1 INTRODUCTION

1.1 Purpose of the Manual

Under most existing conditions, storm water runoff from urban areas picks up pollutants as it flows across roofs, sidewalks, driveways and streets, and then is conveyed by gutters, channels, and storm drains directly to local creeks and the Ocean, without any treatment. This runoff carries sediment, nutrients, bacteria, hydrocarbons, metals, pesticides, and trash. Urban storm water runoff is the single largest source of surface water pollution in Santa Barbara.

The City of Santa Barbara's Storm Water Management Plan/Program (SWMP) is in place to reduce the discharge of non-point source pollutants into local creeks and the Ocean. (See *http://www.santabarbaraca.gov/Resident/Community/Creeks/Storm_Water_Management_Program.htm*). As called for in the SWMP, City staff have produced this Guidance Manual (Manual) to provide assistance in meeting existing post-construction storm water management standards for new development and redevelopment. Specifically, the Manual assists project applicants in the selection, integration, design, and implementation of a variety of storm water Best Management Practice (BMP) options for a project site. In general, a project "site" is defined by the parcel boundaries. The Manual identifies and describes a range of BMPs including rain barrels, bioswales, and infiltration basins, that are designed to capture and treat storm water runoff from development and redevelopment projects.

It is important to emphasize that the Manual is not exclusive in its presentation of BMP options. The purpose of the Manual is to describe a broad range of storm water BMPs that are appropriate for implementation in the City of Santa Barbara. However, it is possible for a project applicant to propose a storm water BMP option that is not included in this Manual, as long as it meets the requirements specifically outlined in the City's SWMP (described again in Section 6.2 of this Manual).

The goal of both the SWMP and the Manual is to provide strategies and guidelines for the protection of water quality and reduction of non-point source pollutant discharges within the City to the Maximum Extent Practicable (MEP). This goal can be met by preventing and controlling the impacts of development, which increases storm water runoff volume, velocity, and pollution, using a sensible combination of pollutant source control, site design, and post-construction storm water runoff BMPs. This Manual assists projects in achieving these goals by providing tailored guidance to two specific audiences:

1. Developers, design engineers, agency engineers, planners, landscape architects, and other storm water professionals, and
2. Residential property owners.

For each audience, this Manual guides the user in the selection, integration, design, and implementation of a variety of BMP options for a project site to meet the City of Santa Barbara post-construction storm water management requirements for development and redevelopment projects. The following flowchart (Figure 1-1) identifies which chapters of the Manual are required to be implemented based on your project type. Project types are divided into three project tiers (Tier 1, Tier 2, and Tier 3). In addition to Figure 1-1, refer to Table 1-1 and associated text in Section 1.3 to identify the project tier. Note that solid arrows in the flowchart indicate required implementation while dashed lines indicate voluntary implementation.

