waste Management (WM-8)

- Concrete washout is hazardous (pH ≈ 12).
- Wastes must be contained.
- Locate washout 50 ft from waterways.
- Minimum size is 10 ft by 10 ft.
- Plastic lining should be 10 mil and free of holes, tears, etc.
- Only fill containment to 75%.
- Cover is recommended if rain is expected.

Common Inspection Findings

Leaking equipment and lack of spill response.

Vehicle and Equipment Maintenance (NS-10)

- Regularly inspect vehicles and equipment for leaks.
- Use drip protection.
  - Pans.
  - Absorbent material backed with barrier.
  - Ensure it is positioned properly.
- Have spill kit available.
- Ensure workers are trained on spill response.

Spill Kits

- All contractors should have a spill kit available.
- Contents:
  - Absorbent materials.
    - Kitty litter, absorbent pad, berms, etc.
  - PPE such as gloves and goggles.
  - Bag or container for disposal.
  - Non-sparking tools for absorbent removal (broom and plastic dust pan).
- Ensure that spills are properly reported.

Common Inspection Findings

Uncontained stockpiles.

Stockpiles near drainage swales.

Stockpile Management (WM-3)

- Stockpile is aggregate stored for multiple days.
- Maximum height is 15 ft.
- Locate away from waterways (50 ft).
- Use perimeter controls (berms, silt fence).
- Stabilize stockpile (cover, grass).

Inspection Findings

Improper disposal of paint.

Material Use (WM-2)

- Use tarps to contain paint drips / chips.
- Mix and store paint within secondary containment.
- Clean painting equipment by:
  - Scraping off excess paint.
  - Wash in a contained area (e.g. bucket).
- Dispose properly.

Common Inspection Findings

Improper hazardous material management

No Label

No containment

Rusting causes container breach

Material Delivery and Storage (WM-1)

- Store materials in a covered area.
  - If drums must be kept uncovered, store them at an angle to reduce the ponding of rainwater.
- Do not store chemicals, drums, or bagged materials on the ground.
  - Use a pallet and when possible secondary containment.
- Ensure all containers are properly labeled.

