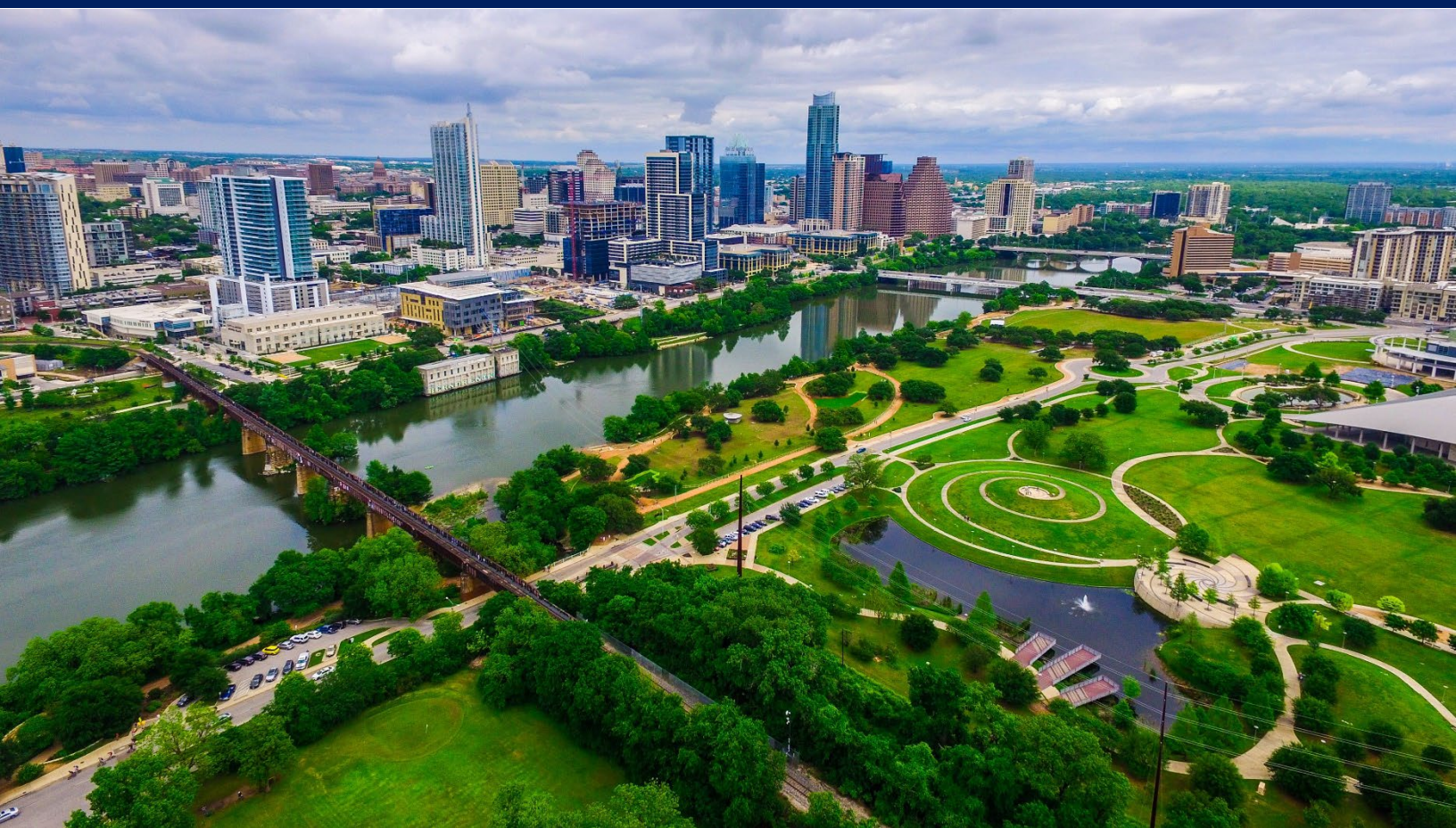


COMPENDIUM OF MS4 PERMITTING APPROACHES



PART 7: OFF-SITE STORMWATER MANAGEMENT



Office of Wastewater Management
Water Permits Division
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Abbreviations

BMP	best management practice
EPA	U.S. Environmental Protection Agency
LID	low impact development
MS4	municipal separate storm sewer system
NPDES	National Pollutant Discharge Elimination System
USGS	United States Geological Survey

1 Introduction

Many states and localities have developed performance or design standards for managing post-construction stormwater discharges from new development and redevelopment projects. In some instances, project developers may not be able to achieve these standards within the boundaries of the new development or redevelopment site. Off-site stormwater management provides a way for project operators to meet these performance standards at a location outside the right-of-way or limit of the area of development. It provides regulatory flexibility for project developers to meet their local stormwater requirements without having to seek a waiver exempting them from those requirements.

This compendium presents examples illustrating how municipal separate storm sewer system (MS4) permits can be written to allow for off-site stormwater management. The compendium provides excerpts of permitting language from a variety of current state-issued and EPA-issued MS4 permits. These excerpts can serve as a road map for permitting authorities and permittees that are interested in incorporating off-site stormwater management into permitting programs. To develop this compendium, EPA reviewed final individual and general National Pollutant Discharge Elimination System (NPDES) MS4 permits issued through October 2022.

This compendium is part of a [series of compendia](#) of MS4 permit excerpts and is intended to serve as a snapshot of permit provisions. As permits are reissued or revised, EPA may update this compendium to include more recent examples and new information. EPA also welcomes input on this compendium and expects to update it as appropriate based on the comments received. EPA notes that the inclusion of any particular permit example should not be read as an endorsement of the entire approach taken in that permit, nor should it be read as EPA's independent determination that the permit terms meet the Phase I and/or Phase II MS4 requirements.

In addition, this document does not impose any legally binding requirements on EPA, states, or the regulated community and does not confer legal rights or impose legal obligations upon any member of the public. EPA made every attempt to ensure the accuracy of the examples included in this document. In the event of a conflict or inconsistency between this compendium and any statute, regulation, or permit, it is the statute, regulation, or permit that governs, not this compendium. For more information about the NPDES Stormwater Program, visit www.epa.gov/npdes/stormwater.

1.1 Background

EPA uses the term “off-site stormwater management” to describe approaches that meet performance standards for post-construction stormwater discharges in a location other than where the development is occurring. Project sites can present a number of challenges that make installing stormwater controls or meeting performance standards difficult or infeasible. These challenges can include space constraints, buried utilities, steep slopes, and soils with insufficient infiltration. Off-site stormwater management programs may require that projects demonstrate such challenges to be eligible to use off-site stormwater management. Off-site stormwater management programs can employ a variety of mechanisms, including but not limited to:

- Meeting stormwater performance and/or design standards at a location outside the project boundary (sometimes called “off-site mitigation”).
- Stormwater credit trading or purchasing systems.
- In-lieu fees paid to support municipal or regional stormwater management projects.

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- Constructing groundwater recharge projects at a location outside of the project boundary.

Allowing off-site stormwater management can provide numerous benefits, such as increasing regulatory flexibility and reducing the use of waivers that exempt projects from meeting stormwater requirements; improving the quality of local waterways by ensuring that numeric performance standards are met; creating opportunities to implement stormwater management throughout the community; and providing more efficient and cost-effective stormwater management alternatives. More information on off-site stormwater management is available at www.epa.gov/npdes/alternative-site-stormwater-management.

Regulated MS4s may be covered under Phase I or Phase II MS4 rules. Phase I MS4 permittees are typically covered by individual permits and can include multiple co-permittees. Most Phase II MS4 permittees are covered under general permits. Occasionally, MS4s may have permit coverage under a watershed permit or cross-jurisdictional permit. A watershed permit is a general permit covering the geographic bounds of a watershed. This compendium provides examples of both Phase I and Phase II MS4 permittees with coverage under a watershed permit. *Cross-jurisdictional permit* is a term used in this compendium to describe an individual MS4 permit covering more than one municipality. The cross-jurisdictional permit examples provided in this compendium are for Phase I MS4s.

When reviewing permit language, EPA searched for examples that were “clear, specific, and measurable” in accordance with 40 CFR 122.34(a) and the MS4 General Permit Remand Rule (81 FR 89320). The permits reviewed either require the permittee to implement an off-site stormwater management program or provide that option (i.e., mandatory implementation or optional implementation). Permits in which implementation is optional often include words such as *can* or *may*. This type of non-specific language is typically not “clear, specific, and measurable”; however, these optional provisions have been included in this compendium due to the nature of off-site stormwater management as a voluntary flexibility. Note that the use of *can* or *may* applies to the option to adopt a voluntary off-site stormwater management program and not to the requirements associated with developing, implementing, and enforcing an off-site stormwater program itself.

EPA reviewed a sample of individual, general, cross-jurisdictional, and watershed MS4 permits from all 10 EPA Regions. The permit excerpts featured in this compendium (see Figure 1) all contain off-site stormwater management requirements, including some that could satisfy the regulatory requirement for “clear, specific, and measurable” permit terms and conditions. These examples aim to showcase the diverse types of off-site stormwater management requirements being used in MS4 permits and to serve as a reference for permit writers.

