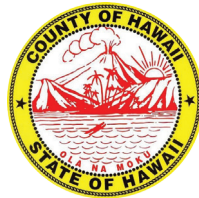
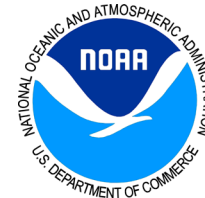


NONPOINT POLLUTION CONTROL FIELD GUIDE

BEST MANAGEMENT PRACTICES FOR
THE OPERATION AND MAINTENANCE
OF HAWAII COUNTY ROADS, HIGHWAYS,
AND BRIDGES
OCTOBER 2020



Hawaii CZM Program
Coastal Zone Management
HAWAII STATE OFFICE OF PLANNING



NONPOINT POLLUTION CONTROL FIELD GUIDE

Best Management Practices for the Operation and Maintenance of Hawaii County Roads, Highways, and Bridges

Prepared for:



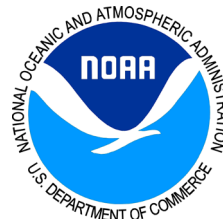
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October 2020

DISCLAIMER

This Nonpoint Pollution Control BMP Field Guide (“Field Guide”) was developed by the State of Hawaii (State) Office of Planning (OP), Coastal Zone Management (CZM) Program for the County of Hawaii (COH) personnel/contractors. The mention of trade names for commercial products does not represent or imply approval or endorsement by State OP-CZM. This Field Guide is intended for use by COH personnel/contractors performing operation and maintenance (O&M) activities on existing COH-owned roads, highways, and bridges and provides a framework for an informed selection of Best Management Practices (BMPs). Note that COH personnel and contractors must implement and maintain the selected BMPs and prepare and adhere to a schedule for implementation and maintenance. This Field Guide does not include activities performed on roads, highways, or bridges under the jurisdiction of the State Department of Transportation (DOT). The guidance for BMPs in the Field Guide is applicable for projects under 1 acre. Per EPA, all construction activities (including, clearing, grading, and excavation) that result in an area disturbance equal to or greater than 1 acre, or are part of a larger development plan, may be subject to the National Pollutant Discharge Elimination System (NPDES) permit regulations.

This disclaimer is applicable to both hard copies and electronic copies of the Field Guide.

ACKNOWLEDGMENTS

The Field Guide and the related *Nonpoint Pollution Control Best Management Practice Guidance Manual – For Operation and Maintenance of County of Hawaii Roads, Highways, and Bridges* (“Manual”) was developed following EPA’s [Guidance Specifying Management Measures for Sources of Nonpoint Pollution in Coastal Waters, Chapter 4, Section VII E – Operation and Maintenance of Roads, Highways, and Bridges. 840-B-92-002 \(January 1993\)](#)¹. The BMPs factsheets in the Manual were adapted from the California Stormwater Quality Association (CASQA) *Stormwater Best Management Practice Handbooks* (2009) and modified to reflect Hawaii’s conditions, as needed. The CASQA handbooks were originally published in 1993 by their predecessor, the California Stormwater Quality Task Force (SWQTF). The numbering of the BMP factsheets in the Manual is consistent with the CASQA BMP numbering convention. The CASQA BMP factsheets that were not applicable to the COH Department of Public Works (DPW) O&M activities for roads, highways, and bridges were excluded. In addition, factsheets from the City and County of Honolulu (CCH), *Construction BMP Manual* (2011) and select in-water BMPs from the State DOT Highways Division (HWYs), *An Integrated Storm Water Management Approach and a Summary of Clear Water Diversion and Isolation Best Management Practices for Use in the State of Hawaii* (2016) were included in the Manual.

¹ For electronic viewing, hyperlinks are displayed in blue text throughout the Field Guide.

PURPOSE OF FIELD GUIDE

This Nonpoint Pollution Control Field Guide (“Field Guide”) is intended to be a quick reference on best management practices (BMPs) for use by the County of Hawaii (COH), Department of Public Works (DPW) road, highway, and bridge maintenance staff or contractors. By implementing BMPs during field activities we can prevent and reduce pollution runoff and help improve overall water quality.

In the Field Guide, DPW road maintenance activities have been divided into six (6) sections wherein each section consists of related activities that are grouped together. General BMPs are provided by common field maintenance activities and activity specific BMPs. For quick reference, “✓” and “✗” marks have been added to pictures to indicate if the control measure shown is a good or bad example of proper installation and maintenance.

BMP factsheets are referenced for each maintenance activity to provide additional information and guidance on pollution control measures. For details on each maintenance activity and to view the BMP Factsheets, please refer to the *Nonpoint Pollution Control Guidance Manual – Best Management Practices for Operation and Maintenance of Hawaii County Roads, Highways, and Bridges* (Manual). The Field Guide is a succinct, abbreviated version of the Manual and is intended for in-field use.



Source: County of Hawaii

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ACRONYMS AND ABBREVIATIONS

BMP	Best Management Practice
CASQA	California Stormwater Quality Association
CFR	Code of Federal Regulations
COH	County of Hawaii
CWB	Clean Water Branch, Department of Health, State of Hawaii
CZARA	Coastal Zone Act Reauthorization Amendments
CZM	Coastal Zone Management
CZMA	Coastal Zone Management Act
DOT	Department of Transportation, State of Hawaii
DPW	Department of Public Works, County of Hawaii
FIFRA	Federal Insecticide, Fungicide, and Rodenticide Act
HEER	Hazard Evaluation and Emergency Response, Department of Health
HSERC	Hawaii State Emergency Response Commission
OP	Office of Planning, State of Hawaii
PRC	Pollution Runoff Control
SWQF	California Stormwater Quality Task Force

WHAT IS NONPOINT SOURCE POLLUTION?

Nonpoint Source (NPS) pollution generally results from land runoff, precipitation, atmospheric deposition, drainage, seepage, or hydrologic modification. Common NPS pollutants include sediment, nutrients, bacteria, and toxic chemicals. During a rain event, the water absorbs and assimilates any pollutants it encounters and moves over and through the ground, adversely affecting groundwater supply, streams, and other waterbodies.

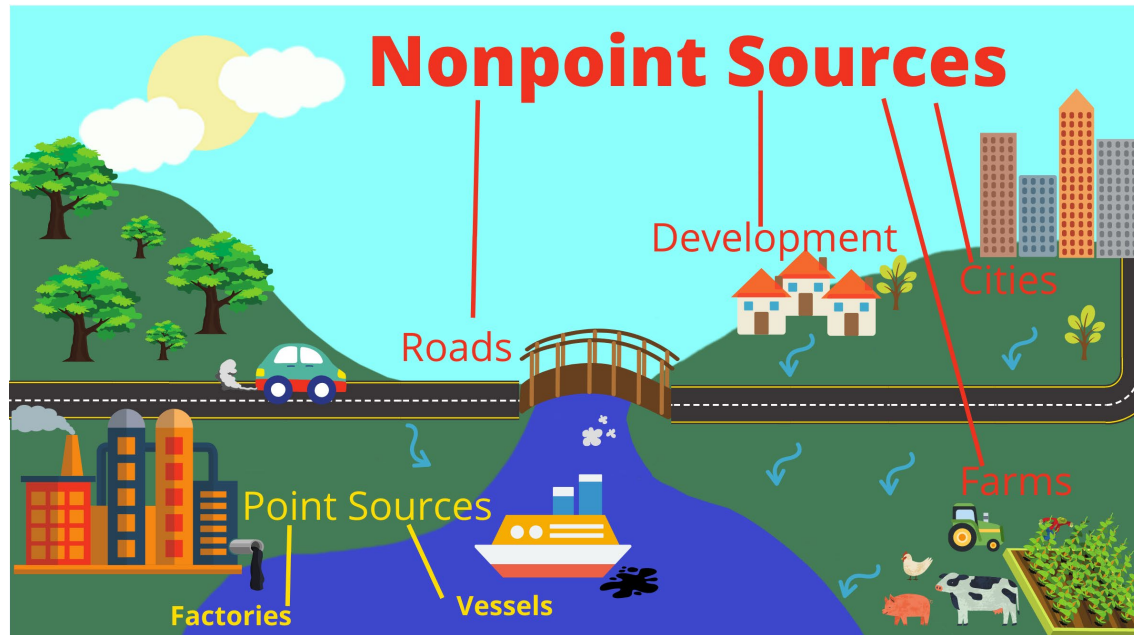
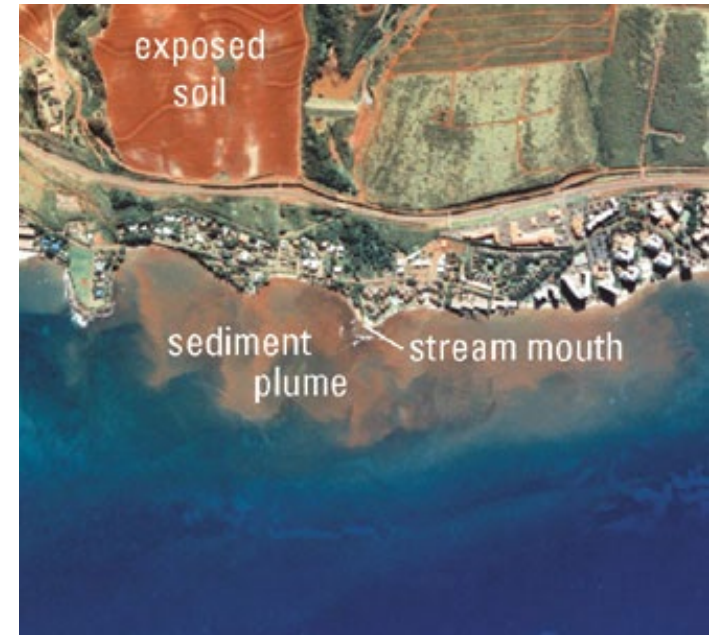


