

# **City of Pico Rivera**



**To:** Mayor and City Council

**From:** City Manager

**Meeting Date:** \_\_\_\_\_, 2013

**Subject:** REGIONAL WATER QUALITY CONTROL BOARD - MS4  
PERMIT COMPLIANCE

**Recommendation:**

1. Adopt a Resolution to approve the Pico Rivera Green Streets Policy Manual; and
2. Introduce the Low Impact Development Ordinance.

**Fiscal Impact:** There is no direct fiscal impact of the recommended actions. However, adoption of a Green Streets resolution and a Low Impact Development ordinance, in compliance with the MS4 Permit, will likely increase costs of some future city street projects and some future private development projects. The costs of compliance with the MS4 Permit may be an unfunded State mandate.

**Discussion:**

The Municipal Separate Storm Sewer System (MS4) Permit (LARWQCB Order No. R-2012-0175) was adopted by LARWQCB on November 8, 2012. This updated MS4 permit is a several hundred page document that contains many new requirements related to the management of surface water quality in Los Angeles County. The City of Pico Rivera is one of the municipalities named as a permittee in the MS4 Permit. The City of Pico Rivera is cooperating with other nearby cities in the Lower Los Angeles River and Lower San Gabriel River watersheds in order to comply with the requirements of the MS4 Permit.

In cooperation with the watershed cities, City staff recommends a compliance path under the permit that involves the preparation of a Watershed Management Program (WMP) the adoption of a Green Streets Policy and a Low Impact Development (LID) Ordinance for greater than 50% of the land area covered by the WMP. The following discussion is presented for Council consideration of a proposed Draft Green Streets Policy Manual, Draft LID Ordinance and NOI.

**Green Streets Policy**

Green streets are beneficial for new road construction and retrofits. They can provide substantial economic benefits when used in transportation applications. Coordinating green infrastructure installation with broader transportation improvements can reduce the cost of storm water management by including it within larger infrastructure improvements. A large

municipal benefit regarding green infrastructure use is maintenance access; using roads and rights-of-way as locations for green infrastructure not only addresses a significant pollutant source, but also alleviates access and maintenance concerns by using public space. Also, right-of-way installations allow for easy public maintenance.

Green streets can incorporate a wide variety of design elements including street trees, permeable pavements, bio-retention, and swales. Although the design and appearance of green streets will vary, the functional goals are the same; provide source control of storm water, limit its transport and pollutant conveyance to the collection system, restore pre-development hydrology to the maximum extent practicable, and provide environmentally enhanced roads.

### **Low Impact Development Ordinance**

Low Impact Development is a strategy for improving the quality of runoff by requiring that development projects direct runoff to storm water treatment systems consisting of vegetation and soil. Since 2007, the City has been requiring storm water mitigations for high priority projects, such as parking lots that are over 5,000 square feet, and housing developments that have 10 or more dwelling units. The new NPDES (MS4) permit increased the number and type of high priority (large) projects.

The goals of LID include: (1) reducing the amounts of pollutants in stormwater and urban runoff, (2) development of specifications for low cost treatment systems that are easier for the property owner or local developer to install, and (3) encouraging property owners to select treatment systems that are easy to maintain and thus minimizing the need for City enforcement. Specific elements of the LID, include are but not limited to:

- Residential development for 1-4 units will be able to utilize provisions of the LID Manual and standards on development plans, and provide the related calculations for the treatment surface.
- Residential development of 5 or more dwelling units and those for commercial or industrial development will require calculations showing a proposed treatment system to accommodate acceptable runoff.
- Where redevelopment projects involve more than 50 percent of the site, runoff from the entire site would have to be treated.
- Use of approved treatment systems, defined in the LID Manual as adopted by Resolution of the City Council, such as:
  - Flow-through planters
  - Vegetative (concave) swales with underdrains
  - Rain Gardens (concave rock and plant areas)
  - Semi-pervious style driveways
  - Infiltration trench drains across driveways

COUNCIL AGENDA REPORT – MTG. OF \_\_\_\_\_  
REGIONAL WATER QUALITY CONTROL BOARD - MS4 PERMIT COMPLIANCE

Page 3 of 3

- Use of other permitted treatment systems to be approved by the Community Development Director.
- Projects subject to New Development and Redevelopment provisions of the MS4 permit (high priority projects) will be separately evaluated in accordance with the LID criteria of the MS4 permit.

Project exempt from LID requirements include but are not limited to:

- A project which does not require a grading, building, demolition, or other permits issued by the division of Building and Safety.
- A development that creates, adds or replaces less than 800 square feet of impervious area (determined from the smallest single family residential home permitted by the City).
- A development involving only emergency construction activity required to immediately protect public health and safety;
- Infrastructure projects within the public right-of-way.
- A development or redevelopment involving only activity related to gas, water, sewer, cable, or electricity services on private property.
- A development involving only resurfacing and/or re-striping of permitted parking lots, where the original line and grade, hydraulic capacity, and original purpose of the facility is maintained.
- A project involving only exterior movie or television production sets, or facades on an existing developed site.

Ronald Bates

RRB:AC:JL:lg

Enc.

- 1) Attachment "A" -Green Streets Policy Resolution
- 2) Attachment "B" -Green Streets Policy Manual
- 3) Attachment "C" - Low Impact Development Ordinance
- 4) Attachment "D" - Low Impact Development Manual

ORDINANCE NO. \_\_\_\_\_

AN ORDINANCE OF THE CITY COUNCIL OF THE CITY OF PICO RIVERA, CALIFORNIA, AMENDING PICO RIVERA MUNICIPAL CODE CHAPTER 16.04, TO EXPAND THE APPLICABILITY OF THE EXISTING STORM WATER AND URBAN RUNOFF POLLUTION PREVENTION REQUIREMENTS BY IMPOSING RAINWATER LOW IMPACT DEVELOPMENT (LID) STRATEGIES ON PROJECTS THAT REQUIRE BUILDING, GRADING AND ENCROACHMENT PERMITS

WHEREAS, the City is authorized by Article XI, Section 5 and Section 7 of the State Constitution to exercise the police power of the State by adopting regulations to promote public health, public safety and general prosperity; and

WHEREAS, the federal Clean Water Act establishes Regional Water Quality Control Boards in order to prohibit the discharge of pollutants in stormwater runoff to waters of the United States; and

WHEREAS, the City is a permittee under the California Regional Water Quality Control Board, Los Angeles Region Order No. R4-2012-0175, issued on November 08, 2012 which establishes Waste Discharge Requirements for Municipal Separate Storm Sewer Systems (MS4) Discharges within the Coastal Watersheds of Los Angeles County, except those discharges originating from the City of Pico Rivera MS4; and

WHEREAS, Order No. R4-2012-0175 contains requirements for municipalities to establish a LID Ordinance in order to participate in a Watershed Management Program and/or Enhanced Watershed Management Program; and

WHEREAS, the Regional Board has adopted Total Maximum Daily Loads (TMDLs) for pollutants which are numerical limits that must be achieved effectively through LID implementation; and

WHEREAS, the City has the authority under the California Water Code to adopt and enforce ordinances imposing conditions, restrictions and limitations with respect to any activity that might degrade waters of the State; and

WHEREAS, the City is committed to a stormwater management program that protects water quality and water supply by employing watershed-based approaches that balance environmental and economic considerations; and

WHEREAS, urbanization has led to increased impervious surface areas resulting in increased water runoff and less percolation to groundwater aquifers causing the transport of pollutants to downstream receiving waters; and

WHEREAS, is it the intent of the City to expand the applicability of the existing LID requirements by providing stormwater and rainwater LID strategies for Development and Redevelopment projects as defined under "Applicability."