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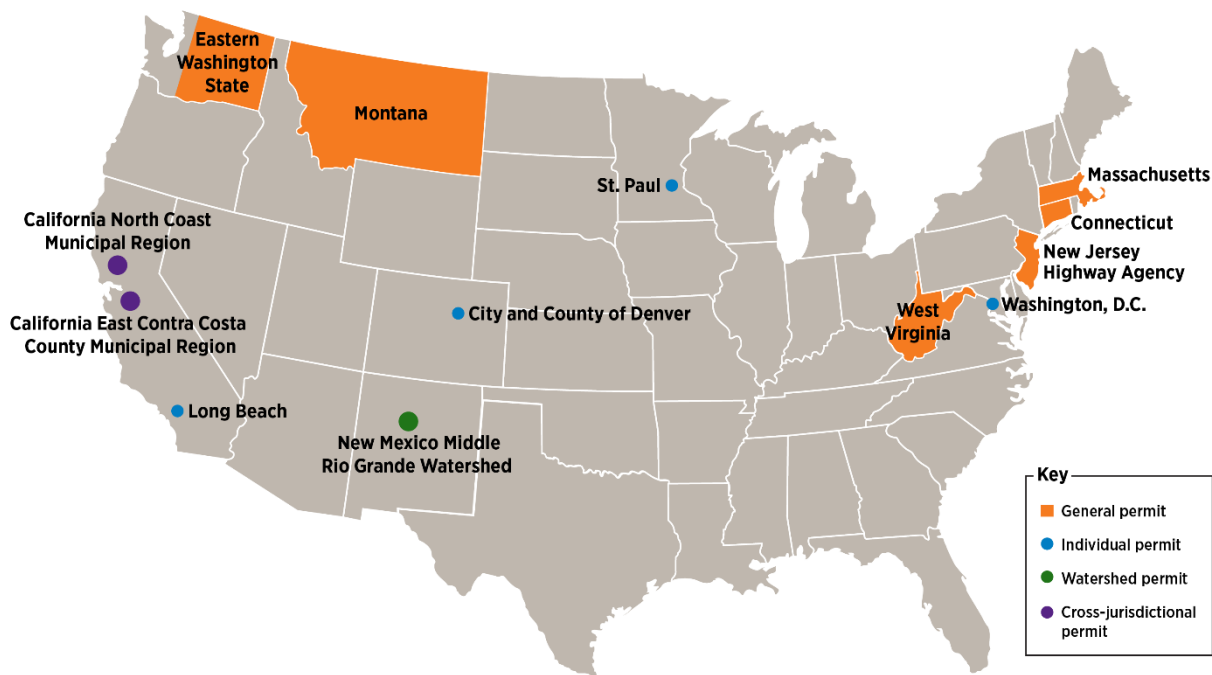


Figure 1. Map of permit excerpts included in the compendium.

1.2 Getting Started

Each section of this compendium presents examples of how off-site stormwater management requirements are incorporated into permits. To make it easier for permit writers to find relevant material, permit examples are grouped by topic areas in the sections that follow:

[Requirements for Using Off-Site Stormwater Management](#)

[Developing an Off-Site Stormwater Management Program](#)

[Off-Site Stormwater Management Outside the Boundaries of a Project Site](#)

[Credit Systems](#)

[In-Lieu Fees](#)

[Groundwater Recharge](#)

[Tracking](#)

Each section provides one or more examples of permits with off-site stormwater management requirements. Each example includes a summary of the permit type and conditions, a regulatory reference indicating where the permit language was excerpted from, and the direct excerpt of the permit language (see general format in the box below).

1 Introduction

City, State Permit Type

Brief summary of permit.

Regulatory Reference

Direct excerpt of permit language.

For all examples, the excerpt language is quoted directly, and full text is available in the referenced permit. Note that some permits use alternate terms or multiple terms to reference off-site stormwater management. Explanatory text uses the term *off-site stormwater management*, and alternate terms are identified prior to each excerpt.

A number of the excerpts included in this compendium are also included in the [Post Construction Standards compendium](#), which presents permit requirements for post-construction stormwater discharges and focuses on numeric performance and/or design standards, and in the [Green Infrastructure compendium](#), which presents permit requirements for encouraging or requiring the use of green infrastructure in post-construction stormwater management.

1 Introduction

The compendium includes excerpts from the following MS4 permits:

MS4 Permit	Effective Date	Off-Site Stormwater Management Program Required by Permit?	Topics Covered
Region 1			
Connecticut Phase II Permit	7/1/2017	Yes	<ul style="list-style-type: none"> Requirements for using off-site stormwater management Off-site stormwater management outside the boundaries of a project site
Massachusetts Phase II Permit	1/6/2021 (modified)	Yes	<ul style="list-style-type: none"> Off-site stormwater management outside the boundaries of a project site
Region 2			
New Jersey, R12 – Highway Agency Phase II Permit	1/1/2020	No	<ul style="list-style-type: none"> Off-site stormwater management outside the boundaries of a project site
Region 3			
Washington, District of Columbia, Phase I Permit	6/22/2018	Yes	<ul style="list-style-type: none"> Developing an off-site stormwater management program Credit systems Tracking
West Virginia Phase II Permit	8/11/2014	Yes	<ul style="list-style-type: none"> Requirements for using off-site stormwater management Developing an off-site stormwater management program Off-site stormwater management outside the boundaries of a project site In-lieu fees Tracking
Region 5			
St. Paul, Minnesota, Phase I Permit	7/12/2018	Yes	<ul style="list-style-type: none"> Off-site stormwater management outside the boundaries of a project site In-lieu fees

1 Introduction

MS4 Permit	Effective Date	Off-Site Stormwater Management Program Required by Permit?	Topics Covered
Region 6			
<u>New Mexico Middle Rio Grande Watershed Permit</u>	12/22/2014	Yes	<ul style="list-style-type: none"> • Requirements for using off-site stormwater management • Developing an off-site stormwater management program • Off-site stormwater management outside the boundaries of a project site • In-lieu fees • Groundwater recharge
Region 8			
<u>City and County of Denver, Colorado, Phase I Permit</u>	4/1/2021 (modified)	Yes	<ul style="list-style-type: none"> • Requirements for using off-site stormwater management • Off-site stormwater management outside the boundaries of a project site
<u>Montana Phase II Permit</u>	4/1/2022	No	<ul style="list-style-type: none"> • Requirements for using off-site stormwater management • Off-site stormwater management outside the boundaries of a project site • Tracking
Region 9			
<u>California East Contra Costa County Municipal Stormwater Permit</u>	9/23/2010	No	<ul style="list-style-type: none"> • Developing an off-site stormwater management program • Off-site stormwater management outside the boundaries of a project site • In-lieu fees
<u>California North Coast Regional Municipal Stormwater Permit</u>	1/6/2016	Yes	<ul style="list-style-type: none"> • Developing an off-site stormwater management program

1 Introduction

MS4 Permit	Effective Date	Off-Site Stormwater Management Program Required by Permit?	Topics Covered
Long Beach, California, Phase I Permit	9/8/2016 (amended)	No	<ul style="list-style-type: none"> • Requirements for using off-site stormwater management • Developing an off-site stormwater management program • Off-site stormwater management outside the boundaries of a project site • Groundwater recharge
Region 10			
Eastern Washington Phase II Permit	8/1/2019	No	<ul style="list-style-type: none"> • Requirements for using off-site stormwater management

2 Requirements for Using Off-Site Stormwater Management

As demonstrated in the permit excerpts below, off-site stormwater management programs sometimes require that projects demonstrate the technical infeasibility of meeting stormwater management requirements on site. Examples of justifications for technical infeasibility include site characteristics, conflicts with other regulatory requirements, site constraints at linear construction projects, historic areas, proximity to drinking water resources, and proximity to known pollutant hot spots. Several of the permit excerpts also require that the determination of technical infeasibility be conducted and endorsed by a technical professional. Permits and programs are not required to include criteria that projects must meet before using off-site stormwater management, and many of the permits included in this compendium do not have such requirements.

California North Coast Regional Municipal Stormwater Permit

The California Regional Water Quality Control Board issued a cross-jurisdictional Phase I MS4 individual permit covering stormwater discharges from the cities of Cloverdale, Cotati, Healdsburg, Rohnert Park, Santa Rosa, Sebastopol, and Ukiah, as well as from Sonoma County, the Sonoma County Water Agency, and the town of Windsor. The permit includes a requirement for each co-permittee's off-site stormwater management program to describe the criteria for eligibility. Note that this permit refers to off-site stormwater management as "offset mitigation."

Section VI.D.9.a.i Excerpt

- i. The offset mitigation program shall describe the criteria in which a project is deemed eligible for offset mitigation. Technical infeasibility criteria must be consistent with section VI.D.3.c.ii.a)1-4.

Long Beach, California, Phase I Permit

The California Regional Water Quality Control Board issued a Phase I MS4 individual permit that includes a requirement for the project applicant to demonstrate the technical infeasibility of full on-site stormwater management by submitting a site-specific analysis conducted and endorsed by a technical professional. Note that this permit refers to off-site stormwater management as "alternative compliance."

Part VII.J.4.ii Excerpt

Alternative Compliance for Technical Infeasibility or Opportunity for Regional Ground Water Replenishment

...

- (2) To demonstrate technical infeasibility, the project applicant must demonstrate that the project cannot reliably retain 100 percent of the SWQDv on-site, even with the maximum application of green roofs and rainwater harvest and use, and that compliance with the applicable postconstruction requirements would be technically infeasible by submitting a site-specific hydrologic and/or design analysis conducted and endorsed by a registered professional

2 Requirements for Using Off-Site Stormwater Management

engineer, geologist, architect, and/or landscape architect. Technical infeasibility may result from conditions including the following:

- (a) The infiltration rate of saturated in-situ soils is less than 0.3 inch per hour and it is not technically feasible to amend the in-situ soils to attain an infiltration rate necessary to achieve reliable performance of infiltration or bioretention BMPs in retaining the SWQDv on-site.
- (b) Locations where seasonal high ground water is within 5 to 10 feet of the surface,
- (c) Locations within 100 feet of a ground water well used for drinking water,
- (d) Brownfield development sites where infiltration poses a risk of causing pollutant mobilization,
- (e) Other locations where pollutant mobilization is a documented concern¹⁹
- (f) Locations with potential geotechnical hazards, or
- (g) Smart growth and infill or redevelopment locations where the density and/ or nature of the project would create significant difficulty for compliance with the on-site volume retention requirement.

