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Developer Technical Information for Projects within the City of Rolling Hills

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LIST OF ATTACHMENTS

- Attachment A: City of Rolling Hills Municipal Code, Chapter 8.32 - Storm Water Management and Pollution Control
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- Attachment E: Planning Information to be Submitted for New Development/ Redevelopment Projects
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- Attachment G: Significant Ecological Areas (SEAs) in Rolling Hills



INTRODUCTION

This document contains technical information and guidelines intended to assist the development community working within the City of Rolling Hills with proper implementation of the New Development and Redevelopment Standards of the Los Angeles County Municipal NPDES Permit (MS4 Permit)¹. These New Development and Redevelopment Standards have replaced the Standard Urban Stormwater Mitigation Plan (SUSMP) which had been in effect in the Los Angeles region for the past decade under the previous MS4 Permit. The New Development and Redevelopment design requirements specify the importance of effective site design as well as the selection, design, and implementation of appropriate best management practices (BMPs) to retain the MS4 Permit-specified storm water quality design volume (SWQDv) to lessen the water quality impacts associated with development.

The City of Rolling Hills has revised Chapter 8.32 of its Municipal Code to include development standards which apply to certain new development and redevelopment projects and include low impact development (LID) design standards. Chapter 8.32 as revised is provided as Attachment A.

This document has been created to help developers navigate the permitting process within the City of Rolling Hills more efficiently. Though this document is not exhaustive and does not provide the complete details necessary to appropriately plan and implement LID design in conformance with the MS4 Permit, it does provide a starting point to make the design process more efficient. To that end, each section in this document has been prepared to help developers answer the following questions for their project:

- Section 1: Does my project trigger the New Development or Redevelopment standards set forth in the MS4 Permit?
- Section 2: Are there steps I can take when initially designing my project to reduce the environmental impact and the chances of triggering the MS4 Permit requirements?
- Section 3: If my project is subject to LID requirements, what amount of storm water am I responsible to retain on-site?

¹ Order No. R4-2012-0175 NPDES Permit No. CAS004001 Waste Discharge Requirements for Municipal Separate Storm Sewer System (MS4) Discharges within the Coastal Watersheds of Los Angeles County, except those Discharges Originating from the City of Long Beach.



- Section 4: If my project is subject to LID requirements, what types of LID BMPs do I need to implement?
- Section 5: If my project is subject to LID requirements but I can't retain the required storm water volume on-site, what am I required to do? How do I prove that I can't retain the required storm water volume on-site?
- Section 6: What information do I need to provide to the City as a result of these requirements?
- Section 7: What additional information is available to assist me in the proper design, construction, and maintenance of LID BMPs?

The flow chart presented in Figure 1 contains the general steps for developers within the City of Rolling Hills to walk through in order to comply with the MS4 Permit and the City's Municipal Code. The flow chart should serve as a starting point for developers to determine which sections of this document are relevant to their specific project.

In addition to the LID requirements described herein, developers should review the City's Water Efficient Landscape Ordinance (Chapter 13.18 of the City's Municipal Code) to determine what landscape water conservation standards are necessary to implement on their project. The Water Efficient Landscape Ordinance, provided as Attachment F, applies specifically to:

- All public agency development projects which are subject to discretionary review by the City and propose new or altered landscape area of 2,500 square feet or more; and
- All single family residential development projects subject to discretionary review by the Planning Commission or City Council, with a total new or altered landscape area equal to or greater than 5,000 square feet.

As stated previously, this Developer Technical Information document is neither exhaustive nor stand-alone, but points to previously developed information and guidance where appropriate. In particular, this document relies on the Low Impact Development Standards Manual developed by the County of Los Angeles to provide detailed design requirements for developers to adhere to when implementing LID. Attachments have also been provided at the end of this document to provide supplemental information for LID implementation.

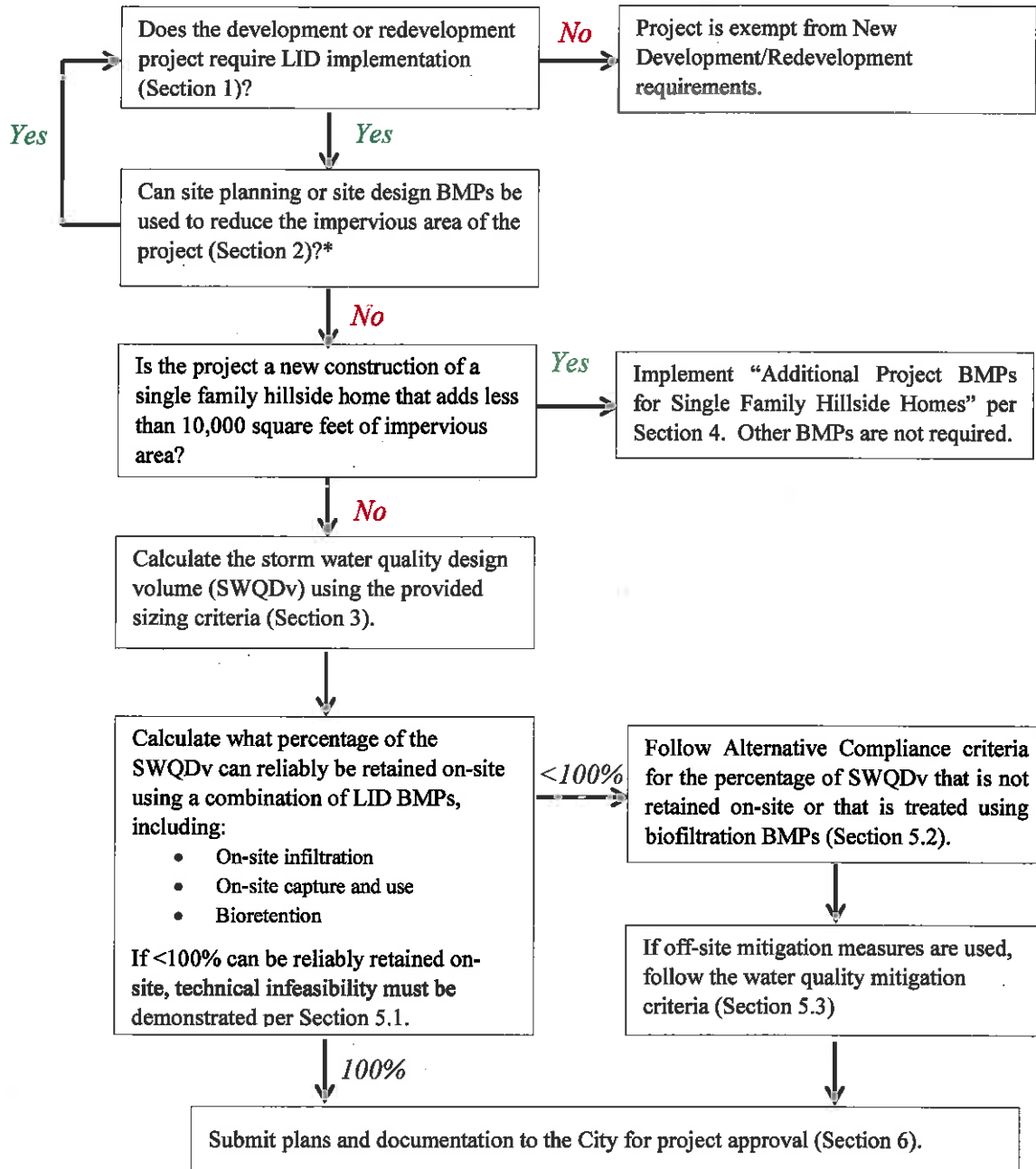


County of Los Angeles Low Impact Development Standards Manual

The County of Los Angeles Low Impact Development (LID) Standards Manual (LA County LID Manual) along with the County's Stormwater BMP Design and Maintenance Manual should serve as the primary design manual for developers to adhere to when designing, implementing, and maintaining LID BMPs on their projects. Both County manuals are available for free and can be downloaded at the web addresses provided in Section 7 below.



**Figure 1: New Development and Redevelopment Project Guidance
Flow Chart for Project Planning**



*If the final impervious area is near the qualifying threshold, consider site planning or site design BMPs (Section 2), e.g., porous pavement, to decrease the final impervious area and to exempt the project from the requirement to retain the SWQDv



SECTION 1. NEW DEVELOPMENT AND REDEVELOPMENT PROJECTS SUBJECT TO LID REQUIREMENTS

As set forth in Chapter 8.32 of the City's Municipal Code, the following projects are required to comply with the New Development and Redevelopment Standards:

1. Construction of new single family residential homes equal to one acre or greater of disturbed area and adding 10,000 square feet or more of impervious surface²;
2. Parking lots with 5,000 square feet or more of impervious area or with twenty-five or more parking spaces;
3. Single family hillside residential developments or redevelopments, which are 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 on these slopes. Single family hillside home projects are exempt from having to capture and treat the SWQDv (as defined in Section 3) unless they create, add, or replace 10,000 square feet or more of impervious surface area. However, the *Additional Project BMPs for Single Family Hillside Homes* described in Section 4 must still be implemented regardless of project size;
4. Street and road construction of 10,000 square feet or more of impervious surface area shall follow USEPA guidance regarding Managing Wet Weather with Green Infrastructure: Green Streets (December 2008 EPA-833-F-08-009) to the maximum extent practicable. Street and road construction applies to standalone streets, roads, highways, and freeway projects, and also applies to streets within larger projects;
5. Projects located in or directly adjacent to, or discharging directly to a Significant Ecological Area (SEA), as shown in Attachment G, where the development will:

² For the purpose of calculating a project's total impervious area, any disturbed 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 by the surface and its underlying material. See Section 3 below for details on calculating the SWQDv.



- a. Discharge storm water runoff that is likely to impact a sensitive biological species or habitat; and
 - b. Create 2,500 square feet or more of impervious surface area;
6. Redevelopment projects that meet the following thresholds:
- a. Land-disturbing activities which create, add, or replace 10,000 square feet or more of impervious surface area on lots containing existing single family dwellings and accessory structures; and
 - b. Land-disturbing activities which create, add, or replace 5,000 square feet or more of impervious surface area on an already developed site excluding single family dwellings and accessory structures.

Where redevelopment results in an alteration to more than fifty percent of impervious surfaces of a previously existing development, and the existing development was not subject to post-development storm water quality control requirements, the entire Project must be mitigated.

Where redevelopment results in an alteration to less than fifty percent of impervious surfaces of a previously existing development, and the existing development was not subject to post-development storm water quality control requirements, only the alteration must be mitigated, and not the entire development.

The following activities or projects do not constitute new development or redevelopment, and are exempt from the New Development and Redevelopment Standards:

1. Routine maintenance activities conducted to maintain original line and grade, hydraulic capacity, or original purpose of facility; road shoulder work, regrading of dirt or gravel roadways and shoulders, and performing ditch cleanouts; update of existing lines and facilities to comply with applicable codes, standards, and regulations regardless if such projects result in increased capacity. This includes replacing existing lines with new materials or pipes; repairing leaks; disturbances to land surfaces solely related to agricultural operations such as disking, harrowing, and soil preparation; or emergency redevelopment activity required to protect public health and safety.
2. Discretionary permit projects or phased project applications which have been deemed complete by February 8, 2013 and which have not received an extension of time.
3. Discretionary permit projects with a valid vesting tentative map.



SECTION 2. SITE PLANNING AND SITE DESIGN BMPS

When initially planning a project, the developer should consider how various Site Planning and Site Design BMPs (LA County LID Manual) can be implemented. These BMPs include:

1. Conserving natural areas, soils and vegetation;
2. Minimizing disturbances to natural drainage patterns;
3. Minimizing and disconnecting impervious surfaces;
4. Minimizing soil compaction; and
5. Directing runoff from impervious areas to pervious areas.

By minimizing the amount of impervious area on the project via Site Planning and Site Design BMPs, it may be possible to reduce a project's impervious area below the applicable threshold trigger in Section 1 above.

SECTION 3. SIZING CRITERIA

For New Development and Redevelopment projects that are identified in Section 1 as being subject to LID requirements, BMPs must be implemented to retain on-site the Storm Water Quality Design Volume (SWQDV)³, defined as runoff from the greater of either:

- The 0.75 inch, 24-hour rain event; or
- The 85th percentile, 24-hour event, as determined from the Los Angeles County 85th percentile precipitation isohyetal report (see Attachment B).

To calculate the SWQDV, follow these steps:

1. Determine the 85th percentile, 24-hour storm depth for the project area using the report provided as Attachment B.
2. Select the design storm, P_{design} [in], as the greater of either the 85th percentile storm depth or 0.75 inches.

³ The term "SUSMP Volume" is used in the LA County LID Manual to refer to the design capture volume.



3. Determine the effective catchment area required to be retained 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 redevelopment projects which alter less than fifty percent of impervious surfaces of a previously existing development, the catchment area should be calculated based on the alteration area only.

4. Calculate the SWQDv based on the following equation:

$$\text{SWQDv [ft}^3\text{]} = \text{Catchment Area [ft}^2\text{]} * P_{\text{design [in]}} * 0.083 \text{ [ft/in]}$$

This calculated volume of water must be retained on-site using BMPs from Section 4 unless it is demonstrated that this is technically infeasible and/or alternative compliance options are more appropriate (see Section 5 below).

SECTION 4. LID BEST MANAGEMENT PRACTICES

In order to control pollutants and storm water runoff from the project site, LID BMPs must be implemented to capture and retain on-site the entire SWQDv (where technically feasible). To accomplish this, BMP types to be used shall include any combination of infiltration, rainfall harvest and use, and/or bioretention. The LA County LID Manual sets forth standards that should be followed when designing and implementing these BMPs.

Infiltration- Infiltration BMPs are constructed with a highly permeable base that is specifically designed to infiltrate runoff. Because it is not often 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, infiltration trenches and basins, and dry wells. In some development scenarios, such as sites with shallow groundwater, sites susceptible to geotechnical hazards, or sites with poor infiltration rates (<0.3 in/hr), it may not be feasible to use infiltration BMPs.

Rainfall Harvest and Use- These BMPs capture storm water 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, pre-fabricated barrels (rain barrels) to large, custom-built cisterns. These systems can be constructed above ground, where 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 storm water. Pollutants are removed by filtering storm water through plants and engineered soils. Bioretention BMPs designed to retain water on-site cannot contain an underdrain (BMPs with an underdrain are discussed in Section 5 below). Attachment C⁴ includes the design criteria for bioretention BMPs including soil specifications. Examples of bioretention BMPs include vegetated planter boxes and rain gardens.