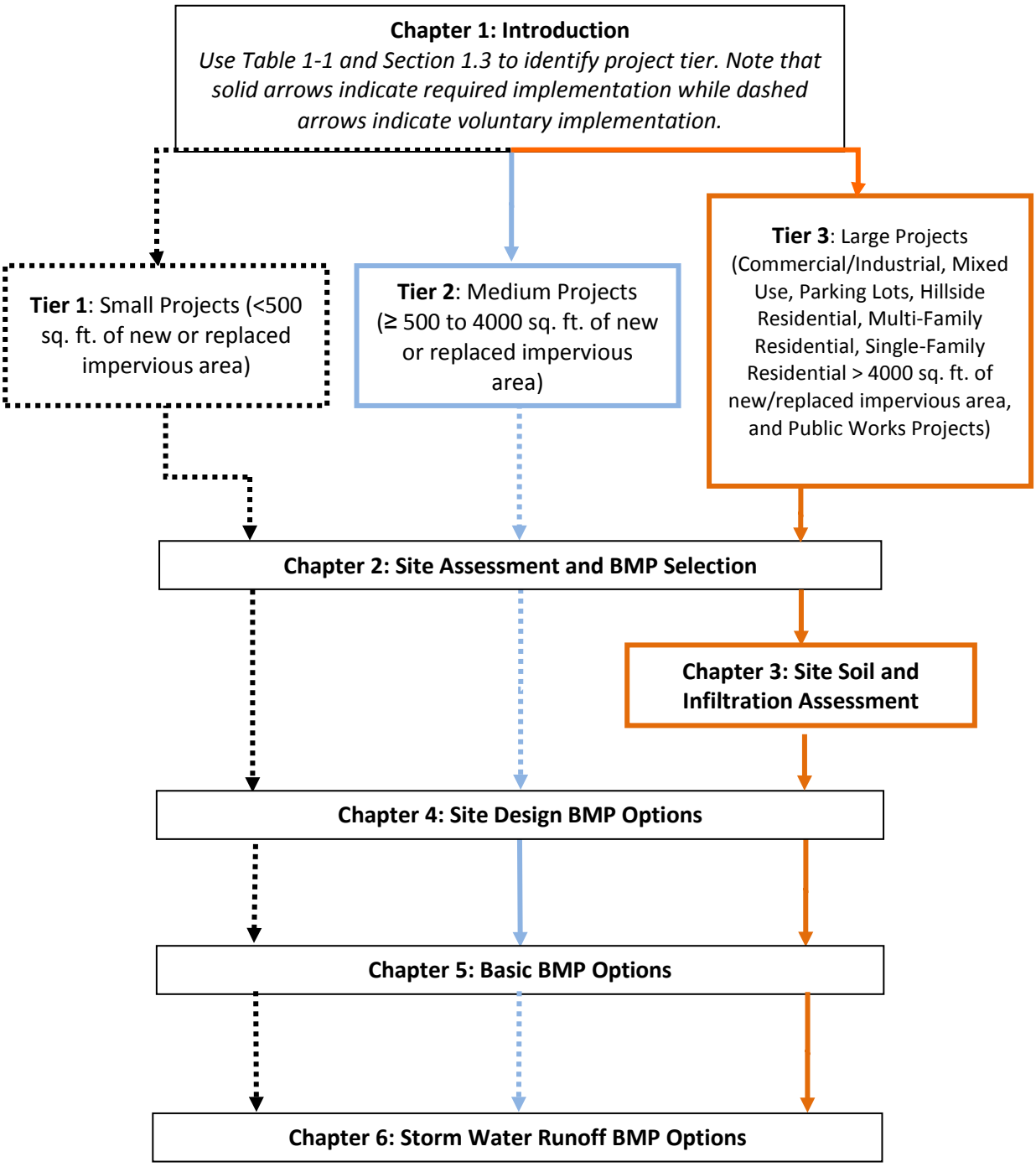

Figure 1-1: Manual Flowchart Based on Project Tier

1.2 Background

1.2.1 Storm Water Management & LID Concepts

The 1948 Federal Water Pollution Control Act was the first major U.S. law addressing water pollution, and initially focused on localized, easily identifiable sources (e.g., discharge of raw sewage or industrial waste) known as *point sources* of water pollution. In 1987, the Clean Water Act was amended by Congress to establish *nonpoint source* management programs, thereby shifting the focus to diffuse sources of water pollution without definite points of entry. Nonpoint sources have a variety of origins, mostly related to land use, such as the runoff from roads, roofs, parking lots, and pervious areas such as lawns, golf courses, and fields that enters the storm water conveyance system (i.e., storm drain inlets and piped connections) in different concentrations and at many locations. Subsurface transport (e.g., septic tank leachfields) and atmospheric deposition also contribute to nonpoint sources of pollution. The U.S. Environmental Protection Agency (U.S. EPA) has determined that pollution transported in precipitation and runoff from urban and agricultural lands is the primary cause of water quality impairment in the United States (U.S. EPA, 2000).

Federal, state, and local laws require the City of Santa Barbara to address local nonpoint sources of water pollution. Under natural conditions, nonpoint sources of water pollution are minimal. Land development creates an increase in impervious surfaces, which increases the amount of nonpoint sources of pollution entering storm water conveyance systems. As storm water runs off impervious surfaces (i.e., rooftops, roads, parking lots, etc.), it:

- Does not infiltrate, which significantly increases runoff volumes and flowrates;
- Moves more quickly, which significantly increases runoff velocities; and
- Entrains (i.e., picks up) pollution, which significantly increases sediment, nutrient, bacteria, and other toxic contaminant concentrations in receiving waters (i.e., local creeks and the ocean).