...

¹⁹ Pollutant mobilization is considered a documented concern at or near properties that are contaminated or store hazardous substances underground.

City and County of Denver, Colorado, Phase I Permit

The Colorado Department of Public Health and Environment issued a Phase I MS4 individual permit that includes a requirement for redevelopment sites using off-site stormwater management to demonstrate technical infeasibility through a site-specific analysis conducted and endorsed by a technical professional.

Part I.E.4.a.iv.(G)1) Excerpt

The applicable redevelopment site must meet the following conditions:

- (a) At least 20 percent of the applicable redevelopment site must drain to control measures that meet the design standards for Water Quality Capture Volume Standard, Pollutant Removal Standard, or Runoff Reduction Standard.
 - (i) Non-structural control measures such as street/parking lot sweeping may be used alone or in combination to demonstrate equivalent runoff reduction for the Pollutant Removal Standard in Part I.E.4.a.iv.(B). The demonstration must be based on scientific literature, and must include documentation that the:
 - (A) expected pollutant discharge conditions that would be present for the redevelopment area in the absence of the additional control measures implemented to meet this part, account for control measures that would

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otherwise be implemented to comply with this permit and any other relevant preexisting pollution controls; and

(B) non-structural control measure implemented will provide pollutant removal equivalent to what would be achieved with the design standard under Part I.E.4.a.iv(B).

(b) Prior to redevelopment, the applicable redevelopment site has greater than 75 percent impervious surfaces.

(c) The permittee has determined that it is technically infeasible to meet any of the design standards. A determination of technical infeasibility must not be based solely on cost. It must be based on whether treatment of the applicable redevelopment site to meet any of the standards in Part I.E.4.a.iv is technically infeasible. Technical infeasibility is determined by a site-specific hydrologic and/or design analysis conducted and endorsed by a registered professional engineer, geologist, architect, and/or landscape architect. The determination of technical infeasibility shall be based upon one of the following factors of technical infeasibility:

(i) Soil instability as documented by a geotechnical analysis and/or land use inconsistent with capture and infiltration of stormwater, or

(ii) Restricted right-of-way, for roadway or aircraft movement surfaces only.

(iii) Other physical, topographical, and/or environmental that would make implementation at the applicable redevelopment site infeasible and cannot be addressed by changes in the site layout.

(iv) Implementation of control measures would cause a conflict with FAA safety standards.

(d) The permittee must require the applicable redevelopment site to control flooding. The following conditions apply:

(i) Variances to the permittee's Floodplain Ordinance shall not be granted for the portion of the applicable redevelopment site using the EATS design standard.

(ii) Discharges from the portion of the applicable redevelopment site using the EATS design standard must have adequate facilities to not cause or increase flood damage from the 100-year flood or alter natural floodplains, stream channels, and natural protective barriers, which help accommodate or channel floodwaters.

Erosion due to flood conditions must be prevented from the portion of the applicable redevelopment site using the EATS design standard.

2 Requirements for Using Off-Site Stormwater Management

Connecticut Phase II Permit

The Connecticut Department of Energy and Environmental Protection issued a Phase II MS4 general permit that includes requirements for developers seeking approval of an off-site stormwater management project or payment of an in-lieu fee to submit a report detailing the factors limiting implementation of runoff reduction requirements. Note that this permit describes mechanisms for off-site stormwater management as “stormwater mitigation” and “fee.”

Section 6.(a)(5)(B) Excerpt

Pursuant to the requirements of subsection 5(A)(i) above, the permittee shall require the party responsible (i.e. a developer within a municipal boundary or a developer/contractor with the institution) for development and redevelopment projects within its MS4 to:

(i) For development or redevelopment of sites that are currently developed with Directly Connected Impervious Area (DCIA) of forty percent or more, retain onsite half the water quality volume for the site. ...

In cases where the runoff reduction requirement cannot be met, the developer/contractor shall submit, for the permittee’s review, a report detailing factors limiting the capability of achieving this goal. In such cases, the permittee shall approve a stormwater mitigation project on another site proposed by the developer/contractor or approve a fee to be deposited into a dedicated account of the permittee for use by the permittee to fund in whole or in part the retrofit of one or more existing DCIA. ...

The report shall include: the measures taken to maximize runoff reduction practices on the site; the reasons why those practices constitute the maximum extent achievable; the alternative retention volume; and a description of the measures used to provide additional stormwater treatment above the alternate volume up to the water quality volume. ...

(ii) For all new development and for redevelopment of sites with less than forty percent DCIA, retain the water quality volume for the site. If there are site constraints that would prevent retention of this volume on-site (e.g. brownfields, capped landfills, bedrock, elevated groundwater, etc.), documentation must be submitted, for the permittee’s review and written approval, which: explains the site limitations; provides a description of the runoff reduction practices implemented; provides an explanation of why this constitutes the maximum extent achievable; offers an alternative retention volume; and provides a description of the measures used to provide additional stormwater treatment for sediment, floatables and nutrients above the alternate volume up to the water quality volume. In such cases, the permittee shall approve a stormwater mitigation project on another site proposed by the developer/contractor or approve a fee to be deposited into a dedicated account of the permittee for use by the permittee to fund in whole or in part the retrofit of one or more existing DCIA. ...

2 Requirements for Using Off-Site Stormwater Management

Montana Phase II Permit

The Montana Department of Environmental Quality issued a Phase II MS4 general permit that includes requirements for permittees to develop and apply criteria for determining circumstances under which off-site stormwater management may be allowed and to implement a formal review process for this determination. Note that this permit refers to off-site stormwater management as “offsite treatment.”

Section II.A.4.a.ii Excerpt

...

Permittees allowing offsite treatment shall do the following:

- Develop and apply criteria for determining the circumstances under which offsite treatment may be allowed. The criteria must be based on multiple factors, including but not limited to technical or logistic infeasibility, such as:
 - Lack of available space
 - High ground water
 - Ground water contamination
 - Poorly infiltrating soils
 - Shallow bedrock
 - Prohibitive costs
 - A land use that is inconsistent with capture and reuse or infiltration of storm water

Determinations may not be based solely on the difficulty and/or cost of implementation. The permittee must develop a formal review and approval process for determining projects eligible for offsite treatment. The offsite treatment option is to be used only after available onsite options have been evaluated and documented through the permittee’s developed formal review and approval process.

...

New Mexico Middle Rio Grande Watershed Permit

EPA Region 6 issued a watershed MS4 permit that covers Phase I and Phase II permittees and includes requirements for projects to demonstrate the infeasibility of meeting the design standard volume on site. The determination of infeasibility must be documented in an analysis conducted and endorsed by a technical professional.

Part I.D.5.b.(v) Excerpt

- (a) Infeasibility to manage the design standard volume specified in Part I(D)(5)(b)(ii)(b), or a portion of the design standard volume, onsite may result from site constraints including the following:
- A. too small a lot outside of the building footprint to create the necessary infiltrative capacity even with amended soils;
 - B. soil instability as documented by a thorough geotechnical analysis;
 - C. a site use that is inconsistent with capture and reuse of storm water;

2 Requirements for Using Off-Site Stormwater Management

D. other physical conditions; or,

E. to comply with applicable requirements for on-site flood control structures leaves insufficient area to meet the standard.

(b) A determination that it is infeasible to manage the design standard volume specified in Part I.D.5.b.(ii)(b), or a portion of the design standard volume, on site may not be based solely on the difficulty or cost of implementing onsite control measures, but must include multiple criteria that rule out an adequate combination of the practices set forth in Part I.D.5.b.(v).

(c) This permit does not prevent imposition of more stringent requirements related to flood control. Where both the permittee's site design standard ordinance or policy and local flood control requirements on site cannot be met due to site conditions, the standard may be met through a combination of on-site and off-site controls.

...

(e) In instances where an alternative to compliance with the standard on site is chosen, technical justification as to the infeasibility of on-site management of the entire design standard volume, or a portion of the design standard volume, is required to be documented by submitting to the permittee a site-specific hydrologic and/or design analysis conducted and endorsed by a registered professional engineer, geologist, architect, and/or landscape architect.

Eastern Washington Phase II Permit

The State of Washington Department of Ecology issued a Phase II MS4 general permit that includes requirements for new permittees to develop and implement criteria for determining when it is infeasible for a project to meet stormwater management requirements on site.

S5.B.5.b.ii.(b)(3) Excerpt

New Permittees that are not already meeting S5.B.5.b.ii.(b)(2) requirement in existing ordinances shall develop and implement criteria to determine when it is infeasible for a project to meet this requirement including, but not limited to:

- Site/Engineering-based conditions, such as soils that do not allow for infiltration of the required volume of stormwater runoff; proximity to a known hazardous waste site or landfill; proximity to a drinking water well or spring; proximity to an onsite sewage system or underground storage tank; setbacks from structures; landslide hazard areas or slopes; seasonal high groundwater; incompatibility with the surrounding drainage system from elevation or location; or areas prone to erosion.
- Incompatibility with uses related to concerns such as public safety, protection from spills, contaminated sites, or frequently flooded areas.
- Incompatibility with state or federal laws.
- New Permittees shall submit to Ecology with the Annual Report due no later than March 31, 2023 a summary of the criteria defining infeasibility, or a citation for the criteria adopted pursuant to a regional LID manual.

2 Requirements for Using Off-Site Stormwater Management

West Virginia Phase II Permit

The West Virginia Department of Environmental Protection issued a Phase II MS4 general permit that includes a condition for the permittee to require the project to provide technical justification for the infeasibility of on-site stormwater management. Note that this permit describes mechanisms for off-site stormwater management as “off site mitigation,” “payment in lieu,” and “alternative approach.”