If the entire SWQDv cannot be retained on-site via one or a combination of the BMPs specified in this Section, alternative compliance options must be implemented (these BMPs are described in Section 5: Alternative Compliance). If only a fraction of the SWQDv can be retained on-site, that fraction must be retained on-site using the BMPs described above and the remaining fraction of the SWQDv must be treated using the alternative compliance measures described below.

Additional Project BMPs for Single Family Hillside Homes- The following measures must be implemented during the construction of a single-family hillside home in addition to applicable BMPs above:

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

SECTION 5. ALTERNATIVE COMPLIANCE

If technical infeasibility can be demonstrated such that the full SWQDv cannot reliably be retained on-site, alternative compliance measures may be implemented to treat the portion of the SWQDv not retained on-site. Alternative compliance using on-site biofiltration is described below. Additional alternative mitigation options for projects demonstrating technical infeasibility are available, as discussed in the City of Rolling Hills Municipal Code, Chapter 8.32 (Attachment A).

⁴ Attachment C as provided in this document is a copy of Attachment H from the MS4 Permit. To avoid confusion, references to "Attachment H" are avoided in this document.



5.1 Alternative Compliance Demonstration (Technical Infeasibility)

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 applicable BMP requirements would be technically infeasible. Technical infeasibility must be demonstrated by submitting a site-specific hydrologic and/or design analysis to the City. This analysis must be conducted and endorsed by a registered professional 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 in/hr 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. 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 on-site wastewater treatment systems);
- e. Locations with potential geotechnical hazards; or
- f. 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 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 SWQDv can be retained on-site, alternative compliance measures as described below must be implemented to address the remaining volume.



5.2 Alternative Compliance Measures (On-site Biofiltration)

On-site Biofiltration BMPs may be used on a project that has demonstrated technical infeasibility; however, biofiltration BMPs must biofiltrate 1.5 times the portion of the SWQDv that is not reliably retained on-site. Attachment C includes the design criteria for biofiltration that must be adhered to. The biofiltration treatment volume must be calculated using Equation 1:

$$[Equation 1] \quad Bv [ft^3] = 1.5 * (SWQDv [ft^3] - Rv [ft^3])$$

Where:

Bv = biofiltration volume required to be treated

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

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

Biofiltration BMPs must be designed in accordance with Attachment C.

5.3 Water Quality Mitigation Criteria

For projects using off-site mitigation measures, treatment of on-site project storm water runoff must be provided. Treatment may be provided by implementing post-construction storm water BMPs, including flow-through modular treatment systems such as sand filters or other proprietary BMP treatment systems. The following water quality mitigation criteria must be met by the project:

1. The pollutant-specific benchmarks provided in Table 1 must be met at the treatment system's outlet. Benchmarks vary based on the watershed where the project is located. The discharge cannot cause or contribute to an exceedance of water quality standards at the downstream MS4 outfall.

Table 1. Water Quality Benchmarks Applicable to New Development Treatment BMPs

Watershed	Suspended Solids (mg/L)	Total P (mg/L)	Total N (mg/L)	TKN (mg/L)	Total Cd (µg/L)	Total Cu (µg/L)	Total Cr (µg/L)	Total Pb (µg/L)	Total Zn (µg/L)
Machado Lake	14	0.1	1.0	-	0.3	6	2.8	2.5	23
Greater LA Harbor	14	0.13	1.28	1.09	0.3	3.73	2.8	2.5	23
All Other Watersheds	14	0.13	1.28	1.09	0.3	6	2.8	2.5	23



2. Flow-through modular treatment systems that are being used must be at least as efficient as a sand filter and able to pass the greater rainfall intensity between 0.2 inches per hour and a one-year, one-hour storm (based on the Los Angeles County isohyetal map).
3. The project cannot cause or contribute to an exceedance of applicable water quality-based effluent limitations in accordance with Total Maximum Daily Loads (TMDLs).

SECTION 6. SUBMITTAL OF PROJECT PLANS

Upon completion of initial project plans, developers must submit their design plans to the City for approval. These plans must include all BMP sizing calculations and details, as well as expected BMP pollutant removal efficiency⁵. In addition, if alternative compliance measures are used due to technical infeasibility, a qualifying report demonstrating technical infeasibility must be submitted to the City.

Along with project plans and BMP details, the *Owner Certification Form* (Attachment D) and *Planning Information to be Submitted for New Development/Redevelopment Projects* (Attachment E) must be completed and submitted to the City.

⁵ 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.



SECTION 7. RESOURCES

CASQA's Industrial and Commercial Handbook is available for download here:

<http://www.cabmphandbooks.com/Industrial.asp>

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

http://water.epa.gov/infrastructure/greeninfrastructure/upload/gi_munichandbook_green_streets.pdf

The County of Los Angeles Low Impact Development Standards Manual (2009) is available for download here:

http://dpw.lacounty.gov/wmd/LA_County_LID_Manual.pdf

The 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

The 2012 MS4 Permit is available for download in its entirety here:

http://www.waterboards.ca.gov/losangeles/water_issues/programs/stormwater/municipal/

Attachments

Attachment A:
City of Rolling Hills' Municipal Code
Chapter 8.32 - Storm Water
Management and Pollution Control

Rolling Hills, California, Code of Ordinances >> Title 8 - HEALTH AND SAFETY >> Chapter 8.32 STORM WATER MANAGEMENT AND POLLUTION CONTROL >>

Chapter 8.32 STORM WATER MANAGEMENT AND POLLUTION CONTROL [5]

Sections:

8.32.010 Title.

8.32.020 Findings.

8.32.030 Purpose and intent.

8.32.040 Definitions.

8.32.050 Construction and application.

8.32.060 Prohibited activities.

8.32.070 Exempted discharges, or conditionally exempted discharges or designated discharges.

8.32.080 Good housekeeping provisions.

8.32.090 Requirements for construction activities.

8.32.095 Planning and Land Development Program requirements for New Development and Redevelopment projects.

8.32.100 Enforcement.

8.32.110 No taking.

8.32.010 Title.

This chapter shall be known as the "City of Rolling Hills Storm Water Management and Pollution Control Ordinance."

8.32.020 Findings.

- A. The Federal Clean Water Act (33 U.S.C. Sections 1251, et seq.) provides for the regulation and reduction of pollutants discharged into the waters of the United States by extending National Pollutant Discharge Elimination System (hereinafter "NPDES") requirements to storm water and dry weather runoff discharge into storm drain systems.
- B. Storm water and dry weather runoff flows from individual properties in the City into natural drainage courses and storm drains owned by other agencies prior to reaching surface waters also known as receiving waters.
- C. The City of Rolling Hills is a co-permittee under the Municipal NPDES Permit authorized by the Federal Clean Water Act. As a co-permittee, the City is required to maintain adequate legal authority within its respective jurisdiction to control pollutant discharges and to require the use of control measures to prevent or reduce the discharge of pollutants to achieve water quality standards.
- D. In order to control, in a cost-effective manner, the quantity and quality of storm water and dry weather runoff to the maximum extent practicable, the adoption of reasonable regulations, as set forth herein, is essential.
- E. The City of Rolling Hills is a unique, low density residential community where development consists of single-family residential homes on large estate-size lots; the only nonresidential development in the City consists of City administration buildings, a fire station, water reservoirs, and a public school campus.
- F. All roadways in the City are privately owned and maintained by the Rolling Hills Community

Association. The City of Rolling Hills does not own or operate a municipal separate storm sewer system. Natural drainage courses within the City are located on private property.

- G. Properties with geologic instability throughout the City and the hillside topography of the entire community make it difficult and in some instances hazardous for property owners to have storm water retention on site if such retention will result in absorption of water in slide planes.
- H. All the properties within the City limits are under the constraints and limitations of CC&Rs of the Rolling Hills Community Association.

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8.32.030 Purpose and intent.

- A. The purpose of this chapter is to comply with the Federal Clean Water Act, the California Porter-Cologne Water Quality Control Act, and the Municipal NPDES Permit by:
 - 1. Reducing pollutants in storm water discharge to the maximum extent practicable;
 - 2. Regulating illicit connections and illicit discharges and thereby reducing the level of contamination of storm water and dry weather runoff into receiving waters; and
 - 3. Regulating non-storm water discharges to the storm sewer system.
- B. The intent of this chapter is to:
 - 1. Protect and enhance the quality of watercourses, water bodies, and wetlands within the City in a manner consistent with the Federal Clean Water Act, the California Porter-Cologne Water Quality Control Act and the Municipal NPDES Permit;
 - 2. Provide the City with the legal authority necessary to implement and enforce the requirements contained in 40 CFR § 122.26(d)(2)(i)(A—F) and in the Municipal NPDES Permit to the extent they are applicable in the City of Rolling Hills; and
 - 3. Set forth compliance measures for the construction and operation of storm water mitigation measures required for certain "New Development" and "Redevelopment", and other projects (as further defined herein) as prescribed in the current version of the Municipal NPDES Permit approved by the Regional Water Quality Control Board-Los Angeles Region, and on file in the office of the City Clerk of this City. This chapter authorizes the City Manager or his/her designee to serve as an authorized enforcement officer to define and adopt applicable Best Management Practices (BMPs) and other storm water pollution control measures, to grant emergency self-waivers, as necessary, and to cite infractions and to impose fines pursuant to this chapter. Except as otherwise provided herein, the authorized enforcement officer shall administer, implement, and enforce the provisions of this section.

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8.32.040 Definitions.

Except as specifically provided herein, any term used in this chapter shall be defined as that term defined in the current Municipal NPDES Permit, or if it is not specifically defined in the Municipal NPDES Permit, then as such term is defined in the Federal Clean Water Act, as amended, and/or the regulations promulgated thereunder. The following definitions apply to this chapter only:

"Area susceptible to runoff" means any surface directly exposed to precipitation or in the path of runoff caused by precipitation.

"Authorized enforcement officer" means the City Manager or his or her designee. "Best Management Practices (BMPs)" means practices or physical devices or systems designed to prevent or reduce pollutant

loading from storm water or non-storm water discharges to receiving waters, or designed to reduce the volume of storm water or non-storm water discharged to the receiving water. Examples of BMPs may include public education and outreach, proper planning of development projects, and proper sludge- or waste-handling and disposal, among others.

"City" means the City of Rolling Hills.

"Construction" means any construction or demolition activity, clearing, grading, grubbing, excavation, or any other activities that result in soil disturbance. Construction includes structure teardown and demolition. It does not include routine maintenance activities required to maintain the integrity of structures by performing minor repair and restoration work, original line and grade, hydraulic capacity, or original purpose of facility; emergency construction activities required to immediately protect public health and safety (including fire prevention); clearing and grubbing of vegetation for landscape maintenance and fire prevention which is not associated with a larger construction project; interior remodeling with no outside exposure of construction material or construction waste to storm water; mechanical permit work; or sign permit work. See "Routine Maintenance" definition below.

"Construction General Permit" means the NPDES General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities, Order No. 2009-0009-DWQ (NPDES No. CAS000002), adopted September 2, 2009, and any successor permit to that permit.

"Control" means to minimize, reduce, eliminate, or prohibit by technological, legal, contractual or other means, the discharge of pollutants from an activity or activities.

"Development" means any construction, rehabilitation, redevelopment or reconstruction of any public or private residential project or mass grading for future construction. It does not include routine maintenance to maintain original line and grade, hydraulic capacity, or original purpose of facility, nor does it include emergency construction activities required to immediately protect public health and safety.

"Directly Adjacent" means situated within two hundred feet of the contiguous zone required for the continued maintenance, function, and structural stability of the environmentally sensitive area.

"Director" means the City Manager or his or her designee.

"Discharge" means when used without qualification the "discharge of a pollutant."

"Discharging directly" means outflow from a drainage conveyance system that is composed entirely or predominantly of flows from the subject, property, development, subdivision, or industrial facility, and not commingled with the flows from adjacent lands.

"Discharge of a Pollutant" means: any addition of any "pollutant" or combination of pollutants to "waters of the United States" from any "point source" or, any addition of any pollutant or combination of pollutants to the waters of the "contiguous zone" or the ocean from any point source other than a vessel or other floating craft which is being used as a means of transportation. The term discharge includes additions of pollutants into waters of the United States from: surface runoff which is collected or channeled by man; discharges through pipes, sewers, or other conveyances owned by a State, municipality, or other person which do not lead to a treatment works; and discharges through pipes, sewers, or other conveyances, leading into privately owned treatment works.

"Discretionary project" is defined in the same manner as Section 15357 of the Guidelines For Implementation Of The California Environmental Quality Act contained in Title 14 of the California Code Of

Regulations, as amended, and means a project which requires the exercise of judgment or deliberation when the City decides to approve or disapprove a particular activity, as distinguished from situations where the City merely has to determine whether there has been conformity with applicable statutes, ordinances, or regulations.

"Disturbed Area" means an area that is altered as a result of clearing, grading, and/or excavation, unless solely for the purposes of landscape maintenance or fire prevention.

"Environmentally Sensitive Area" ("ESA") means an area in which plant or animal life or their habitats are either rare or especially valuable because of their special nature or role in an ecosystem and which would be easily disturbed or degraded by human activities and developments (California Public Resources Code § 30107.5). Areas subject to storm water mitigation requirements are areas designated as Significant Ecological Areas by the County of Los Angeles (Los Angeles County Significant Areas Study, Los Angeles County Department of Regional Planning (1976) and amendments); an area designated as a Significant Natural Area by the California Department of Fish and Game's Significant Natural Areas Program, provided that area has been field verified by the Department of Fish and Game; an area listed in the Basin Plan as supporting the Rare, Threatened, or Endangered Species (RARE) beneficial use; and an area identified by the City as environmentally sensitive.

"Good housekeeping practices" means common practices related to the storage, use or cleanup of materials, performed in a manner that minimizes the discharge of pollutants. Examples include, but are not limited to, purchasing only the quantity of materials to be used at a given time, use of alternative and less environmentally harmful products, cleaning up spills and leaks, and storing materials in a manner that will contain any leaks or spills.

"Hillside" means property located in an area with known erosive soil conditions, where the development contemplates grading on any natural slope that is twenty-five percent or greater and where grading contemplates cut or fill slopes.

"Illicit connection" means any human-made conveyance that is connected to the storm drain system without a permit, excluding roof-drains and other similar type connections. Examples include channels, pipelines, conduits, inlets or outlets that are connected directly to the storm drain system.

