



**The City of Palos Verdes Estates**  
340 Palos Verdes Dr W  
Palos Verdes Estates, CA 90274

# **Guidance for Developers**

## **Low Impact Development (LID)**

### **Requirements for Stormwater**

**January 2022**



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## LIST OF ATTACHMENTS

- Attachment A: City of Palos Verdes Estates Municipal Code, Chapter 13.08 – Storm Drains and Storm Water Management and Pollution Control
- Attachment B: City of Palos Verdes Estates Green Street Policy
- Attachment C: Significant Ecological Areas (SEAs)
- Attachment D: County of Los Angeles, 85<sup>th</sup> Percentile 24-hour Rainfall Depth
- Attachment E: Certification Statement
- Attachment F: LID Project Information Form

## **LIST OF ACRONYMS**

BMP: Best Management Practice

CASQA: California Stormwater Quality Association

LID: Low Impact Development

NPDES: National Pollutant Discharge Elimination System MS4: Municipal Separate Storm Sewer System

SEA: Significant Ecological Area

SIC: Standard Industrial Classification

SWQDv: Storm Water Quality Design Volume

TMDL: Total Maximum Daily Load

USEPA: United States Environmental Protection Agency



## Introduction

Low Impact Development (LID) is an approach to stormwater runoff management that endeavors to retain or mitigate stormwater runoff onsite, thereby lessening adverse downstream water quality and flooding impacts associated with development and redevelopment. LID requires effective site design as well as the selection, design, and incorporation of appropriate stormwater control measures, also referred to as best management practices (BMPs). Site planning and design considerations described in Section 1 are applicable to all new and redevelopment projects. The LID Process Flow Chart presented in **Figure 1** should assist developers in determining which other sections of this document are relevant and applicable to a specific project to meet the LID standards for Priority Development Projects (previously referred to as New Development and Redevelopment projects) as required by the Regional Phase I Municipal Separate Storm Sewer System Permit (MS4 Permit)<sup>1</sup>. The City's Municipal Code Chapter 13.08 (Attachment A) applies stormwater performance requirements to certain Priority Development Projects consistent with the LID standards of the MS4 Permit.

This document has been created to assist the development community working within the City of Palos Verdes Estates (City) in understanding the City's stormwater performance requirements for LID implementation and navigating the City's permitting process. Although this document is not exhaustive and does not provide all technical details necessary to appropriately plan for and incorporate LID into project design in conformance with the MS4 Permit, it provides a roadmap to make the design and approval process more efficient. The sections in this document have been prepared to help developers answer the following questions for a new or redevelopment project:

- Section 1: What site planning and layout considerations must be incorporated on all projects to minimize community flooding and downstream water quality impacts while reducing or potentially avoiding the applicability of stormwater performance requirements?
- Section 2: Does the project as-designed trigger the applicability of stormwater performance requirements for LID?
- Section 3: What is the calculated stormwater quality design volume that must be addressed on-site to meet stormwater performance requirements?

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<sup>1</sup> Order No. R4-2021-0105 NPDES Permit No. CAS004004 Waste Discharge Requirements and National Pollutant Discharge Elimination System (NPDES) Permit for Municipal Separate Storm Sewer System (MS4) Discharges within the Coastal Watersheds of Los Angeles and Ventura Counties.

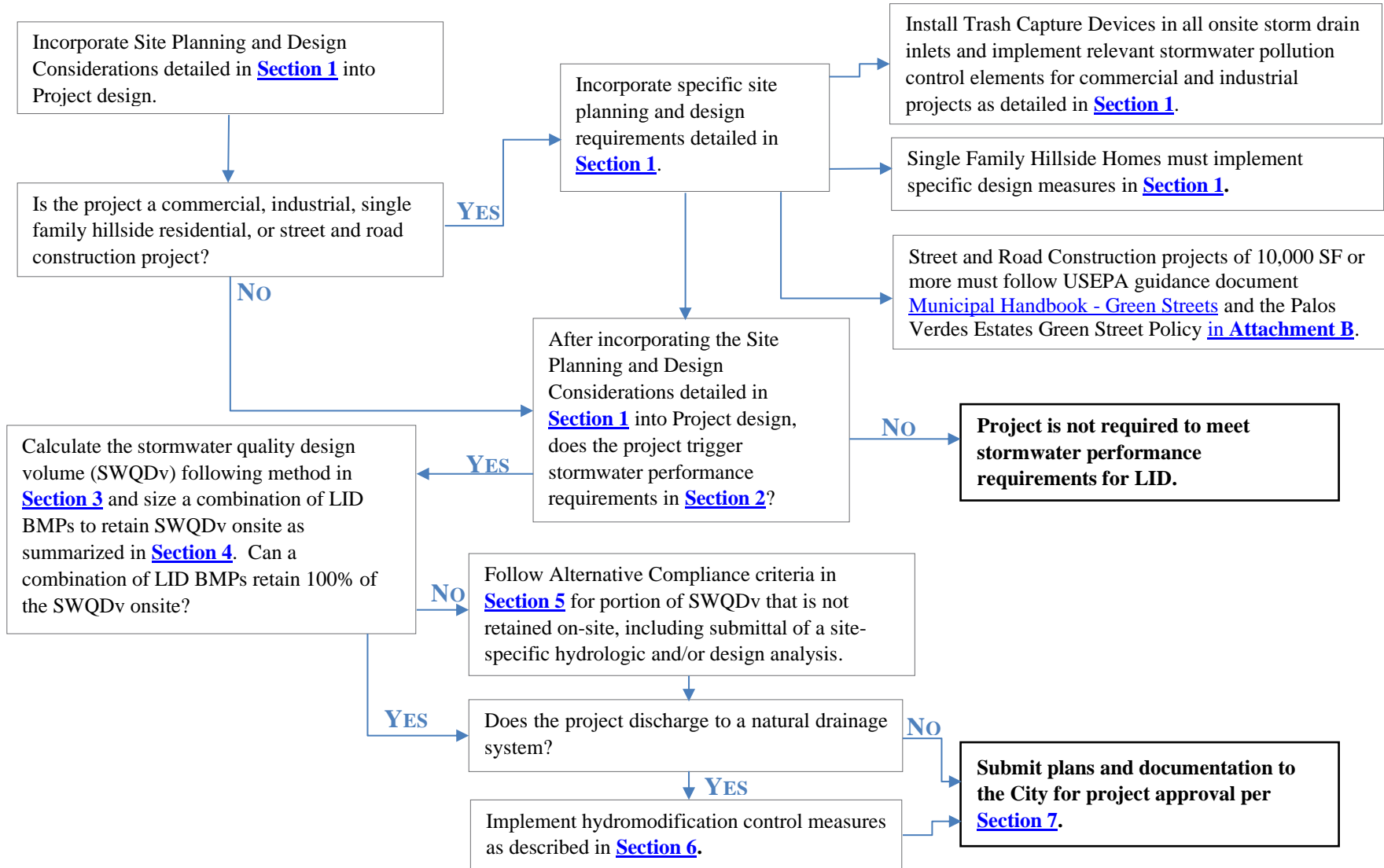


- Section 4: What types of LID BMPs can meet the stormwater performance requirements?
- Section 5: If it is not technically feasible to retain the stormwater quality design volume on-site, what alternative BMPs are available and what documentation is required for a project to be eligible to utilize these alternatives?
- Section 6: If the project discharges to a natural drainage system, what additional hydrologic control measures must be designed into the project to protect the natural drainage system from erosion?
- Section 7: What LID plans, documentation and other information must be submitted to the City to meet these LID requirements?
- Section 8: What resources and references are available for the design, construction, and maintenance of LID BMPs?

This guidance document also directs the user to technical references and standards manuals where appropriate. In particular, this document references the County of Los Angeles LID Standards Manual ([LA County LID Manual, February 2014](#)) which provides detailed design requirements for developers implementing LID. Attachments have also been provided at the end of this document to provide supplemental information for LID implementation.