Part II.C.7.e.16 Excerpt

- (e) When allowing either alternative, the permittee must require technical justification as to the infeasibility of on-site management of the first 1" of rainfall.
- (f) If, as demonstrated to the permittee, it is technically infeasible to manage on site a portion or all of the subject 1" of rainfall, off site mitigation, payment in lieu, or another approved alternative approach will be applied at a 1:1 ratio for that portion.

3 Developing an Off-Site Stormwater Management Program

The permit excerpts below list requirements for permittees that are developing and implementing an off-site stormwater management program. Requirements include deadlines for implementing off-site projects, priorities for selecting various compliance alternatives, and options for permittees to propose additional compliance alternatives not listed in their permit.

California East Contra Costa County Municipal Stormwater Permit

The California Regional Water Quality Control Board issued a cross-jurisdictional Phase I MS4 individual permit covering stormwater discharges from the cities of Antioch, Brentwood, and Oakley, as well as from Contra Costa County and the Contra Costa County Flood Control and Water Conservation District. The permit includes requirements to construct off-site stormwater management projects by specified deadlines. Note that this permit refers to off-site stormwater management as “alternative compliance.”

Provision C.3.e.i.(3) Excerpt

For the alternative compliance options described in Provision C.3.e.i.(1) and (2) above, offsite projects must be constructed by the end of construction of the Regulated Project. If more time is needed to construct the offsite project, for each additional year, up to three years, after the construction of the Regulated Project, the offsite project must provide an additional 10% of the calculated equivalent quantity of both stormwater runoff and pollutant loading. Regional Projects must be completed within three years after the end of construction of the Regulated Project. However, the timeline for completion of the Regional Project may be extended, up to five years after the completion of the Regulated Project, with prior Executive Officer approval. Executive Officer approval will be granted contingent upon a demonstration of good faith efforts to implement the Regional Project, such as having funds encumbered and applying for the appropriate regulatory permits.

California North Coast Regional Municipal Stormwater Permit

The California Regional Water Quality Control Board issued a cross-jurisdictional Phase I MS4 individual permit covering stormwater discharges from the cities of Cloverdale, Cotati, Healdsburg, Rohnert Park, Santa Rosa, Sebastopol, and Ukiah, as well as from Sonoma County, the Sonoma County Water Agency, and the town of Windsor. The permit includes a requirement for each co-permittee to develop and implement an off-site stormwater management program. Note that this permit refers to off-site stormwater management as “offset mitigation.”

Section VI.D.9.a Excerpt

Each Co-Permittee, using a collaborative approach or individually, shall develop and implement an offset mitigation program to substitute all or part of a project’s requirements for volume capture, where on-site compliance is deemed to be technically infeasible. The offset mitigation program shall include the following components:

...

3 Developing an Off-Site Stormwater Management Program

- ii. Full treatment of the design storm is required at all applicable projects and is not eligible for the offset mitigation program.
- iii. When a Co-Permittee determines a project applicant has demonstrated that it is technically infeasible to capture all or part of the volume required to be retained on-site, the Co-Permittee shall require the project applicant to mitigate the portion of the volume capture not achieved by participating in the offset mitigation program.

...

Long Beach, California, Phase I Permit

The California Regional Water Quality Control Board issued a Phase I MS4 individual permit that includes requirements for prioritizing the order in which various on-site and off-site best management practices (BMPs) are selected to meet stormwater management requirements.

Part VII.J.1 Excerpt

The City of Long Beach shall implement a planning and land development program pursuant to this Part VII.J for all new development and redevelopment projects subject to this Order to:

...

vii. Prioritize the selection of BMPs to remove storm water pollutants, reduce storm water runoff volume, and beneficially use storm water to support an integrated approach to protecting water quality and managing water resources in the following order of preference:

- (a) On-site infiltration, bioretention and/or rainfall harvest and use.
- (b) On-site biofiltration, off-site ground water replenishment, and/or off-site retrofit.

Long Beach, California, Phase I Permit

The California Regional Water Quality Control Board issued a Phase I MS4 individual permit that includes requirements for obtaining approval from the Regional Water Board for an off-site stormwater management program and specific implementation requirements for the program. Note that this permit refers to off-site stormwater management as “storm water mitigation.”

Part VII.J.4.iii.(6) Excerpt

The City of Long Beach may apply to the Regional Water Board for approval of a regional or sub-regional storm water mitigation program to substitute in part or wholly for New and Redevelopment requirements for the area covered by the regional or sub-regional storm water mitigation program. Upon review and a determination by the Regional Water Board Executive Officer that the proposal is technically valid and appropriate, the Regional Water Board may consider for approval such a program if its implementation meets all of the following requirements:

- (a) Retains the runoff from the 85th percentile, 24-hour rain event or the 0.75 inch, 24-hour rain event, whichever is greater;
- (b) Results in improved storm water quality;

3 Developing an Off-Site Stormwater Management Program

- (c) Protects stream habitat;
- (d) Promotes cooperative problem solving by diverse interests;
- (e) Is fiscally sustainable and has secure funding; and
- (f) Is completed in five years including the construction and start-up of treatment facilities.
- (g) Nothing in this provision shall be construed as to delay the implementation of requirements for new and redevelopment, as approved in this Order.

Washington, District of Columbia, Phase I Permit

EPA Region 3 issued a Phase I MS4 individual permit that includes a requirement for the permittee to implement an off-site stormwater management program. Note that this permit refers to off-site stormwater management as “off-site mitigation.”

Part 3.2.2 Excerpt

The Permittee shall continue to require the design, construction and maintenance of stormwater controls to achieve on-site retention of 1.2" of stormwater from a 24-hour storm with a 72-hour antecedent dry period through evapotranspiration, infiltration and/or stormwater harvesting and use for all public and private development and redevelopment projects that disturb greater than or equal to 5,000 square feet of land area. This requirement shall continue to be implemented in concert with the off-site mitigation program to compensate for any portion of the 1.2" volume to be retained off-site (Stormwater Retention Credits, see Subsection 3.2.3).

Washington, District of Columbia, Phase I Permit

EPA Region 3 issued a Phase I MS4 individual permit that includes requirements for an on-site stormwater retention volume and allows a portion of that volume to be met off site. Note that this permit refers to off-site stormwater management as “off-site mitigation.”

Part 3.2.5 Excerpt

The Permittee shall continue to require the design, construction and maintenance of stormwater controls to achieve on-site retention of 0.8" of stormwater from a 24-hour storm with a 72-hour antecedent dry period through evapotranspiration, infiltration and/or stormwater harvesting and use for all development projects where less than 5,000 square feet of soil is disturbed, but where the combined footprint of improved building and land-disturbing activities is greater than or equal to 5,000 square feet and which are undergoing substantial improvement. “Substantial improvement,” consistent with District regulations at 21 DCMR § 599, means any repair, alteration, addition, or improvement of a building or structure, the cost of which equals or exceeds 50 percent of the market value of the structure before the improvement or repair is started. The Permittee may allow a portion of the 0.8" volume to be compensated for in an off-site mitigation program consistent with the requirements of Subsection 3.2.3 of this permit.

3 Developing an Off-Site Stormwater Management Program

New Mexico Middle Rio Grande Watershed Permit

EPA Region 6 issued a watershed MS4 permit that covers Phase I and Phase II permittees and includes requirements for developing an off-site stormwater management program, including the option for permittees to establish an off-site stormwater management mechanism not already provided in the permit. Note that this permit refers to off-site stormwater management as “mitigation options.”

Part I.D.5.b.(v)(f) Excerpt

When a Permittee determines a project applicant has demonstrated infeasibility due to site constraints specified in Part I.D.5.b.(v) to manage the design standard volume specified in Part I.D.5.b.(ii).(b) or a portion of the design standard volume on-site, the Permittee shall require one of the following mitigation options:

...

D. Other. In a situation where alternative options A through C above are not feasible and the permittee wants to establish another alternative option for projects, the permittee [*sic*] may submit to the EPA for approval, the alternative option that meets the standard.

West Virginia Phase II Permit

The West Virginia Department of Environmental Protection issued a Phase II MS4 general permit that includes requirements for off-site stormwater management. Note that this permit refers to off-site stormwater management as an “alternative approach” or “alternative method.”

Part II.C.7.e.11.(b)-(c) Excerpt

(b) The first 1" of rainfall must be 100% managed with no discharge to surface waters except when the permittee allows an alternative approach as described below:

...

(iv) The permittee develops and obtains approval of an alternative method of managing the first 1" of rainfall. The method must be equally protective of water quality as the methods spelled out in the permit.

(c) Run-off volume reduction can be achieved by:

- (i) Canopy interception,
- (ii) Soil amendments,
- (iii) Evaporation,
- (iv) Evapotranspiration,
- (v) Rainfall harvesting such as rain tanks and cisterns,
- (vi) Grass channels and swales,
- (vii) Reforestation,
- (viii) Green roofs,

3 Developing an Off-Site Stormwater Management Program

- (ix) Rooftop disconnections, such as gutter drains,
- (x) Permeable pavers/pavement,
- (xi) Porous concrete,
- (xii) Engineered infiltration including extended infiltration via bioretention cells with eventual release,
- (xiii) Release to groundwater may require an Underground Injection Control Permit and permittees are required to list projects using this practice in the annual report, or
- (xiv) Any combination of these methods.

