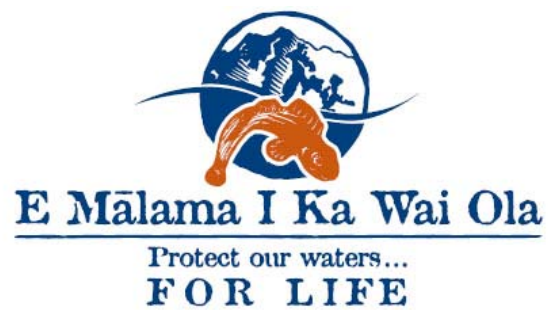


CHAPTER 7
POST-CONSTRUCTION STORM WATER
MANAGEMENT



Drainage detention basin



Chapter 7.0 – Post-Construction Storm Water Management

7.1 Introduction

The Permit requires the City to develop, implement and enforce a program to address storm water runoff from new development and redevelopment projects that result in a land disturbance of one acre or more and smaller projects that have the potential to discharge pollutants to the City MS4. The program must ensure that permanent controls are in place to prevent or minimize water quality impacts to the MEP.

The following excerpt is from the Permit [D.1.e] describing the requirements for the Post-Construction Storm Water Management in New Development and Redevelopment of the Permit:

“D.1.e. Post-Construction Storm Water Management in New Development and Redevelopment

The Permittee shall develop, implement, and enforce a program to address storm water runoff from new development and redevelopment projects that result in a land disturbance of one (1) acre or more and smaller projects that have the potential to discharge pollutants to the City MS4. The Permittee's Land Development Program must ensure that permanent controls are in place to prevent or minimize water quality impacts to the MEP.”

7.1.1 Objectives of the Program

This Program defines requirements and provides guidance for compliance with the requirements for project specific planning, selection, and design of BMPs in a new development and redevelopment project. This Program covers initial project planning through design, construction and completion, including requirements for long-term maintenance of permanent BMPs.

The goals of the Post-Construction Storm Water Management Program are to provide:

- A framework to reduce to the MEP the discharge of pollutants from new development and redevelopment projects;
- Identify standards and Post-Construction BMPs to be implemented to meet NPDES permit requirements;
- Provide the status of the funding requests and implementation of the activities for Wailupe Stream, Kuliouou Stream, and Niu Stream as described in the "Action Plan: Implementing Feasible Opportunities to Retrofit Structural BMPs," dated October 2001;

- Identify procedures for issuing and approving building/grading permits for new development and redevelopment projects that includes a review of post-construction BMP to meet NPDES permit requirements;
- Develop and implement a system to compile a database of post-construction BMPs and the frequency of maintenance and inspection of the BMPs; and
- Implement a Training and Education Program.

In developing this Program, the City may modify the Program in response to local conditions. It is not the intent for this Program to restrict city or county planning commissions, Building Officials or their governing bodies from imposing additional storm water management requirements as a condition on construction projects.

7.1.2 New Development/Redevelopment Projects Subject to the Program

New development and redevelopment projects subject to the requirements of this Program include projects that result in a land disturbance of one acre or more and smaller projects that have the potential to discharge pollutants to the City’s MS4. For the purposes of the SWMP, new development and redevelopment are defined as follows:

New Development - means land disturbing activities; structural development, including construction or installation of a building or structure, the creation of impervious surfaces; and land subdivision.

Redevelopment - means development that would create or add impervious surface area on an already developed site. Redevelopment includes, but is not limited to:

- Expansion of a building footprint;
- Addition to or replacement of a structure;
- Replacement of an impervious surface that is not part of a routine maintenance activity; and
- Land disturbing activities related to structural or impervious surfaces.

In addition to new development and redevelopment projects that result in a land disturbance of one acre or more, the City will evaluate the need to include projects less than one acre that have the potential to discharge pollutants to the City’s MS4. These projects will be identified as “priority projects.” An example of proposed “priority projects” may include the following types of projects identified in Table 7-1.