"Illicit discharge" means any discharge to the storm drain system that is prohibited under local, state or federal statutes, ordinances, codes or regulations. The term illicit discharge includes all non-storm water discharges except authorized non-storm water discharges; conditionally exempt non-storm water discharges; and non-storm water discharges resulting from natural flows specifically identified in the Municipal NPDES Permit.

"Infiltration" means the downward entry of water into the surface of the soil.

"Inspection" means entry and the conduct of an on-site review of structures and devices on a property, at reasonable times, to determine compliance with specific municipal or other legal requirements. The steps involved in performing an inspection, include, but are not limited to:

1. Pre-inspection documentation research;
2. Request for entry;
3. Interview of property owner, resident and/or occupant(s);
4. Property walk-through;
5. Visual observation of the condition of property;

6. Examination and copying of records as required;
7. Sample collection (if necessary or required);
8. Exit discussion (to discuss preliminary evaluation) as appropriate; and
9. Report preparation, and if appropriate, recommendations for coming into compliance.

"Low Impact Development (LID)" means building or landscape features designed to retain or filter storm water runoff.

"Material" means any substance including, but not limited to: garbage and debris; lawn clippings, leaves and other vegetation; biological and fecal waste; sediment and sludge; oil and grease; gasoline; paints, solvents, cleaners and any fluid or solid containing chemicals.

"Municipal NPDES Permit" means the "Waste Discharge Requirements for Municipal Separate Storm Sewer System (MS4) Discharges within the Coastal Watersheds of Los Angeles County, Except Those Discharges Originating from the City of Long Beach MS4" (Order No. R4-2012-0175), NPDES Permit No. CAS004001, effective December 28, 2012, issued by the California Regional Water Quality Control Board—Los Angeles Region, and any successor permit to that permit.

"Municipal separate storm sewer system" or "MS4" means a conveyance or system of conveyances (consisting of roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, manmade channels, or storm drains):

1. Owned or operated by a state, city, town borough, county, parish, district, association, or other public body (created by or pursuant to State law) having jurisdiction over disposal of sewage, industrial wastes, storm water, or other wastes, including special districts under State law such as a sewer district, flood control district or drainage district, or similar entity, or an Indian tribe or an authorized Indian tribal organization, or a designated and approved management agency under section 208 of the CWA that discharges to waters of the United States;
2. Designed or used for collecting or conveying storm water;
3. Which is not a combined sewer; and
4. Which is not part of a Publicly Owned Treatment Works (POTW) as defined in 40 CFR 122.2.

"Natural Drainage Systems" means all drainages that have not been improved (e.g., channelized or armored with concrete, shotcrete, or rip-rap) or drainage systems that are tributary to a natural drainage system.

"New development" means land disturbing activities; structural development, including construction or installation of a building or structure, creation of impervious surfaces; and land subdivision. "New development is not land disturbing activities solely involving landscaping or fire prevention.

"Non-storm water discharge" means any discharge into the MS4 or from the MS4 into a receiving water that is not composed entirely of storm water.

"NPDES" or "National Pollutant Discharge Elimination System" means the national program for issuing, modifying, and revoking and reissuing, terminating, monitoring and enforcing permits, and imposing and enforcing pretreatment requirements, under Clean Water Act Section 307, 402, 318, and 405.

"Pollutant" means those "pollutants" defined in Section 502(6) of the Federal Clean Water Act (33 U.S.C. Section 1362(6)), or incorporated into California Water Code Section 13373. Examples of pollutants include, but are not limited to the following:

1. Commercial and industrial waste (such as fuels, solvents, detergents, plastic pellets, hazardous substances, fertilizers, pesticides, slag, ash and sludge);
2. Metals such as cadmium, lead, zinc, copper, silver, nickel, chromium; and non-metals such as phosphorus and arsenic;
3. Petroleum hydrocarbons (such as fuels, lubricants, surfactants, waste oils, solvents, coolants and grease);
4. Excessive eroded soils, sediment and particulate materials in amounts which may adversely affect the beneficial use of the receiving waters, flora or fauna of the State;
5. Animal wastes (such as discharge from confinement facilities, kennels, pens, recreational facilities, stables and show facilities);
6. Substances having characteristics such as pH less than six or greater than nine, or unusual coloration or turbidity, or excessive levels of fecal coliform, or fecal streptococcus, or enterococcus.

"Project" means all development, redevelopment, and land disturbing activities excluding landscaping projects.

"Rain event" means a rainfall event that produces more than 0.1 inch of precipitation in twenty-four hours unless specifically stated otherwise.

"Redevelopment" means, land-disturbing activity that results in the creation, addition, or replacement of ten thousand square feet or more of impervious surface on existing single family dwelling and accessory structures or the creation, addition, or replacement of five thousand square feet or more of impervious surface area on an already developed site for non-single family projects. Redevelopment includes, but is not limited to: the expansion of a building footprint; addition or replacement of a structure; replacement of impervious surface area that is not part of a routine maintenance activity; and land disturbing activities related to structural or impervious surfaces. It does not include routine maintenance to maintain original line and grade, hydraulic capacity, or original purpose of facility, nor does it include emergency construction activities required to immediately protect public health and safety.

"Regional Board" means the California Regional Water Quality Control Board-Los Angeles Region.

"Routine Maintenance" includes, but is not limited to projects conducted to:

1. Maintain the original line and grade, hydraulic capacity, or original purpose of the facility;
2. Perform as needed restoration work to preserve the original design grade, integrity and hydraulic capacity of flood control facilities;
3. Carry out road shoulder work, regrading dirt or gravel roadways and shoulders and performing ditch cleanouts;
4. Update existing lines and facilities, including the replacement of existing lines with new materials or pipes, to comply with applicable codes, standards, and regulations regardless if such projects result in increased capacity;
5. Repair leaks;
6. Conduct landscaping activities without changing existing or natural grades; and
7. Conduct disking and grubbing for fire prevention.

Routine maintenance does not include construction of new lines or facilities resulting from compliance with applicable codes, standards and regulations. New lines are those that are not associated with existing facilities and are not part of a project to update or replace existing lines.

"Runoff" means any runoff including storm water and dry weather flows from a drainage area that reaches a receiving water body or subsurface. During dry weather it is typically comprised of base flow either contaminated with pollutants or uncontaminated, and nuisance flows.

"Significant Ecological Area" means 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 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.

"Simple LID BMP" means a BMP constructed above ground on a single-family residential home that can be readily inspected by a homeowner or inspector. Simple LID BMPs do not require an operation and maintenance plan per the Municipal NPDES Permit. Examples of such BMPs include, but are not limited to, vegetated swales, rain barrels and above ground cisterns, rain gardens, and pervious pavement.

"Site" means the land or water area where any "structure or activity" is physically located or conducted, including adjacent land used in connection with the structure or activity.

"Source control BMP" means any schedule of activities, prohibition of practices, maintenance procedures, managerial practices or operational practices that aim to prevent storm water pollution by reducing the potential for contamination at the source of pollution.

"Storm water" means storm water runoff and surface runoff and drainage related to precipitation events (pursuant to 40 CFR § 122.26(b)(13); 55 Fed. Reg. 47990, 47996 (Nov. 16, 1990)).

"Structural BMP" means any structural facility designed and constructed to mitigate the adverse impacts of storm water and dry weather runoff pollution (e.g. canopy, structural enclosure). Structural BMPs may include both treatment control BMPs and source control BMPs.

"Treatment" means the application of engineered systems that use physical, chemical, or biological processes to remove pollutants. Such processes include, but are not limited to, filtration, gravity settling, media adsorption, biodegradation, biological uptake, chemical oxidation and UV radiation.

"Treatment control BMP" means any engineered system designed to remove pollutants by simple gravity settling of particulate pollutants, filtration, biological uptake, media adsorption or any other physical,

biological, or chemical process.

8.32.050 Construction and application.

This chapter shall be construed to assure consistency with the requirements of the Federal Clean Water Act and acts amendatory thereof or supplementary thereto, applicable implementing regulations, and the Municipal NPDES Permit, and any amendment, revision or reissuance thereof.

8.32.060 Prohibited activities.

- A. **Illicit Discharges.** It is prohibited to discharge pollutants into natural drainage courses.
- B. **Littering.** No person shall intentionally throw, deposit, place, leave, maintain, keep or permit to be thrown, deposited, placed, left or maintained or kept, any refuse, rubbish, garbage, or any other discarded or abandoned objects, articles or accumulations, on or upon any roadway, driveway, trail, canyon, storm drain, inlet, catch basin conduit or drainage structure, or upon any private plot of land in the City, so that the same might be or become a pollutant. No person shall throw or deposit litter in any fountain, pond, stream or other body of water within the City. This subsection shall not apply to refuse, rubbish or garbage deposited in containers, bags or other appropriate receptacles which are placed in designated locations for regular solid waste pick up and disposal.
- C. **Disposal of Landscape Debris.** It is prohibited to intentionally dispose of leaves, dirt, or other landscape debris into the MS4 or into natural drainage courses.
- D. **No person shall intentionally dispose of manure or any animal waste into the MS4 or into natural drainage course.**
- E. **Non-Storm Water Discharges.** All non-storm water discharges into the municipal storm sewer system are prohibited unless those flows are: in compliance with a separate NPDES Permit; pursuant to a discharge exemption by the Regional Board, the regional board's executive officer, or the State Water Resources Control Board; associated with emergency firefighting activities (i.e., flows necessary for the protection of life or property); natural flows as defined in the Municipal NPDES Permit; conditionally exempt non-storm water discharges as defined in accordance with the Municipal NPDES Permit; or authorized as a temporary non-storm water discharge by USEPA pursuant to sections 104(a) or 104(b) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). Prohibited discharges include, but are not limited to:
 - 1. The discharge of runoff from mobile auto washing, steam cleaning, mobile carpet cleaning, and other such mobile commercial and industrial operations (excluding non-commercial car washing by residents and non-profit organizations);
 - 2. Discharges from areas where repair of machinery and equipment, including motor vehicles, which are visibly leaking oil, fluid or antifreeze, is undertaken;
 - 3. Discharges of runoff from areas where materials containing grease, oil, or other hazardous substances (e.g., motor vehicle parts) are stored, and discharges from uncovered receptacles containing hazardous materials;
 - 4. The discharge of chlorinated/brominated swimming pool water and filter backwash;
 - 5. Discharges of runoff from the washing of toxic materials from paved or unpaved areas;
 - 6. Discharges from the washing out of concrete or cement laden wash water from concrete trucks, pumps, tools, and equipment;

7. Discharges of any pesticide, fungicide, or herbicide, banned by the USEPA or the California Department of Pesticide Regulation;
 8. Discharge of any food or food processing wastes;
 9. Discharge of any fuel and chemical wastes, animal wastes, garbage, batteries, and other materials that have potential adverse impacts on water quality; and
 10. The disposal of hazardous wastes into trash containers that causes a direct or indirect discharge to the municipal storm water system.
- F. Discharges in Violation of the Municipal NPDES Permit. Any discharge that would result in or contribute to a violation of the Municipal NPDES Permit, either separately or in combination with other discharges, is prohibited. Liability for any such discharge shall be the responsibility of the person(s) causing or responsible for the discharge, and such person(s) shall defend, indemnify and hold harmless the City from all losses, liabilities, claims or causes of actions in any administrative or judicial action relating to such discharge.

8.32.070 Exempted discharges, or conditionally exempted discharges or designated discharges.

Discharges from those activities specifically identified in, or pursuant to, the Municipal NPDES Permit as being exempted discharges, or conditionally exempted discharges, shall not be considered a violation of this chapter; provided, that any applicable BMPs developed pursuant to the Municipal NPDES Permit are implemented to minimize any adverse impacts from such identified sources and that required conditions outlined in the Municipal NPDES Permit are met prior to discharge.

8.32.080 Good housekeeping provisions.

Owners and occupants of property within the City shall implement Best Management Practices to prevent or reduce the discharge of pollutants to the municipal storm water system to the maximum extent practicable. Treatment and structural Best Management Practices shall be properly operated and maintained to prevent the breeding of vectors. Implementation includes, but is not limited to:

- A. **Septic Waste.** No person shall leave, deposit, discharge, dump or otherwise expose any chemical or septic waste to precipitation.
- B. **Use of Water.** Runoff of water used for irrigation purposes shall be minimized to the maximum extent practicable. Runoff of water from the conditionally exempt washing down of paved areas shall be minimized to the maximum extent practicable. Conditionally exempt non-storm water discharges of roadway/driveway wash water only include those discharges resulting from use of high pressure, low volume spray washing using only potable water with no cleaning agents. Conditionally exempt non-storm water discharges of roadway/driveway wash water do not include hosing of any driveway or roadway with a garden hose with a pressure nozzle.
- C. **Storage of Materials, Machinery, and Equipment.** Machinery or equipment that is to be repaired or maintained in areas susceptible to or exposed to storm water, shall be placed in a manner so that leaks, spills and other maintenance-related pollutants are not discharged to the MS4.
- D. **Removal and Disposal of Debris from Institutional Motor Vehicle Parking Lots.** Institutional

motor vehicle parking lots with more than twenty-five parking spaces that are located in areas potentially exposed to storm water shall have debris removed in an effective manner regularly from such parking lots.

- E. **Best Management Practices.** Best Management Practices shall be used in areas exposed to storm water for the removal and lawful disposal of all fuels, chemicals, fuel and chemical wastes, animal wastes, garbage, batteries, or other materials which have potential adverse impacts on water quality.

8.32.090 Requirements for construction activities.

- A. Each industrial discharger, discharger associated with construction activity, or other discharger described in any general storm water permit addressing such discharges, as may be issued by the U.S. Environmental Protection Agency, the State Water Resources Control Board, or the Regional Board, shall comply with all requirements of such permit. Each discharger identified in an individual NPDES permit shall comply with and undertake all activities required by such permit. Proof of compliance with any such permit may be required in a form acceptable to the Authorized Enforcement Officer prior to the issuance of any grading, building or occupancy permits, or any other type of permit or license issued by the City.
- B. Storm water runoff containing sediment, construction materials or other pollutants from the construction site and any adjacent staging, storage or parking areas shall be reduced to the maximum extent practicable. The following shall apply to all construction projects within the City, regardless of project size, and shall be required from the time of land clearing, demolition, or commencement of construction until final approval:
1. Sediment, construction wastes, trash and other pollutants from construction activities shall be reduced to the maximum extent practicable.
 2. Structural controls such as sediment barriers, plastic sheeting, detention ponds, filters, berms, and similar controls shall be utilized to the maximum extent practicable in order to minimize the escape of sediment and other pollutants from the site.
 3. All excavated soil shall be located on the site in a manner that minimizes the amount of sediment running onto the street, drainage facilities or adjacent properties. Soil piles not actively in use shall be bermed or covered with plastic or similar materials until the soil is either used or removed from the site.
 4. No washing of construction or other vehicles is permitted adjacent to a construction site. No water from the washing of construction vehicle or equipment on the construction site is permitted to run off the construction site and enter the municipal storm water system.
 5. Trash receptacles must be situated at convenient locations on construction sites and must be maintained in such a manner that trash and litter does not accumulate on the site nor migrate off site. Trash receptacles must be covered at the end of each business day and during rain events.
 6. Erosion from slopes and channels must be controlled through the effective combination of Best Management Practices.
- C. Construction sites where the construction activity covers less than one acre must implement an effective combination of erosion and sediment control BMPs from the Municipal NPDES Permit to prevent erosion and sediment loss, and the discharge of construction wastes.
- D. The owner or authorized representative of the owner must certify in a form acceptable to the Director or duly authorized representative that Best Management Practices to control runoff from construction

activity at all construction sites will be implemented prior to the issuance of any Building or Grading permit.

