5 Combined Sewer Area Performance Requirements

To improve stormwater management across San Francisco's combined sewer areas, the City of San Francisco requires all projects creating and/or replacing 5,000 square feet or more of impervious surface to comply with stormwater management requirements and to submit a Stormwater Control Plan.

The primary reason for implementing post-construction stormwater controls in combined sewer areas is to reduce and delay the volumes and peak flows of stormwater reaching the sewer system. Reducing these volumes and flows can help to reduce combined sewer discharge volume, decrease flooding, and protect water quality. This chapter describes the stormwater performance requirements for projects constructed in combined sewer areas.

Pre-Development Conditions

The SFPUC and Port interpret the term "pre-development" to be the existing conditions on the site before construction of the proposed development project. "Pre-development" is not the natural condition of the site prior to human development. For project sites where demolition has occurred before initiation of the current development project, the pre-development condition is defined as the most recent **active** land use.

Changes in Performance Requirements for Combined Sewer Areas | 2010 to 2016

The 2016 performance requirements for projects within the combined sewer area contain two key differences from the 2010 performance requirements:

1. The threshold at which projects must comply with the SMR has been redefined. In the 2010 *Guidelines*, projects **disturbing 5,000 square feet or more of the ground surface** were subject to the requirements. In the 2016 SMR, the threshold has been revised to projects **creating and/or replacing 5,000 square feet or more of impervious surface**.
2. The 2016 SMR includes Modified Compliance for eligible projects. This option was not available in the 2010 *Guidelines*.

Applicability Dates

The 2010 *Guidelines* performance requirements apply to projects for which a Preliminary SCP was submitted before May 27, 2016. The 2016 SMR performance requirements apply to projects with Preliminary SCPs submitted on or after May 27, 2016.

Combined Sewer Area Performance Requirements

In areas served by the combined sewer system, new or redevelopment projects that create and/or replace 5,000 square feet or more of impervious surface must manage the flow rate and volume of stormwater discharging to the combined sewer system. The combined sewer system performance requirements are divided into two cases based on existing site imperviousness:

- **Case 1:** Projects with existing imperviousness of less than or equal to 50 percent must maintain a stormwater runoff rate and volume at or below pre-development conditions for the 1- and 2-year, 24-hour design storms.
- **Case 2:** Projects with existing imperviousness of greater than 50 percent must reduce the stormwater runoff rate and volume by 25 percent relative to pre-development conditions for the 2-year, 24-hour design storm.

Under certain conditions right-of-way (ROW) projects must comply with the Stormwater Management Requirements (SMR), as described in *Chapter 7: Stormwater Management Requirements in the Streets*.

Activities that create or replace impervious surface include, but are not limited to, the construction, modification, conversion, or alteration of any building or structure and the creation or replacement of outdoor impervious surfaces such as parking areas, driveways, or private street areas.

The SMR does *not* apply to the following activities:

- pavement maintenance activities such as top-layer asphalt grinding and repaving within the existing footprint;
- replacement of existing sidewalks and streets dedicated to and accepted by the City;
- interior remodeling projects;
- re-roofing;
- exterior wall surface replacement; or
- utility repair work requiring trenching or excavation with in-kind surface replacement.

Impervious Surface

The San Francisco Public Utilities Commission (SFPUC) and Port of San Francisco (Port) define an "impervious surface" as a surface that prevents the land's natural ability to absorb and infiltrate rainfall or stormwater. Impervious surfaces include, but are not limited to; building or structures, roof tops, impervious concrete and asphalt, and any other continuous watertight pavement or covering. Landscaped soil and pervious pavement, including pavers with pervious openings and seams, underlain with pervious soil or pervious storage material, are not impervious surfaces.

For the purpose of determining whether a project is subject to the SMR, surfaces that are traditionally impervious, including the entire building footprint and paved or hardscape areas, are included in the summation of created and/or replaced impervious surface. This is to ensure that all stormwater management BMPs (including green roofs and permeable pavement) undergo design review and are included in long-term maintenance agreements.