**Table 7-1
Proposed Priority Projects Categories**

Residential development of 10 units or more
Commercial and industrial development greater than 100,000 square feet including parking area
Retail gas stations
Automotive repair shops
Restaurants where the land area of development is 5,000 square feet or more including parking area
Hillside development on 10,000 square feet or more, which are located on areas with known erosive soil conditions or where natural slope is twenty-five percent or more
Parking Lots 5,000 square feet or more, or with 15 parking spaces or more, and potentially exposed to urban storm water runoff

7.1.3 Exempt Projects

The City may exempt certain types of Construction Projects from this program that pose a minimum risk of storm water pollution. These projects are exempt from post-construction storm water control measures. Lists of specific types of Projects that are deemed to be exempt include:

- Routine maintenance to maintain original line and grade, hydraulic capacity, or original purpose of facility
- Emergency construction activities required to immediately protect public health and safety
- Trenching and resurfacing associated with utility work
- Resurfacing and reconfiguring surface parking lots
- New sidewalk construction, pedestrian ramps, or bike lane on existing roads
- Replacement of damaged pavement.

Additional exemptions may be determined by the local building official (or equivalent municipal authority) and will be provided to DOH with a justification for their designation.

7.2 Standards Revisions

This Chapter describes the City procedures to develop a program to address storm water runoff, to the MEP, from new development and redevelopment projects that result in a land disturbance of one acre or more and smaller projects that have the potential to discharge pollutants to the City MS4.

The following excerpt is from the Permit [D.1.e(1)] describing the requirements for the Post-Construction Storm Water Management in New Development and Redevelopment:

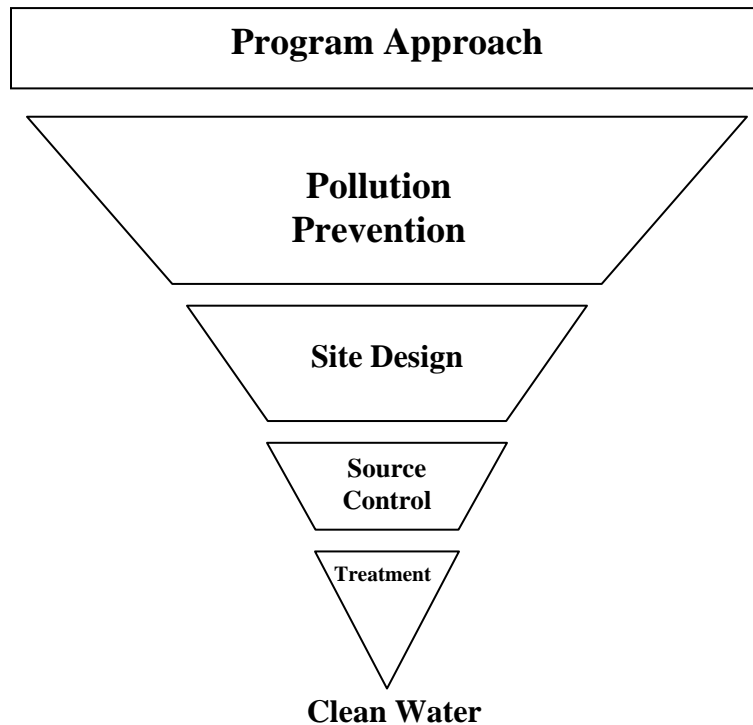
“D.1.e(1) Standards Revision. Within one (1) year of the effective date of this permit, the Permittee shall submit to DOH a plan for addressing post-construction runoff from projects not directly subject to the Permittee's "Rules Relating to Storm Drainage Standards" published January 2000. At a minimum, this shall include specific post-construction standards applicable to all construction projects disturbing at least one (1) acre.”

The City is currently developing a “Post-Construction Storm Water Management Manual” to assist plan reviewers and contractors/developers in meeting the post-construction storm water management requirements for new development and redevelopment projects. Until this Manual is finalized, the City will continue to implement the BMPs and standards described in the following rules and guidance documents for all private sector and CIP Projects under its jurisdiction:

- Rules Relating to Storm Drainage Standards
- Rules Relating to Soil Erosion Standards and Guidelines
- Best Management Practices Manual for Construction Sites in Honolulu

The City will review and update these rules and guidance documents within two years of the effective date of the Permit. The plan to revise these standards is included as Appendix C.4.