- E. Construction sites where the construction activity covers one acre or more must adhere to the requirements set forth in the Municipal NPDES Permit and the Construction General Permit. A Storm Water Pollution Prevention Plan (SWPPP) for construction sites of one acre or greater shall be developed by a Qualified SWPPP Developer (QSD) consistent with the Municipal NPDES Permit. The SWPPP must include all elements required by the Construction General Permit. SWPPPs must be prepared in accordance with their calculated risk level per the Construction General Permit. Such plans must be submitted to the City for review and approval prior to the issuance of building or grading permits.
- F. BMPs selected for erosion and sediment control shall be detailed in the SWPPP. BMPs shall be selected from the Municipal NPDES Permit, as applicable, and, at a minimum, shall include those BMPs specified in Attachments C, D, and E of the Construction General Permit based on the project risk level. Selected BMPs must be selected, designed, implemented, and maintained in accordance with the BMP technical standards presented in the latest version of the California Stormwater Quality Association (CASQA) Stormwater Best Management Practice Handbook for Construction; or Caltrans Stormwater Quality Handbook, Construction Site Best Management Practices Manual and addenda.
- G. Roadway paving and repair projects must implement at a minimum the BMPs listed in the Municipal NPDES Permit. Roadway paving or repair projects greater than one acre in size shall also abide by the Construction General Permit, and implement all necessary BMPs as required for coverage under the Construction General Permit.

8.32.095 Planning and Land Development Program requirements for New Development and Redevelopment projects.

- A. The following New Development and Redevelopment projects are required to comply with the Municipal NPDES Permit:
 - 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 ten thousand square feet of impervious area;
 - 2. Parking lots with five thousand square feet or more of impervious area or with twenty-five or more parking spaces;
 - 3. Single family hillside residential developments or redevelopments;
 - 4. Redevelopment projects in subject categories that meet Redevelopment thresholds (pursuant to the Municipal NPDES Permit), which include:
 - (a) Land-disturbing activities which create, add, or replace ten thousand square feet or more of impervious surface area on lots developed with single family dwellings and/or accessory structures; and
 - (b) Land-disturbing activities which create, add, or replace five thousand square feet or more of impervious surface area on an already developed site excluding lots developed with single family dwellings and accessory structures.
 - (c) Where Redevelopment results in an alteration to more than fifty percent of impervious surfaces of a previously existing development, and the existing development was not subject to post-development storm water quality control requirements, the entire Project must be mitigated.
 - (d) Where Redevelopment results in an alteration to less than fifty percent of impervious

surfaces of a previously existing development, and the existing development was not subject to post-development storm water quality control requirements, only the alteration must be mitigated, and not the entire development.

5. Roadway construction with ten thousand square feet or more of impervious surface area shall follow USEPA guidance regarding Managing Wet Weather with Green Infrastructure: Green Streets (December 2008 EPA-833-F-08-009) to the maximum extent practicable.
6. Any New Development or Redevelopment project located in or directly adjacent to or discharging directly into a Significant Ecological Area (as defined herein), where the development will:
 - (a) Discharge storm water that is likely to impact a sensitive biological species or habitat; and
 - (b) Create two thousand five hundred square feet or more of impervious surface area.

EXCEPTIONS: The following do not constitute New Development or Redevelopment:

1. Routine maintenance activities conducted to maintain original line and grade, hydraulic capacity, original purpose of facility, or emergency redevelopment activity required to protect public health and safety.
2. Discretionary permit projects or phased project applications which have been deemed complete by February 8, 2013, and which have not received an extension of time.
3. Discretionary permit projects with a valid vesting tentative map.

B. Incorporation of Planning and Land Development Program requirements into Project Plans.

1. New Development and Redevelopment projects are required to control pollutants and runoff volume from the project site by minimizing the impervious surface area and controlling runoff through infiltration, bioretention, and/or rainfall harvest and use, in accordance with the standards set forth in the Municipal NPDES Permit.
2. An applicant for a New Development or a Redevelopment Project identified in Section 8.32.095(A) of this chapter shall incorporate into the applicant's project plans a Post Construction Storm Water Mitigation Plan which includes those Best Management Practices necessary to control storm water pollution from the completed project. Structural or Treatment Control BMPs (including, as applicable, post-construction Treatment Control BMPs) set forth in project plans shall meet the design standards set forth in the current Municipal NPDES Permit.
3. To the extent that the City may lawfully impose conditions, mitigation measures, or other requirements on the development or construction of a single-family home in a hillside area, a single-family hillside home Development or Redevelopment project shall implement mitigation measures to:
 - (a) Conserve natural areas;
 - (b) Protect slopes and channels;
 - (c) Provide storm drain system stenciling and signage;
 - (d) Divert roof runoff 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.
4. New Development/Redevelopment Project Performance Criteria: Post-construction control BMPs to mitigate stormwater pollution are required for all new development and

redevelopment projects identified in Section 8.32.095(A) of this chapter unless alternative measures are allowed as provided in the Municipal NPDES Permit. BMPs must be implemented to retain on-site the Stormwater Quality Design Volume (SWQDv), defined as runoff from either:

- (a) Three-quarter-inch, twenty-four-hour rain event; or
- (b) The eighty-fifth percentile, twenty-four-hour event, as determined from the Los Angeles County eighty-fifth percentile precipitation isohyetal map, whichever is greater.

BMPs shall meet the design specifications and on-site retention potential outlined in the Municipal NPDES Permit.

For projects unable to retain one hundred percent of the SWQDv on-site due to technical infeasibility as defined in the Municipal NPDES Permit, projects must implement alternative compliance measures in accordance with the Municipal NPDES Permit.

Single family hillside home development projects are exempt from the New Development/Redevelopment Project Performance Criteria of the Municipal NPDES Permit unless they create, add or replace ten thousand square feet of impervious surface area.

5. Hydromodification Control Criteria.

- (a) All non-exempt New Development and Redevelopment projects located within natural drainage systems as defined in [Section 8.32.040](#) of this chapter must implement hydrologic control measures to prevent accelerated downstream erosion and to protect stream habitat in natural drainage systems. Projects exempt from hydromodification controls are listed in the Municipal NPDES Permit.
- (b) The following New Development and Redevelopment projects must include one, or a combination of, hydromodification control BMPs, Low Impact Development (LID) strategies, or stream and riparian buffer restoration measures:
 - i. Projects on single family lots that create, add, or replace ten thousand square feet or more of impervious surface area are required to implement LID BMPs in accordance with parts B.1 through B.4 of this Section. Single family homes implementing such BMPs will satisfy the hydromodification control requirements of the Municipal NPDES Permit.
 - ii. Projects on non-single family lots 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 on-site, through infiltration, evapotranspiration, and/or harvest and use, the storm water volume from the runoff of 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 (Ep) in the receiving water channel will approximate one, as determined by a Hydromodification Analysis Study and the equation presented in Attachment J of the Municipal NPDES Permit, or other approved equations.

- C. Issuance of Final Approval. As a condition for issuing final approval for New Development or Redevelopment projects identified in Section 8.32.095(A), the Authorized Enforcement Officer shall require property owners or their representative(s) to build all the storm water pollution control Best Management Practices and structural or treatment control BMPs that are shown on the approved

project plans and to submit a signed certification statement stating that the site and all structural or treatment control BMPs will be maintained in compliance with the Municipal NPDES Permit and other applicable regulatory requirements including the following words: "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 ABOVE 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 STORM WATER REQUIREMENTS AND SIGN THIS CERTIFICATION VOLUNTARILY, WITHOUT PURPOSE OF EVASION AND OF OUR OWN FREE WILL AND WITH FULL KNOWLEDGE OF ITS SIGNIFICANCE."

With the exception of Simple LID BMPs (as defined in Section 8.32.040) implemented on lots developed with single family residences, 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. These maintenance records must be kept on site for treatment BMPs implemented on single family residences.

- D. **Transfer of Properties Subject to Requirement for Maintenance of Structural and Treatment Control BMPs.**
 - 1. 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 and assigns 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 then current standards of the City and the Municipal NPDES 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.
 - 2. 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.
- E. **CEQA.** Provisions of this section shall be complementary to, and shall not replace, any applicable requirements for storm water mitigation required under the California Environmental Quality Act.

8.32.100 Enforcement.

- A. **Violations Deemed a Public Nuisance.**
 - 1. Any condition caused or permitted to exist in violation of:
 - (a) Any of the provisions of this chapter; or
 - (b) Any failure to comply with any applicable requirement of the Municipal NPDES Permit, an approved Post-Construction Storm Water Mitigation Plan, or an approved SWPPP with respect to a property; or
 - (c) Any false certification or verification, or any failure to comply with a certification or verification provided by a project applicant or the applicant's successor in interest; or
 - (d) Any failure to properly operate and maintain any structural or treatment control BMP on a property in accordance with an approved SWPPP and/or Post-Construction Storm Water Mitigation Plan or the Municipal NPDES Permit, is determined to be a threat to

the public health, safety and welfare, is declared and deemed a public nuisance, and may be abated or restored by any authorized enforcement officer, and a civil or criminal action to abate, enjoin or otherwise compel the cessation of such nuisance may be brought by the City Attorney.

2. The cost of such abatement and restoration shall be borne by the owner of the property and the cost thereof shall be invoiced to the owner of the property, as provided by law or ordinance for the recovery of nuisance abatement costs.
 3. If any violation of this chapter constitutes a seasonal and recurrent nuisance, the City Manager shall so declare. The failure of any person to take appropriate annual precautions to prevent storm water pollution after written notice of a determination under this paragraph shall constitute a public nuisance and a violation of this chapter.
- B. Concealment. Causing, permitting, aiding, abetting or concealing a violation of any provision of this chapter shall constitute a violation of such provision.
- C. Civil Actions. In addition to any other remedies provided in this section, any violation of this chapter may be enforced by civil action brought by the City. In any such action, the City may seek, as appropriate, any or all of the following remedies:
1. A temporary and/or permanent injunction;
 2. Assessment of the violator for the costs of any investigation, inspection or monitoring survey which led to the establishment of the violation, and for the reasonable costs of preparing and bringing legal action under this subsection;
 3. Costs incurred in removing, correcting or terminating the adverse effects resulting from violation; and
 4. Compensatory damages for loss or destruction to water quality, wildlife, fish and aquatic life.
- D. Administrative Enforcement Powers. In addition to the other enforcement powers and remedies established by this chapter, the authorized enforcement officer has the authority to utilize the following administrative remedies:
1. Cease and Desist Orders. When an authorized enforcement officer finds that a discharge has taken place or is likely to take place in violation of this chapter, the officer may issue an order to cease and desist such discharge, or practice, or operation likely to cause such discharge and direct that those persons not complying shall: (i) comply with the requirement, (ii) comply with a time schedule for compliance, and (iii) take appropriate remedial or preventive action to prevent the violation from recurring.
 2. Notice to Clean. Whenever an authorized enforcement officer finds any oil, earth, debris, grass, weeds, dead trees, tin cans, rubbish, refuse, waste or any other material of any kind, in or upon the roadway or trail abutting or adjoining any parcel of land, or upon any parcel of land or grounds, which may result in pollutants entering the MS4 or a non-storm water discharge to the MS4, the officer may give notice to the owner or occupant of the adjacent property to remove such oil, earth, debris, grass, weeds, dead trees, tin cans, rubbish, refuse, waste or other material, in any manner that the officer may reasonably provide. The recipient of such notice shall undertake the activities as described in the notice.
- E. Penalties. Violation of this chapter shall be punishable as a misdemeanor, punishable as set forth in Section 1.08.020(A) of this code. Each day that a violation continues shall constitute a separate offense.
- F. Permit Revocation. To the extent the City makes a provision of this chapter or any identified BMP a condition of approval to the issuance of a permit or license, any person in violation of such condition is subject to the permit revocation procedures set forth in this code.
- G. Remedies. Remedies specified in this chapter are in addition to and do not supersede or limit any

H. Authority to Carry Out Inspections, Conduct Samplings, and Establishing Sampling Devices. The Authorized Enforcement Officer may carry out all inspections, surveillance, and monitoring procedures necessary to determine compliance and noncompliance with the Municipal NPDES Permit, including the prohibition of non-storm water discharges into the MS4 and receiving waters. With the consent of the owner or occupant or pursuant to an inspection warrant, any Authorized Enforcement Officer may establish on any property such devices as necessary to conduct sampling and monitoring activities necessary to determining the concentrations of pollutants in storm water and/or non-storm water runoff. The inspections provided for herein may include but are not limited to:

1. Inspecting efficiency or adequacy of construction or post construction BMPs;
2. Inspection, sampling and testing any area runoff, soils in areas subject to runoff, and or treatment system discharges;
3. Inspection of the integrity of all storm drain and sanitary sewer systems, including the use of smoke and dye tests and video survey of such pipes and conveyance systems;
4. Inspection of all records of the owner, contractor, developer or occupant of public or private property relating to BMP inspections conducted by the owner, contractor, developer or occupant and obtaining copies of such records as necessary; and
5. Identifying points of storm water discharge from the premises whether surface or subsurface and locating any illicit connection or discharge.

The provisions of this chapter shall not be construed or operate to deprive any property owner of substantially all of the market value of such owner's property or otherwise constitute an unconstitutional taking without compensation.