NOW, THEREFORE, THE CITY COUNCIL OF THE CITY OF PICO RIVERA, CALIFORNIA, DOES HEREBY ORDAIN AS FOLLOWS:

Chapter 16.04 of the Pico Rivera Municipal Code shall be amended to add the following definitions in alphabetical order, and to renumber all existing definitions accordingly in alphabetical order. If the definition of any term contained in this chapter conflicts with the definition of the same term in Order No. R4-2012-0175, then the definition contained in Order No. R4-2012-0175 shall govern:

**"Automotive Service Facility"** means a facility that is categorized in any one of the following Standard Industrial Classification (SIC) and North American Industry Classification System (NAICS) codes. For inspection purposes, Permittees need not inspect facilities with SIC codes 5013, 5014, 5511, 5541, 7532-7534, and 7536-7539 provided that these facilities have no outside activities or materials that may be exposed to stormwater (Order No. R4-2012-0175).

**"Basin Plan"** means the Water Quality Control Plan, Los Angeles Region, Basin Plan for the Coastal Watersheds of Los Angeles and Ventura Counties, adopted by the Regional Water Board on June 13, 1994 and subsequent amendments (Order No. R4-2012-0175).

**"Best Management Practice (BMP)"** means practices or physical devices or systems designed to prevent or reduce pollutant loading from stormwater or non-stormwater discharges to receiving waters, or designed to reduce the volume of stormwater or non-stormwater discharged to the receiving water (Order No. R4-2012-0175).

**"Biofiltration"** means a LID BMP that reduces stormwater pollutant discharges by intercepting rainfall on vegetative canopy, and through incidental infiltration and/or evapotranspiration, and filtration. Incidental infiltration is an important factor in achieving the required pollutant load reduction. Therefore, the term "biofiltration" as used in this Ordinance is defined to include only systems designed to facilitate incidental infiltration or achieve the equivalent pollutant reduction as biofiltration BMPs with an underdrain (subject to approval by the Regional Board's

Executive Officer). Biofiltration BMPs include bioretention systems with an underdrain and bioswales (Order No. R4-2012-0175).

**“Bioretention”** means a LID BMP that reduces stormwater runoff by intercepting rainfall on vegetative canopy, and through evapotranspiration and infiltration. The bioretention system typically includes a minimum 2-foot top layer of a specified soil and compost mixture underlain by a gravel-filled temporary storage pit dug into the in-situ soil. As defined in this Ordinance, a bioretention BMP may be designed with an overflow drain, but may not include an underdrain. When a bioretention BMP is designed or constructed with an underdrain, it is regulated by Order No. R4-2012-0175 as biofiltration (Order No. R4-2012-0175).

**“Bioswale”** means a LID BMP consisting of a shallow channel lined with grass or other dense, low-growing vegetation. Bioswales are designed to collect stormwater runoff and to achieve a uniform sheet flow through the dense vegetation for a period of several minutes (Order No. R4-2012-0175).

**“City”** means the City of Pico Rivera.

**“Clean Water Act (CWA)”** means the Federal Water Pollution Control Act enacted in 1972, by Public Law 92-500, and amended by the Water Quality Act of 1987. The Clean Water Act prohibits the discharge of pollutants to Waters of the United States unless the discharge is in accordance with an NPDES permit.

**“Commercial Development”** means any development on private land that is not heavy industrial or residential. The category includes, but is not limited to: hospitals, laboratories and other medical facilities, educational institutions, recreational facilities, plant nurseries, car wash facilities; mini-malls and other business complexes, shopping malls, hotels, office buildings, public warehouses and other light industrial complexes (Order No. R4-2012-0175).

**“Commercial Malls”** means any development on private land comprised of one or more buildings forming a complex of stores which sells various merchandise, with interconnecting walkways enabling visitors to easily walk from store to store, along with parking area(s). A commercial mall includes, but is not limited to: mini-malls, strip malls, other retail complexes, and enclosed shopping malls or shopping centers (Order No. R4-2012-0175).

**“Construction Activity”** means any construction or demolition activity, clearing, grading, grubbing, or excavation or any other activity resulting in land disturbance. Construction does not include emergency construction activities required to immediately protect public health and safety or routine maintenance activities required to maintain the integrity of structures by performing minor repair and restoration work, maintain the original line and grade, hydraulic capacity, or original

purposes of the facility. See "Routine Maintenance" definition for further explanation. Where clearing, grading or excavating of underlying soil takes place during a repaving operation, State General Construction Permit coverage by the State of California General Permit for Storm Water Discharges Associated with Industrial Activities or for Stormwater Discharges Associated with Construction Activities is required if more than one acre is disturbed or the activities are part of a larger plan (Order No. R4-2012-0175).

**"Control"** means to minimize, reduce or eliminate by technological, legal, contractual, or other means, the discharge of pollutants from an activity or activities (Order No. R4-2012-0175).

**"Development"** means construction, rehabilitation, redevelopment or reconstruction of any public or private residential project (whether single-family, multi-unit or planned unit development); industrial, commercial, retail, and other non-residential projects, including public agency projects; 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 (Order No. R4-2012-0175).

**"Directly Adjacent"** means situated within 200 feet of the contiguous zone required for the continued maintenance, function, and structural stability of the environmentally sensitive area (Order No. R4-2012-0175).

**"Discharge"** means any release, spill, leak, pump, flow, escape, dumping, or disposal of any liquid, semi-solid, or solid substance.

**"Disturbed Area"** means an area that is altered as a result of clearing, grading, and/or excavation (Order No. R4-2012-0175).

**"Flow-through treatment BMPs"** means modular, vault type "high flow biotreatment" devices contained within an impervious vault with an underdrain, or designed with an impervious liner and an underdrain (Order No. R4-2012-0175).

**"Full Capture System"** means any single device or series of devices, certified by the Executive Officer, that traps all particles retained by a 5 mm mesh screen and has a design treatment capacity of not less than the peak flow rate Q resulting from a one-year, one-hour storm in the sub-drainage area (Order No. R4-2012-0175).

**"General Construction Activities Storm Water Permit (GCASP)"** means the general NPDES permit adopted by the State Board which authorizes the discharge of stormwater from construction activities under certain conditions (Order No. R4-2012-0175).



**“General Industrial Activities Storm Water Permit (GIASP)”** means the general NPDES permit adopted by the State Board which authorizes the discharge of stormwater from certain industrial activities under certain conditions (Order No. R4-2012-0175).

**“Green Roof”** means a LID BMP using planter boxes and vegetation to intercept rainfall on the roof surface. Rainfall is intercepted by vegetation leaves and through evapotranspiration. Green roofs may be designed as either a bioretention BMP or as a biofiltration BMP. To receive credit as a bioretention BMP, the green roof system planting medium shall be of sufficient depth to provide capacity within the pore space volume to contain the design storm depth and may not be designed or constructed with an underdrain (Order No. R4-2012-0175).

**“Hillside”** means a property located in an area with known erosive soil conditions, where the development contemplates grading on any natural slope that is 25% or greater, and where grading contemplates cut or fill slopes (Order No. R4-2012-0175).

**“Industrial/Commercial Facility”** means any facility involved and/or used in the production, manufacture, storage, transportation, distribution, exchange or sale of goods and/or commodities, and any facility involved and/or used in providing professional and non-professional services. This category of facilities includes, but is not limited to, any facility defined by either the Standard Industrial Classifications (SIC) or the North American Industry Classification System (NAICS). Facility ownership (federal, state, municipal, private) and profit motive of the facility are not factors in this definition (Order No. R4-2012-0175).

**“Industrial Park”** means land development that is set aside for industrial development. Industrial parks are usually located close to transport facilities, especially where more than one transport modalities coincide: highways, railroads, airports, and navigable rivers. It includes office parks, which have offices and light industry (Order No. R4-2012-0175).

**“Infiltration BMP”** means a LID BMP that reduces stormwater runoff by capturing and infiltrating the runoff into in-situ soils or amended onsite soils. Examples of infiltration BMPs include infiltration basins, dry wells, and pervious pavement (Order No. R4-2012-0175).

**“Low Impact Development (LID)”** consists of building and landscape features designed to retain or filter stormwater runoff (Order No. R4-2012-0175).