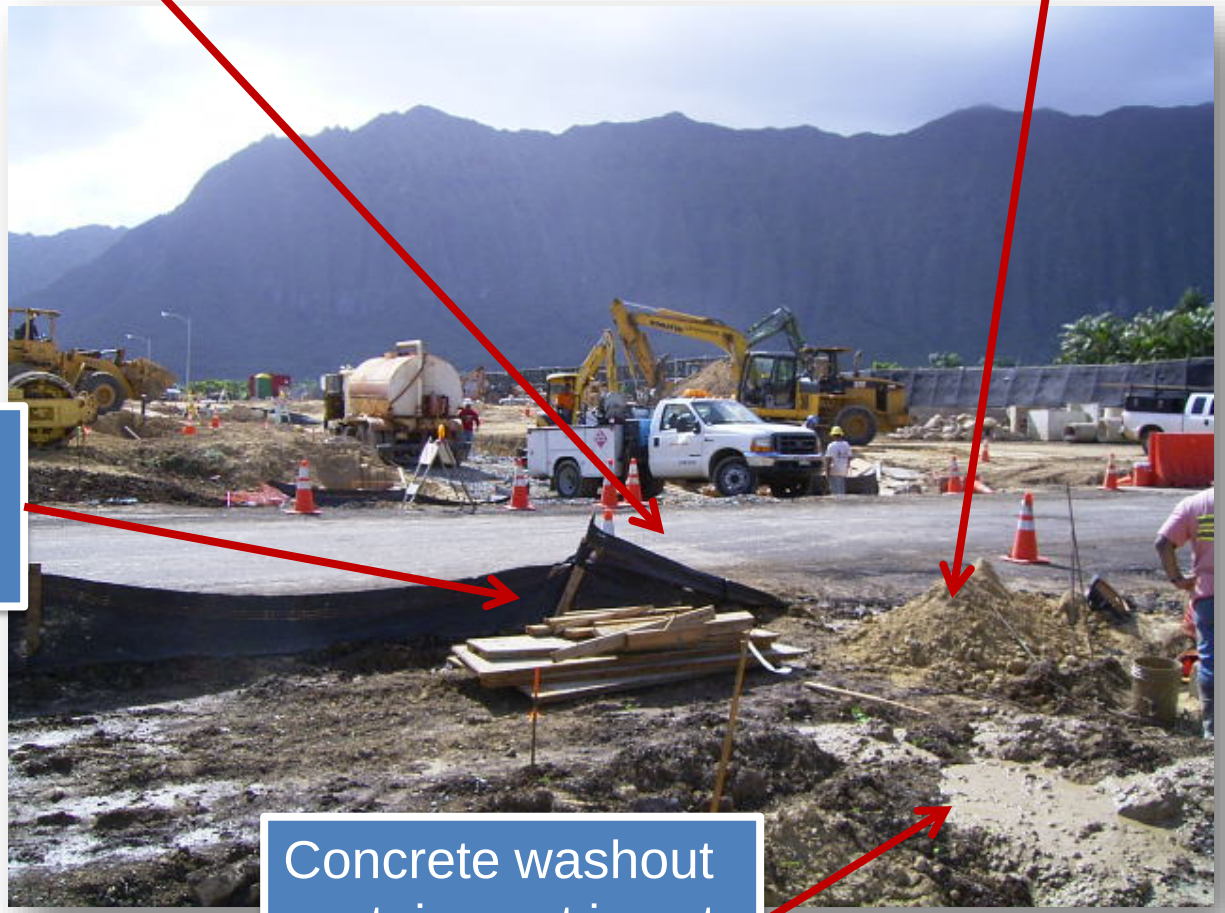
Common Inspection Findings

Improper solid waste management.

Solid Waste Management (WM-5)

- Remove debris from site.
- Place in watertight dumpster.
- Dispose of dumpster contents biweekly or more frequently as needed.
- Locate dumpster 50 ft from waterways.
- Store construction materials neatly.
- Segregate hazardous wastes and recyclable items.

Find the Deficiencies



Finishing the Inspection

- Complete the Construction Inspection Checklist.
- Verbally notify contractor of findings that must be addressed.
- Coordinate follow-up actions.
  - Timeline to re-inspection.
  - Email photos of corrective actions.
  - Other.

Finding Documentation

- Recordkeeping is vital.
  - “If it wasn’t recorded, it didn’t happen.”
- Describe findings in the checklist.
- Photograph finding and surrounding location.
- When verbally describing findings to contractor, you can also provide suggestions.
  - If contractor disagrees, remain professional. Don’t argue back or escalate.
  - Leave the site and send formal letter with documentation.

Back in the Office

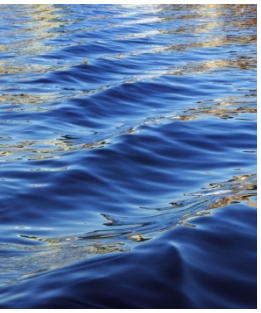
- Finish and sign inspection report ASAP.
- Scan into the computer.
- Attach and describe photographs.
- Attach a map of photo locations, if necessary.
- Send report to ~~CM/~~PM, Environmental Section (EE), and contractor.
  - EE will keep inspection record in database.
- Make a note in calendar to ensure follow-up is completed.

SWMP Enforcement

- Required when corrective actions are not immediately initiated by contractor.
- Conducted by Harbors Qualified Personnel with internal enforcement authority.
- Regulations that will be referenced:
  - SWMP.
  - Construction Contract.
  - HRS Title 15, Chapter 266.
  - HAR Title 19, Chapters 41 to 44.