The impacts of these alterations due to development include:

- Increased concentrations of toxic pollutants and bacteria in surface receiving waters, including beaches near creeks and storm drain outlets.
- Increased flooding due to the increased runoff volumes.
- Decreased wet season groundwater recharge into streams (i.e., baseflows) due to decreased catchment infiltration and increased dry season groundwater recharge into streams due to outdoor irrigation with potable or reclaimed water.
- Similarly, introduction of baseflows in ephemeral streams due to surface discharge of dry weather urban runoff.
- Increased stream and channel bank erosion due to increased runoff volumes and higher stream velocities. Stream channels widen to accommodate and convey the increased volumes. The higher velocities also undercut and scour the banks, removing vegetation and aquatic habitat.

- Increased drinking water treatment requirements due to additional filtering and disinfection needed to cleanse the supply water from surface water sources such as reservoirs and rivers, which carry additional pollutants from land development.
- Increased stream temperature due to loss of riparian vegetation as well as runoff warmed by impervious surfaces, which decreases the dissolved oxygen levels in streams and makes the streams inhospitable to some aquatic life requiring cooler temperatures for survival.

The City of Santa Barbara has separate storm water and sanitary sewer conveyance systems. Everything that enters the storm water conveyance system is transported directly to receiving waters such as local creeks, streams, and the Ocean; it is not treated in a wastewater treatment plant. All untreated storm water runoff from impervious surfaces that drains into streets and enters storm drains directly contributes to nonpoint sources of water pollution. Sediment, pesticides, nutrients, metals, pathogens, hydrocarbons, and trash have been identified as storm water pollutants of concern for the City of Santa Barbara.

Land cover changes that accompany new development and redevelopment projects often increase an area's contribution to storm water runoff through a variety of mechanisms including altering drainage paths, compacting soils, and installing impervious surfaces such as buildings, roads, and parking lots. Reduction of runoff volumes and velocities (or discharge rate) by maintaining the natural hydrology of a site to the maximum extent practicable is an important step in decreasing the storm water pollutants of concern. Traditional treatment methods rely on centralized control and treatment systems that detain and treat, or detain and meter out the runoff volumes to reduce peak discharge rates for flood prevention. However, many of these systems lack the capability to decrease the volume and peak discharge rates enough to eliminate the erosive capabilities and downstream sedimentation that may occur due to the increased runoff volumes and discharge rates, though some may be modified to achieve hydrologic control.

A new strategy, low impact development (LID), is emerging to help deal with these issues. LID is based on designing a site to utilize its inherent natural hydrologic features to reduce the generation of runoff volume, discharge rate, and pollutants and to de-centralize the hydrologic control and treatment systems that handle the runoff that is generated. Combining site design techniques that mimic natural hydrology with smaller systems distributed throughout an area allows for maximum treatment, infiltration, storage, and evapotranspiration (uptake by plants) of runoff. LID also attempts to reduce the amount of impervious area, direct runoff from impervious areas to pervious areas, increase the infiltration and treatment capacity of pervious areas, and lengthen flowpaths between the source of the runoff and where it enters the hydrologic system, thereby increasing the time it takes the runoff to reach a main channel or drain. It is the goal of this Manual to provide guidance for integrating LID practices and principles into a site for preventing the generation of runoff and managing storm water runoff that does occur for all project types.

1.2.2 Benefits of Storm Water Management

The use of LID strategies aids in satisfying hydrologic and water quality regulatory requirements and, at the same time, offers environmental and cost benefits. LID begins at the preliminary site design phase by incorporating site design strategies that mimic natural hydrology, utilizing natural vegetation, and incorporating decentralized post-construction storm water BMPs to

prevent and reduce the hydrologic impacts of development to the maximum extent practicable (MEP). In December 2007, the U.S. EPA published "Reducing Storm water Costs through Low Impact Development (LID) Strategies and Practices." The report analyzed 17 case studies of developments that included LID practices, concluding that LID techniques can reduce project costs in addition to improving environmental performance. It was also found that the range in total capital cost savings was 15 to 80 percent, with a few exceptions where LID project costs exceeded conventional storm water management costs. It was noted that in all cases there were benefits that were not factored into the reported cost reductions. Integrating LID concepts early in the design process allows site designers more flexibility in their design because potential conflicts with other project goals can be identified during initial design rather than after work has begun, which will likely result in a better final product, both functionally and aesthetically. In addition, an LID design approach increases the likelihood that the resulting integration of BMP options will achieve the federally required MEP level of treatment (see Section 1.2.3 for more information on MEP).