**“Municipal Separate Storm Sewer System (MS4)”** means a conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, manmade channels, or storm drains):

- (i) 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, stormwater, 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;
- (ii) Designed or used for collecting or conveying stormwater;
- (iii) Which is not a combined sewer; and
- (iv) Which is not part of a Publicly Owned Treatment Works (POTW) as defined in 40 CFR Section 122.2.

(40 CFR Section 122.26(b)(8)) (Order No. R4-2012-0175)

**“National Pollutant Discharge Elimination System (NPDES)”** means the national program for issuing, modifying, revoking and reissuing, terminating, monitoring and enforcing permits, and imposing and enforcing pretreatment requirements, under CWA Sections 307, 402, 318, and 405. The term includes an “approved program” (Order No. R4-2012-0175).

**“Natural Drainage System”** means a drainage system that has not been improved (e.g. channelized or armored). The clearing or dredging of a natural drainage system does not cause the system to be classified as an improved drainage system (Order No. R4-2012-0175).

**“New Development”** means land disturbing activities; structural development, including construction or installation of a building or structure, creation of impervious surfaces; and land subdivision (Order No. R4-2012-0175).

**“Non-Stormwater Discharge”** means any discharge to a municipal storm drain system that is not composed entirely of stormwater (Order No. R4-2012-0175).

**“Outfall”** means a point source as defined by 40 CFR 122.2 at the point where a municipal separate storm sewer discharges to waters of the United States and does not include open conveyances connecting two municipal separate storm sewers, or pipes, tunnels or other conveyances with connect segments of the same stream or other waters of the United States and are used to convey waters of the United States (40 CFR Section 122.26(b)(9)) (Order No. R4-2012-0175).

**“Parking Lot”** means land area or facility for the parking or storage of motor vehicles used for businesses, commerce, industry, or personal use, with a lot size

of 5,000 square feet or more of surface area, or with 25 or more parking spaces (Order No. R4-2012-0175).

**“Pollutant”** means any “pollutant” defined in Section 502(6) of the Federal Clean Water Act or incorporated into the California Water Code Section 13373 (Order No. R4-2012-0175).

**“Project”** means all development, redevelopment, and land disturbing activities. The term is not limited to “Project” as defined under CEQA (Pub. Resources Code Section 21065) (Order No. R4-2012-0175).

**“Rainfall Harvest and Use”** means a LID BMP system designed to capture runoff, typically from a roof but can also include runoff capture from elsewhere within the site, and to provide for temporary storage until the harvested water can be used for irrigation or non-potable uses. The harvested water may also be used for potable water uses if the system includes disinfection treatment and is approved for such use by the local building department (Order No. R4-2012-0175).

**“Receiving Water”** means “water of the United States” into which waste and/or pollutants are or may be discharged (Order No. R4-2012-0175).

**“Redevelopment”** means land-disturbing activity resulting in the creation, addition, or replacement of 5,000 square feet or more of impervious surface area on an already developed site. 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 routine maintenance activity; and land disturbing activity 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 (Order No. R4-2012-0175).

**“Regional Board”** means the California Regional Water Quality Control Board, Los Angeles Region.

**“Restaurant”** means a facility that sells prepared foods and drinks for consumption, including stationary lunch counters and refreshment stands selling prepared foods and drinks for immediate consumption (SIC Code 5812) (Order No. R4-2012-0175).

**“Retail Gasoline Outlet”** means any facility engaged in selling gasoline and lubricating oils (Order No. R4-2012-0175).

**“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. Includes road shoulder work, regrading dirt or gravel roadways and shoulders, and performing ditch cleanouts.
4. Update existing lines\* and facilities to comply with applicable codes, standards, and regulations regardless if such projects result in increased capacity.
5. Repair leaks

Routine maintenance does not include construction of new\*\* lines or facilities resulting from compliance with applicable codes, standards and regulations.

\* Update existing lines includes replacing existing lines with new materials or pipes.

\*\* New lines are those that are not associated with existing facilities and are not part of a project to update or replace existing lines (Order No. R4-2012-0175).

**“Significant Ecological Areas (SEAs)”** 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.
8. Special areas (Order No. R4-2012-0175).

"Site" means land or water area where any "facility or activity" is physically located or conducted, including adjacent land used in connection with the facility or activity (Order No. R4-2012-0175).

"Storm Drain System" means any facility or any parts of the facility, including streets, gutters, conduits, natural or artificial drains, channels and watercourses that are used for the purpose of collecting, storing, transporting or disposing of storm water, and are located within the City.

"Storm Water or Stormwater" means runoff and drainage related to precipitation events (pursuant to 40 CFR Section 122.26(b)(13); 55 Fed. Reg. 47990, 47995 (Nov. 16, 1990)).

"Urban Runoff" means surface water flow produced by storm and non-storm events. Non-storm events include flow from residential, commercial or industrial activities involving the use of potable and non-potable water.

**[MUNICIPAL CODE SECTION REFERENCE(S)] LOW IMPACT DEVELOPMENT MEASURES FOR NEW DEVELOPMENT AND/OR REDEVELOPMENT PLANNING AND CONSTRUCTION ACTIVITIES.**

- A. **Objective.** The provisions of this Section establish requirements for construction activities and facility operations of Development and Redevelopment projects to comply with the current "Order No. R4-2012-0175," to lessen the water quality impacts of development by using smart growth practices, and integrate LID practices and standards for stormwater pollution mitigation through means of infiltration, evapotranspiration, biofiltration, and rainfall harvest and use. LID shall be inclusive of new development and/or redevelopment requirements.
- B. **Scope.** This Section contains requirements for stormwater pollution control measures in Development and Redevelopment projects and authorizes the City to further define and adopt stormwater pollution control measures, and to develop LID principles and requirements, including, but not limited to, the objectives and

specifications for integration of LID strategies, grant waivers from the LID requirements, and collect funds for projects that are granted waivers. Except as otherwise provided herein, the City shall administer, implement and enforce the provisions of this Section.

- C. **Applicability.** Development projects subject to Permittee conditioning and approval for the design and implementation of post-construction controls to mitigate storm water pollution, prior to completion of the project(s), are:
- (1) All development projects equal to 1 acre or greater of disturbed area that adds more than 10,000 square feet of impervious surface area.
  - (2) Industrial parks with 10,000 square feet or more of surface area.
  - (3) Commercial malls with 10,000 square feet or more of surface area.
  - (4) Retail gasoline outlets with 5,000 square feet or more of surface area.
  - (5) Restaurants (Standard Industrial Classification (SIC) of 5812) with 5,000 square feet or more of surface area.
  - (6) Parking lots with 5,000 square feet or more of impervious surface area, or with 25 or more parking spaces.
  - (7) Street and road construction of 10,000 square feet or more of impervious surface area. Street and road construction applies to standalone streets, roads, highways, and freeway projects, and also applies to streets within larger projects.
  - (8) Automotive service facilities (Standard Industrial Classification (SIC) of 5013, 5014, 5511, 5541, 7532-7534 and 7536-7539) with 5,000 square feet or more of surface area.
  - (9) Projects located in or directly adjacent to, or discharging directly to an Environmentally Sensitive Area (ESA), where the development will:
    - a. Discharge stormwater 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.
  - (10) Single-family hillside homes.
  - (11) Redevelopment Projects
    - a. Land disturbing activity that results in the creation, addition or replacement of 5,000 square feet or more of impervious surface area on an already developed site in Planning Priority Project categories.

- b. 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-construction stormwater quality control requirements, the entire project must be mitigated.
- c. Where Redevelopment results in an alteration of less than fifty percent of impervious surfaces of a previously existing development, and the existing development was not subject to post-construction stormwater quality control requirements, only the alteration must be mitigated, and not the entire development.
- d. Redevelopment does not include routine maintenance activities that are conducted to maintain original line and grade, hydraulic capacity, original purpose of facility or emergency redevelopment activity required to protect public health and safety. Impervious surface replacement, such as the reconstruction of parking lots and roadways which does not disturb additional area and maintains the original grade and alignment, is considered a routine maintenance activity. Redevelopment does not include the repaving of existing roads to maintain original line and grade.
- e. Existing single-family dwelling and accessory structures are exempt from the Redevelopment requirements unless such projects create, add, or replace 10,000 square feet of impervious surface area.