4 Off-Site Stormwater Management Outside the Boundaries of a Project Site

Most of the permits reviewed by EPA for this compendium include the option to meet stormwater management requirements by constructing a stormwater control at a location other than the project site (i.e., off site). Some permits allow stormwater management requirements to be met entirely off site, while others require that a portion of stormwater be managed on site before off-site stormwater management is considered. Certain permits also include specific requirements for determining the volume of stormwater that must be treated by off-site stormwater management.

California East Contra Costa County Municipal Stormwater Permit

The California Regional Water Quality Control Board issued a cross-jurisdictional Phase I MS4 individual permit covering stormwater discharges from the cities of Antioch, Brentwood, and Oakley, as well as from Contra Costa County and the Contra Costa County Flood Control and Water Conservation District. The permit allows a portion of the required stormwater treatment volume to be treated with green infrastructure at an off-site project in the same watershed. Note that this permit refers to off-site stormwater management as “alternative compliance,” and refers to green infrastructure as “low impact development (LID) treatment measures.”

Provision C.3.e.i Excerpt

The Permittees may allow a Regulated Project to provide alternative compliance with Provision C.3.c in accordance with one of the two options listed below:

(1) Option 1: LID Treatment at an Offsite Location

Treat a portion of the amount of runoff identified in Provision C.3.d for the Regulated Project’s drainage area with LID treatment measures onsite or with LID treatment measures at a joint stormwater treatment facility and treat the remaining portion of the Provision C.3.d runoff with LID treatment measures at an offsite project in the same watershed. The offsite LID treatment measures must provide hydraulically-sized treatment (in accordance with Provision C.3.d) of an equivalent quantity of both stormwater runoff and pollutant loading and achieve a net environmental benefit.

...

California East Contra Costa County Municipal Stormwater Permit

The California Regional Water Quality Control Board issued a cross-jurisdictional Phase I MS4 individual permit covering stormwater discharges from the cities of Antioch, Brentwood, and Oakley, as well as from Contra Costa County and the Contra Costa County Flood Control and Water Conservation District. The permit includes a requirement for off-site stormwater management projects to meet the same operation and maintenance requirements as on-site projects.

Provision C.3.e.iv.(3) Excerpt

For all offsite projects and Regional Projects installed in accordance with Provision C.3.e.i-ii, the Permittees shall meet the Operation & Maintenance (O&M) requirements of Provision C.3.h.

4 Off-Site Stormwater Management Outside the Boundaries of a Project Site

Long Beach, California, Phase I Permit

The California Regional Water Quality Control Board issued a Phase I MS4 individual permit that includes requirements for implementing off-site stormwater management infiltration measures. Note that this permit refers to off-site stormwater management as “alternative compliance measures” and describes one mechanism for off-site stormwater management as “offsite infiltration.”

Part VII.J.4.iii Excerpt

Alternative Compliance Measures - When the City of Long Beach determines a project applicant has demonstrated that it is technically infeasible to retain 100 percent of the SWQDv on-site, or is proposing an alternative offsite project to replenish regional ground water supplies, the City of Long Beach shall require one of the following mitigation options:

...

(2) Offsite Infiltration

(a) Use infiltration or bioretention BMPs to intercept a volume of storm water runoff equal to the SWQDv, less the volume of storm water runoff reliably retained on-site, at an approved offsite project, and

(b) Provide pollutant reduction (treatment) of the storm water runoff discharged from the project site in accordance with the Water Quality Mitigation Criteria provided in Part VII.J.4.iii.(7).

(c) The required offsite mitigation volume shall be calculated by Equation 2 below and equal to:

Equation 2:

$$Mv = 1.0 * [SWQDv - Rv]$$

Where:

Mv = mitigation volume

SWQDv = runoff from the 0.75 inch, 24-hour storm event or the 85th percentile storm, whichever is greater

Rv = the volume of storm water runoff reliably retained on-site.

...

Long Beach, California, Phase I Permit

The California Regional Water Quality Control Board issued a Phase I MS4 individual permit that includes conditions for meeting stormwater management requirements by installing BMPs to retrofit existing development at an off-site location. Note that this permit describes one mechanism for off-site stormwater management as “offsite project.”

Part VII.J.4.iii.(4) Excerpt

Offsite Project – Retrofit Existing Development

Use infiltration, bioretention, rainfall harvest and use and/or biofiltration BMPs to retrofit an existing development, with similar land uses as the new development or land uses associated with comparable or higher storm water runoff event mean concentrations (EMCs) than the new

4 Off-Site Stormwater Management Outside the Boundaries of a Project Site

development. Comparison of EMCs for different land uses shall be based on published data from studies performed in southern California. The retrofit plan shall be designed and constructed to:

(a) Intercept a volume of storm water runoff equal to the mitigation volume (Mv) as described above in Equation 2, except biofiltration BMPs shall be designed to meet the biofiltration volume as described in Equation 1 and

(b) Provide pollutant reduction (treatment) of the storm water runoff from the project site as described in the Water Quality Mitigation Criteria provided in Part VII.J.4.iii.(7).

Long Beach, California, Phase I Permit

The California Regional Water Quality Control Board issued a Phase I MS4 individual permit that includes requirements for project applicants proposing other off-site stormwater management projects not listed in the permit. Note that this permit describes mechanisms for off-site stormwater management as “offsite projects,” “offsite mitigation,” “ground water replenishment,” and “retrofit projects.”

Part VII.J.4.iii.(5) Excerpt

Conditions for Offsite Projects

(a) Project applicants seeking to utilize these alternative compliance provisions may propose other offsite projects, which the City of Long Beach may approve if they meet the requirements of this subpart.

(b) Location of offsite projects. Offsite projects shall be located in the same sub-watershed (defined as draining to the same HUC-12 hydrologic area in the Basin Plan) as the new development or redevelopment project. The City of Long Beach may consider locations outside of the HUC-12 but within the HUC-10 subwatershed area if there are no opportunities within the HUC-12 subwatershed or if greater pollutant reductions and/or ground water replenishment can be achieved at a location within the expanded HUC-10 subwatershed. The use of a mitigation, ground water replenishment, or retrofit project outside of the HUC-12 subwatershed is subject to the approval of the Executive Officer of the Regional Water Board.

(c) Project applicant must demonstrate that equal benefits to ground water recharge cannot be met on the project site.

(d) The City of Long Beach shall develop a prioritized list of offsite mitigation, ground water replenishment and/or retrofit projects, and when feasible, the mitigation must be directed to the highest priority project within the same HUC-12 or if approved by the Regional Water Board Executive Officer, the HUC-10 drainage area, as the new development project.

(e) Infiltration/bioretenion shall be the preferred LID BMP for offsite mitigation or ground water replenishment projects. Offsite retrofit projects may include green streets, parking lot retrofits, green roofs, and rainfall harvest and use. Biofiltration BMPs may be considered for retrofit projects when infiltration, bioretention or rainfall harvest and use is technically infeasible.

(f) The City of Long Beach shall develop a schedule for the completion of offsite projects, including milestone dates to identify, fund, design, and construct the projects. Offsite projects shall be completed as soon as possible, and at the latest, within 4 years of the certificate of

4 Off-Site Stormwater Management Outside the Boundaries of a Project Site

occupancy for the first project that contributed funds toward the construction of the offsite project, unless a longer period is otherwise authorized by the Executive Officer of the Regional Water Board. For public offsite projects, the City of Long Beach must provide in their annual reports a summary of total offsite project funds raised to date and a description (including location, general design concept, volume of water expected to be retained, and total estimated budget) of all pending public offsite projects. Funding sufficient to address the offsite volume must be transferred to the City of Long Beach (for public offsite mitigation projects) or to an escrow account (for private offsite mitigation projects) within one year of the initiation of construction.

(g) Offsite projects must be approved by the City of Long Beach and may be subject to approval by the Regional Water Board Executive Officer, if a third-party petitions the Executive Officer to review the project. Offsite projects will be publicly noticed on the Regional Water Board's website for 30 days prior to approval.

(h) The project applicant must perform the offsite projects as approved by either the City of Long Beach or the Regional Water Board Executive Officer or provide sufficient funding for public or private offsite projects to achieve the equivalent mitigation storm water volume.

Long Beach, California, Phase I Permit

The California Regional Water Quality Control Board issued a Phase I MS4 individual permit that includes requirements for off-site stormwater management projects to meet pollutant benchmarks and ensure discharges do not exceed water quality standards. Note that this permit describes mechanisms for off-site stormwater management as "offsite mitigation" and "ground water replenishment."

Part VII.J.4.iii.(7) Excerpt

Water Quality Mitigation Criteria

(a) The City of Long Beach shall require all new development and redevelopment projects that have been approved for offsite mitigation or ground water replenishment projects as defined in Part VII.J.4.ii-iii to also provide treatment of storm water runoff from the project site. The City of Long Beach shall require these projects to design and implement post-construction storm water BMPs and control measures to reduce pollutant loading as necessary to:

(i) Meet the pollutant specific benchmarks listed in Table 10 at the treatment systems outlet or prior to the discharge to the MS4, and

(ii) Ensure that the discharge does not cause or contribute to an exceedance of water quality standards at the City of Long Beach's downstream MS4 outfall.

(b) The City of Long Beach may allow the project proponent to install flowthrough modular treatment systems including sand filters, or other proprietary BMP treatment systems with a demonstrated efficiency at least equivalent to a sand filter. The sizing of the flow through treatment device shall be based on a rainfall intensity of:

(i) 0.2 inches per hour, or

(ii) The one year, one-hour rainfall intensity as determined from the most recent Los Angeles County isohyetal map, *whichever is greater*.

4 Off-Site Stormwater Management Outside the Boundaries of a Project Site

Long Beach, California, Phase I Permit

The California Regional Water Quality Control Board issued a Phase I MS4 individual permit that includes requirements for considering high-priority projects as candidates for off-site stormwater management. Note that this permit describes one mechanism for off-site stormwater management as “off-site mitigation.”