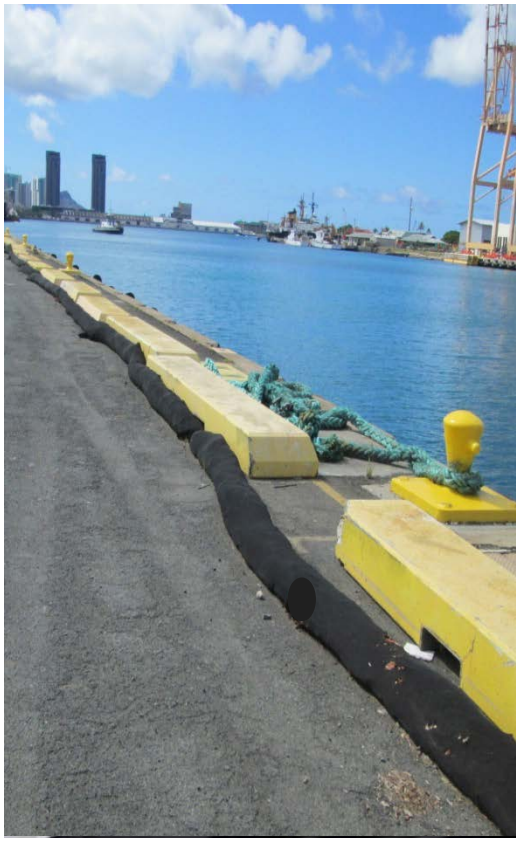
SWMP Enforcement Process

- Upon discovery, contractor will immediately correct deficiency.
- Escalating enforcement, as required:
  - Verbal warnings – PM
  - Written warnings
    - Inspection report – PM
    - Formal letter – HAR-E
    - Notice of Apparent Violation (NAV) – DEP-H
      - Notification provided to Department of Health.
  - Stop work orders – HAR-E
    - Assessing Environmental Liquidated Damage.
  - Terminate Contract – DIR
- Documentation is key!



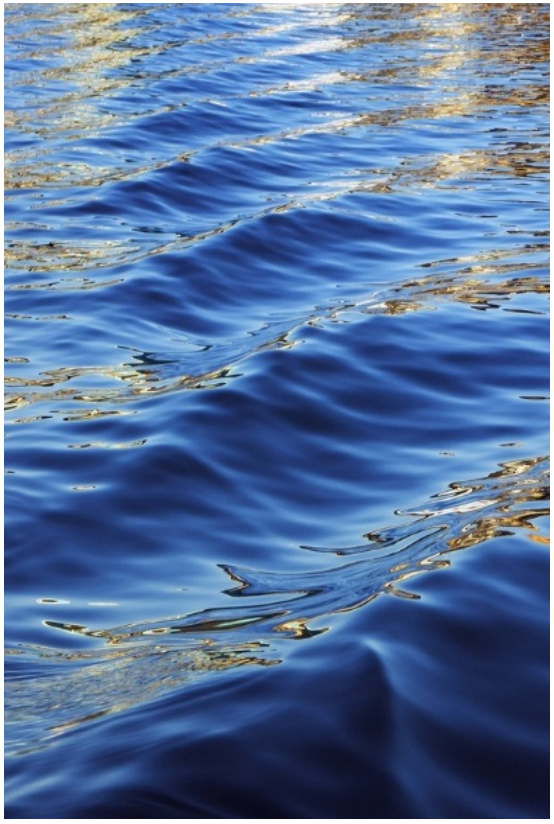
EPA/HDOH Enforcement

- Administrative Penalties:
  - Class I Violation: Up to $10,000 per violation (maximum $25,000).
  - Class II Violation: Up to $10,000 per day per violation (maximum of $125,000).
- Criminal Penalties:
  - Negligent Violations: Up to $2,500 - $25,000 per day (1 yr prison).
  - Knowing Violation: Up to $5,000 - $50,000 per day (3 yrs prison).
  - Knowing Endangerment: $250,000 (15 yrs prison) for an individual. $1 million or an organization.
- False Statements: $10,000 (6 months prison).



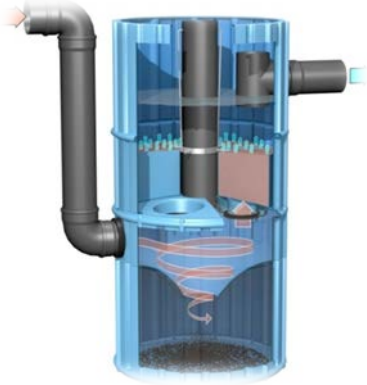
MĀLAMA I KE AWA KAI
PROTECT OUR HARBOR WATERS

HDOT Harbors Post-Construction Process



Post-Construction BMPs

- A BMP that will remain in place following completion of construction to minimize the discharge of pollutants from routine operations on-site.
- Operation and Maintenance Plan required.