**FIGURE 1: LID PROCESS FLOW CHART**





## **Section 1. Site Planning and Design Considerations for All New and Redevelopment Projects**

Developers must implement site planning and design practices on all projects to minimize stormwater runoff and thereby reduce community flooding and downstream water quality impacts through implementation of the following practices:

1. Conserving natural areas, soils and vegetation;
2. Minimizing disturbances to natural drainage patterns;
3. Minimizing and disconnecting impervious surfaces including avoiding direct connection of area drains to the public right of way via curb cores or other means of direct connection to the municipal storm drain system;
4. Minimizing soil compaction; and
5. Directing runoff from impervious areas to pervious, i.e., permeable, areas and avoiding direct connection of roof drains and area drains to the public right of way via curb cores.

Release of concentrated drainage flows to the public right of way is subject to the approval of the City Engineer and will not be considered unless all other options have been explored and deemed infeasible – a discussion of alternatives considered and utilized/rejected shall be provided for such approval.

The LA County LID Manual Section 4 discusses the steps for assessing project site conditions during the planning phase of a project to identify and incorporate appropriate site design practices. By maximizing the amount of pervious area on the project site via planning and site design practices, the stormwater quality design volume that must be addressed by the stormwater performance requirements can be reduced; through effective site design it may be possible to reduce a project's impervious area below the applicable threshold that triggers the stormwater performance requirements in Sections 2 and 3.

**Certified Trash Capture Devices** are required to be installed and maintained in all onsite stormwater inlets associated with commercial, industrial, or multi-family residential projects that connect directly to the municipal storm drain system. Onsite catch basins must be designed to provide sufficient capacity for installing a certified full capture device for trash. A list of devices certified as full capture systems by the State Water Resources Control Board approved for this purpose is maintained on the State's [Trash Implementation webpages](#).

**Single-Family Hillside Homes** are defined as single-family residential projects on properties located in an area with known erosive soil conditions where the project



contemplates grading on any natural slope that is 25% or greater and where grading contemplates cut or fill slopes. Single-family Hillside Home projects must include the following measures in the design and construction of the project regardless of project size or whether the project is required to meet stormwater performance requirements:

- a. Conserve natural areas;
- b. Protect slopes and channels;
- c. Provide storm drain system stenciling and signage;
- d. Divert roof runoff and surface flow to vegetated areas before discharge unless the diversion would result in slope instability; and
- e. Direct surface flow to vegetated areas before discharge unless the diversion would result in slope instability.

**Commercial projects** including, but not limited to, commercial projects that include restaurants and similar food service establishments, petroleum (gasoline or diesel) dispensing and/or automotive service or repair facilities, nurseries and garden centers, and commercial buildings and parking lots, must incorporate design elements to prevent and minimize pollutant discharges from these facilities, particularly those that include areas for outdoor activities such as the storage of materials, vehicles or wastes. The following list identifies Fact Sheets in the LA County LID Standards Manual Appendix D that provide specific guidance on the design of such facilities and areas:

- S-1: Storm Drain Message and Signage
- S-2: Outdoor Material Storage Area
- S-3: Outdoor Trash Storage and Waste Handling Area
- S-4: Outdoor Loading/Unloading Dock Area
- S-5: Outdoor Vehicle/Equipment Repair/Maintenance Area
- S-6: Outdoor Vehicle/Equipment/Accessory Washing Area
- S-7: Fuel and Maintenance Area
- S-8: Landscape Irrigation Practices
- S-9: Building Materials Selection
- S-10: Animal Care and Handling Facilities
- S-11: Outdoor Horticulture Areas

During the design phase of the project, appropriate outside agencies should be consulted on the design of stormwater control measures, as necessary. These agencies may include





but are not limited to Los Angeles County Vector Control, Los Angeles County Industrial Waste Division, and the Los Angeles County Department of Public Health. Refer also to Palos Verdes Estates Municipal Code Chapter 13.14 Sanitary Sewers and Industrial Waste and Chapter 8.04 Health Code which incorporate Los Angeles County codes by reference.

**Industrial Facilities** are subject to the California Industrial General Permit<sup>2</sup> and must be designed to meet those requirements in addition to utilizing the foregoing stormwater control measures applicable to commercial facilities. Any business seeking a business license from the City and operating under a [business classification potentially regulated by the California Industrial General Permit](#) will need to provide evidence that it has applied for and obtained permit coverage prior to issuance of the business license. For more information on the permitting and design requirements for such facilities please refer to:

- State Water Resources Control Board [Industrial Stormwater Program webpages](#)
- California Stormwater Quality Association (CASQA) BMP Handbook for Industrial and Commercial Facility Control BMPs.<sup>3</sup>

**Street and Road construction projects** with 10,000 square feet or more of impervious surface area shall follow USEPA guidance regarding Managing Wet Weather with Green Infrastructure: [Municipal Handbook - Green Streets](#) (December 2008 EPA-833-F-08-009) to the maximum extent practicable. Projects involving street and road construction must also follow the City of Palos Verdes Estates' Green Street Policy in Attachment B for guidance.

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<sup>2</sup> State Water Resources Control Board Order 2014-0057-DWQ as Amended in 2015 and 2018, NPDES No. CAS000001 General Permit for Stormwater Discharges Associated with Industrial Activities, April 1, 2014

<sup>3</sup> <https://www.casqa.org/resources/bmp-handbooks/industrial-commercial>



## **Section 2. Applicability of Stormwater Performance Requirements**

The following types of projects are considered Priority Development Projects and are subject to stormwater performance requirements:

1. Development projects, including the construction of new single-family residential homes, equal to one acre or greater of disturbed area and adding more than 10,000 square feet of impervious area\*;
2. Industrial parks with 10,000 square feet or more of surface area;
3. Commercial malls with 10,000 square feet or more of surface area;
4. New development and redevelopment projects that create and/or replace 5,000 square feet or more of impervious surface (collectively over the entire project site) and support one or more of the following uses:
  - a. Retail gasoline outlets;
  - b. Restaurants (as defined in the Department of Labor's Standard Industrial Classification (SIC) Code 5812);
  - c. Parking lots;
  - d. Automotive service facilities (SIC 5013, 5014, 5511, 5541, 7532-7534 and 7536-7539);
5. Redevelopment projects that create and/or replace 5,000 square feet or more of impervious surface (collectively over the entire project site) on any of the following:
  - a. Existing sites of 10,000 square feet or more of impervious surface area
  - b. Industrial parks 10,000 square feet or more of surface area
  - c. Commercial malls 10,000 square feet or more of surface area

Where redevelopment results in an alteration to more than fifty percent of impervious surfaces of a previously existing development the entire Project must be mitigated to meet stormwater performance requirements for LID.

Where redevelopment results in an alteration to less than fifty percent of impervious surfaces of a previously existing development only the alteration



must be mitigated to meet stormwater performance requirements for LID, and not the entire development.

6. New development and redevelopment projects that create and/or replace 2500 square feet or more of impervious area; discharge stormwater that is likely to impact a sensitive biological species or habitat; and are located in or directly adjacent to, or are discharging directly to a Significant Ecological Area (SEA), including the Palos Verdes Peninsula and Coastline SEA described in Attachment C.
7. For the purpose of calculating impervious area in evaluating applicability of stormwater performance requirements, any area that is covered by impenetrable artificial surfaces is considered impervious. Such surfaces include but are not limited to concrete, brick, pavement, and rooftops. If permeable pavement or a similar permeable artificial surface is counted in the pervious area of a project, such a surface must be shown to be self-retaining with respect to the applicable design storm—this means that the full stormwater quality design volume calculated for the surface in question must be fully retained by the surface and its underlying material.(See Section 3 for details on calculating the stormwater quality design volume.)

The following activities or projects do not constitute a Priority Development Project for purposes of LID and are exempt from the stormwater performance requirements for LID:

- A. Routine maintenance activities that are conducted to maintain original line and grade, hydraulic capacity, original purpose of facility or emergency redevelopment activity required to protect public health and safety. Impervious surface replacement, such as the reconstruction of parking lots and roadways which does not disturb additional area and maintains the original grade and alignment, is considered a routine maintenance activity. Redevelopment does not include the repaving of existing roads to maintain original line and grade.
- B. Interior remodeling projects that do not involve land-disturbing activity.



### Section 3. LID Design Sizing Criteria

Priority Development Projects identified in Section 2 as being subject to stormwater performance requirements for incorporating LID must be designed to retain the stormwater quality design volume (SWQDv) onsite. The SWQDv is defined as the volume of stormwater runoff from the greater of:

- The 0.75-inch, 24-hour rain event; or
- The 85th percentile, 24-hour rain event.