1.2.3 Federal and State Storm water Regulations

In 1972, the Clean Water Act prohibited pollutant discharges from point sources into a navigable waterway of the United States unless it was in compliance with a National Pollutant Discharge Elimination System (NPDES) permit. As point sources were identified and pollution control measures were instituted, it became evident that storm water was an additional source of pollution. This led to the 1987 addition of section 402(p) to the Clean Water Act, which required the U.S. EPA to establish phased requirements for storm water discharges under the NPDES program. In 1990, Phase I of the NPDES Storm Water Program was enacted for storm water discharges from ten categories of industrial activity, municipalities serving a population of over 100,000 people with a separate storm sewer system, and construction activity that disturbed 5 acres or more of land. In 1999, Phase II of the NPDES Storm Water Program was promulgated by U.S. EPA, which expanded Phase I by requiring smaller municipalities and smaller construction sites to implement programs for controlling polluted storm water runoff. The Clean Water Act requires that states or the U.S. EPA establish standards for surface water quality, sewage treatment requirements, and wastewater discharge regulations. California assumed responsibility for implementing the Clean Water Act within the state of California.

In California, the Porter-Cologne Act of 1969 granted broad powers to the State Water Resources Control Board (State Board) as well as the Regional Water Quality Control Boards (Regional Water Boards) to govern water quality and water pollution issues to preserve and enhance all beneficial uses of California's water resources (California Environmental Protection Agency, 2006). The Regional Water Boards are also charged with developing water quality basin plans for the protection and enhancement of the State's water resources. In 2003, under Phase II of the NPDES Storm Water Program, the State Board adopted a NPDES Phase II General Permit No. CAS000004 (State General Permit) for the discharge of storm water from small Municipal Separate Storm Sewer Systems (MS4s) (WQ Order No. 2003-0005-DWQ). The City of Santa Barbara is designated as a small MS4 and is currently in the process of obtaining Phase II State General Permit approval. Phase II permittees are required to develop and implement a Storm Water Management Plan/Program (SWMP) with the goal of reducing the discharge of pollutants to the MEP (California Environmental Protection Agency: State Water Resources Control Board, 2006). The City has developed a SWMP, which is currently under review by the Central Coast Water Board. Approval of the City's SWMP by the Central Coast

Water Board is anticipated by October 2008. In addition, the City must also comply with additional requirements set by the Central Coast Water Board and the Santa Barbara County Flood Control and Water Conservation District.

According to the Central Coast Water Board, small MS4 permittees must incorporate LID methodologies into new development and redevelopment ordinances and design standards. They have identified the volume and velocity of storm water discharged from impervious surfaces as causing increased bank erosion and downstream sedimentation, scouring and channel widening, which significantly impact aquatic ecosystems and degrade water quality. Hydrologic and treatment systems that do not address the changes in volume and velocities (discharge rates) of storm water runoff and urban pollutants (including temperature) do not meet the required MEP standards set by the State General Permit. The State Board puts the onus on the permittee for demonstrating that conventional BMPs are equally effective or that they would result in a substantial cost savings while adequately protecting water quality and reducing discharge (runoff) volume and velocity (SWRCB Order No. WQ 2000-11).

1.2.4 Storm Water Management Plan/Program Requirements (Local Storm Water Regulations)

The SWMP includes six minimum control measures that are outlined in the State General Permit. The fifth minimum control measure concerns post-construction storm water management for new development and redevelopment projects. Santa Barbara's SWMP defines post-construction storm water management BMPs as permanent facilities and on-going practices that address long-term storm water quantity and water quality from new development and redevelopment. The creation of this technical guidance document assists the City in implementing the post-construction storm water management minimum control measure of the State General Permit by providing guidance to new development and redevelopment projects for meeting the post-construction storm water BMP requirements as outlined in the City's SWMP. Santa Barbara also has multiple city plans (General Plan and Local Coastal Plan), municipal codes, and design review boards that include policies and permit processes for new development and redevelopment that address storm water management. Refer to the City of Santa Barbara SWMP for additional information.