**D. Effective Date.** The Planning and Land Development requirements contained in Section 7 of Order No. R4-2012-0175 shall become effective 90 days from the adoption of the Order (February 6, 2013). This includes Planning Priority Projects that are discretionary permit projects or project phases that have not been deemed complete for processing, or discretionary permit projects without vesting tentative maps that have not requested and received an extension of previously granted approvals within 90 days of adoption of the Order. Projects that have been deemed complete within 90 days of adoption of the Order are not subject to the requirements in Section 7.

**E. Specific Requirements.** The Site for every Planning Priority Project shall be designed to control pollutants, pollutant loads, and runoff volume to the maximum extent feasible by minimizing impervious surface area and controlling runoff from impervious surfaces through infiltration, evapotranspiration, bioretention and/or rainfall harvest and use.

(1) A new single-family hillside home development shall include 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.
- (2) Street and road construction of 10,000 square feet or more of impervious surface 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.
- (3) The remainder of Planning Priority Projects shall prepare a LID Plan to comply with the following:
- a. Retain stormwater runoff onsite for the Stormwater Quality Design Volume (SWQDv) defined as the runoff from:
    - i. The 85th percentile 24-hour runoff event as determined from the Los Angeles County 85th percentile precipitation isohyetal map; or
    - ii. The volume of runoff produced from a 0.75 inch, 24-hour rain event, whichever is greater.
  - b. Minimize hydromodification impacts to natural drainage systems as defined in Order No. R4-2012-0175.
  - c. To demonstrate technical infeasibility, the project applicant must demonstrate that the project cannot reliably retain 100 percent of the SWQDv on-site, even with the maximum application of green roofs and rainwater harvest and use, and that compliance with the applicable post-construction requirements would be technically infeasible by submitting a site-specific hydrologic and/or design analysis conducted and endorsed by a registered professional engineer, geologist, architect, and/or landscape architect. Technical infeasibility may result from conditions including the following:
    - i. The infiltration rate of saturated in-situ soils is less than 0.3 inches per hour and it is not technically feasible to amend the in-situ soils to attain an infiltration rate necessary to achieve reliable performance of infiltration or bioretention BMPs in retaining the SWQDv onsite.
    - ii. Locations where seasonal high groundwater is within five to ten feet of surface grade;



- iii. Locations within 100 feet of a groundwater well used for drinking water;
  - iv. Brownfield development sites or other locations where pollutant mobilization is a documented concern;
  - v. Locations with potential geotechnical hazards;
  - vi. Smart growth and infill or redevelopment locations where the density and/or nature of the project would create significant difficulty for compliance with the onsite volume retention requirement.
- d. If partial or complete onsite retention is technically infeasible, the project Site may biofiltrate 1.5 times the portion of the remaining SWQDv that is not reliably retained onsite. Biofiltration BMPs must adhere to the design specifications provided in Order No. R4-2012-0175.
- i. Additional alternative compliance options such as offsite infiltration and groundwater replenishment projects may be available to the project Site. The project Site should contact the City of Pico Rivera to determine eligibility.
- e. The remaining SWQDv that cannot be retained or biofiltered onsite must be treated onsite to reduce pollutant loading. BMPs must be selected and designed to meet pollutant-specific benchmarks as required per Order No. R4-2012-0175. Flow-through BMPs may be used to treat the remaining SWQDv and must be sized based on a rainfall intensity of:
- i. 0.2 inches per hour, or
  - ii. The one year, one-hour rainfall intensity as determined from the most recent Los Angeles County isohyetal map, whichever is greater.
- F. **Validity.** If any provision of this Ordinance is found to be unconstitutional or otherwise invalid by any court of competent jurisdiction, such invalidity shall not affect remaining provisions of this Ordinance are declared to be severable.

**PASSED, APPROVED, AND ADOPTED** at a regular meeting of the City Council of the City of Pico Rivera, California, on this \_\_\_\_ day of \_\_\_\_\_, 2013.

\_\_\_\_\_  
Gustavo V. Camacho, Mayor

ATTEST:

\_\_\_\_\_  
Anna M. Jerome, Assistant City Clerk

\_\_\_\_\_  
Arnold M. Alvarez-Glasman, City Attorney

AYES:

NOES:

ABSENT:

ABSTAIN:

STATE OF CALIFORNIA  
COUNTY OF LOS ANGELES  
CITY OF PICO RIVERA

I, \_\_\_\_\_, City Clerk of the City of Pico Rivera, California, hereby certify that Ordinance No. \_\_\_\_\_ was introduced at a regular meeting of the City Council of the City of Pico Rivera held on the \_\_\_\_ of \_\_\_\_\_ 2013, and thereafter was adopted by the City Council at a regular meeting held on the \_\_\_\_ of \_\_\_\_\_, 2013, and that the same was adopted by the following roll call vote:

AYES:

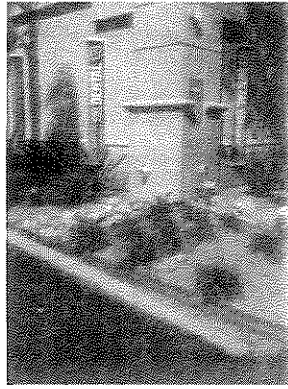
NOES:

ABSENT:

ABSTAIN:

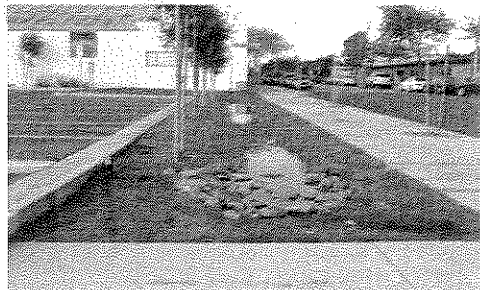
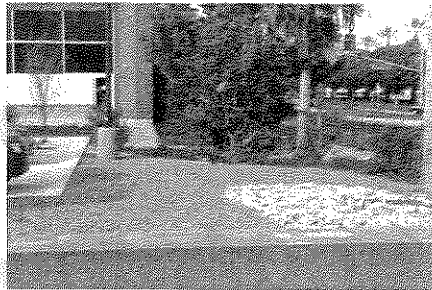
---

CITY CLERK



# City of Pico Rivera

## Low Impact Development For Small Sites Technical Guidance Manual



## TABLE OF CONTENTS

Section 1 – Introduction.....	3
1.1 What Is LID?.....	3
1.2 Why Is LID being required? .....	3
1.3 Project Applicability.....	4
1.4 LID Exemptions.....	5
Section 2 – Commonly Asked Questions.....	6
Section 3 – Design Guidelines and Specifications .....	7
3.1 Design Capture Volume.....	7
3.2 Flow-Through Planter Box.....	8
3.3 Vegetated Swale.....	10
3.4 Rain Garden.....	12
3.5 "Hollywood" Driveway .....	14
3.6 Bottomless Trench .....	16
Section 4 – References .....	18



## **SECTION 1 – INTRODUCTION**

### **1.1 WHAT IS LID?**

LID, or Low Impact Development, is a stormwater management strategy that emphasizes conservation and the use of existing natural site features integrated with distributed, small-scale stormwater controls to more closely mimic natural hydrologic patterns in residential, commercial, and industrial settings.

### **1.2 WHY IS LID BEING REQUIRED?**

The urbanization of Southern California has disrupted the natural flow of stormwater runoff. Rain falling on roofs now flows into metal or plastic downspouts, then to concrete curbs and gutters along asphalt roads, then to concrete storm drains, then to concrete river channels, and then finally into estuaries and the Pacific Ocean.

You can see the problem; rainwater no longer comes into contact with dirt and vegetation. Any pollutants (heavy metals, bacteria, nutrients, pesticides) that would have previously been naturally degraded, are now flowing straight out to environmentally sensitive areas.

