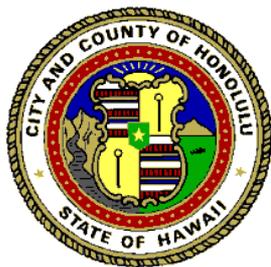


Rules Relating to Water Quality for the Design Community

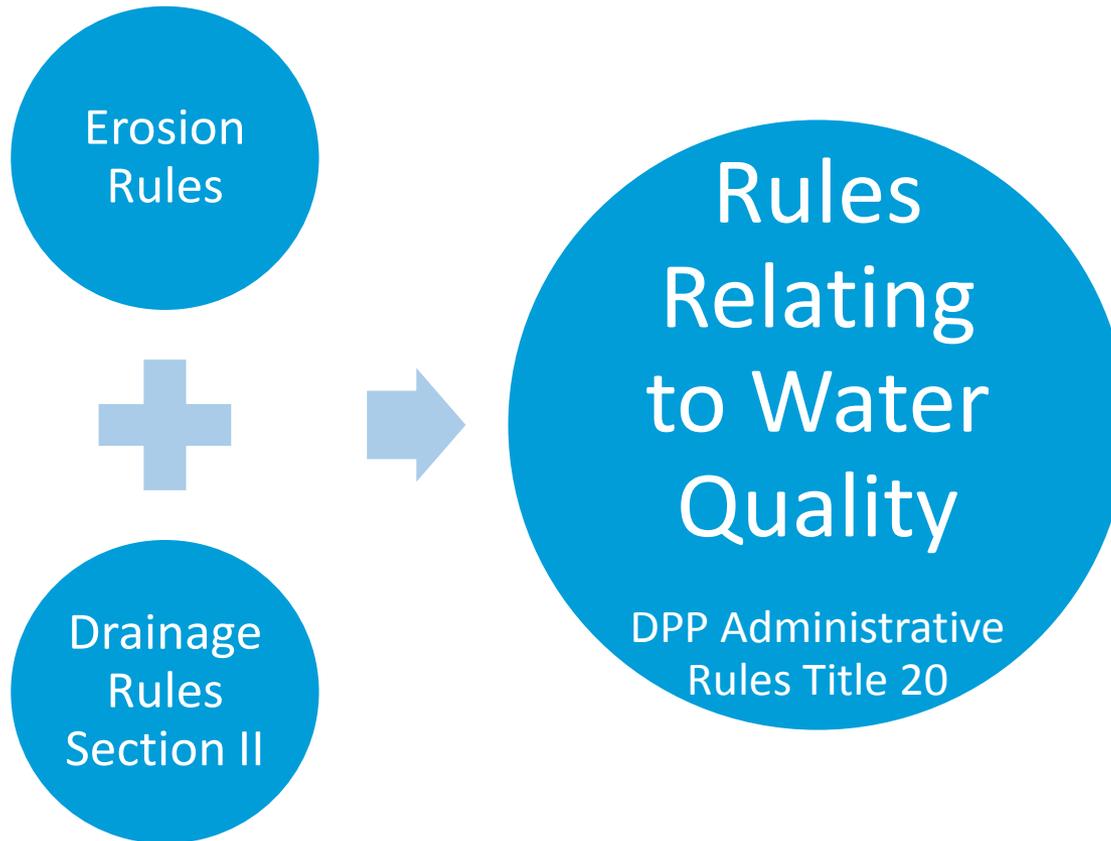
Department of Planning and Permitting



June 2017



One DPP Rule for Water Quality



Flood control requirements will remain separate



Definitions Revised (§20-3-3)

Key Definitions:

- “Development”
- “Redevelopment”
- “ESCP Coordinator”
- “Certified Water Pollution Plan Preparer”
- “Disturbed Area”
- “Land Disturbing Activity”
- “Director”
- “Maximum Extent Practicable”



Development

- “Development” means the sum of any and all actions that are undertaken to alter the natural or existing condition of real property or improvements on real property if a building, electric, grading, grubbing, plumbing, stockpiling, or trenching permit is required for the Project. Development also includes Redevelopment and changes in land use that may result in different or increased Pollutant discharges to the MS4 or Receiving Waters. **Development does not include work that does not involve any Land Disturbing Activity, the installation of signs and traffic control devices, the construction of individual bus shelters, the installation of temporary BMPs, emergency work necessary to repair surfaces that are in immediate need of stabilization, the marking of improved surfaces with striping or signage, residential fence post installation, and minor and ordinary repairs to existing improvements, provided that the work will not increase the impervious surface area of the Project Site or involve replacing 50 percent or more of the on-Site impervious surfaces area.**



Redevelopment

- “Redevelopment” means the **creation, addition, and/or replacement** of impervious surface on improved real property. Redevelopment does not include trenching and resurfacing associated with utility work, resurfacing and reconfiguring existing impervious surfaces, the repair of sidewalks or pedestrian ramps, pothole repair, ordinary road maintenance, or the marking of vehicular or pedestrian lanes on existing roads.



Erosion and Sediment Control Plan Coordinator

- “ESCP Coordinator” means the designee **responsible for the implementation of an ESCP who has a current ESCP coordinator certificate from the Department.** The designation of an ESCP Coordinator does not relieve the property owner or other responsible parties from compliance with these Rules or liability for violations of the same.
- Requires a training, test, and certification from DPP.
- No professional credentials required.
- Responsible for implementation of BMPs and inspections.



Certified Water Pollution Plan Preparer

- “Certified Water Pollution Plan Preparer” means an **Architect, Engineer, Land Surveyor, or Landscape Architect licensed in the State of Hawaii** who has a current **Water Pollution Plan Preparer Certificate** from the Department.
- Requires a training, test, and certification from DPP.
- Required to prepare Storm Water Quality Reports and Checklists.
- Required to certify that post-construction BMPs are installed properly.



Disturbed Area

- “Disturbed Area” means any and all portions of Project Site affected by Land Disturbing Activities. Disturbed Areas include, but are not limited to, soils and surface areas affected by excavation, areas that are graded, grubbed, or clearing by uprooting vegetation, areas affected by the demolition of foundations, **areas used for equipment staging, materials, or staging, and areas affected by heavy pedestrian or vehicular traffic that disrupts ground covers or surface soil conditions.**
- Staging areas are not included in Post-Construction LID size threshold.



Land Disturbing Activity

- “Land disturbing activity” or “land disturbance” means any action, activity, or land use that alters the integrity, structure, texture, density, permeability, contents, or stress conditions of soil or ground surfaces if a building, electric, grading, grubbing, plumbing, stockpiling or trenching permit is required for the Project. Land disturbing activities include, but are not limited to actions that result in the turning, penetration, or moving of soil, the resurfacing of pavement that involves the **exposure of the base course or subsurface soils, and the use of portions of a Project Site as staging areas or base yards.**
- Staging areas are not included in Post-Construction LID size threshold.