Post-Construction Considerations

- Projects of 1 acre or more **must** consider the inclusion of post-construction BMPs.
  - Exceptions:
    - Maintenance activities.
    - Reroofing.
    - Interior work.
    - Utility work.
    - Replacement of damaged pavement.
- Include in Design Review Submittal:
  - Post-Construction BMP Plan Checklist.
  - PSMP: Post-Construction Stormwater Mitigation Plan.

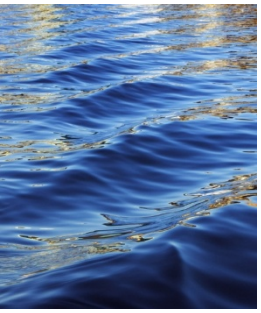
Post-Construction BMP Plan Checklist

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 stormwater pollutants → Identify post-construction BMPs → Complete PSMP

- Applicable to anticipated activities on the site AFTER construction is completed.
- Contents:
  - Narrative of project.
  - Site map.
  - Description of potential pollutants.
  - Drainage study and conditions of concern.
  - Post-Construction BMPs.
  - Maintenance requirements.

PSMP – Potential Pollutants

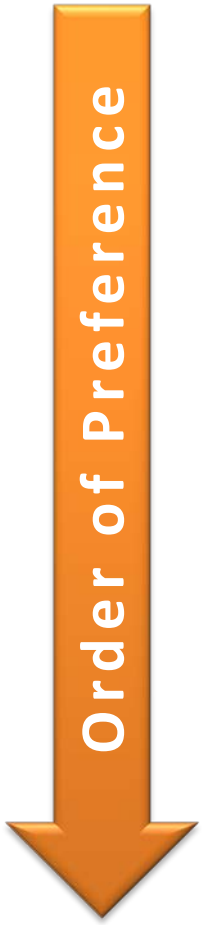
Priority Project Categories	General Pollutant Categories								
	Sediment	Trash & Debris	Metals	Organic Compounds	Nutrients	Oxygen Demanding Substances	Oil & Grease	Bacteria & Viruses	Pesticides
Commercial Development > 1 acre	P[1]	P	P	P[2]	P[1]	P[5]	P	P[3]	P[5]
(Heavy) Industry Development	P	P	P	P		P	P		
Automotive Repair Shops		P	P	P[4,5]			P		
Restaurants		P				P	P	P	P[1]
Parking Lots	P[1]	P	P		P[1]	P[1]	P		P[1]
Fueling Facility		P	P	P		P	P		
Driveways	P	P	P	P[4]	P[1]	P[5]	P		P[1]

P = potential pollutant.

Refer to Section 3.1 of Post-Construction Stormwater Management Manual.

PSMP – BMP Selection

- Select from these categories:
  - **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 – Cover a maintenance area.
  - **Treatment Control**
    - Goal – Remove pollutants from stormwater runoff.
    - Example – Hydrodynamic separators.



PSMP – BMP Selection (cont.)

- Refer to City and County of Honolulu resources.
  - BMP Manual for Construction. (http://cleanwaterhonolulu.com/storm/learning_center/BMP_manual_2011-11.pdf)
  - BMP Guide. (http://www.cleanwaterhonolulu.com/storm/notices/2012_sds_draft_rules/DPP_Storm_Water_BMP_Guide_(07-11-2012).pdf)
  - Rules Relating to Storm Drainage Standards. (http://www.cleanwaterhonolulu.com/storm/notices/2013_sds/index.html)
- Required capacities:
  - Volume based BMPs must capture 1 inch of stormwater.
  - Flow based BMPs must capture/treat rainfall intensity of 0.4 inches per hour.

Common Permanent BMPs

- 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.

Ideal Implementation:
- In areas where there is existing vegetation

Common Permanent BMPs

- 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 Storm Water BMP Guide.

Ideal Implementation:
- Along streets and parking lots.