The updated program will be based upon a four-tiered approach for reducing the potential impact of new development and significant redevelopment projects on water quality. The four tiers are Pollution Prevention, Site Design, Source Control, and Treatment.



7.2.1 Proposed Post-Construction Storm Water Management Manual

The proposed “Post-Construction Storm Water Management Manual” will be developed to assist plan reviewers and contractors/developers in meeting the post-construction storm water management requirements for new development and redevelopment projects. The proposed “Post-Construction Storm Water Management Manual” will be a planning level document and as such is not expected to contain BMP design details but provide design parameters, typically in the form of BMP fact sheets. BMP fact sheets will be used for Source Control, Site Design, and Treatment Controls. The fact sheets will contain detailed descriptions of each BMP, applications, advantages/disadvantages, design criteria, design procedure, and inspection and maintenance requirements to ensure optimal performance of the BMPs.

Prior to selecting BMPs, a good understanding of post-construction activities and potential sources of storm water pollutants is needed. The BMPs considered should address the potential pollutants reasonably expected at the site once the site is occupied or operational.

The Manual will include the following procedures and guidance information:

- Site assessment
- Identification of pollutants of concern
- Identification of hydrologic conditions
- BMP selection criteria
 - Consideration of Site Design BMPs
 - Incorporation of Source Control BMPs
 - Selection, sizing, and incorporation of Treatment Control BMPs (if required), and
- Maintenance and funding of BMPs.

The Program is based on a four-tiered BMP approach for reducing the potential impact of new development and redevelopment projects on water quality. A summary of these BMPs are presented in Table 7-2.

Table 7- 2
Summary of Post-Construction BMPs
for New Development/Redevelopment Projects

BMP Category	Applicable Projects	Pollution Prevention Objective
Pollution Prevention	Required for all projects – as applicable	Any practice that reduces or eliminates the creation of pollutants including educating the public on proper disposal of hazardous or toxic wastes, regulatory approaches, street sweeping and facility maintenance, and detection and elimination of illicit connections and illegal dumping
Site Design BMPs	All projects should consider implementation of Site Design BMPs	Controls integrated into the facility design to minimize or prevent potential pollutants from contacting rainwater or storm water runoff or to prevent discharge of contaminated runoff to the storm drain system or receiving waters.
Structural Source Control BMPs	Required for all projects – as applicable.	Low-technology practices designed to prevent pollutants from contacting storm water runoff or to prevent discharge of contaminated runoff to the storm drainage system.
Treatment Control BMPs	Required for projects when Site Design and Source Controls may not be sufficient to reduce the potential for pollutants to enter the City’s MS4.	Engineered technologies designed to remove pollutants from storm water runoff prior to discharge to the storm drain system or receiving waters

Site Design BMPs

Site Design BMPs should be considered for all projects including regional or watershed programs. Site Design BMPs include controlling peak storm water runoff rates, minimizing impervious area, conserving natural areas, and protecting slopes and channels.

Structural Source Control BMPs

Site-specific structural source control BMPs have been established for a number of common site features such as outdoor material storage areas, trash storage, outdoor loading/unloading docks, outdoor repair and maintenance areas, outdoor washing areas, outdoor fueling areas, and parking lots. Typical required design features include berms, covers, screens, signage, grading, sanitary sewer connections, and emergency storm drain covers.

Treatment Control BMPs

The type of treatment control BMP(s) to be implemented at a site depends on a number of factors including: type of pollutants in the storm water runoff, volume or flow of storm water runoff to be treated, project site conditions, receiving water conditions, and General Industrial Permit requirements, when applicable. Land requirements, and costs to design, construct and maintain treatment control BMPs vary by treatment control BMP.

Examples of treatment controls include biofilters, detention basins, infiltration basins/trenches, wet ponds/wetlands, filtration systems, and hydrodynamic separation systems.

The proposed Post-Construction BMP Manual will identify the post-construction BMPs that will be implemented to provide long-term runoff management once the project is operational or occupied, and also describes the mechanism by which long-term operation and maintenance will be provided.