Director

- “Director” means the director of the City and County of Honolulu Department of Planning and Permitting **or the Director’s authorized agent or representative.**



Maximum Extent Practicable

- “Maximum Extent Practicable” or "MEP" means economically **achievable measures** that prevent or reduce the addition of Pollutants to the environment to the greatest degree achievable through the application of the best available pollution control practices, technologies, processes, siting criteria, operating methods and other alternatives.



Variations (§20-3-64)

- For deviations from the Rules, applicants must submit a petition for variance to the director and may be authorized if all of the following are true:
 - The variance is necessary to **prevent a hardship** caused by unique Site conditions on the property that are not ordinarily found in other areas within the City;
 - The **unique conditions** on the property are **not the result of petitioner's own actions** or the actions of his/her agents, contractors, consultants, or tenants;
 - Granting a variance **will not adversely affect the rights of abutting property owners**;
 - The variance requested **will not result in an unreasonable threat of Pollutant discharges** to the MS4 or State Waters; and
 - The variance requested is the **minimum accommodation needed** to overcome the hardship caused by naturally occurring conditions on the property.



CONSTRUCTION REQUIREMENTS

Plan Review and Implementation of BMPs before and during Construction



Project Categories (§20-3-14 and 17)

Trenching Permits

New Category

Trenching Permit

Development that requires a trenching permit but **does not** require a grading, grubbing, or stockpiling permit.

- ESCP shall be incorporated into trenching plan and notes (§20-3-17).

Minimum BMPs required:

- Project Scheduling;
- Storm Drain Inlet Protection for storm drains that may receive runoff from the Disturbed Area;
- Stockpile Management BMPs;
- Perimeter Controls;
- Dewatering Operations BMPs; and
- Good Housekeeping Practices for work area and staging areas.



Project Categories (§20-3-14)

Building Permits

Category 1: Development that requires a building permit but does not require a grading, grubbing, or stockpiling permit.

<p>Category 1A</p>	<p>Must meet ALL of the following criteria:</p> <ol style="list-style-type: none"> 1. Residential single-family or two-family detached residential Development; 2. The total Disturbed Area for the Project is less than 1,000 square feet; and 3. Land Disturbing activities will not occur on slopes equal to or greater than 15 percent at the Site.
<p>Category 1B</p>	<p>Must meet ANY of the following criteria:</p> <ol style="list-style-type: none"> 1. Commercial Development with less than one acre of Disturbed Area; 2. Residential single-family and two-family detached Development between 1,000 square feet and less than one acre of Disturbed Area; or 3. Residential single-family and two-family detached Development less than 1,000 square feet of Disturbed Area if work will be performed on slopes equal to or greater than 15 percent at the Site.
<p>Category 1C</p>	<p>Development that involves a Disturbed Area of one acre or more or requires a NPDES General/Individual Permit Authorizing Discharges of Storm Water Associated with Construction Activity, issued by the DOH.</p>



ESCP Requirements for SMALL PROJECTS

Category 1A and 1B (§20-3-18 and 19)

- Submit Small Project ESCP Template (Appendix A or B)
 - Submit additional information if needed
- ESCP must include:
 - BMP Site Plan
 - Outline of buildings and structures
 - Clear delineation of disturbed areas
 - Proximate location of proposed BMPs and drainage structures
 - Drainage structures located within 50 feet of the project site
- Minimum BMPs, checklist format

Appendix A


 City and County of Honolulu

Erosion and Sediment Control Plan
Category 1A Template

Construction Site Project Name: _____

Physical Site Address: _____

Erosion and Sediment Control Coordinator: _____ Phone Number: _____

Building Permit Number: _____

Instructions:

This completed template is to be used as the Erosion and Sediment Control Plan (ESCP) for projects which fall under the City and County of Honolulu, Department of Planning and Permitting (DPP) Category 1A: Single-family or Two-family detached residential building projects that disturb less than 1,000 square feet of land and where there will not be land disturbing activities on slopes greater than 15%.

This ESCP must be submitted as part of the Building Permit application and made available on the job site at all times. This ESCP may be prepared by the owner of the project or an authorized representative designated by the owner. Both individuals must certify this ESCP below.

Read through the instructions for each of the three (3) sections on the next pages: I. Erosion Prevention, II. Sediment Control, and III. Good Housekeeping. Any best management practices (BMP) boxes that are checked are mandatory during construction. For more information on each type of BMP, this template lists applicable fact sheet numbers from the City's Construction BMP Manual that may help you decide on which BMP type to use and how to use them. The manual is available on the DPP website (www.honolulu.gov). For any conflicting information between the Rules Relating to Water Quality and the Construction BMP Manual, the requirements of the Rules shall be followed. If other BMPs not listed are used to achieve the same or similar results, attach additional documentation.

I. EROSION PREVENTION: practices that prevent erosion from occurring			
BMP	Check Appropriate Box	Reference Factsheet	
1. Project Scheduling Notify the DPP two (2) weeks prior to starting work. Attach a Project Schedule to this ESCP including dates when BMPs will be installed, when land disturbing activities will begin and end, and dates when BMPs will be removed.	<input type="checkbox"/> Applicable <input type="checkbox"/> Not Applicable	EC-3	
2. Permanent Stabilization Prior to final approval and closing of the permit for work on the project site, permanent stabilization must be in place.	<input type="checkbox"/> Applicable <input type="checkbox"/> Not Applicable	N/A	

II. SEDIMENT CONTROL: practices to prevent soil and sediment from leaving the project site and entering storm drains during rain events			
BMP	Check Appropriate Box	Reference Factsheet	
1. Perimeter Controls Sediment fences or barriers shall be used at the perimeter of all disturbed areas if there is the potential for runoff to flow off the project site, and around the base of all material stockpiles. These may include gravel bags, sand bags, silt rolls, silt fences, or compost socks that intercept runoff.	<input type="checkbox"/> Applicable <input type="checkbox"/> Not Applicable	SE-1, SE-5, SE-6, SE-8, SE-16	
2. Storm Drain Inlet Protection Inlet protection is required over storm drains within 50 feet of your project site unless those inlets drain to a sediment basin or trap.	<input type="checkbox"/> Applicable <input type="checkbox"/> Not Applicable	SE-10	

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Project Categories (§20-3-14)

Grading, Grubbing, and Stockpiling Permits

Category 2	Area of the zoning lot or portion thereof subject to the permit is less than 15,000 square feet for single-family or two-family dwelling uses and less than 7,500 square feet for other uses.
Category 3	Area of the zoning lot or portion thereof subject to the permit is 15,000 square feet or more for single-family or two-family dwelling uses, or 7,500 square feet or more for other uses, but where the total area graded or stockpiled upon is less than 15,000 square feet for single-family or two-family dwellings uses and less than 7,500 square feet for other uses.
Category 4	Total area including any areas developed incrementally that is to be graded, grubbed, or stockpiled upon is 15,000 square feet or more for single-family or two-family dwelling uses, or 7,500 square feet or more for other uses, or in the event a proposed cut or fill is greater than 15 feet in height for single-family or two-family dwelling uses, or 7.5 feet in height for other uses.
Category 5	Development that involves a Disturbed Area of one acre or more or requires a NPDES General/Individual Permit Authorizing Discharges of Storm Water Associated with Construction Activity, issued by the DOH.