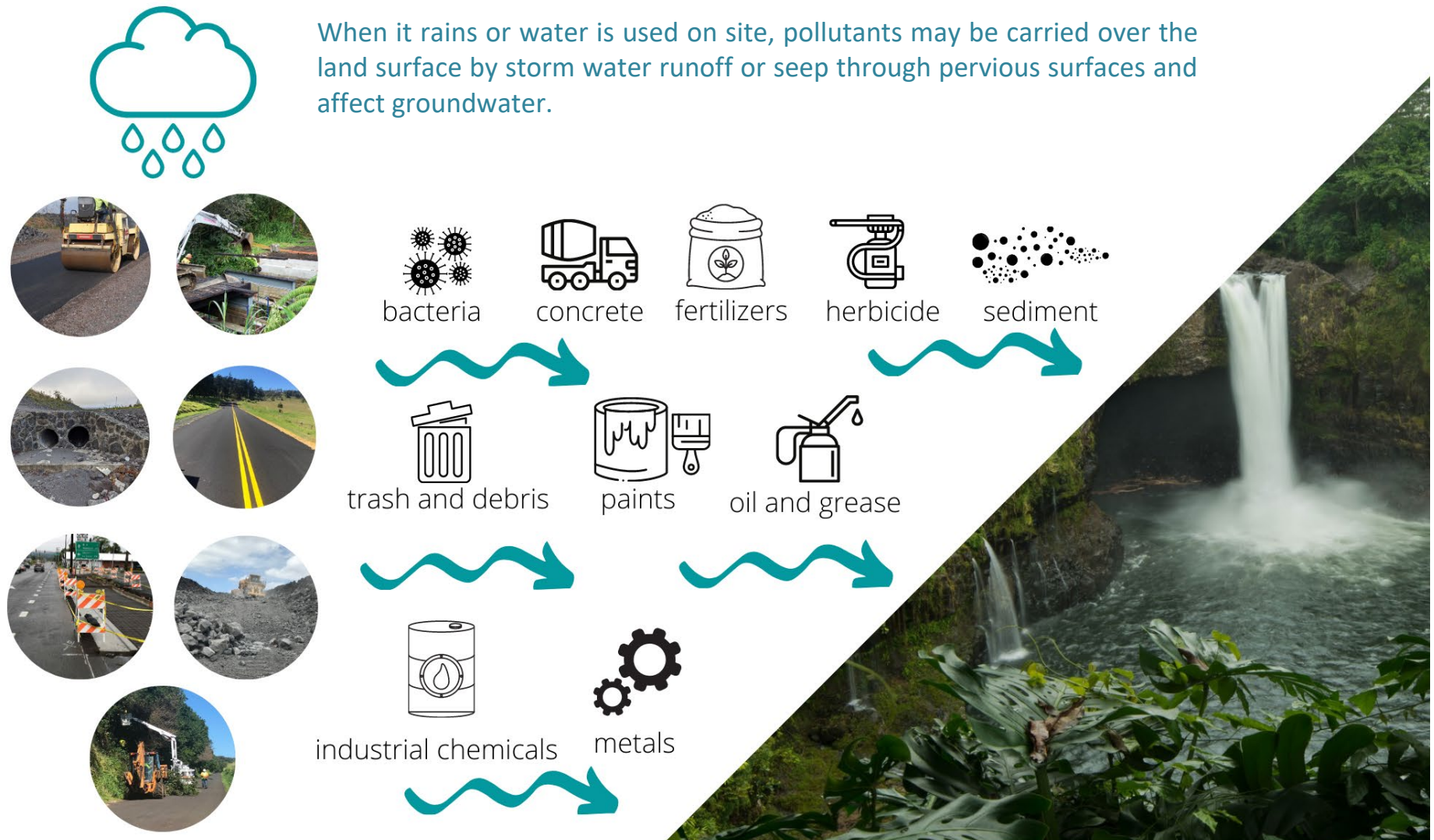
Diagram of common sources of NPS pollution. The blue arrows indicate pollution runoff from roads, development, cities, and farms. Point source pollution is defined as pollution coming from a discernible, confined, and discrete conveyance, such as a storm sewer system, factory, sewage plant, or vessel.



Source: NOAA

Sediment runoff from exposed soil discharged through the stream mouth, resulting in a sediment plume in the ocean.

DPW Operations Can Cause Sediment and Other Pollutants to Flow into Our Streams and Ocean.



This form of NPS pollution is found to have harmful effects on drinking water supplies, recreation, fisheries, and wildlife. We can eliminate and reduce NPS pollution by implementing pollution prevention practices in field activities.

CLEAN WATER STARTS WITH YOU!

Effects of pollution:

- Sediment can cloud the water and make it difficult or impossible for aquatic plants to grow. Sediment also can destroy aquatic habitats.
- Excess nutrients — from fertilizers and leaf debris, for example — can cause algae blooms. When algae die, they sink to the bottom and decompose in a process that removes oxygen from the water. Fish and other aquatic organisms can't exist in water with low dissolved oxygen levels.
- Bacteria and other pathogens can wash into swimming areas and create health hazards, often making beach closures necessary.
- Debris — plastic bags, six-pack rings, bottles, and cigarette butts — washed into waterbodies can choke, suffocate, or disable aquatic life like ducks, fish, turtles, and birds.
- Hazardous wastes like insecticides, pesticides, paint, solvents, used motor oil, and other auto fluids can poison aquatic life.
- Land animals and people can become sick or die from eating diseased fish and shellfish or ingesting polluted water.
- Polluted storm water often affects drinking water sources. This, in turn, can affect human health and increase drinking water treatment costs.

Source: EPA. [After the Storm. A Citizen's Guide to Understanding Stormwater.](#) EPA 833-B-03-002. Jan. 2003.

HOW YOU CAN HELP:

Protect the storm drain and nearby waterbody.



Keep a clean and tidy work area.

Safely store all chemicals to prevent spills.



Clean up spilled paint, oil and grease, and other chemicals.

Keep stockpiles protected when not in use and include perimeter control.



Preserve existing vegetation.
Minimize disturbed areas.

Protect eroded or disturbed areas.



Apply fertilizers/herbicides sparingly. Avoid application during windy/rainy weather.

GENERAL BMPs

The implementation of BMPs in operation and maintenance activities is an important factor in controlling NPS pollution. Each maintenance activity poses a risk to water quality. The risk level is dependent on site's proximity to water. In general, the closer an activity is to surface waters, the higher the risk threat to water quality.

The following BMPs apply to all operation and maintenance of COH roads, highways, and bridge activities under one (1) acre. Per EPA, all construction activities (including, clearing, grading, and excavation), that result in an area disturbance equal to or greater than 1 acre or that are part of a larger development plan may be subject to National Pollutant Discharge Elimination System (NPDES) permit regulations. Regardless of whether the activity poses a High or Low risk threat to water quality, implementing BMPs to all activities will ensure a successful pollution prevention program.

- Erosion Control BMPs
- Sediment Control BMPs
- Non-Storm Water Management BMPs
- Waste Management and Materials Pollution Control BMPs

There is no "one size fits all" BMP. The implementation of BMPs should be determined based on site and project characteristics. If there is a possibility that the activity will contribute to pollutant loadings to surface waters, implement a BMP. In most cases, a combination of BMPs is necessary to be efficient.

A sure-fire way is to think along the lines of containing, collecting, and disposing of all pollutants. If the site is located near a waterbody or storm drain, protect it first before starting the maintenance activity.

Other valuable resources are attached to following the General BMPs:

- Rain Response Guidance
- Spill Response Flowchart
 - Contacts to Report a Spill
 - Spill Incident Log

Proximity to Water (yards)	Area Disturbance (<1 acres)
<100	High
100-1,000	Medium
>1,000	Low



Waipio Valley Road, HI (Source: County of Hawaii)

DPW regularly performs road maintenance activities on the access road to Waipio Valley, HI. The implementation of BMPs is especially important due to the site's proximity to water and High-risk threat to water quality.

EROSION CONTROL BMPs

Erosion controls are used to reduce the amount of sediment that is detached during construction and to prevent sediment from entering runoff. Erosion control is based on two main concepts: (1) disturb the smallest area of land possible for the shortest period of time, and (2) stabilize disturbed soils to prevent erosion from occurring.

Covered activities:	All operation and maintenance of roads, highways, and bridge activities.	
Targeted pollutants:	Sediment	
Why it matters:	Installing Erosion Control BMPs will reduce erosion and prevent sediment from being carried away with storm water. Erosion around roads, highways, and bridges can weaken the structure. Sediment runoff adversely affects our streams and ocean.	
General concept:	<ul style="list-style-type: none"> • Avoid performing maintenance activities during rainy days. Schedule work on dry weather, low wind days. • Minimize the size of the disturbed areas and preserve the existing vegetation. • Install temporary stabilization around disturbed areas for jobs that take longer than one (1) day to complete. When the job is complete, make sure all disturbed areas are permanently stabilized. • Protect and revegetate eroded areas and slopes. • Reduce the velocity of water flow to decrease the impact on ground surface, such as by installing rip-rap or rocks at the outlets of culverts, conduits, or channels. 	
List of different types of Erosion Control BMPs:	<ul style="list-style-type: none"> • EC-0: Employee/Contractor Training • EC-1: Scheduling • EC-2: Preservation of Existing Vegetation • EC-3: Hydraulic Mulch • EC-4: Hydroseeding • EC-5: Soil Binders • EC-7: Geotextiles and Mats • EC-8: Wood Mulching 	<ul style="list-style-type: none"> • EC-9: Earth Dikes and Drainage Swales • EC-10: Velocity Dissipation Devices • EC-11: Slope Drains • EC-12: Streambank Stabilization • EC-14: Seeding, Planting, and Sodding • EC-15: Slope Roughening/Terracing • EC-16: Topsoil Management
Where to get more information:	<i>Nonpoint Pollution Control Guidance Manual – Best Management Practices for Operation and Maintenance of Hawaii County Roads, Highways, and Bridges, Appendix A: Erosion Control BMPs.</i>	



Protect against erosion by installing geotextile mats or other temporary means of stabilization to eroded slopes, disturbed areas, or areas with sparse vegetation. Work to revegetate these areas to implement permanent stabilization.