The main references for these proposed Post-Construction BMP Manual and Fact Sheets include the following:

- California Storm Water Best Management Practice Handbook, New Development and Redevelopment, January 2003
- State of California Department of Transportation (Caltrans), Storm Water Quality Handbooks, Project Planning and Design Guide, April 2003.

7.3 Action Plan for Retrofitting Structural BMPs

The existing structural controls for the City's separate storm sewer system includes the Kaneohe Dam (detention basin), Kahaluu Lagoon retention basin, Waimalu retention basin, and twenty-four debris basins (including the debris basin at the Kaneohe Dam). There are two small pilot projects to capture pollutants from smaller rainfall events: a debris boom near the upstream end of the Ala Wai Canal and an in-line catch basin filter at the intersection of Lewers Street and Ala Wai Boulevard. There are also three debris booms installed at the Ulehawa Stream's east (U-2) and west (U-3) tributaries.

The following excerpt is from the Permit [D.1.e(2)] describing the requirements for the Post-Construction Storm Water Management in New Development and Redevelopment:

“D.1.e(2) Action Plan for Retrofitting Structural BMPs. Within 90 days of the effective date of this permit, the Permittee shall provide the status of the funding requests and implementation of the activities for Wailupe Stream, Kuliouou Stream, and Niu Stream as described on pages 10- 11 of the "Action Plan: Implementing Feasible Opportunities to Retrofit Structural BMPs," dated October 2001, and submitted to DOH on October 31, 2001, to address retrofitting of structural BMPs.”

On October 31, 2001, the City and County of Honolulu, Department of Environmental Services, submitted an “Action Plan to Implement Feasible Opportunities for Existing Structural BMPs” to address retrofitting the following structural BMPs. By letter dated June 26, 2006, ENV provided an update of the report to DOH. Excerpts from both documents are provided below.

“Wailupe Stream: The Corps recommended continued study at Wailupe Stream and deferral of action on Niu Valley and Kuliouou pending the results of further investigation of Wailupe Stream. The cost-benefit ratio for Wailupe is expected to be significantly higher than for either Niu or Kuliouou, and if Wailupe could not be funded, then it is doubtful that improvements to the other two streams could be

justified. Proposed improvements to Wailupe Stream were addressed in the “Final Feasibility Report, Wailupe Stream Flood Control Study, Oahu, Hawaii,” dated December 1998. The recommended alternates and project costs follow.

There were two flood reduction alternatives that received serious consideration. Both included: a) replacing the existing 550 cubic yard capacity debris basin with a new 42,000 cubic yard capacity basin along Wailupe Stream; b) construction of a new 24,000 cubic yard capacity debris basin in the Kului Stream tributary; c) approximately 6,000 feet of concrete channel improvements from the two basins to coast; and d) an unlined channel from the coast line through the existing reef approximately 200 feet from the end of the concrete lined channel. The total project first cost for either of the alternatives that were given serious consideration was estimated to be in excess of \$34 million. The Corps study concluded that even the alternative with highest benefit/cost ratio (0.89) would not meet Federal National Economic Development (NED) criterion of having positive net benefits. However, because of community concern as well as concern at the local, state and federal levels, the Corps is continuing its study. Any federal funding would require an amendment to the Corps budget by the U.S. Congress. Hawaii’s delegation has expressed willingness to request an amendment if the State Department of Land and Natural Resources and the City can provide matching funds (65 percent Federal, 35 percent local).

The Corps also studied the feasibility of constructing debris basins only, but concluded that ‘Past experience has shown that the construction of debris basins without channel improvements can disrupt the delicate balance of natural stream degradation and replenishment, thus leading to increased erosion within the stream,’ and that ‘this alternative would not satisfy the study objectives of reducing the flood hazard with Aina Haina and it was thus eliminated from further consideration.’”

Current Status: This Corps of Engineer project is in the Preconstruction Engineering and Design (PED) phase. The total estimated cost for the PED phase is \$3,856,000 of which the City and State have provided \$482,000 each. The City and State Department of Land and Natural Resources provided the funds in 2004. PED activities have been initiated to prepare a General Reevaluation Report.