ESCP Requirements for Category 2 and 3 (§20-3-21 and 22)

- ESCP must include:
 - A BMP Site Plan, drawn to scale, which depicts:
 - Outline of buildings and structures,
 - Clear delineation of Disturbed Areas, and
 - Proximate location of proposed BMPs.
 - Construction notes with a narrative description of any BMPs that cannot be shown on a Site plan; and
 - A vicinity map showing any drainage structures and Receiving Waters located within 50 feet of the Project Site.



ESCP Requirements For Category 1C, 4, and 5 (§20-3-20, 23, and 24)

- The ESCP must include:
 - A location map showing the name, coordinate, and RW classification.
 - A vicinity map showing the location of, within 100 ft of the project:
 - Streams, channels, and drainage structures.
 - The location of the 100-year flood plain.
 - Topo maps of the existing/finished contours.
 - Existing/final drainage patterns and discharge points.
 - Proposed structures, impervious areas, existing vegetation, final landscaping conditions, and appurtenant improvements.
 - Erosion Control construction notes include BMPs that cannot be shown on a Site Plan.
 - A BMP Site Plan, drawn to scale, showing:
 - Outline of buildings and structures,
 - Delineation of Disturbed Areas, and
 - Proximate location of proposed BMPs.
 - BMP design details and notes identifying:
 - Temporary and Permanent BMPs,
 - Schedule for BMP implementation, and
 - BMP maintenance activities.
 - A list or table of:
 - Preconstruction, during construction, and post-construction BMPs;
 - A statement in construction notes that the contractor/developer/ owner shall obtain written approval from DPP at each stage of Development before proceeding to the next step in Development described in the ESCP.



ESCP Submittal Requirements for Plan Approval (Subchapter 4)

ESCP must be prepared by:	Project Category					
	1A	1B	2	3	4	1C+ 5
Licensed Civil Engineer				X	X	X
Owner or Agent	X	X	X			

- ESCP must be submitted with the first set of plans
- All ESCP must indicate a ESCP Coordinator
 - Name, phone number, mailing address and email address of ESCP coordinator must be provided to DPP 2 weeks prior to commencing any work



Minimum Erosion Control BMPs (§20-3-18 through 24)

Minimum BMP	Project Category					
	1A	1B	2	3	4	1C + 5
Project Planning and Design	X	X	X	X	X	X
Project Scheduling	X	X	X	X	X	X
Slope Management and Protection		X	X	X	X	X
Temporary Stabilization		X	X	X	X	X
Permanent Stabilization	X	X	X	X	X	X
Velocity Dissipation Devices				X	X	X
Diversion BMPs					X	X
Preserve Existing Vegetation						X
Minimize Soil Compaction						X



Minimum Sediment Control BMPs (§20-3-18 through 24)

Minimum BMP	Project Category						
	1A	1B	2	3	4	1C	5
Storm Drain Inlet Protection	X	X	X	X	X	X	X
Perimeter Controls	X	X	X	X	X	X	X
Buffer Zones						X	X
Sediment Traps (between 1 to 5 acres)							X
Sediment Basins (5 acres and greater)							X



Minimum Good Housekeeping BMPs (§20-3-18 through 24)

Minimum BMP	Project Category					
	1A	1B	2	3	4	1C + 5
BMP and Site Maintenance	X	X	X	X	X	X
Dust Control	X	X	X	X	X	X
Material Delivery, Storage, and Use BMPs	X	X	X	X	X	X
Stockpile Management BMPs	X	X	X	X	X	X
Spill Prevention and Control BMPs	X	X	X	X	X	X
Solid Waste Management BMPs	X	X	X	X	X	X
Hazardous Waste Management BMPs	X	X	X	X	X	X
Contaminated Soil Management BMPs	X	X	X	X	X	X
Concrete Waste Management BMPs	X	X	X	X	X	X
Sanitary/ Septic Waste Management BMPs	X	X	X	X	X	X
Liquid Waste Management BMPs	X	X	X	X	X	X
Vehicle and Equipment Cleaning BMPs	X	X	X	X	X	X
Vehicle and Equipment Fueling BMPs	X	X	X	X	X	X
Tracking Control	X	X	X	X	X	X
Stabilized Construction Entrance and Exit				X	X	X
Dewatering Operations				X	X	X



Project Scheduling

- Project schedules must establish:
 - A sequence of all planned actions and activities including, but not limited to:
 - All land disturbing activities,
 - Implementation of the BMPs,
 - Scheduled inspections and maintenance of BMPs, and
 - Removal of temporary BMPs.
 - Deadlines for the implementation/removal of BMPs shall be provided as specific dates or Project milestones.
 - A rain response plan
 - Identifies work that will not be performed during defined rain conditions and/or events.
- Submit scheduled start date to the Director in writing two (2) weeks prior to commencing work
- Project schedules must be revised if delays or disruptions to the Project necessitate changes to the sequence of work or BMPs.
 - Revisions must be submitted to DPP and approved by the Director before work may be performed pursuant to the revised schedule.
- A copy of the original Project schedule and all revised schedules must be kept in the Project Log in chronological order.



Additional Requirements for Development Projects (§20-3-25)

- Projects may also need NPDES permits from the Department of Health
 - Form C: Construction > 1 acre
 - Form F: Hydrotesting
 - Form G: Dewatering



POST-CONSTRUCTION

Permanent BMPs and Low Impact Development



Major Revisions from 2012 *Rules Relating to Storm Drainage Standards*

- Revised List of Priority Projects
- Mandatory implementation of LID for priority projects and revised infeasibility criteria
- Revised Storm Water Quality Report and Operations and Maintenance requirements
- 1.5x Water Quality Volume and Flow Rate for Treat and Release BMPs
- Post-Construction Certification and Recording



Priority Projects Definitions (§20-3-48)

Priority A	Priority B	
<p>All new development and redevelopment, including any incremental development, that proposes land disturbing activities of 1 acre or more.</p>	<p>Any project that may have significant water quality impacts due to its location or associated land use activities, including but not limited to the development or redevelopment of:</p> <ul style="list-style-type: none"> • Retail gas outlets • Automotive repair shops • Restaurants • Parking lots with 20 stalls or more • Buildings greater than 100 feet in height • Retail malls • Industrial parks 	
	<p>Priority B1: Projects with 5,000 square feet of impervious surface area or greater</p>	<p>Priority B2: Projects with less than 5,000 square feet of impervious surface area</p>



Post-Construction Storm Water Management in New and Redevelopment

Post Construction BMPs include:

LID Site Design Strategies

Site and facility design strategy to reduce the post-project runoff, control the sources of pollutants, which reduce the amount of runoff that must be treated.