LID is a new design strategy that corrects this problem. There are many highly technical manuals for designing LID systems, some of which are listed in Section 4 herein. The purpose of this guidance manual is to simplify your design.

Typical LID systems include:

- Flow-Through Planter Boxes
- Vegetative Swales
- Rain Gardens
- “Hollywood” Driveways
- Bottomless Trenches

In addition to the LID systems listed above, there are many other acceptable systems such as capture and re-use (cisterns/ rain barrels), green roofs, pervious pavement/pavers, turf block, etc. However, the design, installation, and subsequent operation and maintenance of these systems can be complex and should be carefully evaluated prior to being proposed. When using these other systems, a published design standard shall be followed.

## 1.3 PROJECT APPLICABILITY

### Step 1: Project Categories.

The first step in LID design is to determine which category the project fits into.

**Category 1.** The project is subject to the provision of the Municipal Separate Storm Sewer System permit (MS4) issued by the California Regional Water Quality Control Board. These projects typically include (but are not limited to): new industrial parks of 10,000 square feet or more; new commercial malls of 10,000 square feet or more; retail gasoline outlets of 5,000 square feet or more; new restaurants of 5,000 square feet or more; new parking lots of 5,000 square feet or more; or the creation, addition or replacement of 5,000 square feet or more of impervious surfaces of existing projects meeting the Regional Board's applicability criteria.

*The project is beyond the scope of this manual and is subject to the requirements as outlined in the MS4 Permit.*

**Category 2.** The project will disturb less than 500 square feet of soil.

*The project is exempt from LID requirements.*

**Category 3.** The project is residential, will involve 4 or less dwelling units and will disturb more than 500 square feet of soil.

*The project falls under the Residential LID Category.*

**Category 4.** The project will involve 5 or more dwelling units, or is at a commercial or industrial site. It will disturb more than 500 square feet of soil.

*The project falls under the Commercial/Industrial LID Category.*

### Step 2: LID Design Requirements.

#### For Residential LID Projects (Category 3 above)

- A Residential LID Project must incorporate one or more LID system(s) in the project design. The system(s) must be shown on the plans submitted to the City.
- Include the following statement:  

*"As the engineer/architect of record for this project, I have designed the LID system in accordance with the design criteria of the City of Pico Rivera's LID Guidance Manual."*
- The project engineer/architect must make sure the safety and soil stability of the LID system is carefully evaluated prior to its inclusion in the design.
- Language describing maintenance activities and indicating the responsible party for such activities (including signature) must be located on the document(s) submitted to the City.
- The entire project area must drain to the LID system(s). If water is flowing to the LID system from areas outside the project area, the LID system must be designed accordingly to treat all tributary areas. In instances where a project cannot treat the runoff from the development area, an equivalent area may be treated as an alternative.

- Calculations must be included on the plans showing the LID system is adequately sized. For Residential LID Projects, the BMP(s) size must be 4% of the tributary area.

For Commercial/Industrial LID Projects (Category 4 above)

- A Commercial/Industrial LID Project must incorporate one or more LID system(s) in the project design. The system(s) must be shown on the plans submitted to the City.
- Include the following statement:

*“As the engineer/architect of record for this project, I have designed the LID system in accordance with the design criteria of the City Pico Rivera’s LID Guidance Manual.”*
- The project engineer/architect must make sure the safety and soil stability of the LID system is carefully evaluated prior to its inclusion in the design.
- Language describing maintenance activities and indicating the responsible party for such activities (including signature) must be located on the document(s) submitted to the City.
- The entire project area must drain to the LID system(s). If water is flowing to the LID system from areas outside the project area, the LID system must be designed accordingly to treat all tributary areas. In instances where a project cannot treat the runoff from the development area, an equivalent area may be treated as an alternative.
- Calculations must be included on the plans showing the LID system is adequately sized. A calculation template is shown on the following specification pages. For Commercial/Industrial LID Projects, the BMP(s) must be sized to treat the entire design capture volume (DCV).

**Step 3: Plan development and submittal.**

The LID system(s) design and location must be shown on the plans and submitted to the City. The Standard Plans are available (yet not required) for guidance.

## **1.4 LID EXEMPTIONS**

**Exemptions from LID Requirements.** LID requirements do not apply to any of the following:

1. A Development that only creates, adds or replaces less than 500 square feet of impervious area;
2. A Development involving only emergency construction activity required to immediately protect public health and safety;
3. Infrastructure projects within the public right-of-way;
4. A Development or Redevelopment involving activity only related to gas, water, cable, or electricity services on private property;
5. A Development involving only resurfacing and/or re-striping of permitted parking lots, where the original line and grade, hydraulic capacity, and original purpose of the facility is maintained;
6. A project involving only exterior movie or television production sets, or facades on an existing developed site;
7. A project not requiring a City building, grading, demolition or other permit for construction activity.



## **SECTION 2 – COMMONLY ASKED QUESTIONS**

1. I am adding a second story to my house. The existing footprint will remain unchanged. Does LID apply?

*No, LID is required only where 500 square feet of soil is being disturbed.*

2. I will be adding a new 500 square foot room that will replace some of my backyard. Does LID apply?

*Yes, you've crossed the 500 square foot threshold.*

3. I will be building a new addition that will be over 500 square feet, but I can't fit an LID system into the new addition. Can I create a LID system for an equivalent area of the existing building?

*Yes, you can create an LID system for an equivalent area of the existing building.*

4. I own a business. There is concrete and asphalt all around. Will LID be required if infeasible?

*A waiver for technical infeasibility may be issued by the Director; however in this situation it is unlikely to be granted. Generally, there is always a way to implement LID requirements.*

5. How big do I have to design the LID systems?

*On the following pages are design criteria. Generally, you have to design the system(s) large enough to treat the first  $\frac{3}{4}$  inches of runoff from a storm.*

6. I am removing a 500 square foot concrete pad that is in need of repair and replacing it with an identical new concrete pad. Does LID apply?

*If the construction would not result in soil disturbance, this would be considered routine maintenance. However, if the construction did result in soil disturbance, a LID system would be required.*

7. I am installing new interior electrical and new plumbing, and will have more than 500 square feet of disturbed soil. When the project is finished, the trenches will be patched to match the existing surrounding surfaces. The existing building will be unchanged. Will LID apply?

*No, utility projects are exempt from LID requirements. See Section 1.4 of this document.*

8. My project does not require any permits from the City. Does LID apply?

*No, only projects requiring City permits need to comply with LID.*

9. If, at some time in the future, I want to change the design of the LID system, can I?

*Yes, only with Planning Department approval.*

## SECTION 3 – DESIGN GUIDELINES AND SPECIFICATIONS

### 3.1 DESIGN CAPTURE VOLUME

The Design Capture Volume (DCV) is required to design the flow through planter box, vegetated swale, rain garden, and any other volume-based LID system.

**DCV Equation:**

$$DCV (ft^3) = C \times d \times A \times 43,560 \times \frac{1}{12}$$

**With:**

$$C = (0.75 \times \text{Impervious Area}) + 0.15$$

$d$  = Design Storm Depth (assume 0.75 inches unless otherwise known)

$A$  = Tributary Area

Below you will find guidelines that must be followed when designing LID for your project. Standard drawings for each LID are included for reference.