To calculate the SWQDv, follow these steps:<sup>4</sup>

1. Determine the 85<sup>th</sup> percentile, 24-hour storm depth for the project area using the Los Angeles County 85<sup>th</sup> percentile precipitation isohyetal map (link provided in Attachment D). This storm depth varies from approximately 0.7 – 1.1 inches within the City of Palos Verdes Estates.
2. Select the design storm,  $P_{design}$  [inches], as the greater of either the 85<sup>th</sup> percentile storm depth or 0.75 inches.
3. Determine the effective catchment area required to be addressed using the following equation:

$$\text{Catchment Area [ft}^2\text{]} = (\text{Impervious Area [ft}^2\text{]} * 0.9) + (\text{Pervious Area [ft}^2\text{]} * 0.1)$$

For the purpose of calculating a project's total impervious area, any area that is covered by impenetrable, artificial surfaces is considered impermeable. Such surfaces include, but are not limited to, concrete, brick, pavement, and rooftops. Additionally, if permeable pavement or a similar artificial surface is used to reduce the total impervious area of a project, such a surface must be shown to be self-retaining with respect to the applicable design storm; this means that the full SWQDv calculated for the surface in question must be fully retained within the footprint of the surface and its underlying material.

For redevelopment projects which alter less than fifty percent of impervious surfaces of a previously existing development the catchment area should be calculated based only on the redeveloped area.

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<sup>4</sup> Alternatively, one of the methods provided in Section 6 of the LA County LID Manual can be followed.



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4. Calculate the SWQD<sub>v</sub> based on the following equation:

$$SWQD_v [ft^3] = Catchment Area [ft^2] * P_{design} [inch] * 0.083 [ft/in]$$

This SWQD<sub>v</sub> must be retained on site using one or more LID BMPs from Section 4 unless it is demonstrated that it is technically infeasible to do so in which case alternative BMPs must be employed as discussed in Section 5.



## Section 4. LID Best Management Practices for Onsite Stormwater Retention

LID BMPs must be implemented to capture and retain the entire SWQDv on site to the extent it is technically feasible in order to control stormwater runoff from the project development. The types of LID BMPs used to capture and retain the SWQDv must include any combination of infiltration, rainfall harvest and use, and/or bioretention. The LA County LID Manual Section 7 sets forth standards that should be followed when designing and constructing these BMPs. Fact Sheets including design schematics for these LID BMPs are provided in LA County LID Manual Appendix E and design examples in Appendix F. The following summary is provided as an overview.

**Infiltration** - Infiltration BMPs are constructed with a highly permeable base that is specifically designed to infiltrate runoff. Because it is often not feasible to infiltrate water at the same rate at which it is collected, a storage component is also a necessary part of these BMPs. Examples of infiltration BMPs include porous pavement with storage provided by void space in the bedding material and base aggregate, subsurface infiltration trenches, infiltration basins, and dry wells. In some development scenarios it may not be feasible to use infiltration BMPs such as on sites with shallow groundwater, Brownfield development sites, sites susceptible to geotechnical hazards, or sites with poor infiltration rates (<0.3 inches per hour).

**Rainfall Harvest and Use** - These BMPs capture stormwater that is generated from impervious surfaces such as rooftops and hold it for later use in lawn and garden watering. Rainwater can be collected for use in a variety of vessels from small, prefabricated barrels (rain barrels) to large, custom-built cisterns. These systems can be constructed above ground so access is simple and pumping is not required, or below ground where pumping is necessary but developable space is saved.

**Bioretention**- Bioretention BMPs are vegetated, shallow depressions that provide storage, infiltration, and evapotranspiration of stormwater. Pollutants are removed by filtering stormwater through plants and engineered soils. Bioretention BMPs designed to retain water on-site shall not include an underdrain (biofiltration BMPs with an underdrain are allowed as alternative BMPs and discussed in Section 5 below). Examples of bioretention BMPs include vegetated planter boxes and rain gardens.

If it is not technically feasible to retain the entire SWQDv on site via one or a combination of the types of BMPs identified above, alternative BMPs must be implemented as described in Section 5 to comply with the stormwater performance requirements. If it is feasible to retain a portion of the SWQDv onsite, that portion/percentage must be retained on site using the BMPs described above and the remaining portion of the SWQDv that is



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infeasible to retain onsite must be treated using the alternative compliance measures described in Section 5.

### **County of Los Angeles Low Impact Development Standards Manual**

The LA County LID Standards Manual and the [LA County Stormwater BMP Design and Maintenance Manual](#), should serve as the primary technical guidance manuals when designing, implementing, and maintaining LID BMPs for a project. The LA County LID Standards Manual<sup>5</sup> is available on the [LA County Public Works LID website](#) and provides guidance to the development community regarding the implementation of LID techniques and BMPs. In addition to providing design standards for a variety of LID BMPs, the LA County LID Standards Manual provides detailed descriptions, examples, and fact sheets to illustrate how such BMPs function.

Website links to free downloadable versions of both County manuals are provided in Section 8.

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<sup>5</sup> LA County LID Manual Section 3 (Non-Designated Project Requirements) are not directly applicable to projects within the City of Palos Verdes Estates.



## **Section 5. Alternative Compliance Requirements**

If the full SWQDv cannot reliably be retained on site due to technical infeasibility, alternative stormwater BMPs may be implemented to treat the portion of the SWQDv not retained on site. Alternative compliance measures are discussed in Section 5.2, however before utilizing them, the project developer must demonstrate the basis for technical infeasibility as discussed in Section 5.1.

### **5.1 Technical Infeasibility Demonstration for Alternative Compliance**

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 rainfall harvest and use, and that compliance with the stormwater performance requirements is technically infeasible. Technical infeasibility must be demonstrated by submitting a site-specific hydrologic and/or design analysis to the City of Palos Verdes Estates Department of Public Works. This analysis must be conducted and endorsed by a registered professional engineer, geologist, architect, and/or landscape architect. Technical infeasibility may result from site conditions including the following:

- a. The infiltration rate of saturated in-situ soils is less than 0.3 inches 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. Project sites where seasonal high ground water is within 5 to 10 feet of the surface;
- c. Sites 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 concern. This includes projects that are located at or near properties that are contaminated or store hazardous substances underground including properties with onsite wastewater treatment systems;
- 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 onsite volume retention requirements.





If technical infeasibility is demonstrated for the entire project, alternative compliance measures as described below must be implemented. If technical infeasibility is demonstrated for part of the project, such that only a portion of the SWQD<sub>v</sub> can be retained on site, alternative compliance measures as described below must be implemented to address the remaining volume.

## 5.2 Alternative Compliance Measures

For projects which are approved to use alternative compliance measures due to demonstrated technical infeasibility, one of the following onsite or offsite volume mitigation options must be implemented. If an offsite volume mitigation is utilized, then the onsite project runoff water quality must also meet the requirements of Section 5.3 Water Quality Mitigation.

### 1. Onsite Biofiltration

Biofiltration BMPs may be used on a project that has demonstrated technical infeasibility; however, biofiltration BMPs must manage and treat 1.5 times the portion of the SWQD<sub>v</sub> that is not reliably retained on-site. The biofiltration treatment volume must be calculated using Equation 1:

$$[Equation 1] \quad B_v [ft^3] = 1.5 * (SWQD_v [ft^3] - R_v [ft^3])$$

Where:

$B_v$  = biofiltration volume required to be treated.

$SWQD_v$  = runoff from the 85<sup>th</sup> percentile, 24-hour storm or the 0.75-inch design storm, whichever is greater.

$R_v$  = the volume of runoff reliably retained on site.

### 2. Off-site Infiltration

Infiltration or bioretention BMPs may be used at an approved off-site project to address the SWQD<sub>v</sub> discharged from a project site. The required off-site mitigation volume must be calculated using Equation 2:

$$[Equation 2] \quad M_v [ft^3] = SWQD_v [ft^3] - R_v [ft^3]$$

Where:

$SWQD_v$  = runoff from the 85<sup>th</sup> percentile, 24-hour storm or the 0.75-inch design storm, whichever is greater.



$R_v$  = the volume of runoff reliably retained on site.