Source Control BMPs

Preventing pollutants from coming in contact with runoff preventing polluted runoff from discharging into the MS4.

LID Retention BMPs

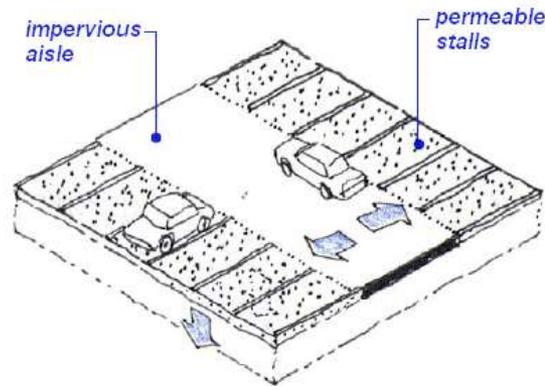
Retaining runoff on-site with no off-site discharge, by infiltration, evapotranspiration, and/or harvesting/reuse

LID Biofiltration BMPs

Removing pollutants from runoff by filtering storm water through vegetation and soils.

Alternative Compliance BMPs

Removing pollutants from runoff by detention, settling, filtration and vortex separation.



Post-Construction Submittal Requirements

- Priority A projects must submit Storm Water Strategic Plan With Master Development Plan (§20-3-50)
- Priority A and B1 projects will be required to submit a Storm Water Quality Report (§20-3-51)
 - Includes:
 - Discussion on Pollutants of Concern and how addressed
 - Sizing Calculations/Worksheets
 - Feasibility screening worksheet
 - Infiltration Testing Results
 - Operations and Maintenance Plan
- Priority B2 projects must submit a Storm Water Quality Checklist (§20-3-52)
 - Documents Site Design and Source Control BMPs



Post-Construction Certification and Recording (§20-3-54)

- Construction of permanent BMPs must be inspected and certified by a CWPPP retained by the owner/ developer (does not need to be the same CWPPP as the Designer).
- Use **Appendix I** of the WQR
- Approved Post Construction Record Drawings and O&M Plan must be recorded at the Bureau of Conveyances or Land Court with property deed

Appendix I

 City and County of Honolulu

Certificate of Completion Form

This form must be signed by a Certified Water Pollution Plan Preparer prior to closing the building and/or grading permit. Record Drawing, Traceing, and a Post-Construction Best Management Practice (BMP) Report must also be submitted and shall include photographic evidence, visual observations, maps and test data to confirm the installation of all required BMPs.

The Certified Water Pollution Plan Preparer must conduct at least two (2) site observation(s) to attest that post construction BMPs and source control BMPs appear to have been installed in general conformance according to the approved construction plans. Contact the Department of Facility Maintenance and Department of Planning and Permitting in the event that the approved post-construction BMPs cannot be built according to plan. Failure to do so may delay permit closure.

Project Name:	
Project Address:	
Tax Map Key(s):	
Building Permit No.:	Grading Permit No.:
Source Control BMPs (description):	
Treatment Control BMPs (description):	

I declare that the following statements are true to the best of my knowledge:

1. I am the Certified Water Pollution Plan Preparer responsible for observing the source control and treatment control BMPs at this project at appropriate intervals to attest that the BMPs appear to have been installed in general conformance with the approved construction plans.
2. I have performed at least two (2) site observations for this project to attest that the source control and treatment control BMPs were installed in general conformance with the approved construction plan at the date and time noted in the attached report unless otherwise noted.
3. Based on my site observations of the source control and treatment control BMPs, I hereby certify that the BMPs for this project appear to have been installed in general conformance with the approved construction plans.

Certified is defined as a licensed professional's opinion based on observation of conditions, knowledge, information, and beliefs. It is expressly understood that the Certified Water Pollution Plan Preparer's certification of a condition's existence relieves no other party of any responsibility or obligation he or she has accepted by contract or custom.

Rev. 06/11/2017



Fifty Percent Rule for Redevelopment (§20-3-48 (b) and (c))

Where the impervious surface of a previously developed Site will be altered by:

50% or more

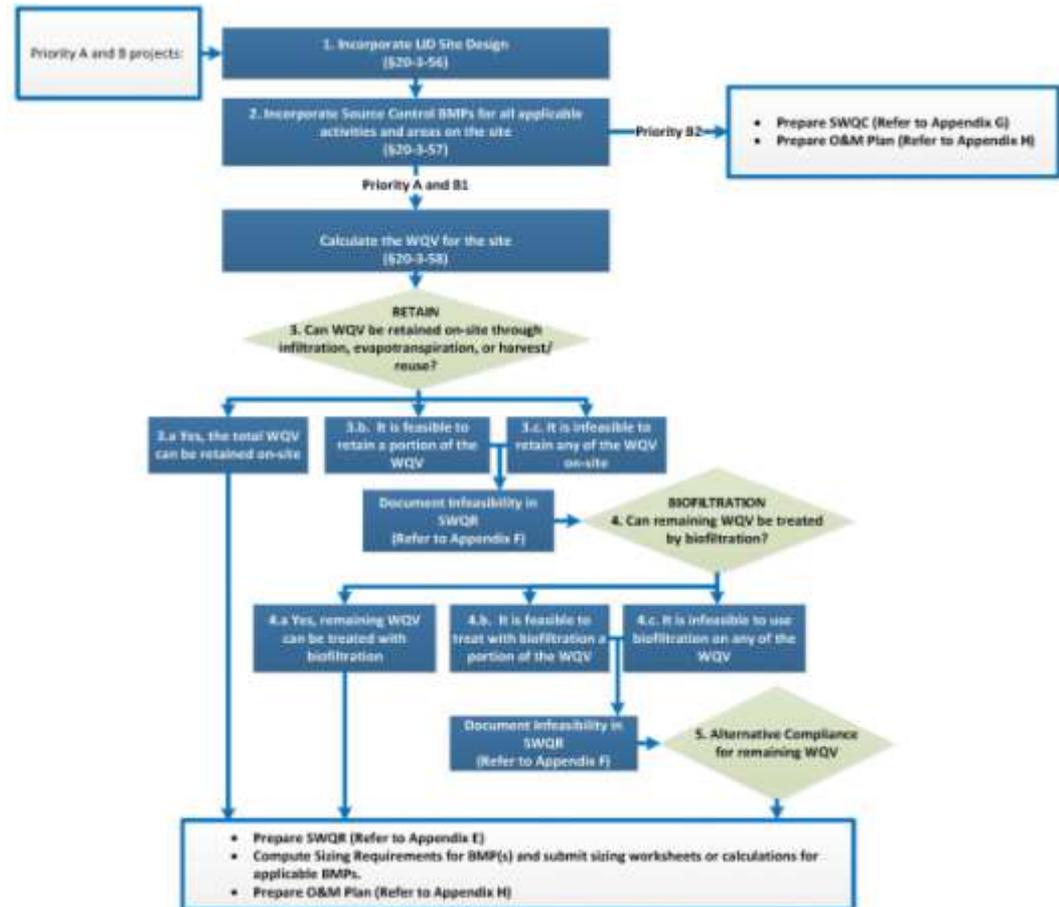
- the entire Development Site must meet WQR requirements