Post-construction BMP requirements, as described in the SWMP, vary depending on project type. Projects are either required or encouraged to implement a combination of site design, basic BMPs, and storm water runoff BMPs as described in Chapters 4, 5, and 6 of this Manual. Incorporating one or more of these BMP types will reduce storm water runoff volume, discharge rate, and pollutant loads, as well as assist a project site's ability to mimic natural hydrologic conditions. The level at which a site integrates these BMPs will provide greater or lesser reductions in storm water runoff volume, velocity, and pollutant loads.

1.2.5 Local/Regional Coordination & Communication

The City of Santa Barbara's storm water management review is integrated into the existing City process for reviewing development project applications. This review process involves coordination among multiple city departments. The SWMP includes a checklist that aids the different city departments and the project applicant in the coordination efforts needed to implement the SWMP requirements for post-construction storm water BMPs. This checklist is referred to as the City of Santa Barbara Development Application Review Team (DART) SWMP Checklist. The checklist facilitates each department's review by providing space for each of the

departments to review applicable sections of the application. There are ten sections under the post-construction storm water BMP portion of the checklist. These ten sections each represent a portion of the requirements for implementation of BMPs and are each assigned to applicable departments. For example, one requirement is the protection of slopes and channels, which requires approval by multiple departments (Planning, Building, Public Works, and Creeks), each based on their own criteria.

1.3 City of Santa Barbara Post-Construction Storm Water Management Requirements (as defined in the SWMP)

New development and redevelopment projects within the City of Santa Barbara are subject to various levels of permitting based on whether they require discretionary[1] or ministerial[2] permit approval. In general, discretionary permit approval is reserved for projects that include:

- annexations,
- specific plans,
- general plan land use designation amendments and zone changes,
- subdivision and lot line adjustments,
- conditional use permits,
- coastal development,
- development and site plans (e.g., commercial/industrial, mixed use, multi-family residential, parking lots, etc.), and
- land use conversions, variances, and modifications.

Discretionary projects vary in size and, while generally reserved for larger projects (greater than one acre as mandated by the State General Permit), the City of Santa Barbara has many discretionary projects that are smaller than one acre. All discretionary review projects in the City of Santa Barbara, regardless of size or land use type, receive extensive development review, may require preparation of an environmental document pursuant to the California Environmental Quality Act (CEQA), and receive detailed conditions of approval for storm water management, as applicable. Discretionary projects are also subject to subsequent design review and ministerial approval. Ministerial projects are projects that do not involve the types of permits identified under discretionary projects. Ministerial projects, which are mostly smaller projects (e.g., single-family residential projects), are not subject to the intensive discretionary review process but may be subject to design review and ministerial approval based on design guidelines, city plans, and ordinances. Similar to the review requirements, post-construction storm water requirements vary by project type.

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[1] **Discretionary:** an action which requires the exercise of judgment or deliberation during the decision-making process, as distinguished from situations where the City is limited to a determination of conformity with applicable statues, ordinances or regulations.

[2] **Ministerial:** a governmental decision involving little or no subjective judgment or discretion as to the wisdom or manner of carrying out the project; a ministerial decision involves only the use of fixed standards or objective measurements.

1.4 Project Tiers

Three project tiers, identified below, require different levels of post-construction storm water BMP implementation for both new development[3] and redevelopment[4] projects (see Table 1-1). Tier 1 (Small Projects) is the only category where post-construction storm water BMP implementation is completely voluntary. Tier 1 includes small (usually ministerial) projects that will be developing or redeveloping less than 500 square feet of impervious[5] area, and do not require Planning Commission (PC) review. Tier 2 (Medium Projects) include:

- All single-family residence projects involving between 500 and 4000 square feet of new or redeveloped impervious area, other than hillside residential projects, if no PC review is required;
- All multi family residence projects, 4 units or less, involving between 500 and 4000 square feet of new or redeveloped impervious area, if no PC review is required;
- All condo conversions involving 4 units or less;
- All commercial and residential reroofing projects involving between 500 and 4,000 square feet

Tier 2 projects are required to demonstrate the use of basic storm water BMPs as outlined in Chapter 5, but are not required to meet the more extensive storm water management requirements contained in Chapter 6. Tier 3 (Large Projects) include all discretionary projects that are not included in Tier 1 or 2, with the exception of minor discretionary projects identified in Appendix J. Tier 3 projects are required to implement a combination of site design, basic BMPs, and storm water runoff BMPs (Chapters 2 through 6) to meet the City's storm water runoff requirements (i.e., reductions in runoff volume, peak discharge, and pollutant loads) as outlined by the City's SWMP and as described in Section 6.2.