“Kuliouou Stream: Proposed improvements to Kuliouou and Niu Streams were further addressed in supplemental study the “Final Supplemental Reconnaissance Report, Urban Flood Control Study, Honolulu, Hawaii” dated December 1994. For Kuliouou Stream, the Corps proposed construction of six debris dams, (concrete and steel construction, maximum thirty feet high). The necessary debris basin capacity was estimated at 90,000 cubic yards. The project also included improvements to the existing lined channel. The project cost, including land, engineering and design, construction and construction management, was estimated to be \$9.78 million. The estimated project cost for construction of the debris basins only, exclusive of land and damages, relocation, access

roads/bridges, design and construction management was \$5.21 million.”

Current Status: Funds are being requested from the City and the State to co-sponsor the project. It is currently being held in abeyance.

“Niu Stream: In the 1994 final supplemental reconnaissance report, the Corps proposed construction of a total of nine dams, (concrete and steel construction, maximum thirty feet high) in two of Niu Stream’s tributaries: five debris dams upstream of the existing boulder basin in Pia Valley, and four debris dams in Kupaua Valley. The necessary debris basin capacity was estimated at 184,000 cubic yards. The project also included improvements to the existing lined channel. The project cost, including land, engineering and design, construction and construction management, was estimated to be \$9.53 million. The estimated project cost for construction of the debris basins only, exclusive of land and damages, relocation, access roads/bridges, design and construction management was \$6.26 million.”

Current Status: There is no ongoing activity for the Niu Stream project at this time.

7.4 Review of Plans for Post-Construction BMPs

The permit review and approval process is one of the last critical points at which the City can impose conditions or standards that will minimize the impacts of urban runoff on local water resources.

Municipalities and developers should address the potential water quality impacts of storm water discharges associated with development activities early in the project planning and design process. Therefore, all new development and redevelopment projects that result in a land disturbance of one acre or more and smaller projects that have the potential to discharge pollutants to the City MS4, will be required to define the quality and quantity of storm water runoff that must be considered during project planning to identify permanent post-construction BMPs that will be included in project design, constructed as part of the project, and ultimately implemented and maintained for the life of the project.

The following excerpt is from the Permit [D.1.e(3)] describing the requirements for the Post-Construction Storm Water Management in New Development and Redevelopment:

“D.1.e.(3) Review of Plans for Post-Construction BMPs. Within one (1) year of the effective date of this permit, the Permittee shall ensure that plan reviews for new developments and redevelopments include a review for post-construction BMPs to ensure compliance with this part of the permit. At a minimum, this will include the review of all plans disturbing at least one (1) acre for post-construction BMPs. Project documents for projects that will include installation of permanent post-construction BMPs shall also include appropriate requirements for their future continued maintenance.”

This chapter describes the City procedures to review, track, inspect and enforce post-construction BMPs requirements for all new development and redevelopment projects that result in a land disturbance of one acre or more and smaller projects that have the potential to discharge pollutants to the City MS4.

The City is currently developing a “Post-Construction Storm Water Management Manual” to assist plan reviewers and contractors/developers in meeting the post-construction storm water management requirements for new development and redevelopment projects.

7.4.1 Private Sector Construction Projects

The requirement for managing the quality and quantity of storm water runoff from new development or redevelopment applies equally to private sector and public agency projects.

In addition to the requirements identified in Chapter 6 “Construction Site Runoff,” prior to issuing a grading or building permit for new development and redevelopment projects that result in a land disturbance of one acre or more and smaller projects that have the potential to discharge pollutants to the City MS4, the City will require applicants to design permanent post-construction BMPs to prevent or minimize water quality impacts to the City’s MS4.

The City will review and approve the Post-Construction BMPs for conformance with “Rules Relating to Storm Drainage Standards.” The City plan reviewer will document the review process by completing the current “Best Management Practices (BMP) Checklist for Construction Plan Approval.” The City will not issue a grading or building permit unless the applicant has satisfied all of the requirements on the Plan Review Checklist. As stated earlier the checklist is currently being revised and requires approval by DOH prior to use.