Basis of Combined Sewer Area Performance Requirements

The performance requirements for combined sewer areas are based upon the stormwater requirements from Sustainable Sites Credit 6.1 "Stormwater Design: Quantity Control" in *LEED version 2.2 for New Construction and Major Renovation*. Coordinating the SMR performance requirements with LEED credits allows the development community to achieve two goals by meeting one performance requirement (i.e. meet the SMR and receive LEED points). The SMR performance requirements remain valid for *LEED version 2009* points, but do not directly correlate with *LEED version 4*. Further information regarding LEED credit requirements is presented in *Chapter 8: Green Building Certification Requirements*.

LID Principles and Strategies

The San Francisco Public Utilities Commission (SFPUC) recommends that design teams consider the Low Impact Design (LID) Principles and Strategies, presented in *Chapter 4: Green Infrastructure Design Approach*, when developing the stormwater management approach for their sites. The five LID Principles and Strategies include preserving and protecting creeks, wetlands, existing vegetation, and other wildlife habitat; incorporating existing drainage patterns, soil conditions, and geology into the site design; minimizing and disconnecting impervious surfaces; treating stormwater at its source; and treating stormwater as a resource, not a waste product.

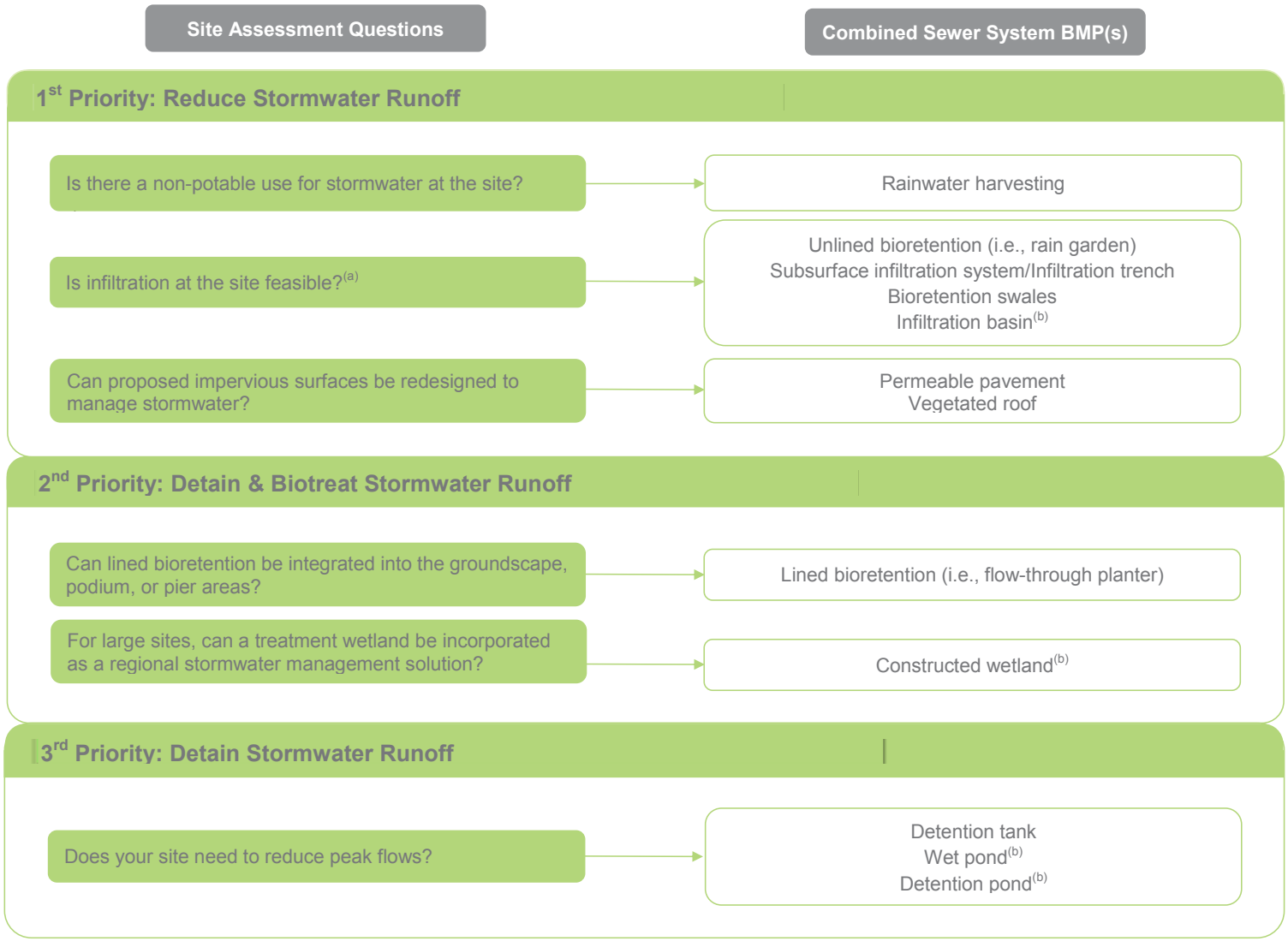
Bioretention in an industrial area of San Francisco. Photo: Krystal Zamora