[\(Back\)](#)

Attachment B:
County of Los Angeles
Analysis of 85th Percentile 24-hour
Rainfall Depth

County of Los Angeles Department of Public Works

Analysis of 85th Percentile 24-hour Rainfall Depth Analysis Within the County of Los Angeles



**Water Resources Division
Hydrology Section**

February 2004



Analysis of 85th Percentile 24-hour Rainfall Depths Within the County of Los Angeles

**County of Los Angeles Department of Public Works
Water Resources Division / Hydrology Section**

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Introduction

Rainfall within the County of Los Angeles varies spatially. The Los Angeles Regional Water Quality Control Board (RWQCB) agreed to use a spatially distributed statistical rainfall distribution for water quality studies. The RWQCB allows the use of 85th percentile 24-hour rainfall event or the 0.75-inch event for Standard Urban Storm Water Mitigation Plan (SUSMP) and Best Management Practices (BMP) design hydrologic studies.

The 85th percentile 24-hour rainfall depths vary from 0.30 to 1.50 inches within the County of Los Angeles. This report provides the analysis used to determine the spatial distribution of the 85th percentile 24-hour rainfall within the County of Los Angeles.

Analysis

The County of Los Angeles Department of Public Works maintains an extensive network of rain gages throughout the county. The 85th percentile 24-hour rainfall spatial distribution analysis required selection of gages to represent rainfall throughout the county. The analysis began with the selection of ninety-nine rain gages. Rain gage selection was based on spatial distribution and rainfall record length. Historic precipitation data includes 40 to 80 years of rainfall at most of the selected gages. Most rain gages in the Antelope Valley had approximately 15 years of historic record available for analysis.

Percentile Analysis

Percentile analysis determines a data value for a specified percentage. For example, if the 85th percentile rainfall depth is analyzed and a value of 1.00 inches is determined, 85 percent of all rainfall events produce 1.00 inch or less of precipitation. The analysis includes 24-hour periods with measurable rainfall and excludes all other 24-hour periods. The analysis provided the average 24-hour rainfall, the 50th, 75th, 85th, 90th, 95th, and 99th percentile 24-hour rainfall depth at each rain gage. The average rainfall represents the sum of all 24-hour rainfall depths divided by the number of records. Appendix A provides the percentile analysis for each rain gage.

Statistical Analysis

A statistical analysis of the data sample confirmed the validity of the percentile analysis. Each data sample was broken into groups of 0.50-inch depths and plotted as a histogram. The probability of occurrence for each 0.50-inch group was determined. Plotting the cumulative probability for the groups resulted in values very similar to the percentile analysis values. The 85th percentile 24-hour rainfall depths ranged from 0.50 to 1.5 inches for the various gages distributed throughout the County. Appendix B shows the histogram, the probability distribution tables, and cumulative distribution chart for the ninety-nine gages analyzed.

Mapping 85th Percentile 24-hour Isohyets

A Geographic Information System (GIS) shape file was created using latitude and longitude coordinates for each rain gage. The GIS shape file also contained the data associated with the 24-hour rainfall analysis. The Spatial Analyst program extension was used with ArcView to create a rainfall grid based on the 85th percentile data for each gage. Contours were created from the grid file to represent the 85th percentile rainfall depth throughout the County of Los Angeles. These isohyets were compared to the NOAA 2-year 24-hour isohyets. The NOAA 2-year 24-hour isohyets reflect topographic influences on spatial rainfall patterns within the County of Los Angeles. The isohyets were also compared to county topography. Rain gages that caused anomalies in the isohyets were discarded. The final isohyetal map used ninety rain gages. The nine discarded gages had small data sets.

A new grid and isohyetal contours were produced after discarding the nine gages. The contours were again compared to the NOAA contours and topographic features in the county. In the County of Los Angeles, areas of higher elevation generally receive more rainfall due to changes in pressure and temperature. The isohyetal map of the 85th percentile 24-hour storm shows this orographic affect. Higher rainfall occurs over the mountains and hills.

Two dummy rain gages added near the county border keep the isohyetal distribution consistent with topography. Accurate portrayal of the isohyets along the Malibu Coast and in the Antelope Valley requires the dummy gages.

Appendix C contains the 85th percentile 24-hour isohyetal map, a map of the rain gage locations, and a description of the settings and process used to create the rainfall grid and contour lines in ArcView. This report also contains an electronic copy of all the data used for the 85th percentile 24-hour rainfall depth analysis.

Appendices

Appendix A

Summary of 24-hour Rain Gage Data

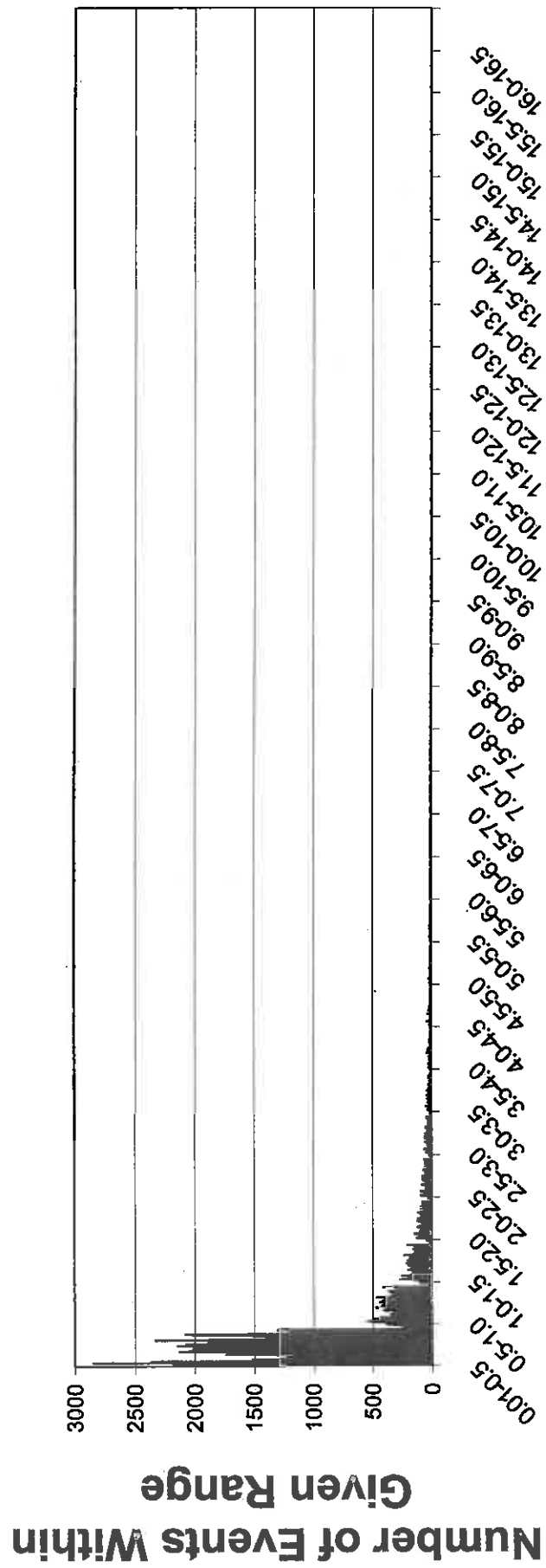
Summary of Rain Gage Data

Gage No.	Gage Name	24-hour Rainfall Total						
		Mean	50th Percentile	75th Percentile	85th Percentile	90th Percentile	95th Percentile	99th Percentile
5	Calabasas	0.57	0.24	0.74	1.10	1.41	2.07	4.23
6	Topanga Canyon Patrol Station	0.54	0.20	0.69	1.11	1.44	2.10	4.05
13	North Hollywood - Lakeside	0.53	0.23	0.66	1.06	1.40	2.02	3.69
17	Seputveda Canyon at Mulholland Hwy.	0.44	0.24	0.77	1.26	1.64	2.31	4.31
23	Chatsworth Reservoir	0.47	0.20	0.60	0.94	1.23	1.82	3.34
43	Palos Verdes Estates	0.26	0.13	0.34	0.52	0.67	0.94	1.67
44	Point Vicente Lighthouse	0.28	0.10	0.34	0.55	0.75	1.07	2.00
53	Colby's Sleepy Hollow Ranch	0.70	0.26	0.80	1.38	1.85	2.74	5.63
63	Santa Anita Dam	0.55	0.20	0.69	1.12	1.53	2.20	4.16
82	Table Mountain	0.51	0.23	0.57	0.96	1.26	1.91	4.11
107	Downey Fire Station	0.50	0.28	0.66	0.97	1.25	1.77	3.00
120	Vincent Patrol Station	0.30	0.16	0.39	0.60	0.79	1.13	1.67
125	San Francisco Canyon Power House #1	0.44	0.20	0.59	0.91	1.20	1.69	3.02
128	Elizabeth Lake - Warm Springs Camp	0.66	0.34	0.80	1.35	1.63	2.32	4.16
156	La Mirada - Standard Oil Company	0.43	0.17	0.45	0.72	0.95	1.43	2.84
172	Duarte	0.66	0.35	0.88	1.32	1.67	2.34	3.77
176	Altadena - Rubio Canyon	0.60	0.25	0.76	1.20	1.61	2.28	3.95
201	Puente Hills - Alta Mira Ranch	0.58	0.30	0.78	1.12	1.40	2.03	3.38
223	Big Dalton	0.50	0.14	0.59	1.00	1.38	2.11	3.62
225	Montana Ranch - Lakewood	0.44	0.24	0.60	0.88	1.10	1.57	2.69
227	San Gabriel - Brimington - Orton	0.58	0.27	0.75	1.15	1.45	2.03	3.58
237	Stone Canyon Reservoir	0.58	0.22	0.77	1.20	1.66	2.35	3.95
238	Hollywood Dam	0.48	0.21	0.63	0.96	1.27	1.92	2.93
277	Sawmill Mountain	0.65	0.27	0.89	1.38	1.77	2.32	4.39
283	Crystal Lake East Pine Flat	0.70	0.24	0.77	1.32	1.90	2.66	5.89
291	Los Angeles 96th and Central	0.49	0.30	0.65	0.92	1.18	1.60	2.96
293	Lake Los Angeles	0.49	0.23	0.69	1.01	1.31	1.87	3.10
286	Gorman Sheriff Station	0.39	0.12	0.37	0.60	0.82	1.25	2.29
289	Little Rock - Schwab	0.29	0.09	0.29	0.46	0.65	0.95	1.65
304	Sewall Canyon - Deer Park	0.60	0.19	0.73	1.20	1.78	2.45	4.88
306	Zuma Beach	0.31	0.16	0.40	0.60	0.78	1.10	2.07
322	Munz Valley Ranch	0.47	0.26	0.60	0.90	1.15	1.67	2.99
334	Cogswell Dam	0.77	0.22	0.66	1.52	2.23	3.41	6.27
356	Spadra Pacific Colony	0.48	0.25	0.62	0.98	1.27	1.78	3.01
372	San Francisco Canyon Power House #2	0.45	0.21	0.60	0.90	1.15	1.68	3.00
373	Bridg's Terrace - Pico Canyon	0.65	0.16	0.63	1.13	1.56	2.33	4.20
379	San Gabriel Canyon East Fork	0.65	0.23	0.78	1.30	1.70	2.60	5.18
390	Monte Dam	0.55	0.19	0.67	1.12	1.62	2.26	4.31
391	Montebello Fire Department	0.51	0.17	0.54	0.87	1.13	1.56	3.05
405	Soledad Canyon	0.46	0.20	0.56	0.90	1.18	1.73	3.20
406	West Azusa	0.51	0.26	0.68	1.03	1.36	1.85	2.93
409	Pyramid Reservoir	0.54	0.17	0.63	1.07	1.50	2.29	4.41
425	San Gabriel Dam	0.63	0.20	0.75	1.28	1.79	2.61	4.83
434	Agoura	0.41	0.13	0.44	0.75	1.03	1.58	3.46
435	Monte Nido	0.47	0.20	0.60	0.96	1.28	1.79	3.46
436	Los Angeles-University of Southern Cal	0.60	0.32	0.75	1.10	1.43	2.05	4.22
443	Laligo Canyon - Beach Ranch	0.47	0.16	0.57	0.85	1.33	1.96	3.66
446	Aliso Canyon - Oak Mountain	0.57	0.27	0.74	1.13	1.45	2.10	3.57
447	Carbon Canyon	0.35	0.17	0.46	0.70	0.89	1.26	2.19
455	Lancaster State Highway Maintenance De	0.32	0.16	0.38	0.59	0.79	1.18	2.08
456	Zuma Canyon Patrol Station	0.48	0.22	0.60	0.90	1.20	1.80	3.17
491	Pacific Palisades	0.40	0.27	0.60	0.85	1.05	1.41	2.24
492	Chillico - State Highway Maintenance Sta	0.66	0.28	0.76	1.30	1.73	2.54	4.94
497	Claremont - Slaughter	0.47	0.21	0.61	0.96	1.27	1.85	3.07
517	Anderson Ranch	0.50	0.18	0.56	0.98	1.35	2.08	3.84
584	Liano	0.31	0.18	0.40	0.61	0.78	1.01	1.75
598	Neenach	0.36	0.14	0.45	0.69	0.93	1.35	2.75
610	Pasadena City Hall	0.48	0.18	0.60	1.00	1.35	2.00	3.54
619	San Antonio Canyon - Sierra Power Hous	0.44	0.11	0.40	0.70	1.00	1.71	4.29
627	San Gabriel Canyon Power House	0.48	0.17	0.59	1.00	1.37	2.04	3.56
634	Santa Monica	0.50	0.25	0.67	1.02	1.32	1.78	3.08
694	Big Tujunga Camp 15	0.58	0.29	0.71	1.10	1.50	2.05	4.29
716	Ducommun Street	0.47	0.24	0.62	0.94	1.24	1.74	3.33
735	Bell Canyon - Platt Ranch	0.37	0.13	0.43	0.74	0.98	1.55	2.89
750	Palmdale F.A.A. Airport	0.24	0.12	0.30	0.48	0.61	0.90	1.54
795	Pasadena - Jordan	0.49	0.19	0.63	1.02	1.41	2.00	3.44
807	Ascot Reservoir	0.48	0.23	0.63	0.98	1.30	1.80	3.10
1006	San Pedro City Reservoir	0.27	0.14	0.36	0.53	0.69	1.02	1.60
1025	Malibu Beach - Dunne	0.33	0.16	0.43	0.64	0.84	1.17	2.20
1041	Santa Fe	0.53	0.27	0.71	1.09	1.40	1.93	3.18
1050	Old Topanga Canyon	0.50	0.18	0.60	1.01	1.38	2.04	3.67
1051	Canoga Park - Pierce College	0.50	0.20	0.65	1.00	1.33	1.95	3.56
1070	Manhattan Beach	0.41	0.22	0.54	0.82	1.05	1.39	2.39
1072	Little Tujunga Ranger Station	0.57	0.31	0.77	1.10	1.39	1.95	3.56
1074	Little Gleason	0.69	0.31	0.79	1.28	1.71	2.59	5.91
1081	Glendale - Gregg	0.55	0.24	0.71	1.11	1.45	2.09	3.79
1086	La Habra Heights - Mutual Water Co.	0.52	0.28	0.68	1.06	1.32	1.94	3.12
1107	La Tuna Debris Basin	0.55	0.30	0.70	1.07	1.40	1.89	3.49
1113	Dominguez Water Company	0.35	0.15	0.42	0.73	0.95	1.42	2.63
1242	Rocky Buttes Indian Museum	0.14	0.05	0.16	0.24	0.32	0.50	0.97
1243	Redman	0.26	0.10	0.29	0.44	0.60	0.88	2.65
1244	Lancaster - Roper	0.15	0.04	0.16	0.27	0.41	0.55	1.47
1246	Scott Ranch	0.14	0.08	0.20	0.40	0.60	0.98	1.51
1247	North Lancaster	0.13	0.04	0.12	0.24	0.32	0.50	0.80
1248	Mescal - Smith	0.22	0.08	0.20	0.36	0.60	1.20	2.32
1252	Palos Verdes Landfill	0.55	0.31	0.73	1.09	1.49	2.01	3.20
1253	Carson - County Sanitation	0.44	0.20	0.55	0.89	1.22	1.65	2.47
1259	Whittier Narrows Reclamation Plant	0.49	0.26	0.60	0.90	1.25	1.80	3.01
1262	Saugus Reclamation Plant	0.51	0.28	0.62	0.94	1.29	1.81	3.49
1263	Valencia Reclamation Plant	0.49	0.28	0.62	1.01	1.31	1.80	2.78
Discarded Gages								
1248	Mescal - Smith	0.22	0.08	0.20	0.36	0.60	1.20	2.32
1249	Relay	0.32	0.08	0.20	0.30	0.46	0.60	1.15
1252	Palos Verdes Landfill	0.55	0.31	0.73	1.09	1.49	2.01	3.20
1253	Carson - County Sanitation	0.44	0.20	0.55	0.89	1.22	1.65	2.47
1259	Whittier Narrows Reclamation Plant	0.49	0.26	0.60	0.90	1.25	1.80	3.01
1262	Saugus Reclamation Plant	0.51	0.28	0.62	0.94	1.29	1.81	3.49
1263	Valencia Reclamation Plant	0.49	0.28	0.62	1.01	1.31	1.80	2.78