In the event of rain, unprotected disturbed areas or ground surfaces with sparse vegetation are more susceptible to erosion, and sediment runoff can be carried into drains or waterbodies.



Revegetate disturbed areas to permanently stabilize the ground and protect against erosion and sediment runoff. Install perimeter controls around disturbed areas and do not remove until at least 75% permanent stabilization is achieved.



Schedule work on dry weather, low wind days to reduce the chance of erosion and wind erosion.

Photo source: top (AECOM), bottom (County of Hawaii)

SEDIMENT CONTROL BMPs

Effective sediment control begins with proper erosion control, which minimizes the detachment and movement of soil particles. Sediment controls are structural BMPs that capture sediment that is transported in runoff. Filtration and detention (gravitational settling) are the main processes used to remove sediment from urban runoff. Sediment control BMPs are the last line of defense to protect water quality and can be used as a perimeter control around disturbed areas to contain pollutant runoff.

Covered activities:	All operation and maintenance of roads, highways, and bridge activities.	
Targeted pollutants:	Sediment, trash and debris, oil and grease, and other construction related waste.	
Why it matters:	Sediment runoff into streams and the ocean prevent sunlight from reaching aquatic plants/coral, clogs fish gills, chokes other organisms, and can smother fish spawning and nursery areas. In addition, heavy metals and other pollutants can bind to fine sediment particles and water and wind can mobilize these pollutants. These pollutants degrade water quality and can harm aquatic life by interfering with photosynthesis, respiration, growth, and reproduction.	
General concept:	<ul style="list-style-type: none"> • Contain the sediment/debris on-site. This includes tracking from vehicle and equipment tires. • Inspect and maintain the Sediment Control BMPs to ensure the efficiency of the control. • Properly clean the accumulated sediment/debris from the Sediment Control BMP. • If BMP degradation appears through usage, replace materials as needed. Properly dispose of spent BMPs. • Uninstall and dispose of all temporary Sediment Control BMPs at the completion of the activity. 	
List of different types of Sediment Control BMPs:	<ul style="list-style-type: none"> • SE-1: Silt Fence • SE-2: Sediment Basin • SE-3: Sediment Trap • SE-4: Check Dams • SE-5: Fiber Rolls • SE-6: Gravel Bags • SE-7: Street Sweeping and Vacuuming • SE-8: Sandbag Barrier • SE-10: Storm Drain Inlet Protection 	<ul style="list-style-type: none"> • SE-12: Location of Potential Sources of Sediment • SE-13: Level Spreader • SE-14: Rip-Rap and Gabion Inflow Protection • SE-15: Vegetated Buffer Strips • SE-16: Compost Socks and Berms • WE-1: Wind Erosion Control • TR-1: Stabilized Construction Entrance/Exit • TR-2: Stabilized Construction Roadway • TR-3: Entrance/Outlet Tire Wash
Where to get more information:	<i>Nonpoint Pollution Control Guidance Manual – Best Management Practices for Operation and Maintenance of Hawaii County Roads, Highways, and Bridges, Appendix B: Sediment Control BMPs.</i>	



Prior to starting activities that may generate pollutants, such as grading, cold planing, and paving, protect the storm drains or other waterbodies to prevent sediment runoff. Remove all storm drain inlet protections only after the activity is complete or during severe rain. A [Rain Response Plan](#) is available on page 23 of the Field Guide.



Ensure Sediment Control BMPs are properly installed. Inspect for damaged or failing BMPs throughout the activity. Clean, maintain, or replace as needed. Remove all temporary Sediment Control BMPs at the completion of the activity.



Street sweeping and other road debris pickup activities are excellent preventative measures to eliminate NPS pollutant discharge and protect water quality.



Inspect and clean vehicle and equipment tires to prevent tracking. Install a stabilized construction entrance/exit if needed. Sweep the roadway structures to remove sediment tracking. DO NOT wash the road. Staining is not considered tracking.

Photo source: top (County of Hawaii), bottom (City and County of Honolulu)

NON-STORM WATER MANAGEMENT BMPs

Non-Storm Water Management BMPs are source control BMPs that prevent pollution by limiting or reducing potential pollutants at their source or eliminating off-site discharge. These practices involve day-to-day general “good housekeeping practices,” which includes keeping a clean, orderly construction site as well as adopting practices designed to minimize or eliminate the discharge of pollutants from vehicle and equipment to surface waters. Non-Storm Water Management BMPs also include In-Water BMPs to be implemented when working in, over, or adjacent to open water.

Covered activities:	All operation and maintenance of roads, highways, and bridge activities.	
Targeted pollutants:	Sediment, trash, debris, green waste, nutrients and chemical herbicide, oil and grease, asphalt, concrete waste, and other construction related waste.	
Why it matters:	Sediment runoff adversely affects our streams and ocean. Trash and green waste may harbor bacteria, viruses, vectors, and depress the dissolved oxygen levels in streams which can kill fish. The overapplication of fertilizers has a higher potential for runoff and leads to algal blooms, excessive plant growth, and causes eutrophication. Pesticides and herbicides are found to be harmful to human and aquatic life.	
General concept:	Reduce potential pollutants from specific activities by implementing isolation, containment, and elimination of off-site discharge.	
List of different types of Sediment Control BMPs:	<ul style="list-style-type: none"> • NS-1: Water Conservation Practices • NS-2: Dewatering Operations • NS-3: Paving and Grinding Operations • NS-4: Temporary Stream Crossing • NS-5: Clear Water Diversion • NS-6: Illicit Connection/Discharge • NS-8: Vehicle and Equipment Cleaning • NS-9: Vehicle and Equipment Fueling • NS-10: Vehicle and Equipment Maintenance • NS-11: Pile Driving Operations • NS-12: Concrete Curing • NS-13: Concrete Finishing 	<ul style="list-style-type: none"> • NS-14: Materials Over Water • NS-15: Demolition Adjacent to Water • NS-16: Temporary Batch Plants • SC-70: Road and Street Maintenance • SC-71: Plaza and Sidewalk Cleaning • SC-73: Landscape Maintenance • SC-74: Drainage System Maintenance • In-Water 1: Cofferdam and/or Sheet Pile Isolation • In-Water 2: Stream Diversion Techniques: Pumped, Pipe/Flume, and Excavated • In-Water 3: In-Stream Construction Sediment Control
Where to get more information:	<i>Nonpoint Pollution Control Guidance Manual – Best Management Practices for Operation and Maintenance of Hawaii County Roads, Highways, and Bridges</i> , Appendix C: Non-Storm Water Management BMPs and Appendix F: Herbicide and Weed Control Methods.	



Regular inspections and maintenance of vehicles and equipment will ensure that they are in good working condition prior to taking them out in the field.

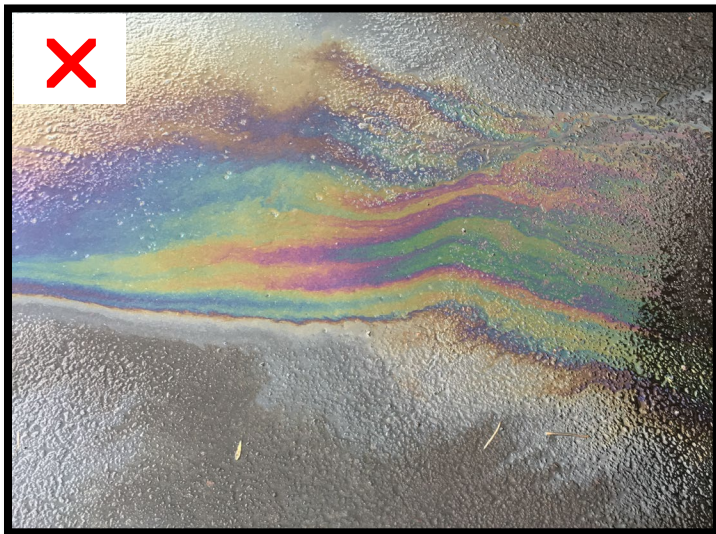


A designated vehicle staging area, equipped with impermeable fabric and perimeter control BMPs, should be available to store vehicles and equipment on site when not in use

Photo source: top (County of Hawaii), bottom (AECOM)



Leaky vehicles should not be taken out for field operations. Should an unexpected leak occur, BMPs, such as drip liners, pans, or other impermeable fabrics, should be on hand to place underneath leaky vehicles. Leaky vehicles must be serviced as soon as possible.



Pollutants that leak from vehicles can runoff into storm drains or into streams. These pollutants are harmful to the environment and threaten water quality.