Part VII.L.4 Excerpt

...

- ii. The City of Long Beach shall screen existing areas of development to identify candidate areas for retrofitting using watershed models or other screening level tools.
- iii. The City of Long Beach shall evaluate and rank the areas of existing development identified in the screening to prioritize retrofitting candidates. ...
- iv. The City of Long Beach shall consider the results of the evaluation in the following programs:

...

(2) Off-site mitigation for New Development and Redevelopment: The City of Long Beach shall consider high priority retrofit projects as candidates for off-site mitigation projects per part VII.J.4.iii(4).

(3) Where feasible, at the discretion of the City of Long Beach, the existing development retrofitting program may be coordinated with flood control projects and other infrastructure improvement programs per Part VII.L.5.ii(2) below.

...

City and County of Denver, Colorado, Phase I Permit

The Colorado Department of Public Health and Environment issued a Phase I MS4 individual permit that includes requirements for off-site stormwater management control measures to treat a minimum impervious area and meet design standards. The permit also includes conditions that apply if the site is developed again. Note that this permit refers to off-site stormwater management as “offsite treatment.”

Part I.E.4.a.iv.(G) Excerpt

...

- 2) The applicable redevelopment site must have an offsite treatment control measure that meets the requirements below.
 - (a) Minimum Offsite Treatment Impervious Area: The offsite treatment control measure must provide treatment for a minimum impervious area, the Minimum Offsite Treatment Impervious Area, that meets the following requirements:
 - (i) The Minimum Offsite Treatment Impervious Area must be equal to or greater than the post-redevelopment impervious area of the applicable redevelopment area that is not treated by control measure(s) meeting the Water Quality Capture Volume Standard, Pollutant Removal Standard, or Runoff Reduction Standard. Impervious areas at the

4 Off-Site Stormwater Management Outside the Boundaries of a Project Site

applicable redevelopment area must be included in the Minimum Offsite Treatment Impervious Area if a non-structural control measure is implemented in accordance with Part I.E.4.a.iv(G)1)(a)(i) in lieu of a control measure meeting the Pollutant Removal Standard.

(ii) Land areas cannot be counted towards meeting the Minimum Offsite Treatment Impervious Area in accordance with Part I.E.4.a.iv(G)2)(a) of this section, above, if the land areas are part of:

(A) an area for which the permittee was required, under a separate development or redevelopment project, to implement permanent control measures for new development or redevelopment under this permit or any previous MS4 permit, including areas located at the applicable redevelopment site;

(B) development plans known to the permittee that would make the area part of an applicable development site prior to January 1, 2036; or

(C) an area from which runoff is already directed to an existing permanent water quality control measure that provides treatment or infiltration of the WQCV or greater.

(iii) The impervious drainage area for the offsite control measure must have similar land use and pollutant loading as the applicable redevelopment site. For example, roads, driveways, and parking lots, shall not be balanced with treatment or control of rooftop impervious surfaces. The permittee must make and document the determination that the conditions are similar.

(iv) The Minimum Offsite Treatment Impervious Area and the portion of the applicable redevelopment site for which control measures are not implemented at a level to meet the Water Quality Capture Volume Standard, Pollutant Removal Standard, or Runoff Reduction Standard must satisfy one of the following conditions.

(A) The offsite control measure discharges to the same HUC10 watershed as the applicable redevelopment site.

(B) The offsite control measure discharges to a receiving water, connected to the applicable development site receiving water, at a location that is less than 5 land miles from the applicable redevelopment site.

(b) Offsite Treatment Control Measure Design Standard: All control measures used to provide treatment for the required Minimum Offsite Treatment Impervious Area must:

(i) Meet the design standards for Water Quality Capture Volume Standard, Pollutant Removal Standard, or Runoff Reduction Standard.

(ii) Be properly sized to provide treatment and/or infiltration for the entire drainage area of the control measure in accordance with the applicable design standard.

(iii) Be designed and built to comply with all assumptions for the development activities planned within its drainage area, including the imperviousness of its drainage area and the applicable development site.

4 Off-Site Stormwater Management Outside the Boundaries of a Project Site

(c) Modification of Control Measures: It is allowable for the permittee to enlarge an existing control measure or the control measure implemented for a different applicable new development or redevelopment site to provide additional treatment capacity for the Minimum Offsite Treatment Impervious Area, provided such modification does not reduce the effectiveness of the control measure for its existing treatment area. Only impervious area that is added to the drainage area of the existing control measure can be counted towards meeting the Minimum Offsite Treatment Impervious Area.

(d) The Minimum Offsite Treatment Control Measure modification is a Control Measure and must meet the requirements applicable to all Post Construction for New Development and Redevelopment control measures (e.g., requirements for plans, inspections, long-term operation and maintenance, etc.) that are established in this permit.

3) If the applicable redevelopment site is redeveloped again, the following conditions apply:

(a) The acreage of impervious area at the previous applicable redevelopment site that was in the EATS program must remain in the program.

(b) The acreage of impervious area at the previous applicable redevelopment site that was not in the EATS program must continue to be treated with onsite control measures.

(c) Any new disturbed area of the applicable development site that is redeveloped again must meet the requirements of this permit.

4) The permittee must ensure that the Minimum Offsite Treatment Control Measure meets the requirements of this permit. The Minimum Offsite Treatment Control Measure must be recorded on the permittee's land records, or equivalent permanent tracking system.

Connecticut Phase II Permit

The Connecticut Department of Energy and Environmental Protection issued a Phase II MS4 general permit that requires the permittee to approve an off-site stormwater management project on another site if runoff reduction requirements cannot be met for development and redevelopment sites. Note that this permit describes one mechanism for off-site stormwater management as "stormwater mitigation project."

Section 6.(a)(5)(B) Excerpt

Pursuant to the requirements of subsection 5(A)(i) above, the permittee shall require the party responsible (i.e. a developer within a municipal boundary or a developer/contractor with the institution) for development and redevelopment projects within its MS4 to:

(i) For development or redevelopment of sites that are currently developed with Directly Connected Impervious Area (DCIA) of forty percent or more, retain onsite half the water quality volume for the site. ...

In cases where the runoff reduction requirement cannot be met, ...

the permittee shall approve a stormwater mitigation project on another site proposed by the developer/contractor...

4 Off-Site Stormwater Management Outside the Boundaries of a Project Site

In the case of linear redevelopment projects (e.g. roadway reconstruction or widening) for the developed portion of the right of way: (1) for projects that may be unable to comply with the full retention standard, the alternate retention and treatment provisions may also be applied as specified above, (2) for projects that will not increase the DCIA within a given watershed, the developer/contractor shall implement the additional stormwater treatment measures referenced above, but will not be required to retain half of the water quality volume.

(ii) For all new development and for redevelopment of sites with less than forty percent DCIA, retain the water quality volume for the site. If there are site constraints that would prevent retention of this volume on-site...

the permittee shall approve a stormwater mitigation project on another site proposed by the developer/contractor...

Any such treatment shall otherwise be designed, installed and maintained consistent with the Stormwater Quality Manual. ...

Massachusetts Phase II Permit

EPA Region 1 issued a Phase II MS4 general permit that requires permittees to allow off-site stormwater management within the same United States Geological Survey (USGS) HUC12 watershed as a new development or redevelopment site. Note that this permit describes one mechanism for off-site stormwater management as "offsite mitigation."

Part 2.3.6.a Excerpt

ii. The permittee shall develop or modify, as appropriate, an ordinance or other regulatory mechanism within three (3) years of the effective date of the permit to contain provisions that are at least as stringent as the following:

...

3. Stormwater management systems on new development shall be designed to meet an average annual pollutant removal equivalent to 90% of the average annual load of Total Suspended Solids (TSS) related to the total post-construction impervious area on the site AND 60% of the average annual load of Total Phosphorus (TP) related to the total postconstruction impervious surface area on the site¹⁰.

a) Average annual pollutant removal requirements in 2.3.6.a.ii.3 are achieved through one of the following methods:

1. installing BMPs that meet the pollutant removal percentages based on calculations developed consistent with EPA Region 1's BMP Accounting and Tracking Tool (2016) or other BMP performance evaluation tool provided by EPA Region 1, where available. If EPA Region 1 tools do not address the planned or installed BMP performance, then any federally or State-approved BMP design guidance or performance standards (e.g., State stormwater handbooks and design guidance manuals) may be used to calculate BMP performance; or
2. retaining the volume of runoff equivalent to, or greater than, one (1.0) inch multiplied by the total post-construction impervious surface area on the new development site; or

4 Off-Site Stormwater Management Outside the Boundaries of a Project Site

3. meeting a combination of retention and treatment that achieves the above standards; or

4. utilizing offsite mitigation that meets the above standards within the same USGS HUC12 as the new development site.

4. Stormwater management systems on redevelopment sites shall be designed to meet an average annual pollutant removal equivalent to 80% of the average annual postconstruction load of Total Suspended Solids (TSS) related to the total post-construction impervious area on the site AND 50% of the average annual load of Total Phosphorus (TP) related to the total post-construction impervious surface area on the site¹¹.

a) Average annual pollutant removal requirements in 2.3.6.a.ii.4 above are achieved through one of the following methods:

1. installing BMPs that meet the pollutant removal percentages based on calculations developed consistent with EPA Region 1's BMP Accounting and Tracking Tool (2016) or other BMP performance evaluation tool provided by EPA Region 1, where available. If EPA Region 1 tools do not address the planned or installed BMP performance, then any federally or State-approved BMP design guidance or performance standards (e.g., State stormwater handbooks and design guidance manuals) may be used to calculate BMP performance; or

2. retaining the volume of runoff equivalent to, or greater than, 0.8 inch multiplied by the total post-construction impervious surface area on the redeveloped site; or

3. meeting a combination of retention and treatment that achieves the above standards; or

4. utilizing offsite mitigation that meets the above standards within the same USGS HUC12 as the redevelopment site.