$M_v$  = mitigation volume.

### 3. Retrofit of an Existing (Off-site) Development

Retrofit of an existing offsite development may be used to address the SWQDv. The existing offsite development must have similar land uses or comparable/higher runoff pollutant event mean concentrations as the project site and should be designed and constructed to:

- a. Intercept a volume of stormwater runoff as calculated in Equation 1 for biofiltration BMPs and as calculated in Equation 2 for infiltration, bioretention, or rainfall harvest BMPs.
- b. Provide pollutant reduction (treatment) of the stormwater runoff from the project site.

Biofiltration BMPs may be considered when infiltration, bioretention, or rainfall harvest and use is technically infeasible.

All off-site volume mitigation projects must meet the following conditions:

- All off-site projects must drain to the same HUC-12 hydrologic area<sup>6</sup> as the new project or must obtain approval by the Executive Officer of the Regional Water Quality Control Board (Regional Board).
- Project applicant must demonstrate that equal benefits to groundwater recharge cannot be met on the project site.
- Off-site projects must be approved by the City and may also be subject to approval by the Executive Officer of the Regional Board (Executive Officer). The project must be performed as approved by the City or Executive Officer or sufficient funding must be available for public or private off-site projects to achieve an equivalent stormwater volume mitigation.

### 5.3 Onsite Water Quality Mitigation Criteria

For projects using off-site alternative compliance measures, treatment of on-site project stormwater runoff for water quality mitigation must also be provided. Treatment may be

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<sup>6</sup> Hydrologic units and areas are used to classify surface waters in California and are defined Chapter 1 of the Basin Plan for the Coastal Watersheds of Los Angeles and Ventura Counties (LA Basin Plan).



provided by implementing post-construction stormwater BMPs, including flow-through modular treatment systems such as sand filters or other proprietary BMP treatment systems that are certified for “Basic Treatment” under the Washington State Department of Ecology’s TAPE Program; or an appropriate future BMP certification developed by the State of California. The stormwater BMPs and control measures must reduce loading of priority pollutants to ensure that the discharge does not cause or contribute to an exceedance of applicable water quality objectives in the downstream outfall and/or receiving water. Priority pollutants for the City of Palos Verdes Estates include, but are not limited to:

- Fecal indicator bacteria
- DDT
- PCBs
- Mercury
- Arsenic
- Nutrients (total nitrogen and total phosphorus)
- Total Suspended Solids

The sizing of the flow through treatment device shall be based on the greater of:

1. A rainfall intensity of 0.2 inches per hours, or
2. The one-year, one-hour rainfall intensity as determined from the most recent Los Angeles County isohyetal map (see Los Angeles County isohyetal map – link provided in Attachment D).



## Section 6. Hydromodification Control Criteria

Hydromodification control measures are necessary for New Development and Redevelopment projects that are located within natural drainage systems.<sup>7</sup> Natural drainage systems within the City include but are not limited to unimproved sections of:

- Coronel Canyon
- Del Campo Valley
- Lunada Canyon
- Malaga Canyon
- Margate Canyon Creek
- Olmsted Canyon Creek
- Valmonte Canyon
- Zumaya Canyon
- Zurita Canyon

All land areas directly or indirectly tributary to a natural drainage system are considered to be located within natural drainage systems. A map with an overlay showing natural drainage systems and significant ecological areas in the City is available here: <https://www.pvestates.org/services/public-works> .

Hydromodification control measures are used to minimize changes in post-development storm water runoff discharge rates, velocity, and duration in order to protect natural drainage systems downstream. Projects greater than one acre in total disturbed area, unless exempt per the list at the end of this section, must implement hydromodification control measures per the requirements in Chapter 13.08.060 C.5.b. of the City's Municipal Code as described below. Alternatively, project design may adhere to hydromodification requirements set forth in Section 8 of the LA County LID Manual.

The following New Development and Redevelopment projects must include one or a combination of hydromodification control BMPs, LID strategies, or stream and riparian buffer restoration measures:

- (1) Single-family home projects identified in Section 2 that meet stormwater performance requirements by implementing LID BMPs in accordance with methods outlined in Section 4 will satisfy the hydromodification requirements of the City's Municipal Code.

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<sup>7</sup> "Natural drainage systems" means all drainages that have not been improved, e.g., channelized or armored with concrete, shotcrete, or riprap, or drainage systems that are tributary to a natural drainage system.



(2) Non-single-family home projects disturbing an area greater than one acre but less than fifty acres within natural drainage systems must demonstrate one of the following:

- (a) The project has been designed to retain onsite the stormwater runoff volume from the ninety-fifth percentile, twenty-four-hour storm; or
- (b) The runoff flow rate, volume, velocity, and duration for the post-development condition do not exceed the pre-development condition for the two-year, twenty-four-hour rainfall event; or
- (c) The erosion potential ( $E_p$ ) in the receiving water channel will approximate one (1), as determined by a hydromodification analysis study and the equation provided in the MS4 Permit, or other approved equations.

(3) Non-single-family home projects disturbing fifty acres or more within natural drainage systems must demonstrate one of the following:

- (a) The project has been designed to infiltrate on site the stormwater volume from the runoff of the two-year, twenty-four-hour storm event; or
- (b) The runoff flow rate, volume, velocity, and duration for the post-development condition do not exceed the pre-development condition for the two-year, twenty-four-hour rainfall event; or
- (c) The erosion potential ( $E_p$ ) in the receiving water channel will approximate one (1), as determined by a hydromodification analysis study and the equation provided in the MS4 Permit, or other approved equations.

Exemptions from these hydromodification requirements include:

- a. The clearing or dredging of a natural drainage system provided the required environmental permits are obtained;
- b. Replacement, maintenance or repair of an existing flood control facility, storm drain, or transportation network;
- c. Redevelopment projects in the urban core that do not increase the effective impervious area or decrease the infiltration capacity of pervious areas;



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- d. Projects that have any increased discharge directly or via a storm drain to a sump, lake, area under tidal influence, into a waterway that has a 100-year peak flow (Q100) of 25,000 cfs or more, or other receiving water that is not susceptible to hydromodification impacts; or
- e. Projects that discharge directly or via a storm drain into concrete or otherwise engineered (not natural) channels, which, in turn, discharge into a receiving water that is not susceptible to hydromodification impacts.



## **Section 7. Submittal of Project Plans**

Upon completion of initial project plans, developers must submit for approval by the City of Palos Verdes Estates Public Works Department a post construction stormwater mitigation plan (LID Plan) outlining the BMPs utilized by the project to conform to the stormwater performance requirements. These plans must include all BMP sizing calculations and details, as well as expected BMP pollutant removal efficiency.<sup>8</sup> Attachment F - *LID Project Information Form* - must be completed and submitted to the City along with the LID Plan. In addition, if alternative compliance measures are used due to technical infeasibility, a report demonstrating qualifying technical infeasibility must be submitted to the City. No discretionary permit may be issued for any new development or redevelopment project subject to these LID requirements until the City's authorized enforcement officer confirms that the LID Plan complies with the applicable stormwater performance requirements and implements appropriate site planning and design best practices.

### **7.1 Issuance of Final Approval**

Project owners shall provide an operation and maintenance plan, monitoring plan where required, and verification of ongoing maintenance provisions for LID practices, treatment control BMPs, and hydromodification control BMPs including but not limited to final map conditions, legal agreements, covenants, conditions or restrictions, CEQA mitigation requirements, conditional use permits, and/or other legally binding maintenance agreements.

As a condition for issuing final approval for new development or redevelopment projects, property owners or their representative(s) shall build all stormwater quality mitigation BMPs including structural or treatment control BMPs that are shown on the approved project plans and shall submit the signed *Owner Certification Form* (Attachment E) stating that all structural or treatment control BMPs will be maintained in compliance with the MS4 permit and other applicable regulatory requirements. Evidence of recordation of this document shall be a requirement of final approval of the project.

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<sup>8</sup> For BMPs detailed in the LA County LID Manual, the pollutant removal summaries provided in the manual are sufficient to meet this requirement. Other BMPs must be accompanied by similar BMP performance summaries.