Appendix B

Statistical Analysis

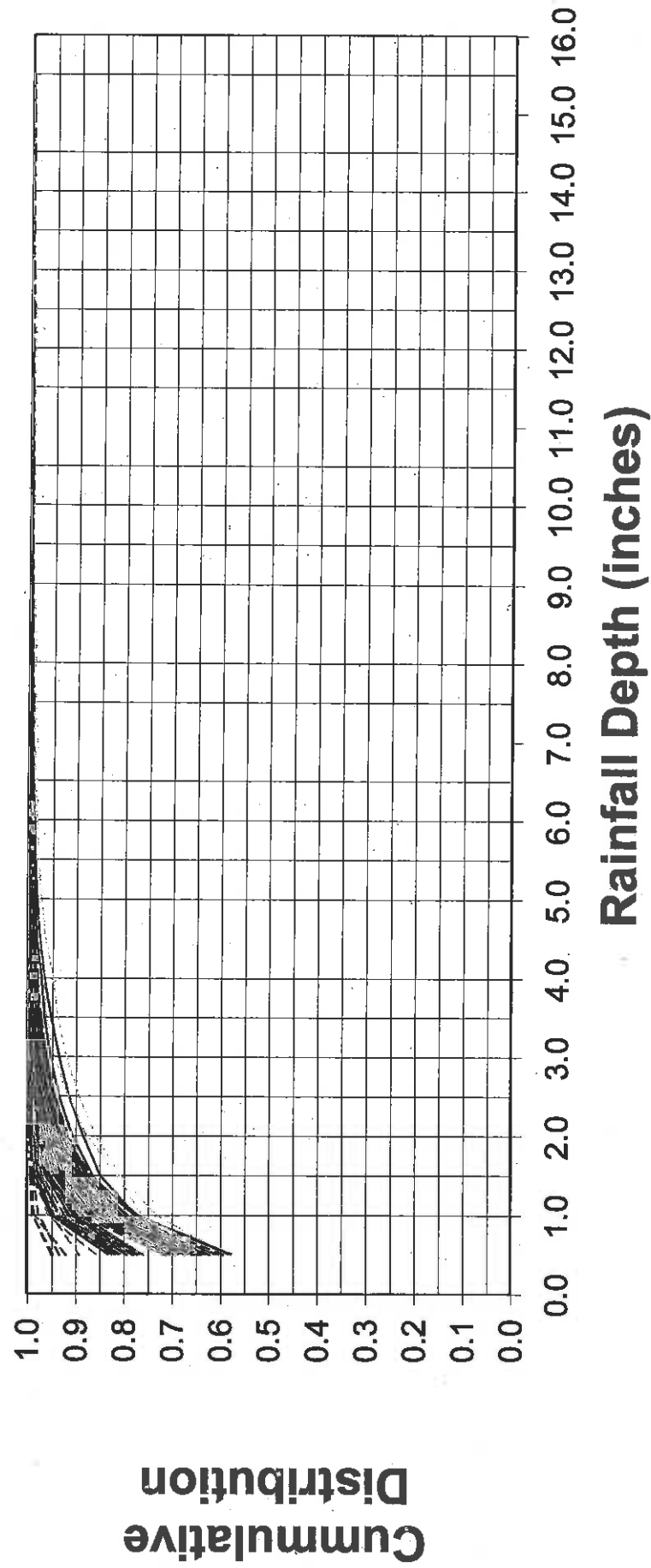
24-hr Rainfall Depth Histogram



Rainfall Depth (Inches)

[illegible][illegible]

24-hour Rainfall Depth - Cumulative Distribution



Appendix C

85th Percentile 24-hour Isohyetal Map and Rain Gage Locations

85th Percentile 24-hr Rainfall Isohyetal Map



85th Percentile 24-hr Isohyetal Map Gages



Procedure for Creating an Isohyetal Map

1. Create a shape file with rainfall depth data at given points throughout the county (rain gages).
2. Import shape file into ArcView and activate the Spatial Analyst extension.
3. Select the shape file with the rainfall data and then zoom to the extents of the shape file.
4. Choose the Interpolate Grid option from the Surface pull down menu.
5. Set the following levels for the input parameters:
 - a. Output Extent – select the Same as Display option.
 - b. Set the grid size at 1000.
 - c. Leave the other settings alone and select the OK button.
6. Choose the spline method from the next pop-up menu.
7. Choose the data values corresponding to the contours desired (i.e., 85th percentile values).
8. Leave the weight value at 0.1.
9. Set the number of points to 50.
10. Select Tension as the type for the interpolation surface and select the OK button.
11. ArcView will create a grid file. If the grid file appears to be what was expected, select the grid file.
12. Select Create Contours from the Surface pull down menu.
13. Set the contour interval and the base (beginning) contour and select the OK button.
14. ArcView will create contours. Select Convert to Shape file from the Theme pull down menu.
15. Auto-label the contours and create a layout for the map.

Attachment C:

**MS4 Permit Bioretention/
Biofiltration Design Criteria**

ATTACHMENT H. BIORETENTION / BIOFILTRATION DESIGN CRITERIA

Note: A significant portion of the information in this appendix has been copied verbatim from the *Ventura County Technical Guidance Manual*, Updated 2011, and modified to reflect recent changes to the bioretention/biofiltration soil media specifications as adopted by the California Regional Water Quality Control Board, San Francisco Region, on November 28, 2011, Order No. R2-2011-083, Attachment L. Permittees can submit alternate Bioretention/Biofiltration Design Criteria subject to Executive Officer approval.

1. Geometry

- a. Bioretention/biofiltration areas shall be sized to capture and treat the design with an 18-inch maximum ponding depth. *The intention is that the ponding depth be limited to a depth that will allow for a healthy vegetation layer.*
- b. Minimum planting soil depth should be 2 feet, although 3 feet is preferred. *The intention is that the minimum planting soil depth should provide a beneficial root zone for the chosen plant palette and adequate water storage for the SWQDv.*
- c. A gravel storage layer below the bioretention/biofiltration soil media is required as necessary to provide adequate temporary storage to retain the SWQDv and to promote infiltration.

2. Drainage

- a. Bioretention and biofiltration BMPs should be designed to drain below the planting soil in less than 48 hours and completely drain in less than 96 hours. *The intention is that soils must be allowed to dry out periodically in order to restore hydraulic capacity needed to receive flows from subsequent storms, maintain infiltration rates, maintain adequate soil oxygen levels for healthy soil biota and vegetation, and to provide proper soil conditions for biodegradation and retention of pollutants.*
- b. *Biofiltration BMPs are designed and constructed with an underdrain. The underdrain is preferably placed near the top of the gravel storage area to promote incidental infiltration and enhanced nitrogen removal. However, if in-situ, underlying soils do not provide sufficient drainage, the underdrain may need to be placed lower in the gravel storage area (within 6 inches of the bottom) to prevent the unit from holding stagnant water for extended periods of time. At many sites, clay soils will drain sufficiently fast, particularly if they are not compacted. Observing soil moisture and surface conditions in the days following a wet period may provide sufficient information for making this decision and may be more directly applicable than in situ or laboratory testing of soil characteristics¹.*

3. Overflow

An overflow device is required at the 18-inch ponding depth. The following, or equivalent, should be provided:

- a. A vertical PVC pipe (SDR 35) to act as an overflow riser.

¹ Dan Cloak, Dan Cloak Environmental Consulting to Tom Dalziel, Contra Costa County, February 22, 2011.

- b. The overflow riser(s) should be 6 inches or greater in diameter, so it can be cleaned without damage to the pipe.

The inlet to the riser should be at the ponding depth (18 inches for fenced bioretention areas and 6 inches for areas that are not fenced), and be capped with a spider cap to exclude floating mulch and debris. Spider caps should be screwed in or glued, i.e., not removable.

4. Integrated Water Quality/ Flow Reduction/Resources Management Criteria

- a. When calculating the capacity of an infiltration system, each Permittee shall account for the 24-hour infiltration assuming that the soil is saturated. Infiltration BMPs shall be limited to project sites where the in-situ soil or the amended on-site soils have a demonstrated infiltration rate under saturated conditions of no less than 0.3 inch per hour.
- b. Bioretention BMPs shall be designed to accommodate the minimum design flow at a surface loading rate of 5 inches per hour and no greater than 12 inches per hour, and shall have a total volume, including pore spaces and pre-filter detention volume of no less than the SWQDv.
- c. If rainwater harvested for use in irrigation is to be credited toward the total volume of storm water runoff retained on-site, each Permittee shall require the project proponent to conduct a conservative (assuming reasonable worst-case scenarios) assessment of water demand during the wet-weather season. This volume will be referred to as the "reliable" estimate of irrigation demand. The portion of water to be credited as retained on-site for use in irrigation shall not exceed the reliable estimate of irrigation demand.
- d. Harvested rainwater must be stored in a manner that precludes the breeding of mosquitoes or other vectors or with a draw down not to exceed 96 hours.
- e. When evaluating the potential for on-site retention, each Permittee shall consider the maximum potential for evapotranspiration from green roofs and rainfall harvest and use.
- f. Project requirements shall address at a minimum the potential use of harvested rainwater for non-potable uses including toilet flushing, laundry, and cooling water makeup water. If the municipal, building or county health code(s) does not allow such use of harvested rainwater, each Permittee shall develop a model ordinance and submit it to the city council or County Supervisors for consideration within 24 months after the Order effective date. The model ordinances shall be based on the International Association of Plumbing and Mechanical Officials' (IAPMO's) Green Plumbing and Mechanical Code Supplement to the 2012 National Standard Plumbing Code, or similar guidance to ensure the safe and effective use of harvested rainwater, separate from the existing provisions, if any, for reclaimed wastewater. California is in the process of adopting its 2012 update to the Uniform Plumbing Code that incorporates the IAPMO Green Plumbing and Mechanical Code Supplement. If the State of California update incorporates the IAPMO Green Plumbing and Mechanical Code Supplement, Permittees are not required to adopt a model ordinance addressing the potential use of harvested rainwater for non-potable uses including toilet flushing, laundry, and cooling water makeup water.

5. Hydraulic Restriction Layers

Infiltration pathways may need to be restricted due to the close proximity of roads, foundations, or other infrastructure. A geomembrane liner, or other equivalent water proofing, may be placed along the vertical walls to reduce lateral flows. This liner should have a minimum thickness of 30 mils. Generally, waterproof barriers should not be placed on the bottom of the biofiltration unit, as this would prevent incidental infiltration which is important to meeting the required pollutant load reduction.

6. Planting/Storage Media Specifications

- a. The planting media placed in the cell should achieve a long-term, in-place infiltration rate of at least 5 inches per hour. Higher infiltration rates of up to 12 inches per hour are permissible. Bioretention/biofiltration soil shall retain sufficient moisture to support vigorous plant growth.
- b. Planting media should consist of 60 to 80% fine sand and 20 to 40% compost.
- c. Sand should be free of wood, waste, coating such as clay, stone dust, carbonate, etc. or any other deleterious material. All aggregate passing the No. 200 sieve size should be non-plastic. Sand for bioretention should be analyzed by an accredited lab using #200, #100, #40, #30, #16, #8, #4, and 3/8 sieves (ASTM D 422 or as approved by the local permitting authority) and meet the following gradation (Note: all sands complying with ASTM C33 for fine aggregate comply with the gradation requirements provided in Table H-1):

Table H-1. Sand Texture Specifications

Sieve Size ASTM D422	Percent Passing by Weight	
	Minimum	Maximum
3 /8 inch	100	100
No. 4	90	100
No. 8	70	100
No. 16	40	95
No. 30	15	70
No. 40	5	55
No. 110	0	15
No. 200	0	5

Note: The gradation of the sand component of the media is believed to be a major factor in the hydraulic conductivity of the media mix. If the desired hydraulic conductivity of the media cannot be achieved within the specified proportions of sand and compost (#2), then it may be necessary to utilize sand at the coarser end of the range specified in above ("minimum" column).