Photo source: AECOM

WASTE MANAGEMENT AND MATERIALS POLLUTION CONTROL BMPs

This BMP specifically targets materials and wastes to be properly managed and stored to prevent spills, leaks, or exposure to storm water run-on/off. Preventative measures should be established, such as providing procedures and training for safe use and storage of materials and wastes during field operations. The following should be considered to minimize pollution:

Covered activities:	All operation and maintenance of roads, highways, and bridge activities.	
Targeted pollutants:	Sediment, trash, debris, green waste, oil and grease, asphalt, concrete waste, and other construction related waste.	
Why it matters:	Sediment runoff adversely affects our streams and ocean. Gross pollutants may harbor bacteria, viruses and vectors and may depress the dissolved oxygen levels in streams, which can kill fish. The overapplication of fertilizers has a higher potential for runoff, which can lead to algal blooms, excessive plant growth, and causes eutrophication. Pesticides and herbicides are found to be harmful to human and aquatic life.	
General concept:	<ul style="list-style-type: none"> • Properly store and cover stockpiles when not in use to prevent runoff in the event of rain. • Implement proper storage, handling, application, and disposal of toxic substances. <ul style="list-style-type: none"> ○ Follow manufacturer's guidelines. ○ Have spill kits stocked and available for accidental spills. • Follow spill control methods to isolate, contain, collect, and dispose of toxic substances. • Properly dispose of solid, hazardous, or liquid waste. 	
List of different types of Sediment Control BMPs:	<ul style="list-style-type: none"> • WM-1: Material Delivery and Storage • WM-2: Material Use • WM-3: Stockpile Management • WM-4: Spill Prevention and Control • WM-5: Solid Waste Management 	<ul style="list-style-type: none"> • WM-6: Hazardous Waste Management • WM-7: Contaminated Soil Management • WM-8: Concrete Waste Management • WM-9: Sanitary/Septic Waste Management • WM-10: Liquid Waste Management
Where to get more information:	Nonpoint Pollution Control Guidance Manual – Best Management Practices for Operation and Maintenance of Hawaii County Roads, Highways, and Bridges, Appendix D: Waste Management and Materials Pollution Control BMPs and Appendix E: Spill Response Procedures and Record.	



Stockpiles should be covered when not in use and be stored away from drains, gutters, and waterbodies. Berms should be placed around them to prevent runoff.



Unprotected stockpiles have potential for runoff in the event of rain or may be blown away by wind. Pollutants from the stockpiles can pose a threat to water quality.



Temporary concrete washout facilities on-site should be located at least 50 feet away from storm drains or waterways. Concrete washout should be contained in a leak-proof container to be filled up to only 75% and left to harden before disposing as solid waste.



Uncontained concrete washout has the potential for runoff and causes damage to the ground and vegetation. If concrete washout is not contained when performing bridge maintenance, the washout can be harmful for aquatic life and pose a threat to water quality.



Spill kits should be stocked and readily available in the event of a spill. Isolate, contain, collect, and properly dispose of all spills.



Chemicals and hazardous materials stored on-site should be stored inside a secondary containment and protected from rain. Solid waste should be placed inside a leak-proof container and transported for proper disposal.

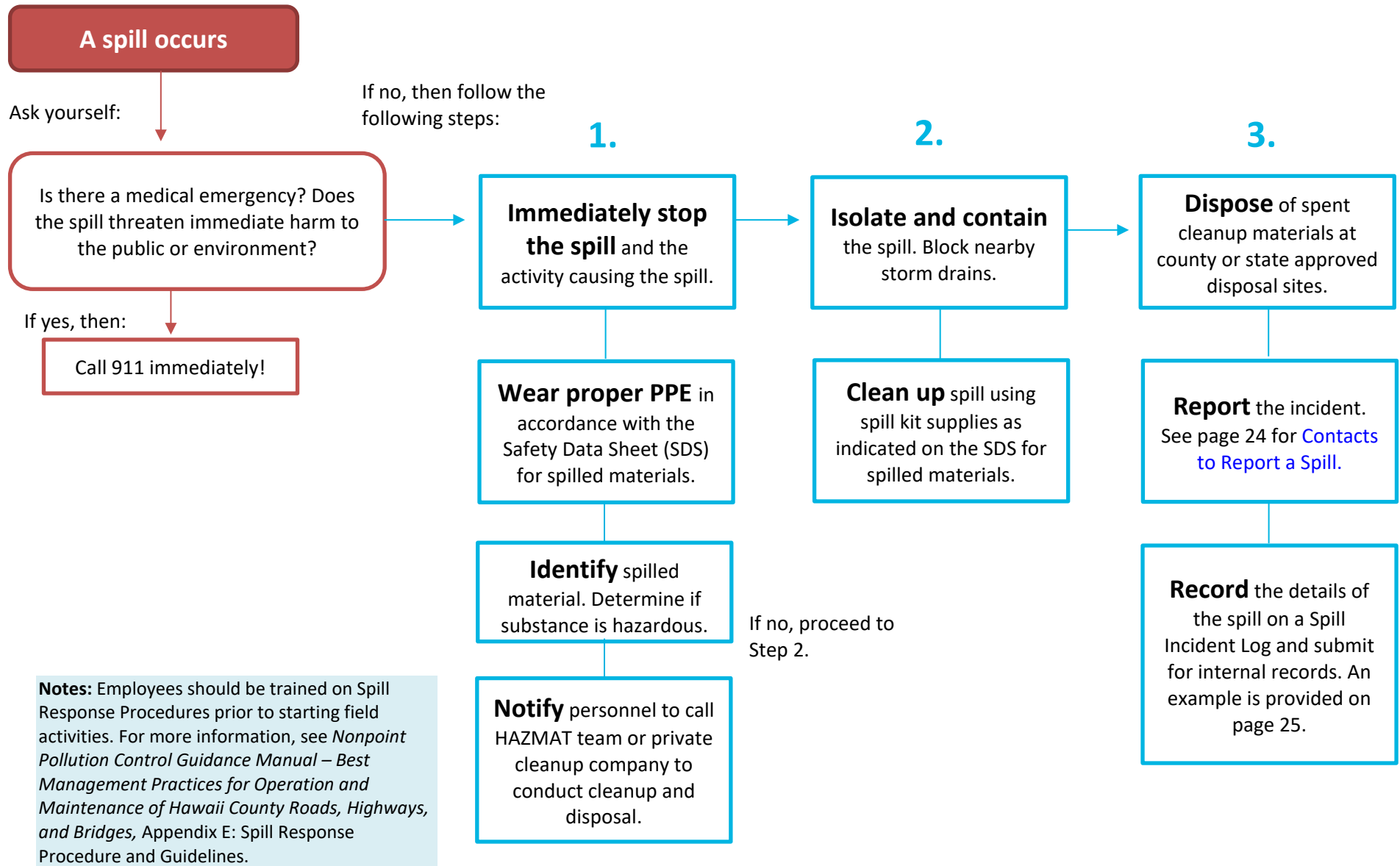
Photo source: top (EnviroMet), bottom (AECOM)

RAIN RESPONSE PLAN

Follow the steps below when severe rain is forecasted:

- | |
|--|
| ✓ Temporarily suspend land disturbing activities including clearing, grubbing, grading, and trenching. |
| ✓ Inspect all BMPs and maintain as needed. |
| ✓ Re-install BMPs that were removed due to active work in the area. |
| ✓ If a severe storm is expected, sweep and remove debris around inlet protection, then remove the inlet protection devices to prevent flooding the surrounding streets. |
| ✓ Secure potential sources of pollution. Cover stockpiles and liquid material in containers with plastic tarps or berm around them, if necessary, to prevent transport of materials in runoff. |
| ✓ Place spill pans or absorbent spill pads under leaky construction vehicles for drip control. Properly dispose of any accumulated oily water after the rain event. |
| ✓ Re-inspect project site after the rain event and reposition, maintain, or replace BMPs as needed. |

SPILL RESPONSE FLOWCHART



Contacts to Report a Spill

Spill Description	Report to	When	Telephone Number
Accidental oil spills.	DOH Clean Water Branch	Immediately	(808) 933-0401
Oil release to County of Hawaii storm drains, includes County streets.	COH DPW Supervisor	Immediately	(808) 961-8321
Release of a listed or unlisted hazardous substance in quantities equal to or exceeding the *reportable quantity criteria in any 24-hour period.	Call and notify the Hawaii State Emergency Response Commission (HSERC)/DOH Hazard Evaluation and Emergency Response (HEER) Office	Immediately	(808) 933-9921
	Written follow-up notification to the HSERC/DOH HEER Office	Within 30 days	
Release of less than 25 gallons of oil in any 24-hour period which is not contained and remedied within 72 hours.	Written notification to the HSERC/DOH HEER Office	Within 30 days	(808) 933-9921
Release of a hazardous substance that poses an imminent or immediate threat to public health or the environment.	Call 911 to request fire, police or emergency medical service personnel response	Immediately	911
Oil or other hazardous materials present in the streams or ocean. Report the location, size, source, color, substances, and time observed.	US Coast Guard	Immediately	(808) 842-2677

Reportable quantities are based on Code of Federal Regulations (CFR):

40 CFR Part 112: Oil Pollution Prevention

https://www.ecfr.gov/cgi-bin/text-idx?tpl=/ecfrbrowse/Title40/40cfr112_main_02.tpl

40 CFR Part 117.3: Determination of Reportable Quantities for Hazardous Substances

https://www.ecfr.gov/cgi-bin/text-idx?node=se40.22.117_13&rgn=div8

For more information, see *Nonpoint Pollution Control Guidance Manual – Best Management Practices for Operation and Maintenance of Hawaii County Roads, Highways, and Bridges*, Appendix E: Spill Response Procedure and Guidelines.