## **7.2 Transfer of Properties Subject to Maintenance of Structural and Treatment Control BMPs**

The transfer or lease of a property subject to a requirement for maintenance of structural and treatment control BMPs shall include conditions requiring the transferee and its successors to either (a) assume responsibility for maintenance of any existing structural or treatment control BMP or (b) to replace an existing structural or treatment control BMP with new control measures or BMPs meeting the current standards of the City and the MS4 Permit. Such requirement shall be included in any sale or lease agreement or deed for such property. The condition of transfer shall include a provision that the successor property owner or lessee conduct maintenance inspections of all structural or treatment control BMPs at least once a year and retain proof of inspection.

For residential properties where the structural or treatment control BMPs are located within a common area which will be maintained by the community association, appropriate arrangements shall be made with the association regarding the responsibility for maintenance.

If structural or treatment control BMPs are located within an area proposed for dedication to a public agency, they will be the responsibility of the developer until the dedication is accepted.





## Section 8. Resources

Business classifications potentially regulated by the Industrial General Permit:

[https://www.waterboards.ca.gov/water\\_issues/programs/stormwater/sicnum.html](https://www.waterboards.ca.gov/water_issues/programs/stormwater/sicnum.html)

CASQA's California LID Portal:

<https://www.casqa.org/resources/california-lid-portal>

City of Palos Verdes Estates Low-Impact Development Guidelines and related forms available for download here: <https://www.pvestates.org/services/public-works>

County of Los Angeles Low Impact Development Standards Manual (2014) is available for download here:

<http://dpw.lacounty.gov/idd/lib/fp/Hydrology/Low%20Impact%20Development%20Standards%20Manual.pdf>

County of Los Angeles Stormwater Best Management Practice Design and Maintenance Manual is available for download here:

[http://dpw.lacounty.gov/DES/design\\_manuals/StormwaterBMPDesignandMaintenance.pdf](http://dpw.lacounty.gov/DES/design_manuals/StormwaterBMPDesignandMaintenance.pdf)

County of Los Angeles Hydrology Map, which contains the 85<sup>th</sup> percentile, 24-hour storm depths throughout the County as well as the 1-year, 1-hour rainfall intensity, can be found here: <http://www.ladpw.org/wrd/hydrologygis/>

Los Angeles County General Plan Appendix E: Conservation and Natural Resources Element Resources available at: <http://planning.lacounty.gov/sea>

State Water Resources Control Board certified full capture systems for trash:

[https://www.waterboards.ca.gov/water\\_issues/programs/stormwater/trash\\_implementation.html](https://www.waterboards.ca.gov/water_issues/programs/stormwater/trash_implementation.html)

State Water Resources Control Board Industrial Stormwater Program:

[https://www.waterboards.ca.gov/water\\_issues/programs/stormwater/industrial.html](https://www.waterboards.ca.gov/water_issues/programs/stormwater/industrial.html)

State of Washington, Department of Ecology's Emerging Stormwater Treatment Technologies (TAPE) program page:

<https://ecology.wa.gov/Regulations-Permits/Guidance-technical-assistance/Stormwater-permittee-guidance-resources/Emerging-stormwater-treatment-technologies>

USEPA's guidance regarding Managing Wet Weather with Green Infrastructure: Green Streets (December 2008 EPA-833-F-08-009) is available for download here:

<https://www.epa.gov/green-infrastructure/green-street-handbook>

# Attachments

**Attachment A:**

**City of Palos Verdes Estates**

**Municipal Code Chapter 13.08**

**Stormwater and Urban Runoff Pollution Control**

[The most current version of the municipal code is available for download at the following link: <https://www.codepublishing.com/CA/PalosVerdesEstates/> ]

**Attachment B:**  
**City of Palos Verdes Estates**  
**Green Street Policy**

**RESOLUTION R15-18**

**A RESOLUTION OF THE CITY COUNCIL  
OF THE CITY OF PALOS VERDES ESTATES, CALIFORNIA  
ADOPTING A GREEN STREETS POLICY FOR TRANSPORTATION CORRIDORS**

WHEREAS, the new Municipal Separate Storm Sewer System (MS4) Permit (Order No. R-2012-0175) was adopted by the California Regional Water Quality Control Board, Los Angeles Region on November 8, 2012 and requires development of Watershed Management Programs (WMPs) or Enhanced Watershed Management Programs (EWMPs) for each watershed that an agency lies in among other requirements; and

WHEREAS, Municipalities electing to prepare an EWMP under this Permit are required to demonstrate that Green Street policies are in place that specify the use of green street strategies for transportation corridors; and

WHEREAS, Green Streets are enhancements to street and road projects to improve the quality of storm water and urban runoff through the implementation of infiltration measures such as bioretention and infiltration trenches and dry wells; biotreatment/infiltration measures such as flow-through planters and vegetated swales; treatment Best Management Practices (BMPs) such as catch basin filters and screens; and implementing and maintaining xeriscaped parkways and tree lined streets; and

WHEREAS, The City of Palos Verdes Estates is participating in the Palos Verdes Peninsula Watershed Management Group (Peninsula WMG). The EWMP has been developed to implement the requirements of the MS4 Permit on a watershed scale. The goal of the requirements is to reduce the discharge of pollutants from MS4s to the maximum extent practicable.

NOW, THEREFORE, the City Council of the City of Palos Verdes Estates DOES HEREBY RESOLVE AS FOLLOWS:

SECTION 1. The City Council hereby adopts a Green Streets Policy attached hereto and incorporated by reference, as the official City policy promoting green street strategies for transportation corridors.

SECTION 2. The City Clerk shall certify to the passage and adoption of this Resolution R15-18.

PASSED, APPROVED AND ADOPTED on this 12<sup>th</sup> day of May, 2015.

\_\_\_\_\_  
James Goodhart, Mayor

ATTEST:

APPROVED AS TO FORM:

\_\_\_\_\_  
Vickie Kroneberger, City Clerk

\_\_\_\_\_  
Christi Hogin, City Attorney

**CITY OF PALOS VERDES ESTATES**  
**GREEN STREET POLICY**

**Purpose**

It is the policy of the City of Palos Verdes Estates (City) to implement green street Best Management Practices (BMPs) as elements of street and roadway projects including public works capital improvement projects. This policy is implemented in compliance with the Waste Discharge Requirements for Municipal Separate Storm Sewer System (MS4) Discharges within the Coastal Watersheds of Los Angeles County, Order No. R4-2012-0175, NPDES Permit No. CAS004001 effective December 28, 2012, and any amendment thereto (Municipal Stormwater Permit).

Green streets are amenities that provide multiple benefits including water quality improvement, attractive streetscapes and parkways, traffic calming, enhanced accessibility to all roadway users, reduction in the heat island effect, and creation of linear or pocket parks. Green streets can incorporate a wide variety of design elements and techniques including the minimization of impervious area through reduction in street width and the application of permeable pavements, street trees and landscaped medians, bioretention, vegetated swales, biofiltration, and/or storage of stormwater. Application of green techniques encourages stormwater contact with soil and vegetation to facilitate natural pollutant removal processes as well as retention and/or infiltration of stormwater to reduce runoff.

**Policy**

- A. **Application.** The City will require the application of green street strategies consistent with USEPA guidance regarding Managing Wet Weather with Green Infrastructure—Green Streets (December 2008 EPA-833-F-08-009) or any successor guidelines adopted by the USEPA and endorsed by the California Regional Water Quality Control Board for the following types of projects:
1. New public and private street and road construction or private development projects that include street and road construction of 10,000 square feet or more of impervious surface area;
  2. Redevelopment of streets and roads that results in the creation or addition or replacement of 5,000 square feet or more of impervious surface area on an already developed site.

The term “street and road construction projects” applies to projects that are standalone street, road or highway projects and also applies to such projects within larger projects.

Routine maintenance (as defined in the Municipal Stormwater Permit) and linear utility projects are excluded from these requirements. Routine maintenance includes slurry seals, repaving, and reconstruction of the road or street where the original line and grade are maintained. It also includes road shoulder work, re-grading of dirt or gravel roadways and shoulders, and performing ditch cleanouts.