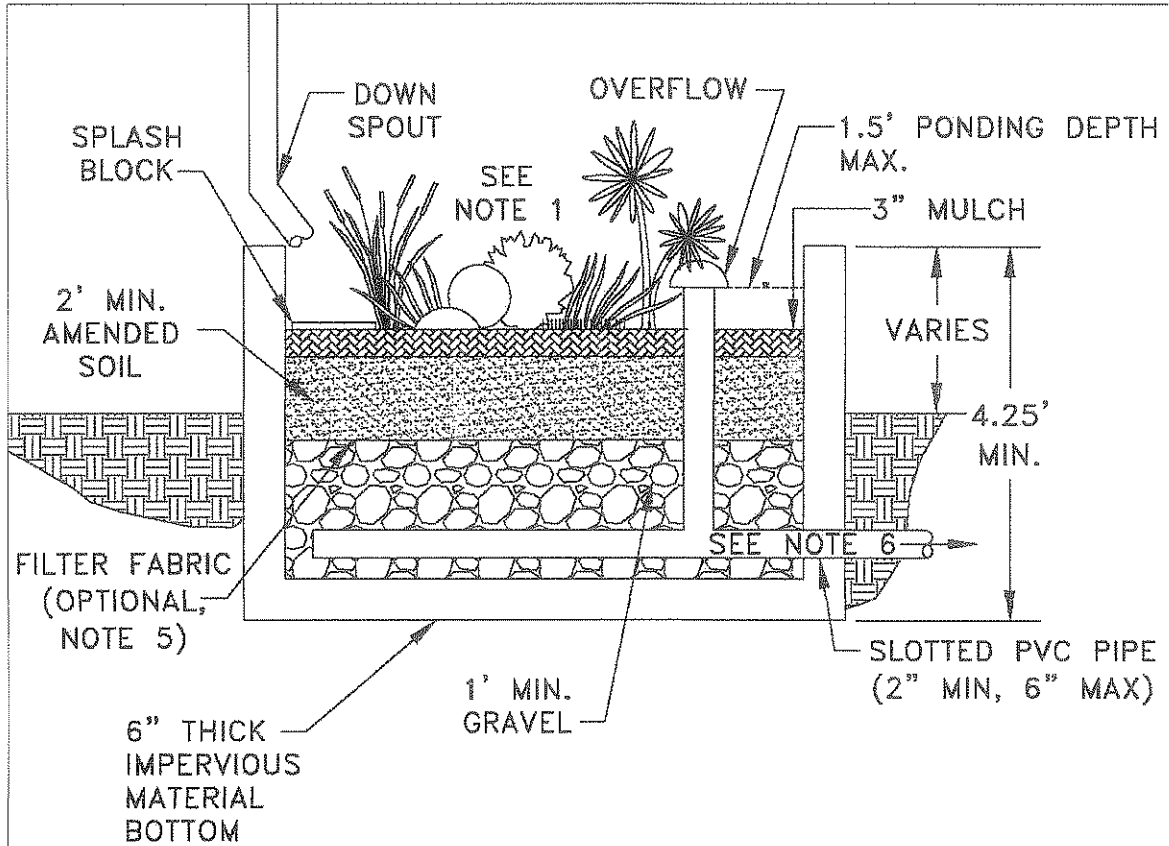
### 3.2 FLOW-THROUGH PLANTER BOX



Figure 1: Flow-through planter box (<http://lateameffort.blogspot.com>).

Design criteria for a flow-through planter box include the following:

- Design drawdown time = 48 hours (surface); 72 hours (total) to prevent vector breeding
- Factor of safety = 2
- Maximum ponding depth = 18 inches
- Soil depth = 2 feet (3 feet preferred)
- Slotted PVC pipe (2-inch minimum diameter) to be placed within 6 inches of bottom of facility
- The area (width \* length) must equal 4% of the tributary area
- Flows may outlet to a curb drain, rain garden, or equivalent
- Cover must be dense, wet, and dry tolerant vegetation



**GENERAL NOTES:**

1. DENSE, WET AND DRY TOLERANT VEGETATION.
2. PONDED WATER MUST DRAIN WITHIN 72 HOURS TO PREVENT VECTOR BREEDING.
3. IF NEEDED, MULTIPLE PIPES MAY BE USED.
4. THE PLANTER BOX AREA (WIDTH \* LENGTH) MUST EQUAL 4% OF THE TRIBUTARY AREA.
5. FILTER FABRIC AVAILABLE AT LOCAL HARDWARE STORES.
6. FLOWS MAY OUTLET TO A CURB DRAIN, RAIN GARDEN, OR EQUIVALENT.

DRAFT

REVISIONS	CITY OF SIGNAL HILL	PUBLIC WORKS DEPT.
	LID-FLOW THROUGH PLANTER BOX	

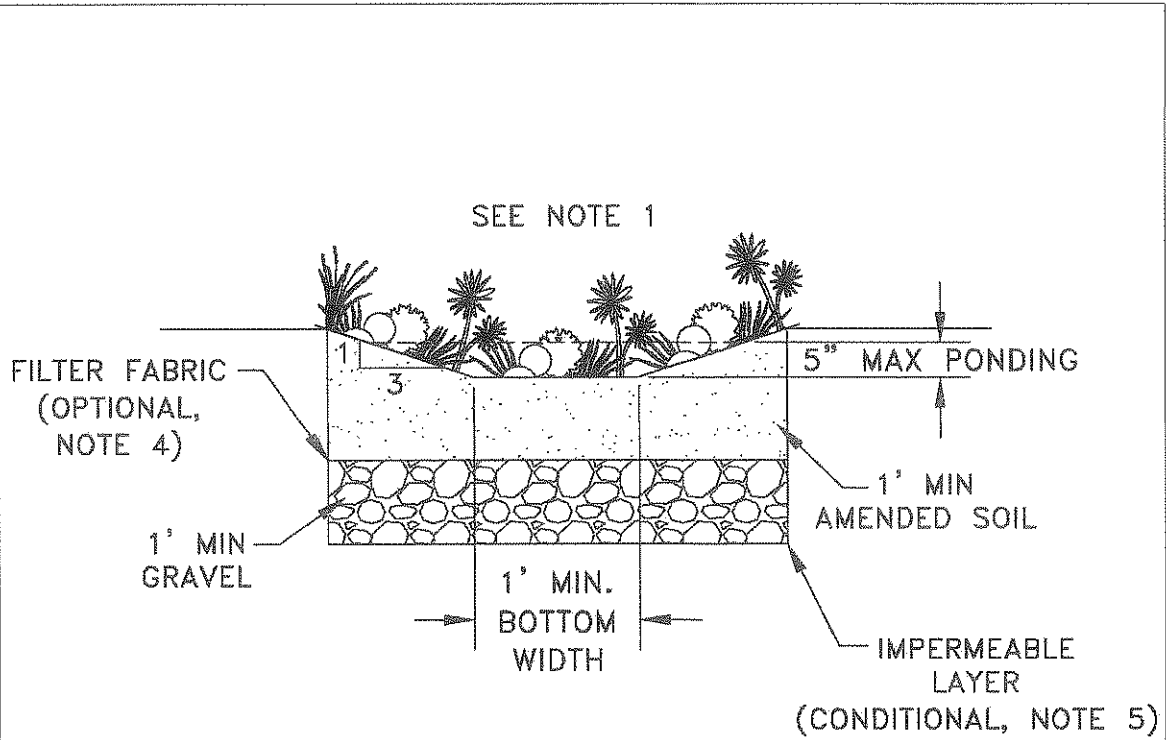
### 3.3 VEGETATED SWALE



Figure 2: Vegetated Swale (Signal Hill, CA).

Design criteria for a vegetated swale include the following:

- Design flow velocity  $\leq 1$  ft/sec.
- Side slopes shall not exceed 3:1 (H:V)
- Slope in flow direction 1% (min) to 6% (max)
- Minimum bottom width = 1 foot
- Minimum swale length = 15 feet
- Maximum ponding depth = 5 feet
- Soil depth = 2 feet minimum
- Design drawdown time = 48 hours (surface); 72 hours (total) to prevent vector breeding
- The area (width \* length) must equal 4% of the tributary area
- Cover must be dense, wet, and dry tolerant vegetation



**GENERAL NOTES:**

1. DENSE, WET AND DRY TOLERANT VEGETATION.
2. PONDED WATER MUST DRAIN WITHIN 72 HOURS TO PREVENT VECTOR BREEDING.
3. THE BOTTOM AREA (WIDTH \* LENGTH) MUST EQUAL 4% OF THE TRIBUTARY AREA.
4. FILTER FABRIC AVAILABLE AT LOCAL HARDWARE STORES.
5. AN IMPERMEABLE LAYER MUST BE USED IF GROUNDWATER IS LESS THAN 10 FEET FROM THE BOTTOM OF THE GRAVEL LAYER.