1.4.1 Requirements by Tier

- Tier 3 (Large projects) have the greatest number of SWMP requirements for project approval related to post-construction storm water management. Tier 3 projects must submit a design review application, including all associated documentation as required

[3] **New Development**: **New** development activity that includes construction, site alteration (e.g., paving, grading, excavating, filling, or clearing) or installation of structures, parking, storage facilities or other impervious surfaces.

[4] **Redevelopment**: Development activity that **replaces** existing structures, parking, storage facilities, or other impervious surfaces with an equivalent area of new impervious surfaces, and/or **expands** existing structures, parking or storage facilities by adding new impervious surfaces. Interior remodeling projects and tenant improvements are not considered to be redevelopment.

[5] **Impervious Surface / Area**: A hard surface area that either prevents or significantly retards the entry of water into the soil mantle compared to the predevelopment condition. A hard surface area that causes water to run off the surface in greater quantities or at an increased rate of flow from the predevelopment flow. Common impervious surfaces include, but are not limited to, rooftops, walkways, patios, driveways, parking lots or storage areas, concrete or asphalt paving, packed earthen materials, and oiled, macadam or other surfaces, which similarly impede the natural infiltration of storm water. Open, uncovered retention/detention facilities shall not be considered as impervious surfaces.

by the application and checklist, and applicants must review the DART SWMP Checklist (Appendix L) with City staff. As shown in Table 1-1, Tier 3 is required to use and implement practices and methodologies from Chapters 2 - 6 in this Manual (or some other BMP design(s) that is appropriate for the site and attains the storm water runoff requirements outlined in the SWMP (also included in Section 6.2 of this Manual). The chapters are arranged in the order in which they should be used. This means that site and soil assessments should be conducted before the selection of BMPs is possible. How many BMPs are implemented into a project depends on the site and soil assessments (Chapters 2 and 3), and what site design BMPs (Chapter 4), basic BMPs (Chapter 5), and storm water runoff BMPs (Chapter 6) are appropriate for the project site to attain the storm water runoff requirements. For some projects, implementing one BMP will meet the requirements and thereby be sufficient. For others, multiple BMPs may be more appropriate and protective of water quality. For information on the benefits of combining multiple storm water BMPs see Section 4.8.

- Tier 2 projects require the submission of a simple site plan. As shown in Table 1-1, Tier 2 projects are required to use and implement one or more practices and methodologies from Chapter 5. The basic BMPs in Chapter 5 are only required for Tier 2 if the project applicant has to obtain a permit from the City. The more elaborate BMPs described in Chapters 4 and 6 are voluntary, but encouraged.
- Tier 1 projects are encouraged to implement appropriate storm water BMPs, such as the site design recommendations from Chapter 5, but no action is required.

Table 1-1: Post-Construction Project Tiers

Tiers	Project Type	Requirement	Applicable Report Chapters				
			Chapter 2: Site Assessment and BMP Selection	Chapter 3: Site Soil and Infiltration Assessment	Chapter 4: Site Design BMP Options	Chapter 5: Basic BMP Options	Chapter 6: Storm Water Runoff BMP Options
Tier 1 (Voluntary)	SMALL PROJECTS[1] (Projects with < 500 sq. ft. of new or replaced impervious area)	Voluntary use of site design, basic, and/or storm water runoff BMP options	▼	▼	▼	▼	▼
Tier 2 (Basic Requirements)	MEDIUM PROJECTS[1] (Projects with 500 to 4000 sq.ft. of new or replaced impervious area)	Select and implement Basic BMP option(s) and identify on the Site Plan	▼	▼	▼	✓	▼
Tier 3 (Storm Water Runoff Requirements)	LARGE PROJECTS[1] (Commercial, Residential > 4000 sq. ft. of new or replaced impervious area, Mixed Use, Parking Lots 10 or more spaces, Hillside Residential, and Public Works Projects)[2]	Meet the *Storm Water Runoff Requirements*[3] through site design, basic BMPs, and storm water runoff BMP options	✓	✓	✓	✓	✓

[1] Small, Medium, Large projects more specifically defined in Section 1.4

[2] Exemptions outlined in Appendix J.