Less than 50%

- only the proposed alteration must meet WQR requirements

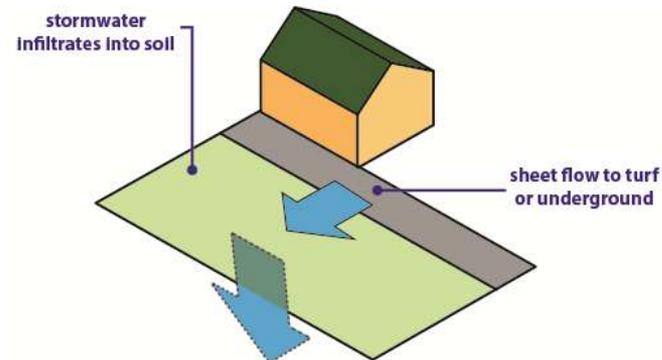
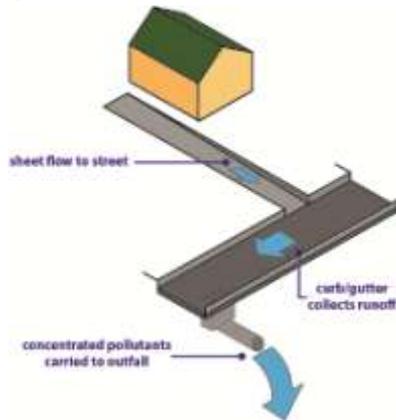


Post-Construction Storm Water Requirements (§20-3-49)

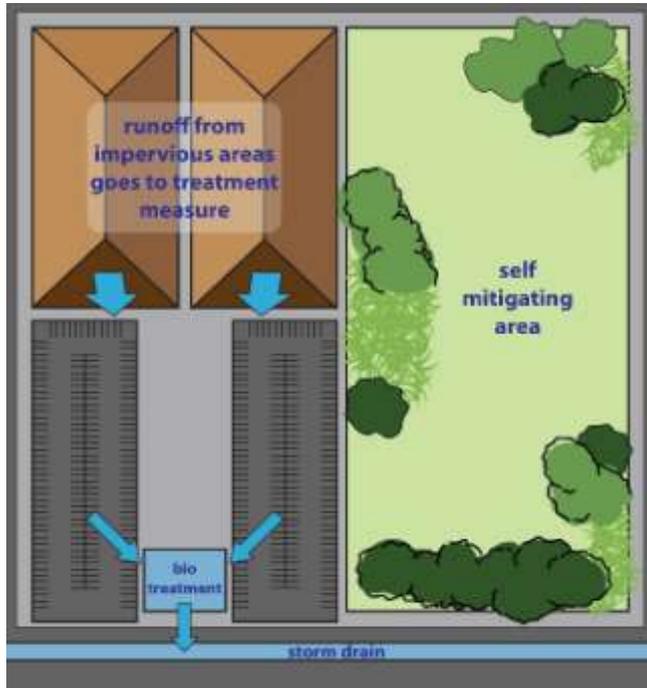


Site Design Strategies (§20-3-56)

- Conserve natural areas, soils, and vegetation
- Minimize disturbances to natural drainages.
- Minimize soil compaction.
- Minimize Impervious Surfaces.
- Direct Runoff to Landscaped Areas and Reduce directly connected impervious areas (DCIA).

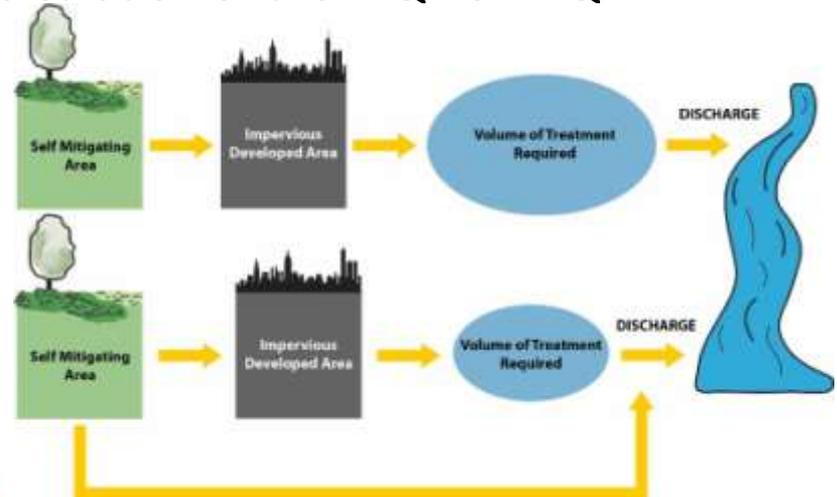


Self-Mitigating Areas (§20-3-56(b))



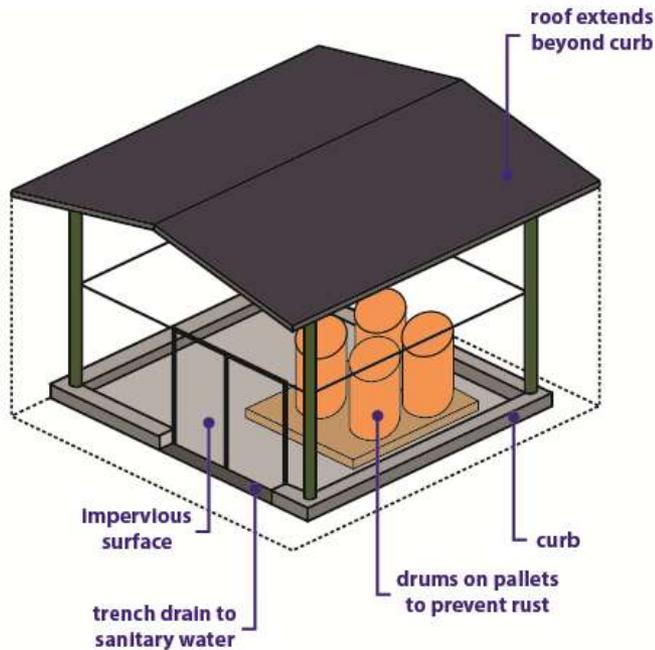
Reduce Treatment Volume by using self-mitigating areas:

Self-mitigating areas consist of natural or landscaped area, which retain and/or treat rainfall over the footprint of the self-mitigating area but do not accept runoff from other areas. Self-mitigating areas may drain directly to the MS4 or other off-site drainage without further treatment and can be excluded in calculation of the WQV or WQF.