DRAFT

	CITY OF SIGNAL HILL	PUBLIC WORKS DEPT.
	LID-VEGETATED SWALE	

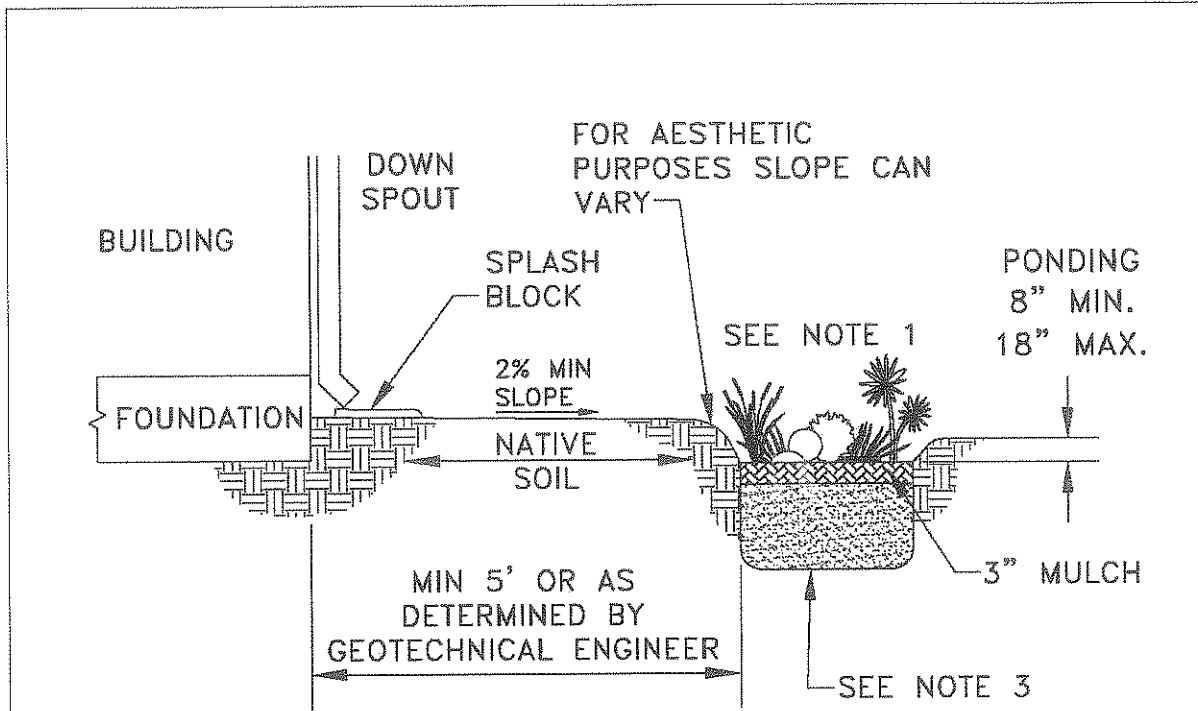
### 3.4 RAIN GARDEN



Figure 3: Rain Garden (<http://www.prairiefirenewspaper.com/2009/04/rain-gardens>).

Design criteria for a rain garden include the following:

- Design drawdown time = 48 hours (surface); 72 hours (total) to prevent vector breeding
- Factor of safety = 2
- Maximum ponding depth = 18 inches
- Minimum ponding depth = 8 inches
- Soil depth = 2 feet minimum (3 feet preferred)
- If downspout is directed to rain garden, slope must be 2% minimum
- Cover must be dense, wet, and dry tolerant vegetation
- The bottom of the rain garden should be no less than 10 feet from the groundwater table



**GENERAL NOTES:**

1. DENSE, WET AND DRY TOLERANT VEGETATION.
2. PONDED WATER MUST DRAIN WITHIN 72 HOURS TO PREVENT VECTOR BREEDING.
3. BIORETENTION SOIL DEPTH 2' MINIMUM (3' PREFERRED).
4. THE RAIN GARDEN AREA (WIDTH \* LENGTH) MUST EQUAL 4% OF THE TRIBUTARY AREA.
5. THE BOTTOM OF THE RAIN GARDEN SHOULD BE NO LESS THAN 10' FROM THE GROUNDWATER TABLE.

DRAFT

REVISIONS	CITY OF SIGNAL HILL	PUBLIC WORKS DEPT.
	LID-RAIN GARDEN	



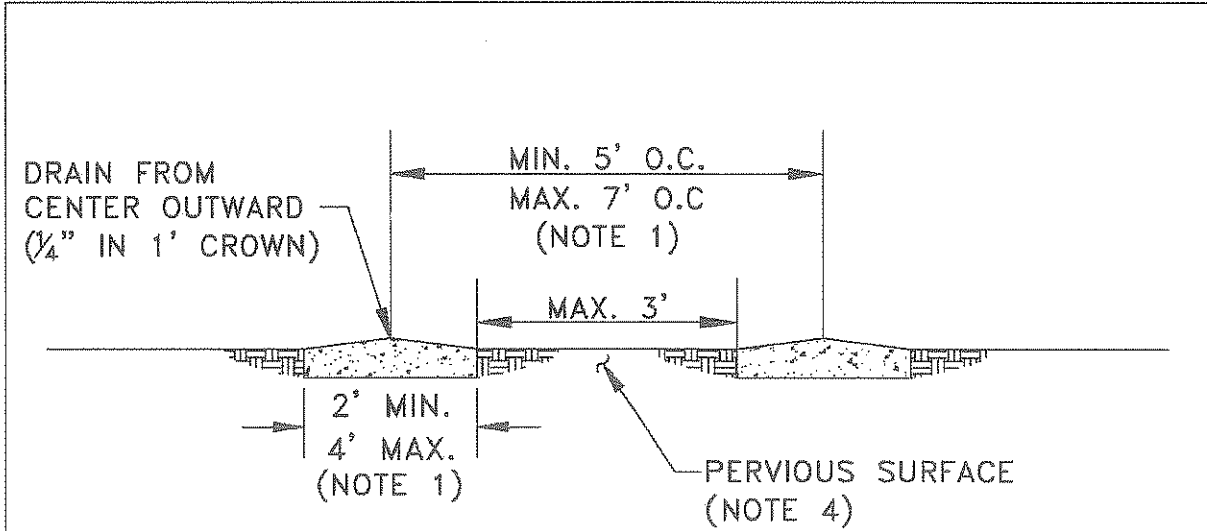
### 3.5 "HOLLYWOOD" DRIVEWAY



Figure 4: "Hollywood Driveway" (<http://www.apartmenttherapy.com>).

Design criteria for a "Hollywood" Driveway include the following:

- Recommended spacing between ribbons is 5 to 7 feet (may vary depending on expected traffic)
- Ribbon width = 2 feet minimum
- Ribbon thickness = 6 inches minimum (with mesh or rebar)
- Ribbons should drain outward from the center of crown
- Center strip should include an irrigation line



GENERAL NOTES:

1. MAXIMUM WIDTH AND SPACING ARE RECOMMENDED AND MAY VARY DEPENDING ON EXPECTED TRAFFIC.
2. DRIVEWAY RIBBONS SHOULD BE AT LEAST 2 FEET IN WIDTH.
3. DRIVEWAY RIBBONS SHOULD BE AT LEAST 6 INCHES THICK WITH MESH OR REBAR.
4. PERVIOUS SURFACE INCLUDES; VEGETATION (GRASS), WIDELY SPACED INTERLOCKING PAVERS, AND GRAVEL.
5. DRIVEWAY RIBBONS SHALL BE CONCRETE, TRAFFIC RATED PAVERS, BRICK, OR EQUIVALENT MATERIAL.