SPILL INCIDENT LOG

(to be filled out by personnel reporting the spill)

Location: _____

(Address/description of where the spill occurred)

Date and Time of the Spill: _____

(If time of the spill is not known, record the time the spill was discovered)

Type of Spill:

(Record/description the spill substance, appearance, color, etc.)

Where did the Spill discharge to?

Sewer:

☐ Yes

☐ No

Storm Drain:

☐ Yes

☐ No

Ocean/Stream:

☐ Yes

☐ No

Other: _____

☐ Yes

☐ No

Action Taken:

(Record what was done and by who, Refer to Spill Response Procedures and Guidelines for details)

Who was contacted:

(Record names and times contacted, Refer to [Contacts to Report a Spill](#) on page 24 or Spill Response Procedures and Guidelines for details)

Report Filled out by:

Print Name: _____ **Signature:** _____ **Date:** _____

DPW CLEANING ACTIVITIES

BRIDGE CLEANING/WASHING AND WEEP HOLE CLEANING

Why it matters:	Cleaning debris off bridges is a proactive step to eliminating NPS pollutant runoff into streams and ocean. Weep hole cleanings aid in flood mitigation. Due to its proximity to water, the activity poses a High-Risk threat to water quality.
Erosion Control BMPs	<ul style="list-style-type: none"> All personnel should be trained on the activity they are responsible for performing. Includes health and safety measures and PPE. Schedule during dry weather.
Non-Storm Water Management BMPs	<ul style="list-style-type: none"> All vehicles and equipment should be in good working order and leak free. Drip liners or pans should be on hand in the event of a leak. Protect the waterbody with suspended tarps or booms to catch loose debris.
Sediment Control BMP	<ul style="list-style-type: none"> Sweep or vacuum debris off bridge.
Waste Management and Materials Pollution Control BMPs	<ul style="list-style-type: none"> Solid waste collected during cleaning operations should be contained and transported for proper disposal. Any liquid used during cleaning operation should be contained, collected, and transported in a leak-proof container for proper disposal. Uninstall all temporary BMPs once the maintenance activity is complete and dispose as solid waste. Separate spent BMPs contaminated by hazardous waste from non-hazardous waste and dispose accordingly.
Where to get more information:	<i>Nonpoint Pollution Control Guidance Manual – Best Management Practices for Operation and Maintenance of Hawaii County Roads, Highways, and Bridges, Section 4.1.</i>



Bridge path (County of Hawaii)

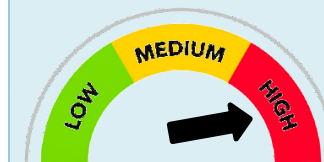
Structure type: Bridges

Activity performed by: Highway Maintenance

Pollutants of Concern:

- Sediment
- Trash/Debris
- Oil and Grease

Threat to water quality:



CULVERT CLEANING, DRYWELL CLEANING, DEAD ANIMAL PICK UP, DEBRIS REMOVAL, STREET SWEEPING, AND TRASH REMOVAL/LITTER PICK UP

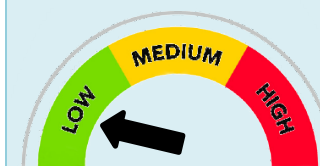
Why it matters:	Cleaning debris off roads and highways is a proactive step to eliminating NPS pollutant runoff into streams and ocean. In addition, cleanings culverts and drywells aid in flood mitigation. Implementing BMPs during any activity, regardless of whether it poses a Low-Risk threat to water quality will ensure a successful pollution prevention program.
Erosion Control BMPs	<ul style="list-style-type: none"> • All personnel should be trained on the activity they are responsible for performing. Includes health and safety measures and PPE. • Schedule during dry weather. • For culverts or other outlets, protect against erosion by installing riprap or other velocity dissipators to reduce the impact of water on ground surfaces.
Non-Storm Water Management BMPs	<ul style="list-style-type: none"> • All vehicles and equipment should be in good working order and leak free. Drip liners or pans should be on hand in the event of a leak.
Sediment Control BMP	<ul style="list-style-type: none"> • Protect the storm drains prior to street sweeping to prevent the mechanical sweeper from pushing sediment and debris into the drain. • Sweep or vacuum dirt and debris from roadway. Analyzing the amount of debris collected may help determine whether certain locations require a higher frequency of cleanings.
Waste Management and Materials Pollution Control BMPs	<ul style="list-style-type: none"> • Solid waste collected during cleaning operations should be contained and transported for proper disposal. • If any hazardous waste was collected during roadway pick-ups, separate from non-hazardous solid waste, contain it, and transport for proper disposal. • Uninstall all temporary BMPs once the maintenance activity is complete and dispose as solid waste. Separate spent BMPs contaminated by hazardous waste from non-hazardous waste and dispose accordingly.
Where to get more information:	<i>Nonpoint Pollution Control Guidance Manual – Best Management Practices for Operation and Maintenance of Hawaii County Roads, Highways, and Bridges, Section 4.2.</i>



Vacuum truck (County of Hawaii)

Structure type: Roads and Highways**Activity performed by:** Highway Maintenance**Pollutants of Concern:**

- Biological Waste
- Sediment
- Trash/Debris

Threat to water quality:



Regular street sweeping and road debris pickups proactively eliminate the potential for NPS pollution and aid in beautification of our island.



Culvert cleanings can prevent trash and debris from discharging. Clogged culverts can cause flood issues. In addition to regular cleanings, efforts should be made at the outlets to prevent erosion. Install riprap or other velocity dissipators to reduce the impact of water on ground surface.

Photo source: top (City and County of Honolulu), bottom (County of Sonoma)

DPW TRAFFIC DIRECTING ACTIVITIES

DELINEATOR INSTALLATION AND TRAFFIC CONTROL MEASURES (ROAD CLOSURES)

Why it matters:	Road and bridge maintenance activities may require road closure or detour around the construction activity. Delineators and other traffic controls are measures for keeping both maintenance workers and road users safe. Implementing BMPs for any activity, regardless of whether it poses a Low-Risk threat to water quality, will ensure a successful pollution prevention program.
Erosion Control BMPs	<ul style="list-style-type: none"> All personnel should be trained on the activity they are responsible for performing. Includes health and safety measures and PPE.
Non-Storm Water Management BMPs	<ul style="list-style-type: none"> All vehicles and equipment should be in good working order and leak free. Drip liners or pans should be on hand in the event of a leak.
Sediment Control BMP	<ul style="list-style-type: none"> If the delineator installation requires bolting into the asphalt, manually sweep and collect the loose asphalt or pavement.
Waste Management and Materials Pollution Control BMPs	<ul style="list-style-type: none"> Solid waste collected during cleaning operations should be contained and transported for proper disposal. Uninstall all temporary BMPs once the maintenance activity is complete and dispose as solid waste. Separate spent BMPs contaminated by hazardous waste from non-hazardous waste and dispose accordingly.
Where to get more information:	<i>Nonpoint Pollution Control Guidance Manual – Best Management Practices for Operation and Maintenance of Hawaii County Roads, Highways, and Bridges, Section 5.1.</i>



Delineators (County of Hawaii)

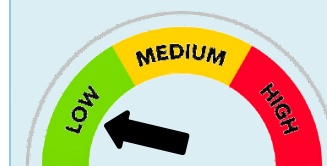
Structure type: Roads, Highways, and Bridges

Activity performed by: Highway Maintenance

Pollutants of Concern:

- Sediment
- Asphalt/pavement

Threat to water quality:



DPW REPAIR ACTIVITIES

BRIDGE CRACK, PATCHING, OR PATH REPAIRS

Why it matters:	Routine repairs and maintenance of bridge structures are necessary to maintain overall structural integrity and ensure the structures are safe for public use. Due to its proximity to water, the activity poses a High-Risk threat to water quality.
Erosion Control BMPs	<ul style="list-style-type: none"> All personnel should be trained on the activity they are responsible for performing. Includes health and safety measures and PPE. Schedule during dry weather.
Non-Storm Water Management BMPs	<ul style="list-style-type: none"> All vehicles and equipment should be in good working order and leak free. Drip liners or pans should be on hand in the event of a leak. Protect the waterbody with suspended tarps or booms to catch loose debris. If concrete work is needed, extra precaution should be used to prevent concrete waste from entering the waterbody.
Sediment Control BMP	<ul style="list-style-type: none"> Sweep or vacuum debris off bridge before and after maintenance operation. Stockpiles should be stored away from waterways. When not in use, stockpiles should be covered with plastic tarps and have berms around them to prevent runoff in case it rains. Remove dirt/asphalt from vehicle and equipment tires to prevent tracking.
Waste Management and Materials Pollution Control BMPs	<ul style="list-style-type: none"> The best way to eliminate a pollutant spill is prevention. All personnel should be trained to prevent and respond to spills. Solid waste collected during cleaning operations should be contained and transported for proper disposal. Uninstall all temporary BMPs once the maintenance activity is complete and dispose as solid waste. Separate spent BMPs contaminated by hazardous waste from non-hazardous waste and dispose accordingly.
Where to get more information:	<i>Nonpoint Pollution Control Guidance Manual – Best Management Practices for Operation and Maintenance of Hawaii County Roads, Highways, and Bridges, Section 6.1.</i>



Bridge columns (County of Hawaii)

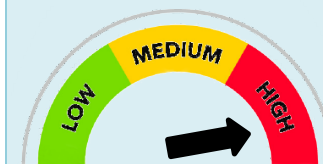
Structure type: Bridges

Activity performed by: Highway Maintenance

Pollutants of Concern:

- Sediment
- Wood debris
- Concrete

Threat to water quality:





Prevent sediment tracking by installing a stabilized construction entrance/exit.