The “Best Management Practices (BMP) Checklist for Construction Plan Approval” will be revised to meet the requirements of the “Post-Construction Storm Water Management Manual.”

Inspection and Enforcement

During the construction phase, the City is responsible for the inspection and enforcement of grading ordinances and any grading permit conditions, including the construction of required post-construction BMPs. The inspection frequencies and enforcement actions were discussed in Chapter 6.0 – “Construction Site Runoff.”

Once construction is complete, the City will conduct inspection and enforcement actions to ensure that the Post-Construction BMPs are being properly operated and maintained. The City’s inspection and enforcement program for private sector Post-Construction

BMPs are described under the Industrial and Commercial Activities (Chapter 9.0 of the SWMP).

7.4.2 Capital Improvement Program (CIP) Projects

In many public agencies the process for planning, design, approval, and oversight of public facilities differs from the process for private sector development projects. For example, typically private development projects are regulated through building or grading permits. Public agency projects in comparison may undergo design review by the contracting agency of the City; may or may not be issued permits or similar administrative authorizations; and are then regulated through the enforcement of contract terms and approved plans and specifications.

All CIP construction contracts administered by the City are governed by the “General Conditions of Construction Contracts” of the City and County of Honolulu and represent the City’s policy relating to construction projects as authorized by the Hawaii Revised Statutes, Chapter 103D, and the Hawaii Administrative Rules (HAR), Title 3, Department of Accounting and General Services.

For CIP projects, the City or authorized representatives, are responsible for construction management including the design of post-construction BMPs. The majority of CIP projects are designed by engineering/consulting firms contracted by the City. The requirements to design post-construction BMPs will be incorporated into the Contract Documents.

As part of the standards revisions, the City will review the current Contract Specifications to include Post-Construction BMP requirements.

As with private sector projects, the City will review and approve the Post-Construction BMPs for conformance with “Rules Relating to Storm Drainage Standards.” The City plan reviewer will document the review process by completing the current “Best Management Practices (BMP) Checklist for Construction Plan Approval.” The City will not issue a grading or building permit unless the applicant has satisfied all of the requirements on the Plan Review Checklist.

Inspection and Enforcement

During the construction phase, the City is responsible for the inspection and enforcement of grading ordinances and any grading permit conditions, including Post-Construction BMPs. The inspection frequencies and enforcement actions were discussed in Chapter 6.0 – “Construction Site Runoff.”

Once construction is complete, the inspection and maintenance transfers to the appropriate City agency under the Pollution Prevention/Good Housekeeping Program (Chapter 8.0 of the SWMP).

7.4.3 Project Closeout

The ownership, operation, and maintenance of structural and treatment BMPs may be the responsibility of a private entity or the City under various arrangements and with various funding sources. Following satisfactory project completion and inspection, the City will accept structural and treatment BMPs within public right-of-ways or on land dedicated to public ownership. Upon acceptance, responsibility for operation and maintenance will transfer from the contractor to the appropriate City department, including the funding mechanism identified.

If a property owner or a private entity, such as a homeowners association (HOA), retains or assumes responsibility for operation and maintenance of structural BMPs, the City shall require access for inspection through an agreement. If the City will be responsible for operating and maintaining structural or treatment BMPs on private property, an easement will be established to allow for entry and proper management of the BMPs.

7.5 BMP, Operation and Maintenance, and Inspection Database

A structural or treatment BMP is not considered effective, nor are maximum extent practicable criteria met, unless a mechanism is in place to provide for long-term reliability, which is achieved through proper operation and maintenance. Therefore, once construction is complete, assurance is required for the long-term operation and maintenance of structural BMPs, and most particularly for Treatment Control BMPs.