- B. Benefits. The City will consider opportunities to improve stormwater quality, eliminate non-stormwater runoff, replenish groundwater, create attractive streetscapes and parkways, and provide enhanced accessibility to all roadway users and safety through new development and redevelopment of street and roadway projects and related capital improvement projects.
- C. Best Management Practice (BMP) Selection and Design. The City will require projects subject to this policy to incorporate green street BMPs to address stormwater runoff from the project area. The attached table is provided to guide selection of BMPs for Green Street projects. The most recent version of the County of Los Angeles Low Impact Development (LID) Standards Manual will serve as the design reference for selected Green Street BMPs. The Director of Planning and Building or Designee has final authority in decisions regarding project/site-specific technical feasibility for selected BMPs.
- D. Retrofit Scope. The City will use the Peninsula Enhanced Watershed Management Program to identify opportunities for green street BMP retrofits. Final decisions regarding implementation will be determined by the City Manager based on the availability of adequate funding.
- E. Training. The City will incorporate aspects of green streets into internal annual staff training of targeted staff.

**City of Palos Verdes Estates Green Street Project BMP Selection Guideline**

BMP Type	Green Street Project Type						Slopes*
	Commercial Streets w/ Curb and Gutter	Residential Street w/ Curb and Gutter	Roads w/rolled or soft shoulder	Minor Arterials	Major Arterials	Sidewalks	
Alternative Street Designs +	X	X	◆	X	X	X	L/M/S
Street Trees/Canopy Rainfall Interception ++	◆	◆		◆	◆	◆	
VEG-2 : Stormwater Planter	X	X					L/M
VEG-3 : Tree-Well Filter	X	X		X		X	L/M/S
VEG-4: Vegetated Swales	X	X	X	X	X		L/M
VEG-5: Filter Strips			X	X	X		L/M
RET-1: Bioretention	X	X	X	X	X		L/M
RET-3: Infiltration Trench	X	X	X			X	L/M
RET-4: Dry Well			X				L/M
RET-5: Permeable Pavement without Underdrain						X	L
T-5: Permeable Pavement with Underdrain	X	X	X			X	L/M
T-6: Proprietary Treatment Control Measures	X	X		X	X	X	

\* L-Low (<5%), M-Moderate, S-Steep (>12%)

◆ Minimum BMPs to be implemented for green street project type

X BMPs to be considered depending on greens street project types and specific location

+ Not included in County of Los Angeles Low Impact Development (LID) Standards Manual, subject to review by the Director of Planning and Building or designee.

++ Typical street tree spacing is 30 feet apart along medians and other public rights-of-way subject to review by the Public Works Director or designee.



**Attachment C:**  
**Significant Ecological Areas**  
**within the**  
**City of Palos Verdes Estates**

The MS4 Permit defines a Significant Ecological Area (SEA) as “an area that is determined to possess an example of biotic resources that cumulatively represent biological diversity, for the purposes of protecting biotic diversity, as part of the Los Angeles County General Plan”. Areas are designated as SEAs if they possess one (1) or more of the following criteria:

1. The habitat of rare, endangered, and threatened plant and animal species;
2. Biotic communities, vegetative associations, and habitat of plant and animal species that are either one of a kind, or are restricted in distribution on a regional basis;
3. Biotic communities, vegetative associations, and habitat of plant and animal species that are either one of a kind or are restricted in distribution in Los Angeles County;
4. Habitat that at some point in the life cycle of a species or group of species, serves as a concentrated breeding, feeding, resting, migrating grounds and is limited in availability either regionally or within Los Angeles County;
5. Biotic resources that are of scientific interest because they are either an extreme in physical/geographical limitations, or represent an unusual variation in a population or community;
6. Areas important as game species habitat or as fisheries;
7. Areas that would provide for the preservation of relatively undisturbed examples of natural biotic communities in Los Angeles County; and
8. Special areas.

The following description of the SEAs within the City of Palos Verdes Estates is excerpted from the **Los Angeles County Department of Regional Planning – SEA Program and the Los Angeles County General Plan Appendix E: Conservation and Natural Resources Element Resources** available at: <http://planning.lacounty.gov/sea>. A map of the natural drainage and SEA areas in Palos Verdes Estates is available at: <https://www.pvestates.org/services/public-works>. The descriptive excerpts below have been edited for relevance to the portion of the Palos Verdes Peninsula and Coastline SEA located within the City of Palos Verdes Estates.

#### **BOUNDARY AND RESOURCES DESCRIPTION**

The Palos Verdes Peninsula (Peninsula) and Coastline SEA is chiefly located offshore around the Palos Verdes Peninsula, but also includes terrestrial habitat in the Portuguese Bend Preserve and several other disjunctive drainages and ridgelines. All of the many offshore rocks within 12 nautical miles of the coast are part of the California Coastal National Monument that are managed by the Bureau of Land Management in the U.S.

Department of the Interior. Many endangered marine mammals use this habitat. Certain interior Peninsula canyons and slopes are critical habitat for the federally threatened coastal California gnatcatcher (*Polioptila californica californica*). Certain of the interior areas are also critical habitat for the federally endangered Palos Verde blue butterfly (*Glaucopsyche lygdamus palosverdesensis*). The gnatcatcher favors the coastal sage scrub or chaparral vegetation; the butterfly favors flatter areas with grassland plants of the upper marine terraces, such as Ventura milk-vetch (*Astragalus pycnostachyus* var. *lanosissimus*), which is a principal food plant for its larvae. The gnatcatcher critical habitat covers virtually all of the terrestrial part of the SEA and extends well beyond the SEA on the Peninsula. The butterfly's critical habitat is chiefly in flatter areas of the marine terraces but can include broader areas of the canyons.

The SEA is located at least partially in each of the following United States Geological Survey (USGS) 7.5' California Quadrangles: Torrance, San Pedro, and Redondo Beach.

Most of the SEA is in the nearshore marine habitat and extends from the high tide line of the beach to about one mile offshore. The designated SEA traverses along the coastline of the Palos Verdes Peninsula from Flat Rock Point at the northern end of Bluff Cove in Palos Verdes Estates to the City of Palos Verdes Estates boundary with Rancho Palos Verdes. The terrestrial part of the SEA includes several non-contiguous ravines, canyons and streambeds that are adjacent to rural residential areas.

Specifically, disjunctive interior parts of the SEA include Agua Amarga Canyon and Lunada Canyon, which drain to Lunada Bay (critical habitat for both the Palos Verdes blue butterfly and the coastal California gnatcatcher), as well as cliffs and headland areas with coastal bluff, coastal chaparral, and grassland.

The SEA is formed by the Palos Verdes Range, and is characterized by marine terraces atop rough terrain that is created by the erosion of the upland areas into many canyons. The flatter areas on the marine terraces are the areas that have been developed. Unparalleled headlands, rocky shoreline, and the land-sea interface provide for a tremendous variety of biotic resources in this area. It is one of the most biologically diverse and productive regions in the County, and contains several biotic communities, including rocky intertidal, kelp bed, coastal strand, and coastal sage scrub. This 10-mile stretch of coastline, between Point Fermin and Bluff Cove, is the only sizeable rocky intertidal area in the County.

The Peninsula was once an island before sediments filled the Los Angeles Basin, and it has many biological associations today that originated during the time it was insular. A number of the uncommon plants, for example, are also only known from offshore islands, and some of the bird subspecies on the Peninsula are also only known elsewhere on the offshore islands. They are not found on the mainland except on the Palos Verdes Peninsula.

Rocky shores support a great number of species. This is primarily due to the interface of the ocean and the land, the highly diverse natural communities that both contain, and the oxygen and food-rich environment offered by this habitat. The natural features include a variety of substrates, both stable and unstable, the aeration of water and humidification of the air through wave splash, and the upwelling of nutrient-rich waters along the Southern California coast.

Sub-tidally, one can find representatives of every phylum of animals (major groupings, such as mollusks, echinoderms, jellyfish, etc.), many of which are not represented on land. Rocky substrates are as diverse as the intertidal areas. Sandy subtidal areas also support a great variety of species, but most are cryptic and submerge into the depths of the sand because of the high energy and unstable nature of their environment.

Kelp beds dominated by giant kelp (*Macrocystispyrifera*) are an extremely productive habitat that provides food, attachment sites, and shelter for a diverse community of invertebrates, fishes, and sea mammals. They are an important nursery habitat for juvenile fishes. Kelp beds were originally common off the Southern California coast wherever rocks were present at shallow depths. However, due to man-made and natural phenomena, this habitat has been severely diminished in the region, and is now rare in the County. A kelp bed habitat restoration program was begun in the area in the 1960s and appears to have been successful.