Keep the work site clean and tidy. Install suspended tarps or booms to catch loose debris during bridge maintenance activity to protect the water below.

POTHOLES

Why it matters:	Pothole repairs are not only important to ensure road safety for road users, but they serve to improve the structural integrity of the road, seal cracks, and reduce NPS pollutant discharge. Implementing BMPs for any activity, regardless of whether it poses a Low-Risk threat to water quality, will ensure a successful pollution prevention program.
Erosion Control BMPs	<ul style="list-style-type: none"> • All personnel should be trained on the activity they are responsible for performing. Includes health and safety measures and PPE. • Schedule during dry weather.
Non-Storm Water Management BMPs	<ul style="list-style-type: none"> • All vehicles and equipment should be in good working order and leak free. Drip liners or pans should be on hand in the event of a leak.
Sediment Control BMP	<ul style="list-style-type: none"> • Sweep or vacuum debris from work area before and after maintenance operation.
Waste Management and Materials Pollution Control BMPs	<ul style="list-style-type: none"> • The best way to eliminate a pollutant spill is prevention. All personnel should be trained to prevent and respond to spills. • Solid waste collected during cleaning operations should be contained and transported for proper disposal. • Uninstall all temporary BMPs once the maintenance activity is complete and dispose as solid waste. Separate spent BMPs contaminated by hazardous waste from non-hazardous waste and dispose accordingly.
Where to get more information:	<i>Nonpoint Pollution Control Guidance Manual – Best Management Practices for Operation and Maintenance of Hawaii County Roads, Highways, and Bridges, Section 6.2.</i>



Pothole (County of Hawaii)

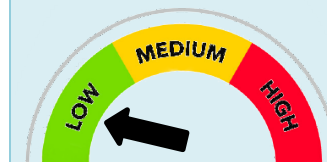
Structure type: Roads and Highways

Activity performed by: Highway Maintenance

Pollutants of Concern:

- Sediment
- Asphalt
- Gravel
- Oil and Grease

Threat to water quality:



SPEED HUMP REPAIR

Why it matters:	Speed humps are an effective traffic calming technique to control traffic flow. Speed hump repairs ensure safe road conditions for public usage. Implementing BMPs for any activity, regardless of whether it poses a Low-Risk threat to water quality, will ensure a successful pollution prevention program.
Erosion Control BMPs	<ul style="list-style-type: none"> All personnel should be trained on the activity they are responsible for performing. Includes health and safety measures and PPE. Sawcutting produces dust and asphalt installation requires a dry workspace. Schedule during dry, low wind weather.
Non-Storm Water Management BMPs	<ul style="list-style-type: none"> All vehicles and equipment should be in good working order and leak free. Drip liners or pans should be on hand in the event of a leak. Paving and grinding operations require specific BMPs. See NS-3 in the Manual for specific BMPs for this activity.
Sediment Control BMP	<ul style="list-style-type: none"> Protect the storm drain inlets to prevent sediment and asphalt from entering the storm drains. Do not remove until the activity is completed. Sweep or vacuum debris from work area before and after maintenance operation. Remove dirt/asphalt from vehicle and equipment tires to prevent tracking.
Waste Management and Materials Pollution Control BMPs	<ul style="list-style-type: none"> The best way to eliminate a pollutant spill is prevention. All personnel should be trained to prevent and respond to spills. Solid waste collected during cleaning operations should be contained and transported for proper disposal. Uninstall all temporary BMPs once the maintenance activity is complete and dispose as solid waste. Separate spent BMPs contaminated by hazardous waste from non-hazardous waste and dispose accordingly.
Where to get more information:	<i>Nonpoint Pollution Control Guidance Manual – Best Management Practices for Operation and Maintenance of Hawaii County Roads, Highways, and Bridges, Section 6.3 and Appendix C, NS-3.</i>



Speed hump installation (County of Hawaii)

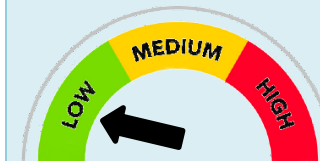
Structure type: Roads and Highways

Activity performed by: Highway Maintenance

Pollutants of Concern:

- Sediment
- Asphalt/pavement
- Gravel
- Oil and Grease

Threat to water quality:



SIDEWALK REPAIR

Why it matters:	Sidewalks provide a safe path for pedestrians. Repairing sidewalks improves their structural integrity, seals cracks, and reduces NPS pollutant discharge. The threat to water quality can be Low, Medium, or High, depending on site- and project-specific conditions.
Erosion Control BMPs	<ul style="list-style-type: none"> All personnel should be trained on the activity they are responsible for performing. Includes health and safety measures and PPE. Removing the existing pavement produces dust; new pavement installation in the rain is not advised. Schedule during dry, low wind days.
Non-Storm Water Management BMPs	<ul style="list-style-type: none"> All vehicles and equipment should be in good working order and leak free. Drip liners or pans should be on hand in the event of a leak. Paving and grinding operations require specific BMPs. See NS-3 in the Manual for specific BMPs for this activity.
Sediment Control BMP	<ul style="list-style-type: none"> Protect the storm drain inlets to prevent sediment and asphalt from entering the storm drains. Do not remove until the activity is completed. Stockpiles should be stored away from street, gutters, and storm drains. When not in use, stockpiles should be covered with plastic tarps and have berms around them to prevent runoff in case it rains. Sweep or vacuum debris from work area before and after maintenance operation. Remove dirt/asphalt from vehicle and equipment tires to prevent tracking.
Waste Management and Materials Pollution Control BMPs	<ul style="list-style-type: none"> The best way to eliminate a pollutant spill is prevention. All personnel should be trained to prevent and respond to spills. Solid waste collected during cleaning operations should be contained and transported for proper disposal. Uninstall all temporary BMPs once the maintenance activity is complete and dispose as solid waste. Separate spent BMPs contaminated by hazardous waste from non-hazardous waste and dispose accordingly.
Where to get more information:	<i>Nonpoint Pollution Control Guidance Manual – Best Management Practices for Operation and Maintenance of Hawaii County Roads, Highways, and Bridges, Section 6.4 and Appendix C, NS-3.</i>



Sidewalk repair (County of Hawaii)

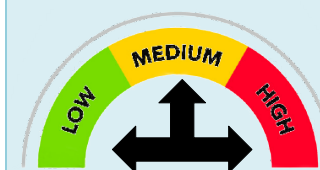
Structure type: Roads and Highways

Activity performed by: Highway Maintenance

Pollutants of Concern:

- Sediment
- Asphalt/Concrete

Threat to water quality:





Sweep and vacuum all debris from work area before and after sidewalk repair operations.



Pile of wood not removed after maintenance operation and was left sitting on the gutter. It is important to implement good housekeeping practices to reduce potential pollutant discharge.

Photo source: County of Hawaii

COLD PLANING

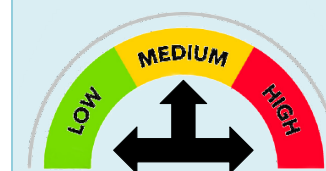
Why it matters:	Cold planing is done to remove road surface irregularities or to remove whole sections of the roadway for paving or trenching operations. The threat to water quality can be Low, Medium, or High, depending on site- and project-specific conditions.
Erosion Control BMPs	<ul style="list-style-type: none"> • All personnel should be trained on the activity they are responsible for performing. Includes health and safety measures and PPE. • Cold planing produces dust and new pavement installation requires a dry workspace. Schedule during dry, low wind days.
Non-Storm Water Management BMPs	<ul style="list-style-type: none"> • All vehicles and equipment should be in good working order and leak free. Drip liners or pans should be on hand in the event of a leak. • Paving and grinding operations require specific BMPs. See NS-3 in the Manual for specific BMPs for this activity.
Sediment Control BMP	<ul style="list-style-type: none"> • Protect the storm drain inlets to prevent sediment and asphalt from entering the storm drains. Do not remove until the activity is completed. • Stockpiles should be stored away from street, gutters, and storm drains. When not in use, stockpiles should be covered with plastic tarps and have berms around them to prevent runoff in case it rains. • Sweep or vacuum debris from work area before and after maintenance operation. • Remove dirt/asphalt from vehicle and equipment tires to prevent tracking.
Waste Management and Materials Pollution Control BMPs	<ul style="list-style-type: none"> • Solid waste collected during cleaning operations should be contained and transported for proper disposal. • Uninstall all temporary BMPs once the maintenance activity is complete and dispose as solid waste. Separate spent BMPs contaminated by hazardous waste from non-hazardous waste and dispose accordingly.
Where to get more information:	<i>Nonpoint Pollution Control Guidance Manual – Best Management Practices for Operation and Maintenance of Hawaii County Roads, Highways, and Bridges, Section 6.5 and Appendix C, NS-3.</i>



Cold planed road (County of Hawaii)

Structure type: Roads and Highways**Activity performed by:** Highway Maintenance**Pollutants of Concern:**

- Sediment
- Gravel
- Asphalt/Concrete
- Oil and Grease

Threat to water quality:



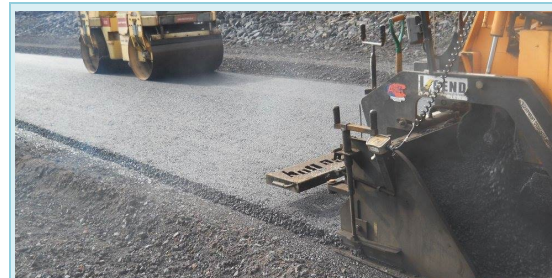
Implement dust control practices and sediment control measures during cold planing operations to reduce pollutant runoff. Installing a silt fence around the work area is an effective measure for dust control and prevents sediment runoff.