- d. Compost should be a well decomposed, stable, weed free organic matter source derived from waste materials including yard debris, wood wastes, or other organic materials not including manure or biosolids meeting standards developed by the US Composting Council (USCC). The product shall be certified through the USCC Seal of Testing Assurance (STA) Program (a compost testing and information disclosure program). Compost quality should be verified via a lab analysis to be:

- Feedstock materials shall be specified and include one or more of the following: landscape/yard trimmings, grass clippings, food scraps, and agricultural crop residues.
- Organic matter: 35-75% dry weight basis.
- Carbon and Nitrogen Ratio: $15:1 < C:N < 25:1$
- Maturity/Stability: shall have dark brown color and a soil-like odor. Compost exhibiting a sour or putrid smell, containing recognizable grass or leaves, or is hot (120 F) upon delivery or rewetting is not acceptable.
- Toxicity: any one of the following measures is sufficient to indicate non-toxicity:
 - $NH_4:NH_3 < 3$
 - Ammonium < 500 ppm, dry weight basis
 - Seed Germination $> 80\%$ of control
 - Plant trials $> 80\%$ of control
 - Solvita® > 5 index value
- Nutrient content:
 - Total Nitrogen content 0.9% or above preferred
 - Total Boron should be < 80 ppm, soluble boron < 2.5 ppm
- Salinity: < 6.0 mmhos/cm
- pH between 6.5 and 8 (may vary with plant palette)
- Compost for bioretention should be analyzed by an accredited lab using #200, ¼ inch, ½ inch, and 1 inch sieves (ASTM D 422) and meet the gradation described in Table H-2:

Table H-2. Compost Texture Specifications

Sieve Size ASTM D422	Percent Passing by Weight	
	Minimum	Maximum
1 inch	99	100
½ inch	90	100
¼ inch	40	90
#200	2	10

Tests should be sufficiently recent to represent the actual material that is anticipated to be delivered to the site. If processes or sources used by the supplier have changed significantly since the most recent testing, new tests should be requested.

Note: the gradation of compost used in bioretention/biofiltration media is believed to play an important role in the saturated hydraulic conductivity of the media. To achieve a higher saturated hydraulic conductivity, it may be necessary to utilize compost at the coarser end of this range ("minimum" column). The percent passing the #200 sieve (fines) is believed to be the most important factor in hydraulic conductivity.

In addition, a coarser compost mix provides more heterogeneity of the bioretention media, which is believed to be advantageous for more rapid development of soil structure needed to support health biological processes. This may be an advantage for plant establishment with lower nutrient and water input.

- e. Bioretention/Biofiltration soils not meeting the above criteria shall be evaluated on a case by case basis. Alternative bioretention soil shall meet the following specification:

"Soils for bioretention facilities shall be sufficiently permeable to infiltrate runoff at a minimum rate of 5 inches per hour during the life of the facility, and provide sufficient retention of moisture and nutrients to support healthy vegetation." The following steps shall be followed by the Permittees to verify that alternative soil mixes meet the specification:

- Submittals – The applicant must submit to the Permittee for approval:
 - A sample of mixed bioretention/biofiltration soil.
 - Certification from the soil supplier or an accredited laboratory that the bioretention/biofiltration soil meets the requirements of this specification.
 - Certification from an accredited geotechnical testing laboratory that the bioretention/biofiltration soil has an infiltration rate of between 5 and 12 inches per hour.
 - Organic content test results of mixed bioretention/biofiltration soil. Organic content test shall be performed in accordance with by Testing Methods for the Examination of Compost and Composting (TMECC) 05.07A, "Loss-On-Ignition Organic Matter Method".
 - Organic Grain size analysis results of mixed bioretention/biofiltration soil performed in accordance with ASTM D 422, Standard Test Method for Particle Size Analysis of Soils.
 - A description of the equipment and methods used to mix the sand and compost to produce the bioretention/biofiltration soil.
- The name of the testing laboratory(s) and the following information:
 - Contact person(s)
 - Address(s)
 - Phone contact(s)
 - email address(s)
 - Qualifications of laboratory(s), and personnel including date of current
 - Certification by STA, ASTM, or approved equal.
- Bioretention/biofiltration soils shall be analyzed by an accredited lab using #200, and 1/2" inch sieves (ASTM D 422 or as approved by municipality), and meet the gradation described in Table H-3).

Table H-3. Alternative Bioretention/Biofiltration Soil Texture Specifications

Sieve Size ASTM D422	Percent Passing by Weight	
	Minimum	Maximum
1/2 inch	97	100
200	2	5

- Bioretention/biofiltration soils shall be analyzed by an accredited geotechnical lab for the following tests:
 - Moisture – density relationships (compaction tests) shall be conducted on bioretention soil. Bioretention/biofiltration soil for the permeability test shall be compacted to 85 to 90 percent of the maximum dry density (ASTM D1557).
 - Constant head permeability testing in accordance with ASTM D2434 shall be conducted on a minimum of two samples with a 6-inch mold and vacuum saturation.

7. Mulch for Bioretention/Biofiltration Facilities

Mulch is recommended for the purpose of retaining moisture, preventing erosion and minimizing weed growth. Projects subject to the State's Model Water Efficiency Landscaping Ordinance (or comparable local ordinance) will be required to provide at least two inches of mulch. Aged mulch, also called compost mulch, reduces the ability of weeds to establish, keeps soil moist, and replenishes soil nutrients. Aged mulch can be obtained through soil suppliers or directly from commercial recycling yards. It is recommended to apply 1" to 2" of composted mulch, once a year, preferably in June following weeding

8. Plants

- a. Plant materials should be tolerant of summer drought, ponding fluctuations, and saturated soil conditions for 48 to 96 hours.
- b. It is recommended that a minimum of three types of tree, shrubs, and/or herbaceous groundcover species be incorporated to protect against facility failure due to disease and insect infestations of a single species.
- c. Native plant species and/or hardy cultivars that are not invasive and do not require chemical inputs should be used to the maximum extent practicable.

References

California Regional Water Quality Control Board, San Francisco Bay Region. 2011. Municipal Regional Stormwater Permit (Order No. R2-2011-0083, Attachment L). Adopted November 28, 2011.

Dan Cloak, Dan Cloak Environmental Consulting to Tom Dalziel, Contra Costa County, February 22, 2011.<<http://www.cccleanwater.org/c3-guidebook.html>>. Accessed on January 31, 2012.

Geosyntec Consultants and Larry Walker Associates. 2011. *Ventura County Technical Guidance Manual for Stormwater Quality Control Measures, Manual Update 2011. Appendix D*. Prepared for the Ventura Countywide Stormwater Quality Management Program. July 13, 2011.

Attachment D:
LID Project Certification Statements



**New Development and Redevelopment Project
Owner's Certification Statement for Design of LID BMPs**

This form must be signed by the project owner as a certification of project responsibility. The signed form must be submitted to the City along with final project plans.

“Should the project plans and specifications provided to the City as part of the New Development/Redevelopment planning process 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 storm water requirements and sign this certification voluntarily, without purpose of evasion and of our own free will and with full knowledge of its significance.”

Owner's Name – Print

Project Address

Owner's Name – Signature

Date



New Development and Redevelopment Project

Owner's Certification Statement for Construction and Maintenance of LID BMPs⁶

This form must be signed by the project owner as a certification of project responsibility to maintain BMPs following construction. The signed form must be submitted to the City along with Final Project Plans.

The undersigned, _____ ("Owner"), hereby certifies that it owns the real property described as follows ("Subject Property"), located in the City of Rolling Hills:

Project Address: _____

Zoning Case Number: _____

Owner is aware of the requirements of the City of Rolling Hills Municipal Code, Chapter 8.32, the County of Los Angeles Low Impact Development (LID) Standards Manual and the County's Stormwater BMP Design and Maintenance Manual. The following post-construction BMP features have been installed on the Subject Property:

- | | |
|---|---|
| <input type="checkbox"/> Porous pavement | <input type="checkbox"/> Cistern/rain barrel |
| <input type="checkbox"/> Infiltration trench/pit | <input type="checkbox"/> Bioretention or biofiltration |
| <input type="checkbox"/> Rain garden/planter box | <input type="checkbox"/> Disconnect impervious surfaces |
| <input type="checkbox"/> Dry Well | <input type="checkbox"/> Storage containers |
| <input type="checkbox"/> Landscaping and landscape irrigation | <input type="checkbox"/> Green roof |
| <input type="checkbox"/> Other _____ | |

The location, including GPS x-y coordinates, and type of each post-construction BMP feature installed on the Subject Property is identified on the site diagram attached hereto as Subject Property Site Diagram, and/or included in the information provided in Attachment E following.

Owner hereby covenants and agrees to maintain the above-described post-construction BMP feature(s) in a good and operable condition at all times, and in accordance with the LID Maintenance Guidelines, attached hereto as Final Design Plans.

Owner further covenants and agrees that the above-described post-construction BMP features shall not be removed from the Subject Property unless and until they have been replaced with other post-construction BMP features.

Owner further covenants and agrees that if Owner hereafter sells the Subject Property, Owner shall provide printed educational materials to the buyer regarding the post-construction BMP features that are located on the Subject Property, including the type(s) and location(s) of all such features, and instructions for properly maintaining all such features.

Owner makes this Covenant and Agreement on behalf of itself and its successors and assigns. This Covenant and Agreement shall run with the Subject Property and shall be binding upon owner, future owners, and their heirs, successors and assignees, and shall continue in effect until the release of this Covenant and Agreement by the City of Rolling Hills, in its sole discretion.

Owner Signature/Date

⁶ Adapted from the Grading Review Sheet by County of Los Angeles Department of Public Works-Building and Safety/Land Development Division

Attachment E:
**Planning Information to be Submitted
for New Development/
Redevelopment Projects**

**Planning Information for New Development/Redevelopment LID Projects
(In Accordance with Chapter 8.32 of City of Rolling Hills Municipal Code)**

General Project Information		
Project Address		
Parcel ID		
Zoning/Use Code:		
Project Developer		
Project Owner		
Owner Phone		
Owner address		
Owner email		
Site acreage:		
Project acreage/disturbed area (may be less than site acreage for redevelopment projects)		
Planned impervious surface area for the project (ft ²) (Includes building footprint as well as impervious driveways, patios, sport courts, etc.)		
Planned pervious surface area for the project (ft ²)		
State WDID No. (if subject to Construction General Permit)		
Runoff Calculations for Project Site		
85th percentile, 24-hour storm (inches)		
Project design storm (Inches) (Greater of 85th percentile, 24-hour storm and 0.75)		
Storm Water Quality Design volume (cubic ft)		
Percent of design storm to be retained on site		
Biofiltration BMPs being used ? (Yes/No)		
Biofiltration BMP Treatment Volume (1.5 times the SWQDv not reliably retained on site)		
If offsite mitigation measures will be used, the following information must be provided		
Design volume for water quality mitigation treatment BMPs (ft ³)		
If flow-through water quality treatment BMPs are approved, provide the 1-year, 1-hour storm intensity (inches per hour)		
Percent of design storm volume to be infiltrated at off-site mitigation site		
Percent of design storm to be treated with biofiltration at off-site retrofit		
Name/address of off-site mitigation or retrofit sites		
GIS coordinates for off-site mitigation project		
BMP Specifications		
Permanent Structural BMP ID [provide additional columns for BMPs as necessary]	BMP A	BMP B (If necessary)
Structural BMP Type and Description		
BMP Location on Site (Coordinates)		
BMP Location Description (or attach map)		
BMP Design Capture Volume (ft ³)		

*Attach BMP design plans/specs

Attachment F:
City of Rolling Hills' Municipal Code
Chapter 13.18 – Water Efficient
Landscape Ordinance

Chapter 13.18

WATER EFFICIENT LANDSCAPE

Sections:

- 13.18.010 Purpose.
- 13.18.020 Applicability.
- 13.18.030 Definitions.
- 13.18.040 Landscape Plan Design Standards.
- 13.18.050 Exceptions.
- 13.18.060 Submittal Requirements.
- 13.18.070 Determination of Conforming Installation and Compliance Certification.

13.18.010 Purpose.

It is the policy of the City of Rolling Hills to promote water conservation. The landscape water conservation standards detailed in this Chapter are intended to promote water conservation while allowing the maximum possible flexibility in designing healthy, attractive, and cost-effective water efficient landscapes.

13.18.020 Applicability.

This Chapter applies to:

A. All public agency development projects which are subject to discretionary review by the City and propose new or altered landscape area of 2,500 square feet or more; and

B. All single family residential development projects subject to discretionary review by the Planning Commission or City Council, with a total new or altered landscape area equal to or greater than 5,000 square feet.

13.18.030 Definitions

"Application rate" means the rate of irrigation (inches/hour or gallons per minute) at which water is applied by an irrigation system.

"Automatic irrigation system" means an irrigation system that can be controlled without manual manipulation and which operates on a preset program.

"Discretionary review" means review of a development project by the Planning Commission and/or City Council that requires that the Planning Commission or City Council ascertain compliance with this Chapter, and that also requires the exercise of judgment, deliberation or decision by the Planning Commission and/or City Council.

"Evapotranspiration" or "ET" means the approximate summation of water losses through evaporation from soil and transpiration from the plants during a specified period of time.

"ETo" means the approximation of water loss expressed in inches per year from a field of 4-to-7-inch-tall cool season grass that is not water stressed.

"ET Adjustment Factor" means a factor used to set an efficiency goal, that when applied to ETo adjusts for plant factor and irrigation efficiency, two of the major influences upon the amount of water that needs to be applied to a landscape.

"Hydrozone" means a portion of the planting area having plants grouped according to water need.

"Irrigation system" means a complete connection of system components, including the water distribution network and the necessary irrigation equipment and downstream from the backflow prevention device.

"Landscape Area" means all areas where new or altered landscaping is proposed as part of a new development proposal.

"Landscape Plan" means design plans with a planting plan and irrigation plan, and plans with supporting detail sheets to include notes and/or specifications.

"New Development" means a new building on a vacant site, an addition to an existing building on a site, a new building on a developed site, or a change in land use type that requires a discretionary permit from the City.

"Plant Factor" means a factor that when multiplied by the ETo, estimates the amount of water used by a given plant species.

"Planting area" means the parcel area less building pad(s), driveway(s), patio(s), deck(s), walkway(s) and parking area(s). Planting area includes water bodies (i.e., fountains, ponds, lakes) and natural areas.