The coastal cliffs found in the area range in elevation from 100 to 300 feet and support coastal sage scrub and coastal strand bluff scrub. These and offshore rocks offer ideal roosting and feeding sites for numerous shorebirds, gulls, and other seabirds, including the fully protected California brown pelican (*Pelecanus occidentalis californicus*). The area is an important stop for migrating birds as they fly along the coast or across the Santa Monica Bay. In addition, the bluff tops that are now abandoned agricultural fields are utilized by many species as wintering feeding grounds. One fully protected species, the American peregrine falcon (*Falco peregrinus anatum*), and one very uncommon species

of conservation concern, the prairie falcon (*F. mexicanus*), have been known to winter here in recent years.

The bluff tops and cliffs have been disturbed by pedestrian use, residential development, and agriculture. Only very small, isolated ravines remain in a natural state. The shoreline has suffered major biological impairment, commonly blamed on over-collection by humans and intense pollution. The health of the marine environment has been relatively poor due to human influences, such as outfalls with toxic contents, but appears to be slowly recovering.

#### **WILDLIFE MOVEMENT**

The SEA is on the Pacific Flyway migration route, which is used by many birds seasonally and plays an important role as a stopover because of its extensive undisturbed marine resources. It does not fall within any identified terrestrial movement routes for wildlife because it is isolated by the ocean on one side and enclosed by miles of developed land on the remaining terrestrial sides.

The offshore major part of the SEA is on the annual migration route of the California gray whale (*Eschrichtius robustus*), which is a Convention on International Trade in Endangered Species (CITES) Appendix I animal. This means that they have endangered status, and no trade or harvest is permitted, except by strictly controlled export and import permits that are issued in countries that are party to the convention and have legislation of adoption, which includes the U.S. The gray whale migrates close to shore on its transit during the winter months, from the Bering Sea to lagoons of Baja California for calving and breeding. A whale count station is manned by volunteers at the Point Vicente Park and Interpretive Center that has yearly records, starting in 1979. The whales generally return north offshore. The area may be a migration corridor for other marine animals, as this is part of the great Southern California Bight, which has an eddy circling counterclockwise to the north off the southward flow of the California Current. This flow brings marine organisms (fishes, invertebrates, and plants) that may have major population concentrations in the south to this part of the ocean habitat. Most of these organisms have a planktonic stage that is dependent on the current system to maintain their populations and distribution. Pollution of the ocean waters by development on land will have significant effects that may not be appreciated immediately because of the cryptic nature of subtidal animals and plants.

Other CITES Appendix I mammals have been recorded as using the SEA in the Point Vicente records including sperm whales (*Physeter macrocephalus*), minke whales (*Balaenoptera acutorostrata*), humpback whales (*Megaptera novaeangliae*), blue whales (*Balaenoptera musculus*), fin whales (*Balaenoptera physalus*), and southern sea otters (*Enhydra lutris nereis*).

The SEA meets all SEA designation criteria and supports many regional biological values. Each criterion and how it is met is described in the table below.

CRITERION	STATUS	JUSTIFICATION
A) The habitat of core populations of endangered or threatened plant or animal species.	Met	The Palos Verdes Peninsula is the western-most area of breeding for the threatened coastal California gnatcatcher. The headlands and rocky shoreline provide wintering habitat for two important birds: the fully protected California brown pelican and the state-fully protected American peregrine falcon. The canyons of the SEA support three races of birds that are residents only on the Peninsula and the Channel Islands: insular forms of the orange-crowned warbler, western flycatcher, and Allen’s hummingbird. Rare plants, such as southern island mallow and island crossosoma, make this area a very special mainland population for species that otherwise occur only on the offshore islands. Island green dudleya, a rare bluff plant known only from Palos Verdes Peninsula, Santa Catalina Island, and San Nicolas Island, occurs in the Portuguese Bend Landslide.
B) On a regional basis, biotic communities, vegetative associations, and habitat of plant or animal species that are either unique or are restricted in distribution.	Met	Unparalleled headlands, rocky shoreline, and the land- sea interface provide for a tremendous variety of biotic resources in the coastline area. Rocky shores support a great number of species, and the upwelling of deep waters provides nutrient-rich waters for the area’s kelp beds, which are dominated by giant kelp. Kelp beds were formerly common off the Southern California coast wherever rocks were present at shallow depths. However, due to man-made and natural phenomena, this habitat has been severely diminished in the region. The mainland SEA areas contain mainland populations of species that occur chiefly on the offshore Channel Islands. Any population characteristic of an island is of extremely restricted regional distribution.
C) Within the County, biotic communities, vegetative associations, and habitat of plant or animal species that are either unique or are	Met	Kelp beds are now rare in the County. These algal communities can account for 90% of the biomass where they occur, and they provide food and habitat for hundreds of species. Like terrestrial forests, they moderate the microclimate, reduce wave shock to shorelines and provide shade and shelter to their myriad denizens. The coastal cliffs

CRITERION	STATUS	JUSTIFICATION
restricted in distribution		support coastal sage and coastal strand vegetation, which are rare in Los Angeles because of the scarcity of rocky headlands. The Peninsula's former island status and current maintenance of mainland populations of species that occur chiefly on the offshore Channel Islands are very special. Any population characteristic of an island is of extremely restricted distribution in the County.
D) Habitat that at some point in the life cycle of a species or group of species, serves as concentrated breeding, feeding, resting, or migrating grounds and is limited in availability either regionally or in the County.	Met	The coastal cliffs provide ideal roosting and feeding sites for numerous shorebirds, gulls, and other seabirds, including the fully protected California brown pelican. This headland is a principal rest-stop for migrating terrestrial and marine birds on the Pacific Flyway and a wintering area for some migrants. Bluff tops and marine terraces of abandoned agricultural fields are utilized by many species as winter feeding grounds. The Palos Verde Peninsula is the western-most area of breeding for the federally threatened coastal California gnatcatcher. It has numerous plant and animal species that only occur here and otherwise on the offshore islands, so this is a special area for all phases of their life cycles. The marine area is an important migration area for all of the sea life and marine mammals.
E) Biotic resources that are of scientific interest because they are either an extreme in physical/geographical limitations or represent unusual variation in a population or community.	Met	Much scientific and educational work has been done on this part of the coastline. State and county agencies have generated a great deal of information about the area. The Peninsula was once an island and has biotic characteristics more like the offshore Channel Islands than the rest of the County. It is an anomaly of an island now attached to the mainland, and thus interesting for biogeographic studies. The Peninsula canyons are the western-most area of breeding coastal California gnatcatchers. Because of the resident birds and plants that occur only on the Palos Verdes Peninsula and the Channel Islands, this area is of scientific interest for study of island biogeography and evolutionary ecology.
F) Areas that would provide for the preservation of relatively undisturbed examples of the original natural biotic communities in the County.	Met	As the only extensive (10 miles long) rocky intertidal shoreline in the County, the coastline is an important area for preserving its intense biodiversity. It has headlands, rocky shoreline cliffs, rocky intertidal areas, boulder field intertidal areas, kelp beds, coastal strand, ephemeral coastal strand, and coastal sage scrub. The bluffs have a special array of plants found nowhere else on the County mainland. The Peninsula has diverse communities typical of the offshore Channel Islands including coastal sage scrub (which is used by the mainland threatened bird, coastal California gnatcatcher), chaparral, and riparian habitats. The SEA canyons are the least disturbed coastal drainages of the County.

In conclusion, the area is an SEA because it contains A) the habitat of core populations of endangered and threatened plant and animal species; B-C) biotic communities, vegetative associations, and habitat of plant and animal species that are either unique or are restricted in distribution in the County and regionally; D) concentrated breeding, feeding, resting, and migrating grounds, which are limited in availability in the County; E) biotic resources that are of scientific interest because they are either an extreme in physical/geographical limitations, or represent unusual variation in a population or community; and F) areas that provide for the preservation of relatively undisturbed examples of original natural biotic communities in the County.