Common Permanent BMPs

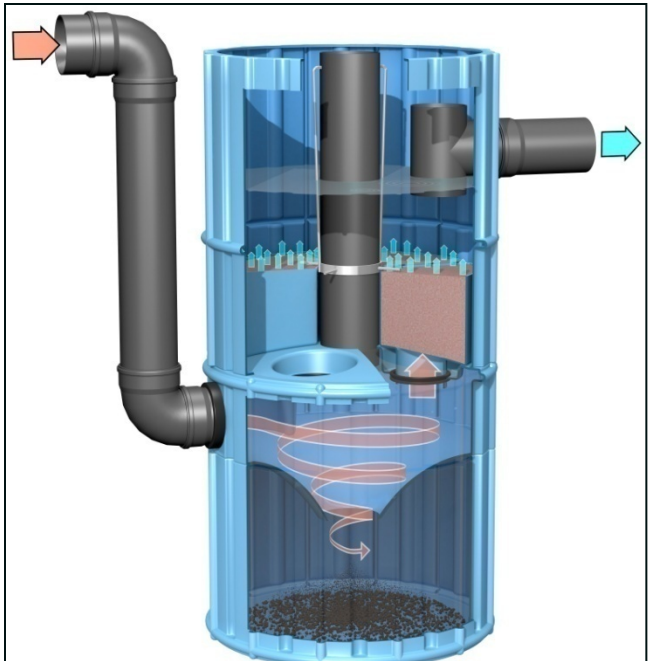
- Permeable Pavement
  - Paved surfaces that infiltrate, treat, and/or store rainwater where it falls.
  - Refer to CCH Storm Water BMP Guide.

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

Common Permanent BMPs

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

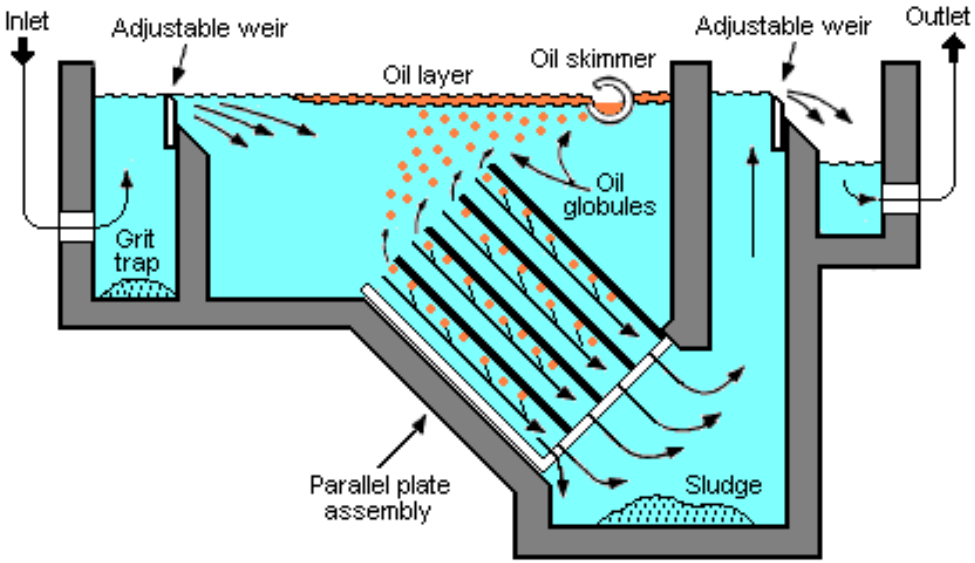
Ideal Implementation:
•Areas where materials to be removed from runoff are heavy particulates – which can be settled – or floatables –which can be captured, rather than solids with poor settleability or dissolved pollutants.



Preferred Permanent BMPs

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

Ideal Implementation:
•Areas where vehicle repairs or washing take place.



Lessons Learned

- 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

- Harbors Website: http://hidot.hawaii.gov/harbors/malamaikeawakai/
- Harbors Contacts:
  - Stormwater Reporting Hotline: 587-1962
  - Environmental Section: Joy Zhang, P.E. 587-1960, ying.j.zhang@hawaii.gov.

MALAMA I KE AWA KAI
PROTECT OUR HARBOR WATERS