Preferred BMP Selection

When selecting BMPs to meet the performance requirements, the SFPUC and Port encourage design teams in combined sewer areas to use the Combined Sewer Area BMP Hierarchy (Figure 7). The Combined Sewer Area BMP Hierarchy presents a process for selecting BMPs that prioritizes reuse (rainwater harvesting), infiltration, and vegetated roofs. However, for some sites in San Francisco's combined sewer areas, reuse, infiltration, or vegetated roofs may not be feasible when the following conditions are present:

- Little to no demand for non-potable water (rainwater harvesting); and
- Documented high concentrations of pollutants in underlying soil or groundwater, preventing infiltration; or
- Potential geotechnical hazard that could be exacerbated by infiltration; or
- Being located on elevated structures, such as piers over water, causing infiltration to be infeasible.

In such cases, bioretention facilities that include an impermeable liner and an underdrain at the bottom of the storage layer (a configuration commonly known as a "flow-through planter") may be used. If none of these BMPs are feasible on site, projects in combined sewer areas should then consider detention-based BMPs that do not incorporate biotreatment (i.e. detention tanks and ponds). All stormwater controls used for compliance with the SMR must be located on a parcel, unless a project applies for Modified Compliance or triggers the combined sewer area ROW requirements outlined on in *Chapter 7: Stormwater Management Requirements in the Streets*.



Notes:
(a) For information on infiltration constraints and feasibility refer to Appendix C: Infiltration Guidance.
(b) Typically appropriate for large or multi-parcel sites.

Figure 7. *Combined Sewer Area BMP Hierarchy*

Modified Compliance

In 2014, the SFPUC initiated a Modified Compliance Program for the combined sewer area to allow projects with proven site challenges to comply with the SMR via modified stormwater control performance requirements or the use of BMPs in adjacent public sidewalks to meet standard performance requirements. The Modified Compliance Program was developed based on feedback from the development and design community, research and modeling by the SFPUC, and coordination with the San Francisco Planning and Urban Research Association (SPUR). Table 2 provides more information on the eligibility and compliance options of the Modified Compliance Program. Modified Compliance Program materials are available on the SFPUC website at www.sfwater.org/smr.

Table 2. The Modified Compliance Program

Eligibility

- Applies only to Case 2 projects (sites with existing imperviousness of greater than 50 percent) served by the combined sewer system
- Requires evaluation of site constraints, including high groundwater, shallow depth to bedrock, poorly infiltrating soils, contamination, and presence of zero lot line conditions (buildings that extend to the property lines)
- Requires evaluation of project potential for rainwater harvesting
- Requires the submittal of a Modified Compliance Application (available at www.sfwater.org/smr) documenting these evaluations **prior** to submittal of Preliminary SCP.

Outcomes

Eligible projects may meet SMR requirements via:

- **Modification of performance requirements**: Allowed decrease in volume reduction requirements (to a minimum of 10%) and required increase in peak rate reduction requirements at a 1:1 ratio (to a maximum of 40%). For example, if the volume reduction requirement is decreased from 25% to 20%, the required peak flow reduction increases from 25% to 30%.

  OR

- **BMPs in adjacent public sidewalk**: The use of stormwater BMPs in the adjacent public right-of-way (i.e. sidewalks) to comply with standard Combined Sewer Area performance requirements.

Modified Compliance was allowed for this multi-use building in the Mission District of San Francisco, which was constrained by Type D soils. Lined bioretention planters and rainwater harvesting were implemented to achieve the modified performance requirements Photo: Krystal Zamora