Source Control BMPs (§20-3-57)

- Prevent storm water from contacting work areas.
- Prevent pollutants from contacting surfaces that come into contact with storm water runoff.



REQUIRED FOR:

- Landscaped areas
- Automatic irrigation systems
- Storm drain inlets
- Loading docks
- Parking areas
- Vehicle/equipment repair
- Vehicle/equipment fueling
- Vehicle/equipment washing/cleaning
- Residential vehicle washing for condominium and apartment buildings
- Outdoor trash storage
- Outdoor material storage
- Outdoor work areas
- Outdoor process equipment operations



Treatment Control BMPs (§20-3-58)

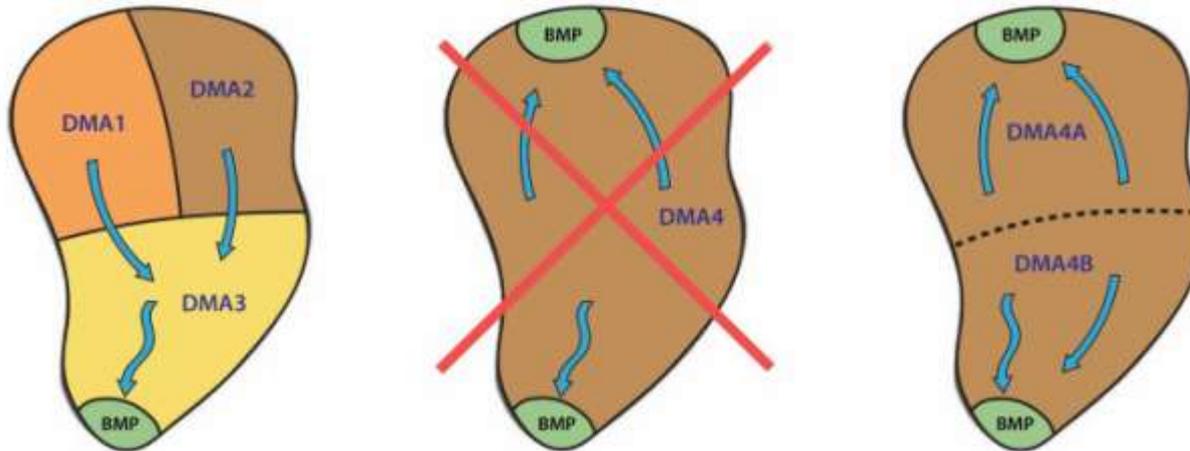
BMP	Retention (1" design storm runoff depth)	Biofiltration (1.5")	Alternative Compliance (1.5")
Infiltration Basin	•		
Infiltration Trench	•		
Subsurface Infiltration	•		
Dry Well	•		
Bioretention Basin	•		
Permeable Pavement	•		
Harvesting / Reuse	•		
Green Roof		•	
Vegetated Bio-Filter		•	
Enhanced Swale		•	
Vegetated Swale		•	
Vegetated Buffer Strip		•	
Detention Basin			•
Manufactured Treatment Device			•
Sand Filter			•

- Anything that is not retention must treat 1.5X the WQV or WQFR
- ALL Infiltration BMPs must use a Safety Factor of 2



Drainage Management Areas (§20-3-58 (c))

- Define DMAs based on drainage patterns and BMPs to which they drain.
- More than one DMA can drain to a single BMP.
- A single DMA cannot drain to more than one BMP.



De Minimis Area (§20-3-58 (d))

NOT included in treatment area volume IF:

1. Areas about the perimeter of the Development Site (rock walls, sidewalks, etc.)
2. Topography or land ownership constraints make BMP construction Infeasible.
3. Each De Minimis area should be less than 250 square feet and the sum of all De Minimis areas should represent less than 2 percent of the total added or replaced Impervious Surface of the Project.
4. Two De Minimis Areas cannot be adjacent to each other and hydraulically connected.



Sizing: Volume Based BMPs (§20-3-58 (e))

Includes:

- **Infiltration BMPs:** Infiltration Basins, Infiltration Trenches, Subsurface Infiltration Systems, Dry Wells, Bioretention Basins, and Permeable Pavement.
- **Biofiltration BMPs:** Green Roofs, Vegetated Bio-Filters, and Enhanced Swales.
- **Alternative Compliance BMPs:** Detention Basins, and Sand Filters.

$$\underline{WQV = PCA \times 3630}$$

- WQV=water quality volume (cubic feet)
- P=design storm runoff depth (inches)
 - P=1" for LID Retention, P=1.5" for treat and release (biofiltration and alternative compliance)

- C=volumetric runoff coefficient

$$\underline{C = 0.05 + 0.009I}$$

C= volumetric runoff coefficient

I= percent impervious cover (%)

- A=drainage management area(s) (acres)



Sizing: Flow-Through Based BMPs (§20-3-58 (f))

Includes:

- **Biofiltration BMPs:** Vegetated Swales and Vegetated Filter Strips
- **Alternative Compliance BMPs**

$$\underline{WQF = 1.5 \times CiA}$$

- WQF = Water quality flow rate (cubic feet per second)
- C = Volumetric runoff coefficient
- i = Peak rainfall intensity (inches per hour)
 - Use 0.4 inches per hour
- A = Drainage management area(s) (acres)



Sizing: Demand Based BMPs (Harvest/Reuse) (§20-3-58 (h))

One of Two equivalent performance standards shall be met:

1. Capture at least 80 percent of average annual (long term) runoff volume AND meet 80 percent of the annual overall demand. If these criteria are met then no further BMPs are required to retain the WQV for that DMA.

-OR-

2. Size based on 48-hour demand. Remaining WQV not captured must be retained onsite through infiltration or, if Infeasible, treated with biofiltration, or alternative compliance.