[3] The *Storm Water Runoff Requirements* as defined in the City's SWMP (and Chapter 6 of this Manual).

Required	Voluntary
✓	▼

1.5 How to Use This Manual

The purpose of this section is to assist the user in navigating the Manual to find information pertinent to the tier of the proposed project (See Figure 1.1).

The following provides a summary of the contents of Chapters 2-6 and the appendices.

Chapter 2: Site Assessment and BMP Selection, discusses the process for assessing a site's conditions and constraints, and selecting appropriate BMPs based on the project's tier requirements, pollutants of concern, and site conditions.

Chapter 3: Soil Assessment Methods, discusses: (1) the level of soil assessment needed for Tier 3 projects, (2) who should conduct the assessment, (3) the goals of a preliminary site investigation, and (4) the steps involved in test pit investigations and infiltration/permeability tests.

Chapter 4: Site Design BMP Options, introduces the objectives and process of site design, identifies specific site design options, and presents issues to consider when implementing site design principles. This chapter also provides some examples of how site design practices can be implemented for different project types (e.g., single-family residential vs. commercial). Chapter 4 is required for Tier 3 projects and is voluntary for Tier 1 and Tier 2 projects.

Chapter 5: Basic BMP Options, provides guidance for selecting and implementing appropriate basic BMPs for mitigating runoff from new and redeveloped impervious surfaces. Basic BMPs are required for Tier 2 projects. Basic BMPs alone cannot be used to meet the storm water runoff requirements for Tier 3 projects, although they do assist in reducing storm water runoff volumes, discharge rates, and pollutant loadings. Chapter 5 contains practical, user-friendly BMP factsheets for each of the basic BMP options. See Table 5-1 for a basic BMP comparison matrix that assists users in identifying basic BMPs appropriate for a project's specific site conditions and tier.

Chapter 6: Storm Water Runoff BMP Options, provides guidance to new development and redevelopment Tier 3 projects for selecting, sizing, designing, implementing, and maintaining storm water runoff BMPs that meet the storm water runoff requirements set forth by the City's SWMP (and outlined in Section 6.2). Chapter 6 contains BMP factsheets and engineering design details for a series of storm water runoff BMP options grouped into BMP type categories. Chapter 6, along with Appendix D, provides example sizing and design calculations for the different BMP options. See Table 6-2 for a storm water runoff BMP selection matrix that assists users in identifying storm water runoff BMPs appropriate for a project's specific site conditions and meeting the project's specific storm water runoff requirements.

Appendix A: Glossary of Terms - defines terms used in this Manual.

Appendix B: Site Conditions Maps - includes maps of the Santa Barbara area with soil types, slopes, special hillside/coastal bluff districts, and floodplain areas.

Appendix C: BMP Sizing Methodologies - explains the BMP sizing methodologies for meeting the storm water runoff requirements as outlined in Section 6.2.

Appendix D: BMP Design Examples - includes example calculations for sizing and designing Tier 3 storm water runoff BMPs.

Appendix E: Pond Outlet Sizing Examples – provides example sizing and design calculations for different pond outlet design types.

Appendix F: Flow Splitter Design Specifications – provides specifications for sizing and designing flow splitters for off-line BMPs.

Appendix G: Plant List - provides a (mostly) native plant list for vegetated BMPs described in Chapter 5 and 6.

Appendix H: Facility Inspection Checklists - provides inspection checklists for the storm water runoff BMPs provided in Chapter 6.

Appendix I: Maintenance Agreements - presents sample maintenance agreements for ensuring long-term maintenance of private Tier 3 storm water runoff BMPs.

Appendix J: List of Discretionary Projects Exempt from Tier 3 Requirements – provides a list of exempt minor discretionary project types.

Appendix K: DART SWMP Checklist – A copy of the Santa Barbara Development Application Review Team (DART) SWMP Checklist.