In some cases, a larger dust control method is necessary, such as the tall dust fence shown in the image to the left.

PAVING

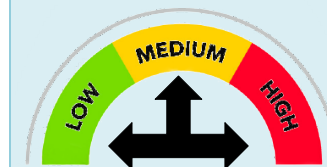
Why it matters:	Road paving not only ensures safe road conditions for road users but also improves the structural integrity of the road, seals cracks, and reduces NPS pollutant discharge. The threat to water quality can be Low, Medium, or High, depending on site- and project-specific conditions.
Erosion Control BMPs	<ul style="list-style-type: none"> All personnel should be trained on the activity they are responsible for performing. Includes health and safety measures and PPE. Cold planing produces dust and new pavement installation requires a dry workspace. Schedule during dry, low wind weather.
Non-Storm Water Management BMPs	<ul style="list-style-type: none"> All vehicles and equipment should be in good working order and leak free. Drip liners or pans should be on hand in the event of a leak. Paving and grinding operations require specific BMP implementation. See NS-3 in the Manual for specific BMPs during this activity.
Sediment Control BMP	<ul style="list-style-type: none"> Protect the storm drain inlets to prevent sediment and asphalt from entering the storm drains. Do not remove until the activity is complete. Stockpiles should be stored away from street, gutters, and storm drains. When not in use, stockpiles should be covered with plastic tarps and have berms around them to prevent runoff in case it rains. Sweep or vacuum debris from work area before and after maintenance operation. Remove dirt/asphalt from vehicle and equipment tires to prevent tracking.
Waste Management and Materials Pollution Control BMPs	<ul style="list-style-type: none"> The best way to eliminate a pollutant spill is prevention. All personnel should be trained to prevent and respond to spills. Solid waste collected during cleaning operations should be contained and transported for proper disposal. Uninstall all temporary BMPs once the maintenance activity is complete and dispose as solid waste. Separate spent BMPs contaminated by hazardous waste from non-hazardous waste and dispose accordingly.
Where to get more information:	<i>Nonpoint Pollution Control Guidance Manual – Best Management Practices for Operation and Maintenance of Hawaii County Roads, Highways, and Bridges, Section 6.6 and Appendix C, NS-3.</i>



Paving (County of Hawaii)

Structure type: Roads and Highways**Activity performed by:** Highway Maintenance**Pollutants of Concern:**

- Sediment
- Gravel
- Asphalt/Concrete
- Oil and Grease

Threat to water quality:



Traffic control measures ensure worker/public safety. Sediment Control BMPs, such as silt fences, reduce pollutant runoff.



Schedule paving operations during dry weather to eliminate pollutant runoffs.

ROAD SIGNAGE AND RAIL REPLACEMENT

BRIDGE GUARD RAIL REPLACEMENT

Why it matters:	Bridge guard rails promote safe roadway conditions. DPW precuts and pre-paints bridge rail replacement parts offsite to reduce construction debris at the project. Although DPW places extensive effort to reduce pollutant discharge by preparing construction materials off-site, due to its proximity to water, the activity poses a High-Risk threat to water quality.
Erosion Control BMPs	<ul style="list-style-type: none"> All personnel should be trained on the activity they are responsible for performing. Includes health and safety measures and PPE. Schedule during dry weather.
Non-Storm Water Management BMPs	<ul style="list-style-type: none"> All vehicles and equipment should be in good working order and leak free. Drip liners or pans should be on hand in the event of a leak. Protect the waterbody with suspended tarps or booms to catch loose debris, wood shavings, and paint chips.
Sediment Control BMP	<ul style="list-style-type: none"> Sweep or vacuum debris off bridge before and after maintenance operation. Stockpiles should be stored away from waterways. When not in use, stockpiles should be covered with plastic tarps and have berms around them to prevent runoff in case it rains.
Waste Management and Materials Pollution Control BMPs	<ul style="list-style-type: none"> Solid waste collected during cleaning operations should be contained and transported for proper disposal. Uninstall all temporary BMPs once the maintenance activity is complete and dispose as solid waste. Separate spent BMPs contaminated by hazardous waste from non-hazardous waste and dispose accordingly.
Where to get more information:	<i>Nonpoint Pollution Control Guidance Manual – Best Management Practices for Operation and Maintenance of Hawaii County Roads, Highways, and Bridges, Section 7.1.</i>



Bridge guard rail (County of Hawaii)

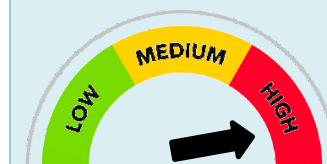
Structure type: Bridges

Activity performed by: Building Division

Pollutants of Concern:

- Sediment
- Wood Debris
- Paint Chips

Threat to water quality:



SIGN REPLACEMENT

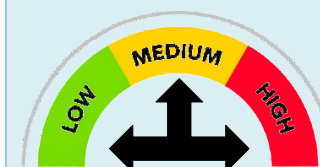
Why it matters:	Road signs provide important information to drivers and pedestrians. DPW replaces road signs to meet retroreflectivity requirements and improve visibility for road users. There is typically no ground disturbance during sign replacement activity, as the existing poles are kept in place, and only the sign itself is replaced. For new installations, there is ground disturbance when a new post is installed. The threat to water quality for new installations may be Low, Medium, or High depending on the proximity to water.
Erosion Control BMPs	<ul style="list-style-type: none"> • All personnel should be trained on the activity they are responsible for performing. Includes health and safety measures and PPE. • Schedule during dry weather. • Minimize the size of disturbed areas. Install Erosion Control BMPs to stabilize the disturbed area once the installation is completed.
Non-Storm Water Management BMPs	<ul style="list-style-type: none"> • All vehicles and equipment should be in good working order and leak free. Drip liners or pans should be on hand in the event of a leak. • For sign installation located on bridges and causes ground disturbance, implement BMPs to protect the waterbody with suspended tarps or booms if there is a potential for pollutants to discharge.
Waste Management and Materials Pollution Control BMPs	<ul style="list-style-type: none"> • Solid waste collected during cleaning operations should be contained and transported for proper disposal. • Uninstall all temporary BMPs once the maintenance activity is complete and dispose as solid waste. Separate spent BMPs contaminated by hazardous waste from non-hazardous waste and dispose accordingly.
Where to get more information:	<i>Nonpoint Pollution Control Guidance Manual – Best Management Practices for Operation and Maintenance of Hawaii County Roads, Highways, and Bridges, Section 7.1.</i>



Road signs (County of Hawaii)

Structure type: Roads, Highways, and Bridges**Activity performed by:** Traffic Division and Highway Maintenance**Pollutants of Concern:**

- Sediment
- Pavement

Threat to water quality:

STRIPING

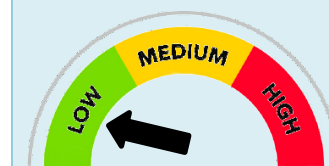
Why it matters:	Road markings direct the flow of traffic. DPW performs road striping inspection and maintenance every four (4) years to maintain its visibility for road users. Implementing BMPs for any activity, regardless of whether it poses a Low Risk threat to water quality, will ensure a successful pollution prevention program.
Erosion Control BMPs	<ul style="list-style-type: none"> • All personnel should be trained on the activity they are responsible for performing. Includes health and safety measures and PPE. • Schedule during dry weather.
Non-Storm Water Management BMPs	<ul style="list-style-type: none"> • All vehicles and equipment should be in good working order and leak free. Drip liners or pans should be on hand in the event of a leak.
Sediment Control BMP	<ul style="list-style-type: none"> • Sweep or vacuum debris from work area before and after maintenance operation.
Waste Management and Materials Pollution Control BMPs	<ul style="list-style-type: none"> • The best way to eliminate a pollutant spill is prevention. All personnel should be trained to prevent and respond to spills. • Solid waste collected during cleaning operations should be contained and transported for proper disposal. • Uninstall all temporary BMPs once the maintenance activity is complete and dispose as solid waste. Separate spent BMPs contaminated by hazardous waste from non-hazardous waste and dispose accordingly.
Where to get more information:	<i>Nonpoint Pollution Control Guidance Manual – Best Management Practices for Operation and Maintenance of Hawaii County Roads, Highways, and Bridges, Section 7.3.</i>



Preparing the road for striping (County of Hawaii)

Structure type: Roads and Highways**Activity performed by:** Traffic Division**Pollutants of Concern:**

- Sediment

Threat to water quality:

DPW VEGETATION CONTROL ACTIVITIES

GRASS CUTTING, SHOULDER SCRAPING, TREE TRIMMING, AND MULCHING

Why it matters:	Vegetation control measures improve road safety conditions for all road users and is a proactive step to reduce the impact of hazardous events, such as falling tree branches during high wind conditions. The threat to water quality can be Low, Medium, or High, depending on site- and project-specific conditions.
Erosion Control BMPs	<ul style="list-style-type: none"> All personnel should be trained on the activity they are responsible for performing. Includes health and safety measures and PPE. Schedule during dry weather.
Non-Storm Water Management BMPs	<ul style="list-style-type: none"> All vehicles and equipment should be in good working order and leak free. Drip liners or pans should be on hand in the event of a leak.
Sediment Control BMP	<ul style="list-style-type: none"> Protect the storm drain inlets to prevent sediment and green waste from entering the storm drains. Do not remove until the activity is completed. Stockpiles should be stored away from street, gutters, and storm drains. When not in use, stockpiles should be covered with plastic tarps and have berms around them to prevent runoff in case it rains. Sweep or vacuum debris from work area before and after maintenance operation.
Waste Management and Materials Pollution Control BMPs	<ul style="list-style-type: none"> Solid waste collected during cleaning operations should be contained and transported for proper disposal. Uninstall all temporary BMPs once the maintenance activity is complete and dispose as solid waste. Separate spent BMPs contaminated by hazardous waste from non-hazardous waste and dispose accordingly.
Where to get more information:	<i>Nonpoint Pollution Control Guidance Manual – Best Management Practices for Operation and Maintenance of Hawaii County Roads, Highways, and Bridges, Section 8.1.</i>