¹⁰ Pollutant removal is calculated based on average annual loading and not on the basis of any individual storm event

¹¹ Pollutant removal is calculated based on average annual loading and not on the basis of any individual storm event

St. Paul, Minnesota, Phase I Permit

The Minnesota Pollution Control Agency issued a Phase I MS4 individual permit that includes requirements for selecting off-site stormwater management project areas and documenting who is responsible for maintenance of off-site stormwater management BMPs. Note that this permit describes one mechanism for off-site stormwater management as "mitigation projects."

Part III.C.5.a.(5) Excerpt

There may be circumstances where the **Permittee** or other **owners** and **operators** of a **construction activity** cannot cost effectively meet the conditions for post-construction **stormwater** management in Part III.C.5.a.(2) and (4) on the site of the original **construction**

4 Off-Site Stormwater Management Outside the Boundaries of a Project Site

activity. For this purpose, the **Permittee** must identify, or may require **owners** or **operators** of a **construction activity** to identify, locations where mitigation projects can be completed. The **Permittee's** regulatory mechanism(s) must ensure that any **stormwater discharges** not addressed on the site of the original **construction activity** are addressed through mitigation and, at a minimum, must ensure the following requirements are met:

(a) Mitigation project areas are selected in the following order of preference:

- 1) Locations that yield benefits to the same **receiving water** that receives runoff from the original **construction activity**.
- 2) Locations within the same Department of Natural Resources (DNR) catchment areas as the original **construction activity**.
- 3) Locations in the next adjacent **DNR catchment area** up-stream.
- 4) Locations anywhere within the **Permittee's** jurisdiction.

(b) Mitigation projects must involve the creation of new **structural stormwater BMPs** or the retrofit of existing **structural stormwater BMPs**, or the use of a properly designed regional **structural stormwater BMP**.

(c) Routine maintenance of **structural stormwater BMPs** already required by this permit cannot be used to meet mitigation requirements of this Part.

(d) The **Permittee** must develop and retain documentation that mitigation projects are carried out consistently with Part III.C.5.a.(5)(a) and (b).

(e) The **Permittee** must document who is responsible for long-term maintenance on all mitigation projects of this Part.

...

Montana Phase II Permit

The Montana Department of Environmental Quality issued a Phase II MS4 general permit that includes design requirements for off-site stormwater controls installed within the same sub-watershed as the project site.

Section II.A.4.a.ii Excerpt

... For projects that cannot meet 100% of the runoff reduction requirement, the remainder of the runoff from the first 0.5 inches of rainfall must be either:

- Treated onsite using post-construction storm water management controls expected to remove 80 percent total suspended solids (TSS);
- Managed offsite within the same sub-watershed using post-construction storm water management controls that are designed to infiltrate, evapotranspire, and/or capture for reuse; or
- Treated offsite within the same sub-watershed using post-construction storm water management controls expected to remove 80 percent total suspended solids (TSS)...

4 Off-Site Stormwater Management Outside the Boundaries of a Project Site

New Jersey, R12 – Highway Agency Phase II Permit

The New Jersey Department of Environmental Protection issued a Phase II MS4 general permit that allows permittees to meet design and performance standards with off-site stormwater management. Note that this permit refers to off-site stormwater management as stormwater management “at an alternative location” or “by alternative means.”

Part IV.B.4.e Excerpt

The design and performance standards for stormwater management measures can be met at an alternative location or by alternative means provided the permittee has a mitigation plan which meets the following requirements:

- i. The mitigation plan shall identify measures that are necessary to offset the deficit created by the alternate location or design. The mitigation plan must satisfy the same criteria that a mitigation plan prepared in accordance with Stormwater Management Rule N.J.A.C. 7:8-4.6 must satisfy. See Chapter 3 of the NJ Stormwater BMP Manual at <https://www.njstormwater.org> for guidance; and
- ii. The permittee submits, within 30 days after approving an alternate location or design, a written report to the Department describing the alternate location or design and the required mitigation. Submit the written report to the Department at: ...

Stormwater Management Rule N.J.A.C. 7:8-4.6, referenced in the above permit excerpt, can be found at www.nj.gov/dep/rules/rules/njac7_8.pdf on page 27.

New Mexico Middle Rio Grande Watershed Permit

EPA Region 6 issued a watershed MS4 permit that covers Phase I and Phase II permittees and includes requirements for redevelopment projects to manage all or a portion of the design standard volume off site. Note that this permit refers to off-site stormwater management as “mitigation options” and describes one mechanism for off-site stormwater management as “off-site mitigation.”

Part I.D.5.b.(v)(f) Excerpt

When a Permittee determines a project applicant has demonstrated infeasibility due to site constraints specified in Part I.D.5.b.(v) to manage the design standard volume specified in Part I.D.5.b.(ii).(b) or a portion of the design standard volume on-site, the Permittee shall require one of the following mitigation options:

A. Off-site mitigation. The off-site mitigation option only applies to redevelopment sites and cannot be applied to new development. Management of the standard volume, or a portion of the volume, may be implemented at another location within the MS4 area, approved by the permittee. The permittee shall identify priority areas within the MS4 in which mitigation projects can be completed. The permittee shall determine who will be responsible for long-term maintenance on off-site mitigation projects.

...

4 Off-Site Stormwater Management Outside the Boundaries of a Project Site

West Virginia Phase II Permit

The West Virginia Department of Environmental Protection issued a Phase II MS4 general permit that includes an option for installing runoff reduction practices off site for retrofit or redevelopment projects, with emphasis on improving impaired waters. Note that this permit describes one mechanism for off-site stormwater management as “off-site mitigation.”

Part II.C.7.e.16.(h) Excerpt

Off-site mitigation projects runoff reduction practices may be implemented at another location approved by the permittee, however, emphasis shall be on improving locations draining to 303d/TMDL waters. Such emphasis shall be the measurable, enforceable goal for existing permittees for this component.

(i) The permittee shall identify priority areas within the sewershed - watershed in which mitigation projects can be completed.

(ii) Mitigation must be for retrofit or redevelopment projects, and cannot be applied to new development.

(iii) The permittee shall determine who will be responsible for long term maintenance on mitigation projects. The SWMP shall contain a detailed description of the system the permittee intends to use to track responsible parties of mitigation projects.

5 Credit Systems

The one excerpt presented below requires the permittee to continue to implement their stormwater credit program and establishes a construction date cutoff and application deadline for stormwater BMPs that are eligible to generate credits.

Washington, District of Columbia, Phase I Permit

EPA Region 3 issued a Phase I MS4 individual permit that includes a requirement that the permittee continue implementing an off-site stormwater management credit program. Note that this permit refers to off-site stormwater management as “Stormwater Retention Credit offsite mitigation program.”

Part 3.2.3 Excerpt

3.2.3.1 In order to provide for flexibility for those development projects that may not be capable of retaining 1.2" of storm water runoff on-site, the Permittee shall continue to implement the Stormwater Retention Credit (SRC) offsite mitigation program.

3.2.3.2 In order to maximize water quality benefits, if a retention practice was installed prior to July 1, 2013, it will only be eligible to generate SRCs if an application has been submitted within six (6) months after the effective date of the appropriate revisions to the District’s stormwater regulations. The Permittee shall initiate appropriate revisions to the regulations within twelve (12) months of the effective date of this permit unless an alternate schedule is approved by EPA.

6 In-Lieu Fees

Some permits include the option for owners/developers to pay in-lieu fees rather than implement stormwater management requirements on site or at an off-site location. These fees are often set aside to fund public or regional stormwater management projects that meet the same requirements as on-site stormwater management or provide an equivalent benefit.

California East Contra Costa County Municipal Stormwater Permit

The California Regional Water Quality Control Board issued a cross-jurisdictional Phase I MS4 individual permit covering stormwater discharges from the cities of Antioch, Brentwood, and Oakley, as well as from Contra Costa County and the Contra Costa County Flood Control and Water Conservation District. The permit includes requirements for payment of in-lieu fees to fund regional off-site stormwater management projects. Note that this permit describes one mechanism for off-site stormwater management as “in-lieu fees.”

Provision C.3.e.i Excerpt

The Permittees may allow a Regulated Project to provide alternative compliance with Provision C.3.c in accordance with one of the two options listed below:

...

(2) Option 2: Payment of In-Lieu Fees

Treat a portion of the amount of runoff identified in Provision C.3.d for the Regulated Project’s drainage area with LID treatment measures onsite or with LID treatment measures at a joint stormwater treatment facility and pay equivalent in-lieu fees⁸ to treat the remaining portion of the Provision C.3.d runoff with LID treatment measures at a Regional Project.⁹ The Regional Project must achieve a net environmental benefit.

...

⁸ **In-lieu fees** – Monetary amount necessary to provide both hydraulically-sized treatment (in accordance with Provision C.3.d) with LID treatment measures of an equivalent quantity of stormwater runoff and pollutant loading, and a proportional share of the operation and maintenance costs of the Regional Project.

⁹ **Regional Project** – A regional or municipal stormwater treatment facility that discharges into the same watershed that the Regulated Project does.

6 In-Lieu Fees

St. Paul, Minnesota, Phase I Permit

The Minnesota Pollution Control Agency issued a Phase I MS4 individual permit that includes a requirement that payments of in-lieu fees be applied to public stormwater projects that comply with the off-site stormwater management project requirements. Note that this permit describes one mechanism for off-site stormwater management as “payment in lieu.”