"Special Landscape Area (SLA)" means park and recreational areas permanently and solely dedicated to edible plants such as orchards and vegetable gardens, and areas irrigated with recycled water are subject to the MAWA with an ET adjustment factor not to exceed 1.0.

"Turf" means a groundcover surface of mowed grass with an irrigation water need of greater than 30% of the ETo.

"Water Budget Calculation" means the Maximum Annual Applied Water Allowance, which shall be calculated using the following formula, per Section 492.4 of the State of California Model Water Efficient Landscape Ordinance, which may be amended from time to time:

$$\text{MAWA} = (\text{ETo}) (0.62) [0.7 \times \text{LA} + 0.3 \times \text{SLA}]$$

MAWA = Maximum Applied Water Allowance (maximum gallons per year available for the project).

Eto = Reference Evapotranspiration (39.7 inches per year for the City of Rolling Hills).

0.7 = ET Adjustment Factor (as designated by the state of California).

LA = Landscape Area (square feet, including SLA)

0.62 = Conversion Factor (inches to gallons)

SLA = Special Landscape Area (square feet)

0.3 = The additional ET Adjustment Factor for the Special Landscape Area

“Water Wise Plants” means those plants that are evaluated as needing “moderate” (40-60% of ETo), “low” (10-30% of ETo) and “very low” (< 10% of ETo) amounts of water as defined and listed by Water Use Classifications of Landscape Species (WUCOLS) available from the State of California Department of Water Resources. Other sources of water wise plant classifications may be used if approved by the City Manager.

“Weather Based Irrigation Controller” means an irrigation controller that automatically adjusts the irrigation schedule based on changes in the weather.

13.18.040 Landscape Plan Design Standards.

An applicant proposing new or altered landscaping, which is subject to the requirements of this Chapter, shall comply with each of the following in the design, installation, and maintenance of the landscaped area, unless an exception is granted pursuant to Section 13.18.050.

A. Landscape Plan Content:

1. Applicants shall submit a Landscape Plan depicting the landscaped area and all existing landscaping to remain on the lot. Landscaping shall be designed to be irrigated at no more than 0.7 of the reference evapotranspiration (ETo) and shall not exceed the MAWA. The City reserves the right to modify plans in quantity and quality of the landscape to meet the requirements of this Chapter.

2. Applicants shall provide all relevant information on the landscape plan including botanical names for plants and turf species; container sizes; percentage calculations of allowable areas of turf; low, medium or high water use plants and water-wise plants; water budget calculations; monthly irrigation schedule; and specific requests for any exceptions to the requirements of this Chapter in accordance with Section 13.18.050. Areas of existing landscaping to remain unaltered shall be indicated on the landscape plan.

B. Use of Turf and Water Wise Plants:

1. The landscape area of single family residential and institutional use projects shall be designed with no more than 40% of the landscaped area in turf or plants that are not water wise plants.

2. Turf shall not be used on slopes of 20% (5:1) or greater within the landscape area.

3. Additional turf areas may be approved by the City for areas designed and used for outdoor sporting and recreational activities. Approved turf areas may be watered at 1.0 of the referenced evapotranspiration (ETo).

C. Mulch: The landscape area, except those portions of the landscape area planted in turf, shall be covered with mulch material to an average thickness of at least 3 inches throughout. In areas with groundcover planted from flats, mulch shall be installed to an average thickness of

1-½ inches. Additional mulch material shall be added from time to time as necessary in order to maintain the required depth of mulch.

D. Irrigation: All new or altered irrigation systems proposed as part of a new development shall incorporate the following requirements in their design, installation and maintenance:

1. Irrigation systems shall be designed and installed to avoid overspray and runoff. Valves shall be separated for individual hydrozones based on plant water needs and sun or shade requirements.

2. An automatic irrigation system is required and shall include a weather-based irrigation controller, including a rain shut-off sensor.

3. Areas less than eight feet wide shall be irrigated with appropriately selected equipment that provides the proper amount of water coverage without causing overspray onto adjacent surfaces.

4. All sprinklers shall have matched precipitation rates within each valve and circuit. All irrigation systems shall be designed to include optimum distribution uniformity, head to head spacing, and setbacks from walkways and pavement.

5. All irrigation systems shall provide check valves at the low end of irrigation lines to prevent unwanted draining of irrigation lines.

6. Pressure regulators may be required on the irrigation system as determined by the Building and Safety Department.

13.18.050 Exceptions.

Exceptions to these landscape water conservation standards may be granted by the City Manager upon a finding, based on substantial evidence, that the exceptions will promote equivalent or greater water conservation than is provided for in these standards. Requests for exceptions shall be in writing and shall be submitted to the City Manager at the time the application is submitted to the City for review. Requests for exceptions must be accompanied by documentary evidence supporting the finding of equivalent or greater water conservation.

13.18.060 Submittal Requirements.

A. In accordance with California Business and Professions Code Section 5641, as may be amended from time to time, drawings for the conceptual design and placement of tangible objects and landscape features; or plans, drawings and specifications for the selection, placement or use of plants, may be submitted by any person, including licensed landscape architects, licensed landscape contractors or landscape designers. Construction documents, details or specifications for the tangible objects or landscape features, or site alterations which

require grading or drainage plans, shall be prepared by a licensed professional as required by California law.

B. The landscape plan shall include a "Statement of Compliance" in a form approved by the City Manager certifying that the landscape design complies with the mandatory elements of this Chapter. The Statement of Compliance shall be signed by the person who prepared the landscape plan and shall be submitted to the City prior or concurrent with submitting final development plans to the Building and Safety Department.

C. The Planning Commission or City Council may require, on a case-by-case basis, that the landscaping plan and statement of compliance be submitted concurrently with the development application or prior to rendering a decision for the development.

D. The project applicant shall submit a financial obligation in the amount of the cost estimate of the implementation of the landscaping plan and irrigation plus fifteen percent, which shall be posted prior to issuance of a grading and building permit. The financial obligation shall be retained with the City for not less than two years after landscape installation. The retained deposit will be released by the City Manager after the City Manager determines that the landscaping was installed pursuant to the landscaping plan as approved, and that such landscaping is properly established and in good condition.

13.18.070 Determination of Conforming Installation and Compliance Verification.

A. The person who prepared the landscape plan shall inspect the installation of the landscaping and any irrigation system included in the plan and shall certify in writing to the City Manager that the installation substantially conforms to the approved landscape plan. Certification shall be submitted within 90 days of the date the construction project has received approval of a final inspection from the Building and Safety Department. The applicant is eligible for a one-time extension in submitting the certification up to 90 days, based on findings of good cause provided the application requesting an extension is filed prior to the original 90-day deadline.

B. Verification of compliance with this Chapter, as applicable, shall be made by the City Manager. The financial obligation described in Section 13.18.160D shall not be returned unless the certification of compliance is on file with the City.

Section 4: Severability. If any section, subsection, subdivision, sentence, clause, phrase, or portion of this ordinance is, for any reason, held to be invalid or unconstitutional by the decision of any court of competent jurisdiction, such decision shall not affect the validity of the remaining portions of this ordinance. The City Council hereby declares that it would have adopted this ordinance, and each section, subsection, subdivision, sentence, clause, phrase, or portion thereof, irrespective of the fact that any one or more sections subsections, subdivisions, sentences, clauses, phrases, or portion thereof be declared invalid or unconstitutional.

Section 5: Notice. The City Clerk shall certify as to the adoption of this ordinance and post a certified copy of this ordinance, including the vote for and against the same, in the office of the City Clerk, in accordance with Government Code Section 36993.

Section 6: Effective date. This ordinance shall go into effect and be in full force and operation from and after thirty (30) days after its final passage and adoption.

PASSED, APPROVED, AND ADOPTED this 25th day of January, 2010.

/s/ Thomas Heinsheimer

**_____
THOMAS HEINSHEIMER, MAYOR**

Attest:

/s/ Heidi Luce

**_____
HEIDI LUCE, DEPUTY CITY CLERK**



City of Rolling Hills

INCORPORATED JANUARY 24, 1957

NO. 2 PORTUGUESE BEND ROAD
ROLLING HILLS, CA 90274
(310) 377-1521
FAX (310) 377-7288

LANDSCAPE PLAN REQUIREMENTS FOR RESIDENTIAL PROJECTS

(RHMC 13.18 Effective February 24, 2010)

PROVISIONS AND STANDARDS

1. Landscape Plans for new or altered landscaping of 5,000 square feet or greater are required to comply with specific standards, if landscaping is part of a development project that is subject to approval by the Planning Commission or City Council. Examples of such projects include: Site Plan Reviews, Variances and Conditional Use Permits.
2. At the direction of the property owner the plan may be prepared by the owner or a landscape professional, unless alteration requires grading or drainage plan (Ca. Business and Professions Code §5641)
3. The plan must include: names of plants (botanical and common), number and sizes of containers, percentage calculation of turf areas; low, medium or high water use plants and water-wise plants; water budget calculations; monthly irrigation schedule; and any areas of existing landscaping to remain unaltered.
4. The City reserves the right to require modified plans of the landscape to meet the requirements of Ordinance 316.
5. Landscaping of applicable projects must be designed such that water use will not exceed:
 - 70% of the City's designated *evapotranspiration rate* (ETo) = 39.7 in. / year.
 - A water budget (MAWA) calculated for the project (see attached worksheet).
6. Turf and non water-wise plants:
 - Must comprise less than 40% of the total landscaped area (plantings in a roadway easement are not counted towards 40%).
 - Turf not permitted to be planted on slopes of 20% (5:1) or greater.
 - City may approve additional turf areas for outdoor sporting, recreational activities, or another approved function irrigated at 1.0 of the City's (ETo).
7. Mulching requirements:
 - Non-turf areas must have an average thickness of 3-inches minimum throughout.
 - Groundcovers planted from nursery flats must have an average thickness of 1.5-inches.
 - Mulch thickness and coverage must be maintained for the life of the planting.

8. Irrigation systems are required to have the following features:
 - Automatic irrigation controllers, weather based with rain shut-off sensors
 - Sprinklers with optimum distribution uniformity, spacing, matched precipitation rates per valve and circuit, and setbacks from hard surfaces.
 - Check valves for each line.

PLAN APPROVAL PROCESS

1. Before discretionary permit application and public hearing:
 - Submit preliminary conceptual Landscape Plan to City with discretionary permit application. The conceptual plan shall clearly identify all proposed new and/or existing landscaping to be altered.
2. Before obtaining grading or building permits:
 - Submit detailed Landscape Plan to the City along with a "Statement of Compliance" signed by the preparer, certifying that the landscape design complies with Ordinance No. 316 (see attached form) and cost estimate for the landscaping and irrigation. (City Staff with City landscaping consultant will review plan and cost estimate.)
 - Submit to the City a financial obligation in the amount based on the cost of the landscaping and irrigation plus 15% City administration cost.
3. Following project completion:
 - Within 90 days of the date the related development project has received an approved final inspection, the plan preparer must inspect installed landscaping and irrigation system included in the approved landscape plan and submit certification (see attached form) to City staff verifying that the installation substantially conforms to the plan. The City may extend the submission requirement for an additional 90 days.
 - After two years of installation of the landscaping/irrigation staff will inspect it, and if satisfied that it complies with the approved plan and landscaping is in good condition, the City will refund the security deposit.

ATTACHMENTS:

1. City of Rolling Hills Landscape Water Budget Calculation Worksheet
2. City of Rolling Hills Landscape Plan Statement of Compliance
3. City of Rolling Hills Landscape Installation Certificate of Completion

Public:INACTIVE FILES:LANDSCAPING ORDINANCE REQUIREMENTS AND FORMS:Ordinance No. 316 Forms:Ord 316 Guidelines Handout 1.doc

04/2013



City of Rolling Hills

LANDSCAPE WATER BUDGET CALCULATION WORKSHEET

(To be submitted with Landscape Plan per RHMC 13.18)

This form is to be used to calculate a project's Maximum Annual Applied Water Allowance (MAWA) for all landscaping subject to Ordinance 316, Water Efficient Landscape.

Equation: $MAWA = (ET_o) (0.62) [ETAF \times LA + 0.3 \times SLA]$

Where:

MAWA	= Maximum Applied Water Allowance (maximum gallons per year available for the project).
ET _o	= Reference Evapotranspiration (39.7 inches per year for the City of Rolling Hills).
ETAF	= ET Adjustment Factor, 0.7 for new landscaping.
LA	= Landscape Area (square feet, including SLA)
0.62	= Conversion Factor (inches to gallons)
SLA	= Special Landscape Area (square feet)
0.3	= The additional ET Adjustment Factor for the Special Landscape Area (total factor of 1.0).

Maximum Applied Water Allowance = _____ gallons per year.

Show calculations:



City of Rolling Hills

LANDSCAPE PLAN STATEMENT OF COMPLIANCE

(To be submitted with Landscape Plan per RHMC 13.18)

I hereby certify that:

(1) I am: (check one):

☐ A landscape architect or other landscape professional (Lic. Number if applicable:

_____).

☐ The property owner of the subject landscaped site.

(2) The landscape design and water use calculations for the property located at (provide street address or parcel number(s):

_____ were prepared by me or under my supervision.

(3) The landscape design and water use calculations for the identified property comply with The City of Rolling Hills Water Efficient Landscape Ordinance No. 316 (Municipal Code Chapter 13.18).

(4) The information I have provided in this Certificate of Landscape Design is true and correct and is hereby submitted in compliance with the City of Rolling Hills Water Efficient Landscape Ordinance.

Print Name

Date

Signature

License Number

Address

Telephone

E-mail Address



City of Rolling Hills

LANDSCAPE INSTALLATION CERTIFICATE OF COMPLETION

(RHMC 13.18)

I hereby certify that:

(1) I am (check one):

☐ A landscape architect or other landscape professional (Lic. Number if applicable: _____).

☐ The property owner of the subject landscaped site.

(2) The landscape project for the property located at (provide street address or parcel number(s):

was installed by me or under my supervision.

(3) The landscaping for the identified property has been installed in substantial conformance with an approved Landscape Plan including Water Budget calculations and complies with the requirements of the City of Rolling Hills Water Efficient Landscape Ordinance No. 316 (Municipal Code Chapter 13.18) for the purpose of achieving an efficient use of water in the subject landscape.

(4) The information I have provided in this Landscape Installation Certificate of Completion is true and correct and is hereby submitted in compliance with the City of Rolling Hills Water Efficient Landscape Ordinance.

Print Name

Date

Signature

Address

Telephone

E-mail Address

Attachment G:
Significant Ecological Areas Within
Rolling Hills