Tree trimming (County of Hawaii)

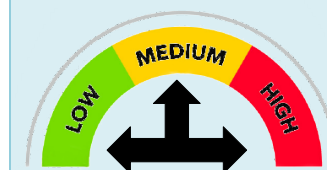
Structure type: Roads and Highways

Activity performed by: Highway Maintenance

Pollutants of Concern:

- Green Waste

Threat to water quality:



WEED CONTROL

Why it matters:	Weed control operations control grasses and other vegetation that are incompatible with their local surroundings. Often, these vegetations are invasive, out-compete Hawaii's native vegetation, and can thus reduce or degrade the area's natural diversity. Weed control methods consist of manual and mechanical removal (such as weed whacking and mowing), as well as chemical herbicides. The risk level for threat to water quality, which depends on the weed control method and its proximity to water, may be Low, Medium, or High risk.
Important to note:	<p>EPA recommends establishing a pesticide/herbicide use and nutrient management program. This consist of:</p> <ul style="list-style-type: none"> • Limiting the application, generation, and migration of toxic substances; • Ensuring the proper storage and disposal of toxic materials; and • Applying nutrients at rates necessary to establish and maintain desirable vegetation without causing significant nutrient runoff to surface water. • Restrict herbicide use in highway rights-of-way to only those applicators certified under the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) to ensure safe and effective application.
Erosion Control BMPs	<ul style="list-style-type: none"> • All personnel should be trained on the activity they are responsible for performing. Includes health and safety measures and PPE. • Avoid chemical herbicide application during windy or rainy weather. Schedule during dry, low wind days.
Non-Storm Water Management BMPs	<ul style="list-style-type: none"> • All vehicles and equipment should be in good working order and leak free. Drip liners or pans should be on hand in the event of a leak.
Sediment Control BMP	<ul style="list-style-type: none"> • Protect the storm drain inlets to prevent sediment and green waste from entering the storm drains. Do not remove until the activity is completed. • Stockpiles should be stored away from street, gutters, and storm drains. When not in use, stockpiles should be covered with plastic tarps and have berms around them to prevent runoff in case it rains. • Sweep or vacuum debris from work area before and after maintenance operation.



Herbicide spray (Hawaii DOT)

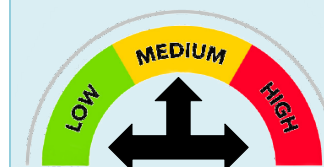
Structure type: Roads and Highways

Activity performed by: Highway Maintenance

Pollutants of Concern:

- Green Waste
- Herbicide

Threat to water quality:



Waste Management and Materials Pollution Control BMPs	<ul style="list-style-type: none">• The best way to eliminate a pollutant spill is prevention. All personnel should be trained to prevent and respond to spills.• Over-application and mishandling of chemical herbicide can lead to harmful effects on the environment. Follow manufacturer's guidelines for storage, application, and disposal.• Solid waste collected during cleaning operations should be contained and transported for proper disposal.• Uninstall all temporary BMPs once the maintenance activity is complete and dispose as solid waste. Separate spent BMPs contaminated by hazardous waste from non-hazardous waste and dispose accordingly.	
Where to get more information:	<i>Nonpoint Pollution Control Guidance Manual – Best Management Practices for Operation and Maintenance of Hawaii County Roads, Highways, and Bridges, Section 8.2 and Appendix F – Herbicide and Weed Control Methods.</i>	

BRIDGE VEGETATION GROWTH REMOVAL

Why it matters:	Vegetation growth removal is important to prevent damage to the bridge structure and improve overall safe road conditions. Only manual and mechanical methods for removing vegetation are recommended. DO NOT use chemical herbicide near waterways. Due to its proximity to water, the activity poses a High-Risk threat to water quality.
Erosion Control BMPs	<ul style="list-style-type: none"> All personnel should be trained on the activity they are responsible for performing. Includes health and safety measures and PPE. Schedule during dry weather.
Non-Storm Water Management BMPs	<ul style="list-style-type: none"> All vehicles and equipment should be in good working order and leak free. Drip liners or pans should be on hand in the event of a leak. Protect the waterbody with suspended tarps or booms to catch loose debris.
Sediment Control BMP	<ul style="list-style-type: none"> Stockpiles should be stored away from waterways. When not in use, stockpiles should be covered with plastic tarps and have berms around them to prevent runoff in case it rains. Sweep or vacuum debris off bridge before and after maintenance operation.
Waste Management and Materials Pollution Control BMPs	<ul style="list-style-type: none"> Solid waste collected during cleaning operations should be contained and transported for proper disposal. Uninstall all temporary BMPs once the maintenance activity is complete and dispose as solid waste. Separate spent BMPs contaminated by hazardous waste from non-hazardous waste and dispose accordingly.
Where to get more information:	<i>Nonpoint Pollution Control Guidance Manual – Best Management Practices for Operation and Maintenance of Hawaii County Roads, Highways, and Bridges, Section 8.3.</i>



Bridge vegetation removal (County of Hawaii)

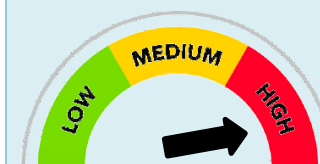
Structure type: Roads and Highways

Activity performed by: Highway Maintenance

Pollutants of Concern:

- Green Waste

Threat to water quality:



OTHER DPW ACTIVITIES

GRADING

Why it matters:	Grading is the precursor for a variety of DPW activities, such as paving and flood mitigation efforts. The risk level for threat to water quality for grading operations, which depends on the project size and the proximity to water or drainage structures, may be Low, Medium, or High. An assessment of site-specific and project conditions should be made prior to starting the activity and extra precaution should be taken for Medium- or High-Risk activities. The implementation of BMPs is especially important to prevent pollutant runoff from higher risk activities.
Erosion Control BMPs	<ul style="list-style-type: none"> • All personnel should be trained on the activity they are responsible for performing. Includes health and safety measures and PPE. • Schedule during dry weather. • Minimize the size of disturbed areas. Install temporary stabilization for activities lasting longer than one (1) day. Install Erosion Control BMPs to permanently stabilize the disturbed area once the installation is completed.
Non-Storm Water Management BMPs	<ul style="list-style-type: none"> • All vehicles and equipment should be in good working order and leak free. Drip liners or pans should be on hand in the event of a leak.
Sediment Control BMP	<ul style="list-style-type: none"> • Protect the storm drain inlets to prevent sediment and green waste from entering the storm drains. Do not remove until the activity is complete. • Stockpiles should be stored away from waterways. When not in use, stockpiles should be covered with plastic tarps and have berms around them to prevent runoff in case it rains.
Waste Management and Materials Pollution Control BMPs	<ul style="list-style-type: none"> • Solid waste collected during cleaning operations should be contained and transported for proper disposal. • Uninstall all temporary BMPs once the maintenance activity is complete and dispose as solid waste. Separate spent BMPs contaminated by hazardous waste from non-hazardous waste and dispose accordingly.
Where to get more information:	<i>Nonpoint Pollution Control Guidance Manual – Best Management Practices for Operation and Maintenance of Hawaii County Roads, Highways, and Bridges, Section 9.1.</i>



Grading (County of Hawaii)

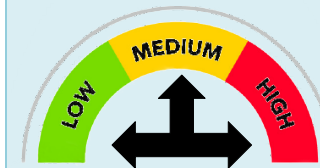
Structure type: Roads and Highways

Activity performed by: Highway Maintenance

Pollutants of Concern:

- Sediment
- Green Waste

Threat to water quality:



FLOOD MITIGATION

Why it matters:

As required by [Hawaii County Code Chapter 27](#), flood control measures should be implemented during the initial construction phase to protect against flood damage, to utilize the natural drainage patterns and barriers to channel flood waters, and to control development activities that increase flood damage. DPW performs a variety of flood mitigation activities on existing flood mitigating structures on roads, highways, and bridges. The cleanings of drywells and culverts for roads and highways and of weep holes on bridges all aid in flood control efforts. In addition, cold planing and road paving are intended to improve road conditions and to prevent flooding on roadways. These activities were discussed in previous sections.



Dirt filled culvert (AECOM)

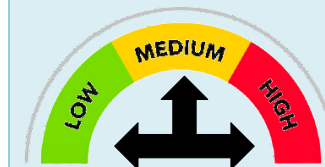
Structure type: Roads and Highways

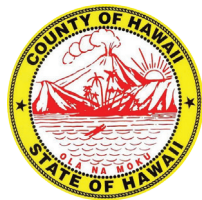
Activity performed by: Highway Maintenance

Pollutants of Concern:

- Sediment
- Trash/Debris
- Green Waste
- Gravel/Concrete
- Other

Threat to water quality:





Hawaii CZM Program
Coastal Zone Management
HAWAII STATE OFFICE OF PLANNING