Part III.C.5.a.(5)(f) Excerpt

If the **Permittee** receives payment from the **owner** and/or **operator** of a **construction activity** for mitigation purposes in lieu of the **owner** or **operator** of that **construction activity** meeting the conditions for post-construction **stormwater** management in Part III.C.5.a.(2) and (4) the **Permittee** must apply any such payment received to a public **stormwater** project, all projects must be in compliance with Part III.C.5.a.(5)(a)-(e).

New Mexico Middle Rio Grande Watershed Permit

EPA Region 6 issued a watershed MS4 permit that covers Phase I and Phase II permittees and includes requirements for applying payments of in-lieu funds to public stormwater projects and maintaining a public database of projects for which the funds may be used. Note that this permit refers to off-site stormwater management as “mitigation options” and describes one mechanism for off-site stormwater management as “payment in lieu.”

Part I.D.5.b.(v)(f) Excerpt

When a Permittee determines a project applicant has demonstrated infeasibility due to site constraints specified in Part I.D.5.b.(v) to manage the design standard volume specified in Part I.D.5.b.(ii).(b) or a portion of the design standard volume on-site, the Permittee shall require one of the following mitigation options:

...

C. *Payment in lieu.* Payment in lieu may be made to the permittee, who will apply the funds to a public stormwater project. MS4s shall maintain a publicly accessible database of approved projects for which these payments may be used.

...

West Virginia Phase II Permit

The West Virginia Department of Environmental Protection issued a Phase II MS4 general permit that includes a requirement that payments of in-lieu fees be applied to public stormwater projects. Note that this permit describes one mechanism for off-site stormwater management as “payment in lieu.”

Part II.C.7.e.16.(i) Excerpt

For payment in lieu projects, payment may be made to the permittee, who must apply the funds to a public stormwater project.

...

7 Groundwater Recharge

The permit excerpts presented below allow off-site groundwater recharge as an alternative to meeting stormwater management requirements on site. The Long Beach, California, Phase I permit includes requirements for determining the volume of runoff to be captured and where the groundwater recharge can be project is located.

Long Beach, California, Phase I Permit

The California Regional Water Quality Control Board issued a Phase I MS4 individual permit that includes requirements to allow off-site stormwater management when a project can replenish groundwater at an off-site location. Note that this permit refers to off-site stormwater management as “alternative compliance measures.”

Part VII.J.4.ii.(1) Excerpt

In instances of technical infeasibility or where a project has been determined to provide an opportunity to replenish regional ground water supplies at an offsite location, the City of Long Beach may allow projects to comply with this Order through the alternative compliance measures as described in Part VII.J.4.iii.

Long Beach, California, Phase I Permit

The California Regional Water Quality Control Board issued a Phase I MS4 individual permit that includes requirements for criteria that projects must demonstrate to implement groundwater recharge at an off-site location. Note that this permit refers to off-site stormwater management as “alternative compliance measures.”

Part VII.J.4.ii.(3) Excerpt

To utilize alternative compliance measures to replenish ground water at an offsite location, the project applicant shall demonstrate (i) why it is not advantageous to replenish ground water at the project site, (ii) that ground water can be used for beneficial purposes at the offsite location, and (iii) that the alternative measures shall also provide equal or greater water quality benefits to the receiving surface water than the Water Quality/Flow Reduction/Resource Management Criteria in Part VII.J.4.i.

7 Groundwater Recharge

Long Beach, California, Phase I Permit

The California Regional Water Quality Control Board issued a Phase I MS4 individual permit that includes requirements for regional groundwater replenishment projects to capture a volume of stormwater that is equivalent to the stormwater design requirements. The permit also requires that these projects be located in the same sub-watershed as the project that did not implement on-site stormwater management. Note that this permit describes mechanisms for off-site stormwater management as “mitigation,” “ground water replenishment,” and “retrofit project.”

Part VII.J.4.iii.(3) Excerpt

Ground Water Replenishment Projects

The City of Long Beach may propose, in their Watershed Management Program or EWMP, regional projects to replenish regional ground water supplies at offsite locations, provided the groundwater supply has a designated beneficial use in the Basin Plan.

(a) Regional groundwater replenishment projects must use infiltration, ground water replenishment, or bioretention BMPs to intercept a volume of storm water runoff equal to the SWQDv for new development and redevelopment projects, subject to conditioning and approval by the City of Long Beach for the design and implementation of post-construction controls, within the approved project area, and

(b) Provide pollutant reduction (treatment) of the storm water runoff discharged from development projects, within the project area, subject to conditioning and approval by the City of Long Beach for the design and implementation of post-construction controls to mitigate storm water pollution in accordance with the Water Quality Mitigation Criteria provided in Part VII.J.4.iii.(7).

(c) Where the City of Long Beach elects to implement a regional ground water replenishment project in lieu of onsite controls, it shall ensure the volume of runoff captured by the project shall be equal to:

Equation 2:

$$Mv = 1.0 * [SWQDv - Rv]$$

Where:

Mv = mitigation volume

SWQDv = runoff from the 0.75 inch, 24-hour storm event or the 85th percentile storm, whichever is greater

Rv = the volume of storm water runoff reliably retained on-site.

(d) Regional groundwater replenishment projects shall be located in the same sub-watershed (defined as draining to the same HUC-12 hydrologic area in the Basin Plan, or HUC-12 equivalent area) as the new development or redevelopment projects which did not implement on site retention BMPs . The City of Long Beach may consider locations outside of the HUC-12 but within the HUC-10 subwatershed area if there are no opportunities within the HUC-12 subwatershed or if greater pollutant reductions and/or ground water replenishment can be achieved at a location within the expanded HUC-10 subwatershed. The use of a mitigation, ground water replenishment, or retrofit project outside of the HUC-12 subwatershed is subject to the approval of the Executive Officer of the Regional Water Board.

7 Groundwater Recharge

New Mexico Middle Rio Grande Watershed Permit

EPA Region 6 issued a watershed MS4 permit that covers Phase I and Phase II permittees and includes requirements for implementing off-site stormwater management projects that replenish regional groundwater supplies. Note that this permit refers to off-site stormwater management as “mitigation options” and describes one mechanism for off-site stormwater management as “ground water replenishment.”

Part I.D.5.b.(v)(f) Excerpt

When a Permittee determines a project applicant has demonstrated infeasibility due to site constraints specified in Part I.D.5.b.(v) to manage the design standard volume specified in Part I.D.5.b.(ii).(b) or a portion of the design standard volume on-site, the Permittee shall require one of the following mitigation options:

...

B. Ground Water Replenishment Project: Implementation of a project that has been determined to provide an opportunity to replenish regional ground water supplies at an offsite location.

...

8 Tracking

As demonstrated by the permit excerpts below, some permits require permittees to track off-site stormwater management projects. These requirements include maintaining an inventory or database of all projects that implement off-site stormwater management and tracking information such as project location, retention volume, rationale for approval, and project-related monetary transactions. Two of the permits below require information to be publicly accessible or posted on the permittee’s website.

Washington, District of Columbia, Phase I Permit

EPA Region 3 issued a Phase I MS4 individual permit that requires the permittee to post on its website the status of all projects that must comply with the stormwater management regulations. The permittee is also required to maintain a database to track plan review, inspection, and performance of projects, including those with off-site retention volume.

Part 3.2.1 Excerpt

...

3.2.1.1 The Permittee shall annually post on its website the status of all projects required to comply with the stormwater management regulations, including the total performance volume calculated for the project, the amount of stormwater retention volume achieved on-site, the amount of stormwater retention volume achieved off-site, and the compliance status of each project with an off-site retention volume.

...

3.2.1.3 The Permittee shall maintain a database to track plan review, inspection, and the on-site and off-site retention performance of each project subject to this requirement. For projects using off-site retention, the compliance status of those projects with their off-site retention volume shall also be tracked.

Montana Phase II Permit

The Montana Department of Environmental Quality issued a Phase II MS4 general permit that includes requirements for maintaining an inventory of projects that use off-site stormwater management. Note that this permit refers to off-site stormwater management as “offsite treatment.”

Section II.A.4.a.ii Excerpt

...

Permittees allowing offsite treatment shall do the following:

...

- Maintain an inventory of regulated projects which utilize offsite treatment for post-construction storm water runoff. The inventory must include the following information for each approved project:
 - Geographic location of the project

8 Tracking

- Location of offsite treatment
- Documentation of the rationale for approval of offsite treatment

West Virginia Phase II Permit

The West Virginia Department of Environmental Protection issued a Phase II MS4 general permit that includes requirements for meeting measurable goals when developing an off-site stormwater management program. Note that this permit refers to off-site stormwater management as “off-site mitigation.”

Part II.C.7.e.16.(g) Excerpt

For any of these options to be available, the permittee must create an inventory of appropriate mitigation projects, and develop appropriate institutional standards and management systems to value, evaluate, and track transactions.

(i) For new permittees, the measurable, enforceable goal for this measure shall be documentation of the municipality's decision to implement or not implement off-site mitigation procedures. Documentation shall be included in the third year annual report.

(ii) For existing permittees who opt to develop an off-site mitigation program, the measurable, enforceable goal shall be the prioritization [*sic*] of projects located in sewersheds that drain to 303d/TMDL waters. Documentation of development shall be included in the third year annual report.

West Virginia Phase II Permit

The West Virginia Department of Environmental Protection issued a Phase II MS4 general permit that requires permittees to maintain a publicly accessible inventory of approved off-site stormwater management projects. Note that this permit describes one mechanism for off-site stormwater management as “in-lieu projects.”

Part II.C.7.e.16.(i) Excerpt

...

(i) Permittees shall maintain a publicly accessible inventory of approved in-lieu projects which fully details all monetary transactions associated with the projects. This information shall also be submitted with the annual report.