## **Attachment D**

### **County of Los Angeles**

#### **Analysis of 85<sup>th</sup> Percentile 24-hour Rainfall Depth**

The County of Los Angeles Hydrology Map, which contains the 85<sup>th</sup> percentile, 24-hour storm depth throughout the County as well as the 1-year, 1-hour rainfall intensity, can be found here: <http://www.ladpw.org/wrd/hydrologygis/>

The map can be used to obtain the design storm for projects within the City of Palos Verdes Estates. Simply check the box for the desired “Layer” in the top left corner of the map, and then zoom into the project location. For projects lying between two isohyet lines, the greater of the two isohyet values should be used to estimate the appropriate design storm.



## **Attachment E:**

### **LID Project Certification Statement**

As a condition for issuing final approval for projects subject to these requirements, the property owner shall submit the following signed certification statement.



## Owner's Certification Statement for Stormwater Structural or Treatment Control BMPs

The subject property/project site and all structural or treatment control BMPs included on the project plans and specifications will be maintained in compliance with the MS4 Permit and other applicable regulatory requirements.

Should the above representation be incorrect, we understand and acknowledge that we are responsible for the cost of correcting any deficiency in the performance of the project condition as well as payment of applicable administrative and/or civil remedies. We understand that the City will rely on the representations contained in this statement as having achieved our obligation for compliance with stormwater requirements and sign this certification voluntarily, without purpose of evasion and of our own free will and with full knowledge of its significance.

The transfer or lease of a property subject to a requirement for maintenance of structural and treatment control BMPs shall include conditions requiring the transferee and its successors to either (a) assume responsibility for maintenance of any existing structural or treatment control BMP or (b) to replace an existing structural or treatment control BMP with new control measures or BMPs meeting the current standards of the City and the MS4 Permit. Such requirement shall be included in any sale or lease agreement or deed for such property. The condition of transfer shall include a provision that the successor property owner or lessee conduct maintenance inspections of all structural or treatment control BMPs at least once a year and retain proof of inspection.

For residential properties where the structural or treatment control BMPs are located within a common area which will be maintained by the community association, appropriate arrangements shall be made with the association regarding the responsibility for maintenance.

If structural or treatment control BMPs are located within an area proposed for dedication to a public agency, they will be the responsibility of the developer until the dedication is accepted.

---

Owner's Name – Print

---

Owner's Name – Signature

---

Date

**Attachment F:**

**LID Project Information Form**

A fillable version of the following form is available for download from the City's website at: <https://www.pvestates.org/services/public-works>

# LID Project Information Form

## City of Palos Verdes Estates

1. Project Name

2. Street Address

3. Parcel APN

4. Select predominant land use of proposed project: Low-density Residential

5. Latitude:  Longitude:

(enter in decimal notation with at least six values to the right of the decimal point)

Use this link to look up latitude and longitude for entries above:

<https://mynasadata.larc.nasa.gov/latitudelongitude-finder/>

6. Select current project status:

7. Enter planned or actual project completion date:

8. Choose stormwater mitigation project type: New Development w/Onsite Retention

If project type includes alternative compliance for volume mitigation, check box if site-specific

Technical Infeasibility Analysis report has been submitted to City for review.

9. Choose the BMP type for onsite project volume mitigation:

If a combination of BMP types is utilized, choose 2<sup>nd</sup> onsite BMP being utilized:

10. Enter the total area draining to all onsite BMPs combined (in acres):

11. Enter the total stormwater storage capacity provided by all onsite BMPs (acre-feet):

Is project storage capacity equal to or greater than runoff from the 85<sup>th</sup> %,24-hr storm?

12. Enter SWQDv for project (in cubic feet):

13. Enter portion of project's SWQDv that will be retained onsite (cubic feet):

14. Enter total designed biofiltration volume (cubic feet):

15. Native soil infiltration rate (inches/hour), if available:

16. Percent imperviousness of project area:

17. If there is rainfall harvest & use, estimate annual stormwater capture (acre-ft/yr):

*See next 2 pages: Directions for Completing LID Project Information Form for explanation on completing individual questions.*

## Directions for completing LID Project Information Form

1. Project Name: e.g., enter owner's last name or commercial facility name.
2. Enter street number and name with prefixes and suffixes, do not enter city, state or zip code.
3. Enter parcel APN if available
4. Use the dropdown list to select predominant land use of proposed project from pull-down box:
  - a. Low-density residential = single family residential
  - b. High-density residential = multi-family residential
  - c. Commercial includes office buildings as well as retail uses
  - d. Industrial including manufacturing, warehousing, etc.
  - e. Transportation includes roads and parking lots
  - f. Institutional includes governmental buildings, schools, religious buildings
  - g. Open space includes parks, playgrounds, natural preserves, trails
5. Enter the latitude and longitude of the project location in decimal notation providing at least six values to the right of the decimal point. If needed, use the provided website link to look up the latitude and longitude using the project address.
6. Project status: use the dropdown list to select "Planned" if project is still in progress, select "Built" if project has been constructed and LID systems are operational.
7. Enter the planned completion date of the project or date LID systems were operational for a "built" project (in MM/DD/YY format).
8. Use the dropdown list to choose the type of stormwater mitigation that will be implemented for the project, identifying first whether it is a **New Development** or **Redevelopment** project and then choosing the appropriate mitigation subtype. The subtype identifies whether the project will be employing **Onsite Retention** of the SWQDv or using one of the **Alternative Compliance** measures (onsite biofiltration, offsite infiltration at an approved alternative project location, or offsite retrofit of an existing site). Refer to **Sections 4 and 5 of the City's Guidance for Stormwater LID** for explanation. The available stormwater mitigation types are:
  - a. New Development – Onsite Retention
  - b. New Development – Alternative Compliance – Onsite Biofiltration
  - c. New Development – Alternative Compliance – Offsite Infiltration
  - d. New Development – Alternative Compliance – Retrofit Existing Development
  - e. Redevelopment – Onsite Retention
  - f. Redevelopment – Alternative Compliance – Onsite Biofiltration
  - g. Redevelopment – Alternative Compliance – Offsite Infiltration
  - h. Redevelopment – Alternative Compliance – Retrofit Existing DevelopmentNote that if an Alternative Compliance option is selected such as biofiltration, then a Technical Infeasibility Analysis Report must be submitted to the City for review—check the box if this report has been submitted.
9. Choose the BMP type being used to mitigate the project SWQDv. This should correspond with the answer you chose above. The choices are:
  - a. Onsite Infiltration (retention) which includes pervious paving, bioretention, and rain gardens
  - b. Rainfall Harvest and Use, i.e., cisterns (also a type of retention)
  - c. Biofiltration which must address at least 1.5 times the portion of SWQDv not retained onsiteIf a project proposes to use a combination of Onsite Retention for part of the project area and Onsite Biofiltration for the rest of the project area, then enter the retention BMP as the 1<sup>st</sup> type and choose the alternative compliance BMP as the 2<sup>nd</sup> BMP type.
10. Enter the total area managed by the BMP(s). If a project uses both Onsite Retention and Onsite Biofiltration, enter the combined drainage areas for both (or all) BMPs used in the project. If a

redevelopment project is not required to address the entire parcel due to less than 50% redevelopment, then only enter the area of the project being redeveloped and addressed by the BMPs.

11. Stormwater Storage Capacity should be the sum of all the stormwater storage volume being provided by the designed BMPs. This value may be different than the SWQDv. For projects that include pervious paving, this value should include the storage volume below the paving. For rainfall harvest this should be the volume of the cistern.
12. Enter the SWQDv in cubic feet for the project as designed (also see **Section 3 of the City's Guidance for Stormwater LID**).
13. Enter the portion of the project SWQDv in cubic feet that will be retained onsite (do not include the portion to be addressed through biofiltration).
14. Enter the design biofiltration volume in cubic feet (if applicable). This value should be at least equal to 1.5 times the non-retained portion of the SWQDv.
15. Native soil infiltration rate: if a native soil infiltration rate is available, e.g., if a site-specific geotechnical report and percolation test was conducted for the project, enter this value in inches per hour.
16. Calculate the proposed percent imperviousness of the project according to the equation:  $\text{Impervious area} / (\text{Impervious area} + \text{Pervious area})$ . Enter the value as a decimal and the form will automatically show it as a percentage.
17. If a rainfall harvest and use BMP is used in the project, please estimate the annual stormwater capture for this system based on average annual rainfall.