Pollutants of Concern (§20-3-55)

Priority Project Categories	Nutrients	Sediment	Trash	Pathogens	Pesticides	Oil & Grease	Metals	Organic Compounds
Priority A: Residential Development > one acre	X	X	X	X	X	X		
Priority A: Commercial Development >one acre	P ⁽¹⁾	P ⁽¹⁾	X	P ⁽³⁾	P ⁽⁵⁾	X	X	P ⁽²⁾
Priority B: Industrial		X	X			X	X	X
Priority B: Automotive Repair Shops			X			X	X	X ⁽⁴⁾⁽⁵⁾
Priority B: Restaurants			X	X	P ⁽¹⁾	X		
Priority B: Parking Lots	P ⁽¹⁾	P ⁽¹⁾	X		P ⁽¹⁾	X	X	X
Priority B: Retail Gasoline Outlets			X			X	X	X
Priority B: Buildings taller than 100 ft in height	X	X	X	X	X	X		
(All) Streets, Highways & Freeways	P ⁽¹⁾	X	X	X	P ⁽¹⁾	X	X	X ⁽⁴⁾

X = anticipated P = potential

Describe potential pollutants and which BMPs are being chosen to address them in the SWQC/ SWQR



Infiltration Testing (§20-3-59)

Required for all infiltration facilities

Facility	Recommended # of Permeability Tests
<ul style="list-style-type: none">• Infiltration Basin• Subsurface Infiltration• Dry Well• Bioretention Basin• Permeable Pavement	1 test per 2,500 sq-ft
<ul style="list-style-type: none">• Infiltration Trench	1 test per 100 linear ft

Specific testing methods should be determined by Licensed Engineer with geotechnical expertise



LID Treatment Control Feasibility (§20-3-63)

- Must use Appendix F to document infeasibility for infiltration, harvest/reuse, and biofiltration
- Provide additional documentation as needed
- Submit as an attachment to the SWQR

Appendix F

 City and County of Honolulu

Feasibility Screening Worksheet

Directions: Use this worksheet to evaluate and document the feasibility of infiltration BMPs, harvest/ reuse systems, and biofiltration BMPs. This worksheet must be attached to the Storm Water Quality Report for DPP review. Part 1 determines the infeasibility of infiltration BMPs. Part 2 determines the infeasibility of harvest/ reuse BMPs. Part 3 determines the infeasibility of individual biofiltration BMPs. The BMPs in Part 3 may only be used on the portion of the WQV that cannot be retained onsite through retention BMPs (infiltration and harvest/ reuse BMPs).

Part 1: Infiltration Feasibility Screening

Check "Yes" or "No" to indicate whether the following conditions apply to the project. If "Yes" is checked for any question, then infiltration is infeasible, and you must provide evidence the condition.

Evaluation Criteria for Infiltration Feasibility		Yes	No
1.	Do the soils beneath the BMP invert have measured infiltration rates less than 0.5 in/hr or are they classified as USDA HSG "C" or "D" as reported by the USDA Natural Resources Conservation Service?	<input type="checkbox"/>	<input type="checkbox"/>
2.	Is there a seasonal high groundwater table within 3 ft. from BMP invert?	<input type="checkbox"/>	<input type="checkbox"/>
3.	Is there a documented concern that there is a potential on the site for soil or groundwater pollutants to be mobilized?	<input type="checkbox"/>	<input type="checkbox"/>
4.	Are geotechnical hazards present such as land slide prone areas?	<input type="checkbox"/>	<input type="checkbox"/>
5.	Would excavation disturb rui kapua or other archaeological resources?	<input type="checkbox"/>	<input type="checkbox"/>
6.	Would the BMP need to be built within the setbacks listed in below?		
Set back from nearest:			
	Drinking water well	50	
	Septic system	33	
	Private Property line	10	<input type="checkbox"/>
	Building foundation	20	
	Down-sloped building foundation	100	
7.	Are there land uses that pose a high threat to water quality including high potential for chemical spills (including oil and grease) or high levels of sand or sediment?	<input type="checkbox"/>	<input type="checkbox"/>
8.	Would infiltration facilities at this site conflict with the location of existing or proposed underground utilities or easements, or would the siting of infiltration facilities at this site result in their placement on top of underground utilities, or otherwise oriented to underground utilities, such that they would discharge to the utility trench, restrict access, or cause stability concerns?	<input type="checkbox"/>	<input type="checkbox"/>

Based on the results of Part 1, Infiltration is (check one): Feasible Infeasible

If feasible, you may design infiltration facilities and/or proceed to the Part 2 Harvest/ Reuse Feasibility Screening section for the area from which runoff must be treated.

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Infiltration Infeasibility

1. Soils beneath the BMP invert have measured Infiltration rates of less than 0.5 in/ hr or are USDA HSG “C” or “D” as reported by the USDA Natural Resources Conservation Service;
2. The seasonally high groundwater table is within 3 feet from the BMP invert;
3. There is a documented concern that there is a potential onsite for soil Pollutants, ground water Pollutants, or Pollutants associated with industrial activities to be mobilized;
4. There are geotechnical concerns at the Site;
5. Excavation for the installation of the BMP would disturb iwi kupuna or other archeological resources;
6. The BMP cannot be built within the following setbacks:
 - 50 feet from the nearest drinking water well;
 - 35 feet from the nearest septic system;
 - 10 feet from the nearest private property line;
 - 20 feet from the nearest building foundation at the Project Site;
 - 100 feet from the nearest down-gradient building foundation; or
7. Infiltration facilities would conflict with the location of existing or proposed underground utilities or easements, or would result in their placement on top of underground utilities, or otherwise oriented to underground utilities, such that they would Discharge to the utility trench, restrict access, or cause stability concerns.



Harvest/Reuse Infeasibility

- The demand is inadequate to reuse the required volume of water;
- The technical requirements cause the harvesting system to exceed 2 percent of the total Project cost;
- The Site where a cistern must be located is at a slope greater than 10 percent;
- There is no available space to locate a cistern of adequate size to harvest and use the required amount of water;
- The cistern cannot be built within the following setbacks:
 - 10 feet from the nearest septic system;
 - 5 feet from the nearest private property line;
 - 5 feet from the nearest building foundation at the Project Site; or
- The Project includes a reclaimed water system and demand for a harvest/ reuse system cannot be met.



Biofiltration Infeasibility: Vegetated Swales and Filter Strips

- The excavation would disturb iwi kupuna or other archaeological resources;
- The Site does not receive enough sunlight to support vegetation;
or
- Unable to operate off-line with bypass and unable to operate in-line with safe overflow mechanism.



Bilfiltration Infeasibility: Vegetated Biofilter

- Excavation would disturb iwi kupuna or other archaeological resources;
- The invert of underdrain layer is below seasonally high groundwater table;
- The Site does not receive enough sunlight to support vegetation;
- The Site lacks sufficient hydraulic head to support BMP operation by gravity; or
- Unable to operate off-line with bypass and unable to operate in-line with safe overflow mechanism



Biofiltration Infeasibility: Dry Swale

- Excavation would disturb iwi kupuna or other archaeological resources;
- The invert of underdrain layer is below seasonally high groundwater table;
- The Site lacks sufficient hydraulic head to support BMP operation by gravity; or
- Unable to operate off-line with bypass and unable to operate in-line with safe overflow mechanism.



Biofiltration Infeasibility: Green Roof

- The roof is for a single family residential dwelling;
- Roof space is unavailable due to renewable energy, electrical, and/or mechanical systems; or
- Slope on roof exceeds 25 percent (14 degrees).