The following excerpt is from the Permit [D.1.e(4)] describing the requirements for the Post-Construction Storm Water Management in New Development and Redevelopment:

“D.1.e(4) BMP, Operation and Maintenance, and Inspection Database. Within two (2) years of the effective date of this permit, the Permittee shall develop and implement a system to compile a database of post-construction BMPs and the frequency of maintenance and inspection of the BMPs. The database shall include both public and private activities or projects which initially discharge into the Permittee’s MS4 and shall begin in the plan review stage with a database or geographic information system (GIS). Within the permit renewal application, the Permittee shall provide the plan to map the post-construction BMPs on the GIS. In addition to the standard information collected for all projects (e.g., project name, owner, location, start/end date, etc.), the tracking system shall also include, at a minimum:

- *Type and number of Source Control BMPs*
- *Type and number of Treatment Control BMPs*
- *Latitude longitude coordinates of controls using Global Positioning Systems (GPS) and NAD83 Datum*
- *Photographs of controls*
- *Operation and maintenance requirements, including frequency*
- *Frequency of inspections”*

This section presents the City's procedures to develop and implement a system to compile a database of post-construction BMPs and the frequency of maintenance and inspection of the BMPs for both public and private activities or projects that discharge to the City's MS4. The database serves as the basis for the maintenance, inspection, enforcement, and reporting elements of the program. The procedures to develop this database include:

- Enter locations of all post-construction BMPs that discharge into the City's MS4, and
- Establish procedures for entering future post-construction BMPs that discharge into the City's MS4.

Update Current Records

The first step is to develop a process to identify all existing post-construction BMP that are within the jurisdiction of the city and/or discharge into the City's MS4. Various City departments maintain the infrastructure construction plans. The construction plans (as-built) include specific sheets that provide details of the projects infrastructure. Information about each site will be collected and entered into the database. General relevant site information includes:

- Project Name;
- Owner Information;
- Project Location – Full address (if known), City, Zip Code;
- Tract Number(s) and Lot number(s);
- Parcel Map Number(s) and Parcel number(s);
- Latitude/Longitude coordinates or BMPs using GPS and NAD83 Datum;
- Description of project (i.e., public, commercial, residential, industrial, etc.);
- Date of Construction (if known);
- Municipal Grading or Building Permit Number(s);
- Type and number of Source Control BMPs;
- Type and number of Treatment Control BMPs;
- Operation and Maintenance Requirement, including frequency;
- Frequency of Inspections;
- Photographs of Structural and/or Treatment BMPs; and
- Comments.

7.6 Education and Training

Education and training are major components of any successful storm water program. The City will provide education and outreach material for those parties who apply for City and County of Honolulu permits (i.e., developers, engineers, architects, consultants, construction contractors, excavators, and property owners) on the selection, design, installation, operation and maintenance of storm water treatment controls.

The following excerpt is from the Permit [D.1.e(5)] describing the requirements for the Post-Construction Storm Water Management in New Development and Redevelopment:

“D.1.e(5) Education and Training.

- (a) Project Proponents: Within one (1) year of the effective date of this permit, the Permittee shall provide education and outreach material for those parties who apply for City and County of Honolulu permits (i.e., developers, engineers, architects, consultants, construction contractors, excavators, and property owners) on the selection, design, installation, operation and maintenance of storm water treatment controls. The outreach material may include a simplified flowchart of thresholds triggering permits and requirements, a list of requirement permits, implementing agencies, fees, overviews, timelines and a brief discussion of potential environmental impacts associated with storm water runoff.*
- (b) Inspectors. All Permittee staff responsible for inspecting permanent post-construction BMPs shall receive training within one year of the effective date of this permit and annually thereafter.”*

Appropriate City staff involved with construction site BMPs and post-construction BMPs were trained to promote a clear understanding of post-construction BMPs. The City conducted and documented the training within one year of the effective date of the permit. Appendix B.3 documents the training along with the slide presentation, handouts and exercises used in the classes.

The Post-Construction Storm Water Management training included:

- General Program Management Training. This training consisted of overall program administration and implementation. The content of the training included:
 - Goals and objectives of the Post-Construction Storm Water Management in New Development and Redevelopment Program;
 - Regulatory Background;
 - Standards Revisions and Post-Construction BMP Manual;
 - Plan Review and Approval Process, including inspection and enforcement;
 - Overview of Post-Construction BMP Operation and Maintenance, and Inspection Database
- Post-Construction BMP Inspection Training. In addition to the above training, building/grading permit inspectors and/or other staff involved in inspections of post-construction BMPs received training that consisted of procedures for inspecting construction sites and what to look for in the field when inspecting construction site BMPs and post-construction BMPs.