DRAFT

REVISIONS	CITY OF SIGNAL HILL	PUBLIC WORKS DEPT.
	LID—"HOLLYWOOD" DRIVEWAY	

### 3.6 BOTTOMLESS TRENCH

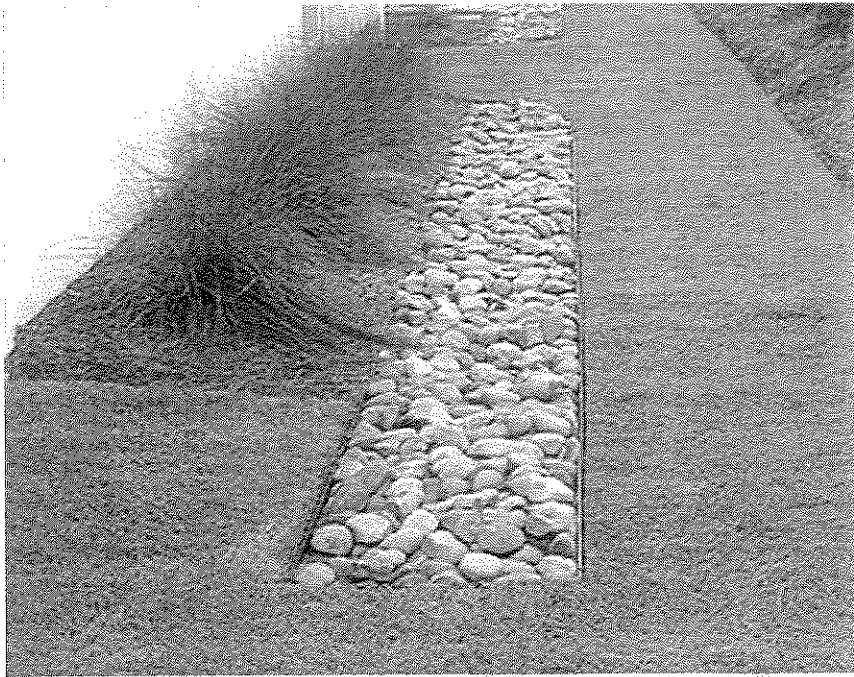
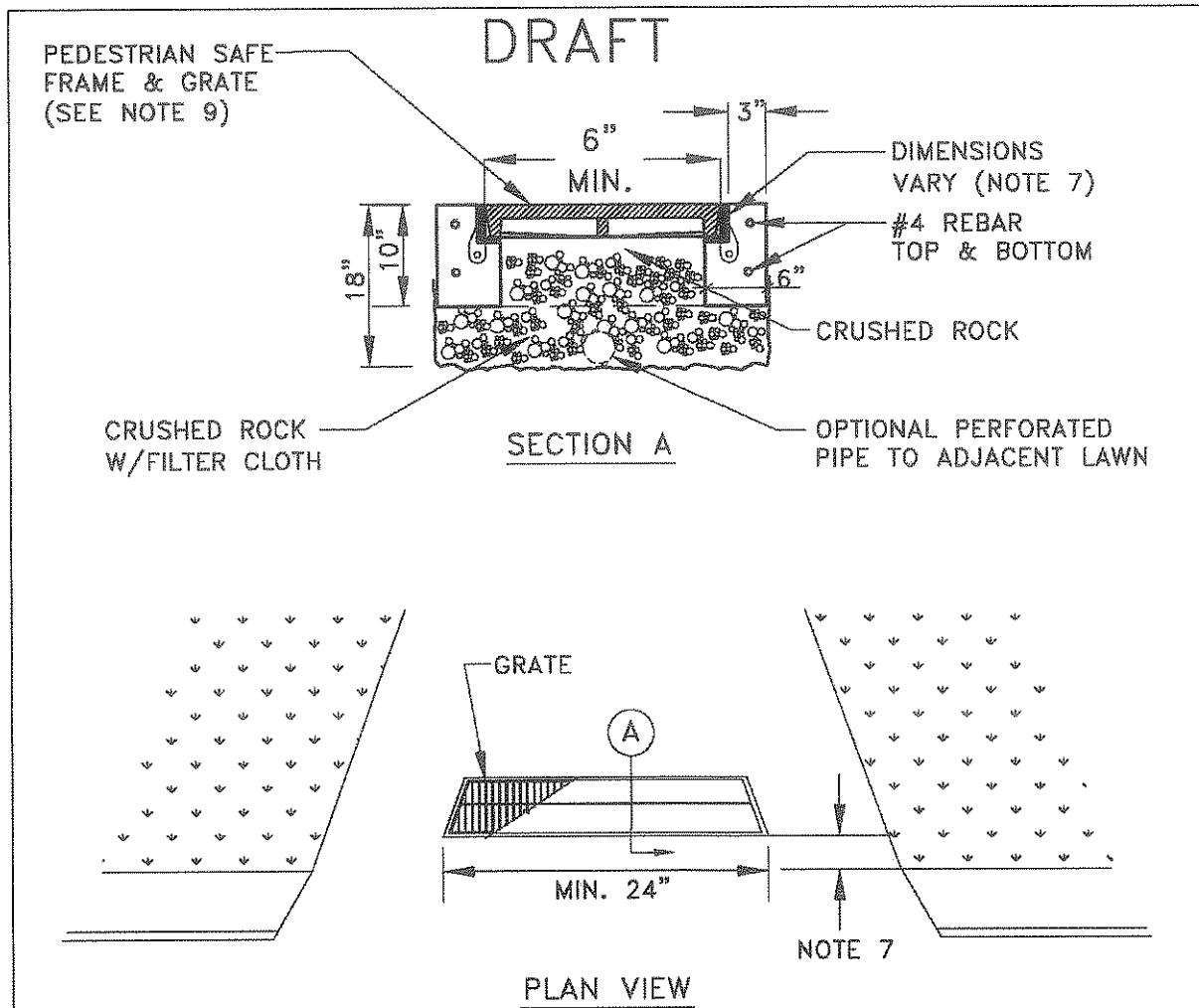


Figure 5: Bottomless trench (<http://www.cob.org/services/environment/water-quality/>).

Design criteria for a Bottomless Trench include the following:

- Trench width = 24 inches (across driveway)
- Trench depth = 18 inches
- Bottom 8 inches of the trench must be filled with crushed rock
- Trench must be at least 12 inches from back of sidewalk (or edge of pavement in the case of no sidewalk)
- Longitudinal width = 6 inches (along driveway)
- Frame and grate must be pedestrian safe



**GENERAL NOTES:**

1. TRENCH SHOULD BE 24" WIDE (ACROSS DRIVEWAY) X 18" DEEP.
2. PRECAST MAY BE USED.
3. FILTER CLOTH MUST BE PLACED IN THE TRENCH EXTENDING 12" VERTICAL.
4. BOTTOM 8" OF THE TRENCH MUST BE FILLED WITH CRUSHED ROCK.
5. DIMENSIONS DETERMINED BY GRATE FRAME DIMENSION. USE FRAME AS A FORM.
6. MUST BE APPLIED AT LEAST 12" FROM BACK OF SIDEWALK OR EDGE OF PAVEMENT IN THE CASE OF NO SIDEWALK.
7. MINIMUM LONGITUDINAL WIDTH (MEASURED ALONG DRIVEWAY) OF FRAME & GRATE IS EQUAL TO 6" WITH 3/8" SLOT OPENINGS. EAST JORDAN IRON OR EQUAL.

REVISIONS	CITY OF SIGNAL HILL	PUBLIC WORKS DEPT.
	LID-"BOTTOMLESS" TRENCH	

## **SECTION 4 – REFERENCES**

The Los Angeles County Low Impact Development Standards Manual at:

[http://dpw.lacounty.gov/wmd/dsp\\_LowImpactDevelopment.cfm](http://dpw.lacounty.gov/wmd/dsp_LowImpactDevelopment.cfm)

The City of Los Angeles Low Impact Development Best Management Practices Handbook at:

<http://lacitysan.org/wpd/Website/program/LID/lidintro.htm>

Please note that the City of Pico Rivera's LID ordinance takes precedent in the event of any inconsistencies with any outside references.