Operations and Maintenance Plan (§20-3-53)

- Use **Appendix H**
 - Name and phone number for the individual(s), association, or management company responsible ensuring maintenance is being performed;
 - Maintenance activities for each BMP;
 - Inspection frequencies for each BMP;
 - A Post-Construction BMP plan showing the location of each BMP with a summary of the maintenance activities and inspection schedule for each BMP; and
 - Identification of the source of funds and/or revenue for implementation of the Operations and Maintenance Plan.
- Any changes after permit closure must be submitted to DFM

Appendix H

 City and County of Honolulu

**Operation and Maintenance Plan
For Permanent Storm Water BMPs**

Project Name:

Project Location:

Tax Map Key(s):

Total Project Size:

City MS4 Facility(ies):

Prepared For:

Owner: Developer's Name
Owner: Developer's Street Address
Owner: Developer's City, State, Zip Code
Owner: Developer's Telephone Number

Designated Entity for Storm Water Maintenance:

Name of Individual, Association, or Management Company
Telephone Number

Date of Preparation



LID IN PRACTICE



Subdivision Street Layout



Conventional w/alleys



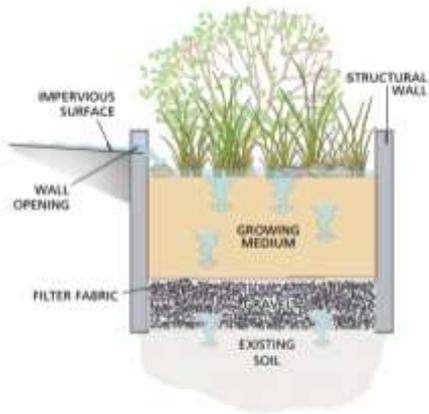
Curvilinear w/ cul-de-sacs



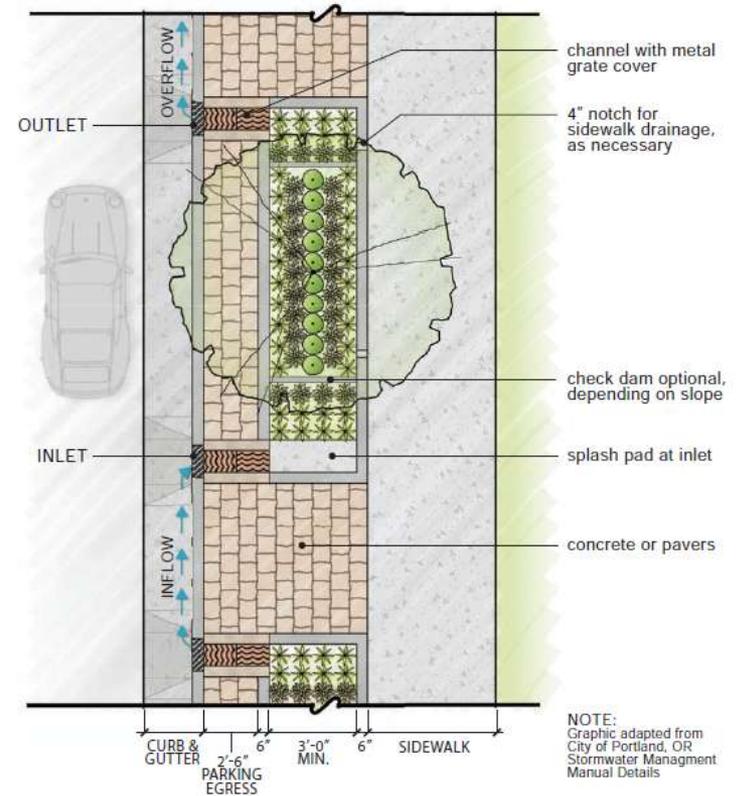
Hybrid with road loop design



Retention: Bioretention Planters



Photos: City of Portland



Biofiltration: Planter Boxes



Photo: City of Long Beach LID Manual



Photo: Lastormwater.org

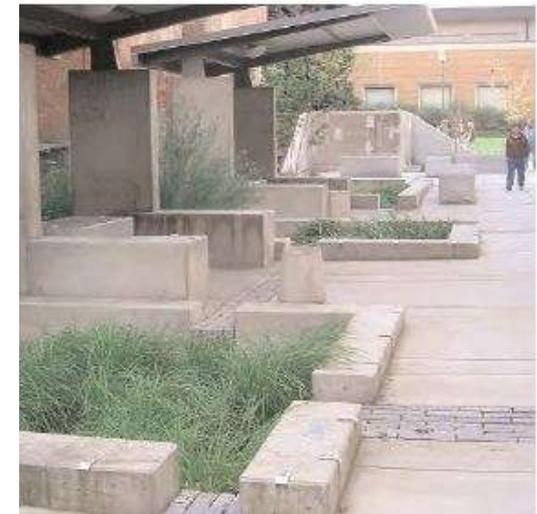


Photo: City of Portland



Biofiltration: Green Roofs



Honolulu Civic Center



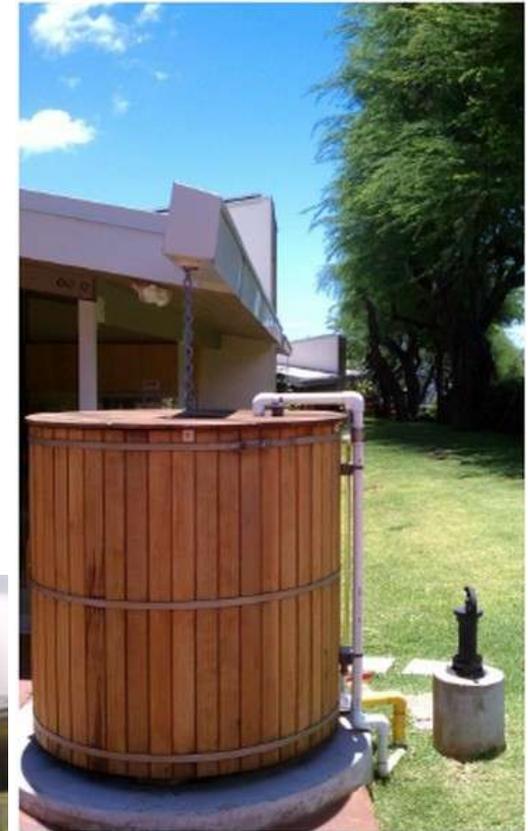
Turtle Bay Resort, 2014 (Honolulu Roofing Company)



Harvest and Reuse



<http://www.braleygray.com/green/rainwater-harvesting> [Portland, OR]



Cisterns at Punahou School and Hawaii Baptist Academy



BMPs in Parks and Open Spaces

Rain Gardens



Rain garden at Koko Head District Park
(<http://www.malamamaunalua.org>)



Rain garden at Wahikuli Wayside Park, Island of Maui
<http://westmauikumuwai.org/what-you-can-do/install-a-rain-garden/>



Rain garden at Punahou School



BMPs for Parking Lots

Bioretention/ Biofiltration:



Watershedco.com



Subsurface infiltration



www.cenews.com

Permeable Pavers/Hybrid parking lots



Photo courtesy of CCH



Thank you!