Along with training city staff, education of permit applicants, contractors, developers, engineers, property owners, and other responsible parties to ensure they have an understanding of the storm water requirements is essential.

Parties responsible for the various Post Construction tasks are illustrated in Figure 7-1.

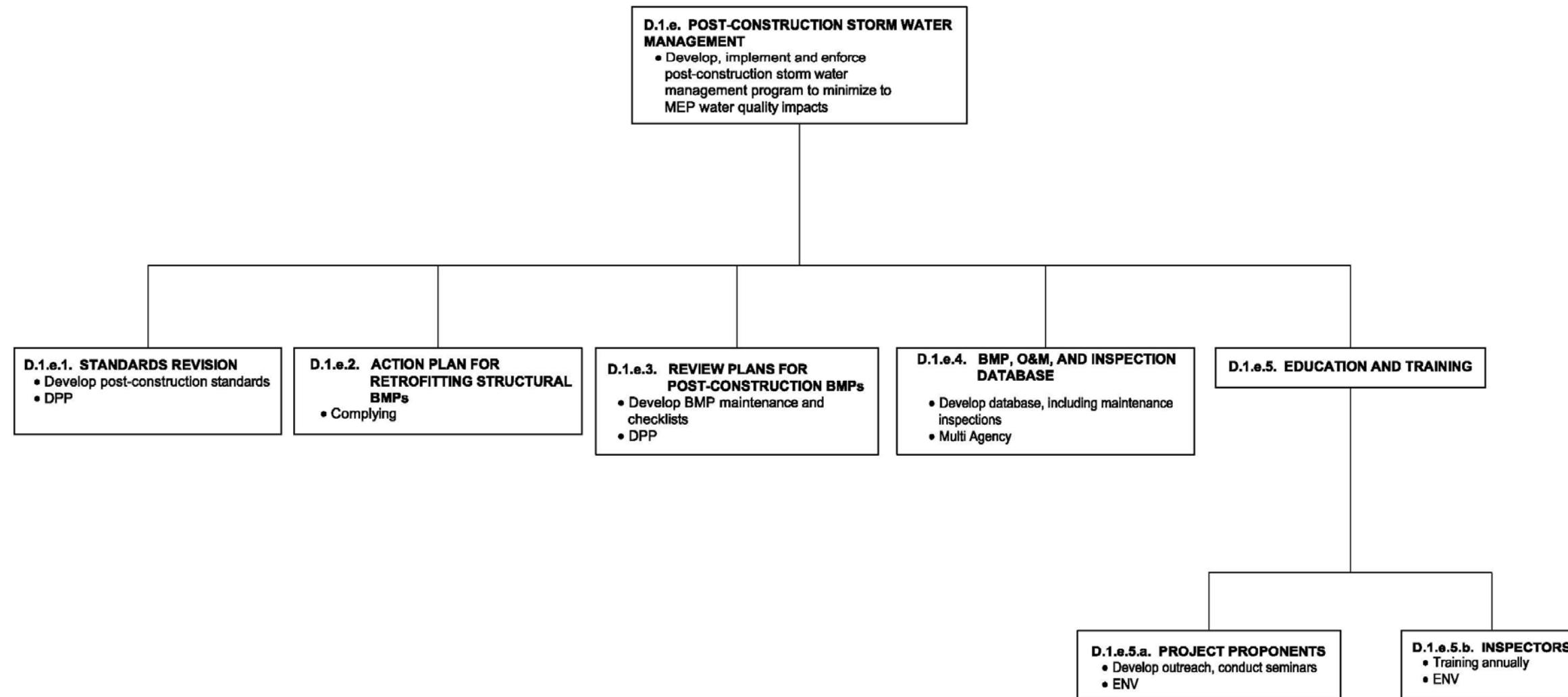


FIGURE 7-1
Responsible Agency
Post Construction Storm Water Management