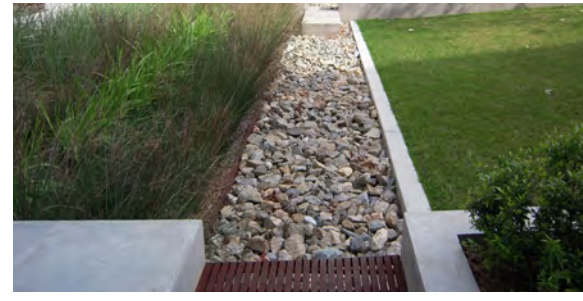


San Diego Low Impact Development Location Map

Effective July 2014



Bioretention

Bioretention areas are shallow depressions in the landscape designed to capture runoff and encourage temporary ponding to help filter storm water runoff. As runoff collects in the bioretention areas, it slowly filters through the soil to remove sediment, trash, metals and other pollutants. By incorporating native plants, bioretention areas can further reduce pollutants through uptake of contaminants by both plants and natural microbes in the soil.

43rd & LOGAN BIORETENTION POND 43rd Street at Logan Avenue, 92113

This bioretention pond collects runoff from Logan Avenue through a curb gutter inlet. The enhanced soil within the pond is a mix of organic matter, sand, gravel and zeolite designed to both support plant growth and filter storm water. As runoff percolates through the soil roadway pollutants such as sediment, trash and metals are removed before the water is directed through an underdrain to nearby Chollas Creek. Additionally, the plants and natural microbes within the soil help to further break down pollutants.



43RD & LOGAN FILTRATION TRENCH 43rd Street at Logan Avenue, 92113

A series of 25 filtration trenches run along the southern parkway of Logan Avenue and the eastern parkway of 43rd Street. Storm water runoff from the adjacent travel lanes flows into special inlets that filter out trash before runoff is sent through a series of filtration chambers. The chambers are filled with a specific soil mix designed to remove metals and other roadway pollutants before sending the filtered water to the storm water conveyance system and nearby Chollas Creek.



MT. ABERNATHY GREEN STREET Mt. Abernathy Ave at Camber St, 92117

San Diego's first green street includes several bioretention areas installed along Camber, Chelford, and Charing Streets, just off Mt. Abernathy Ave. in Clairemont. These bioretention areas were installed between the street and sidewalk to collect and filter runoff from neighborhood streets. Curb cut-outs direct street runoff into the enhanced, highly permeable soils to filter out pollutants such as sediment, trash, and metals. Drainage pipes installed beneath the soil carry the filtered water to the storm drain system.



SANFORD CONSORTIUM 2880 Torrey Pines Scenic Drive, 92037

This collaborative research facility works with nature as evidenced by the two bioretention ponds installed within the landscape on both the southern and western sides of the building. These bioretention areas are designed to detain water from both the roof and the surrounding hardscape. Storm runoff is encouraged to temporarily pond and filter through the soils. A raised storm drain inlet captures overflow from larger storm events.



San Diego LOW IMPACT DEVELOPMENT Design

Low Impact Development (LID) is a storm water Best Management Practice that mimics natural hydrologic processes to treat and control storm water. These practices can help designers, architects, planners, and engineers design projects that better manage storm water runoff and prevent pollution.

We've researched the best examples of LID design within the City of San Diego and included them on this map so that you can see for yourself how these treatment control structures work in real situations. If you are aware of an outstanding example of LID design that was not included on this map, please, let us know about it.

Contact us at thinkblue@sandiego.gov.



This information is available in alternative formats upon request. (REV 10-2014)

Bioswales

Bioswales are shallow, open channels with gently sloping sides that can be incorporated into landscapes to direct flow, slow runoff and promote pollutant removal through infiltration. Vegetation planted within the channel, such as native plants or grasses, helps slow the flow of water and filter out pollutants. Permeable soils are often amended to further enhance performance and support plant growth.

UCSD KEELING APARTMENTS Keeling Apartments, 92161

This bioswale is designed to look like a dry river bed (arroyo) and flows towards the south end of the residential apartments and along Scholars Drive South. As water moves along the bioswale it is slowed to encourage natural infiltration and pollutant removal as storm runoff filters through the highly permeable soils.



CLAIREMONT BOYS AND GIRLS CLUB 4635 Clairemont Mesa Blvd., 92117

This bioswale has been incorporated into the parking lot median and is designed to collect and detain sheet flow directly from the parking area. Curbs surrounding the median are level with the parking lot surface to allow runoff to flow directly into the swale. A storm drain inlet has been installed to collect overflow during high volume storm events to protect against flooding.



SAN DIEGO AIRPORT TERMINAL 2 3225 N. Harbor Drive, 92101

Located on the north side of the Terminal 2 parking lot, these cobble filled retention areas are designed to slow down water transport to encourage infiltration. Breaks in the curb allow storm water from the street to enter the swale and the use of decomposed granite helps to minimize erosion.



Permeable Pavement

Permeable pavement is a type of outdoor surfacing that allows runoff to seep through it and into the soil below where the water is filtered and temporarily stored before ultimately soaking into the ground. In flood prone areas, underdrains carry excess water to the storm drain system. Permeable pavement is an alternative to conventional concrete and asphalt paving and offers a range of utility, strength and permeability.

SAN DIEGO AIRPORT TERMINAL 2 3225 N. Harbor Drive, 92101

Permeable pavers have been incorporated into parking lot medians and are also used along the edge of the parking lot to collect and detain sheet flow directly from the parking area. As water flows across the permeable pavers it seeps through the spaces between pavers and into an underlying aggregate stone reservoir where the water is filtered before entering an underdrain conveyance system.



1st & MONTECITO PARKING LOT First St. and Montecito Way, 92103

Permeable asphalt has been used only in the low traffic parking spaces throughout the lot. Storm water and runoff from cars can seep through the asphalt into a soil reservoir layer beneath the pavement where it is stored until it can soak into the local soils.



KELLOGG PARK PARKING LOT Kellogg Park, La Jolla, CA 92037

La Jolla Cove is home to two Areas of Special Biological Significance (ASBS) which protect our oceans and prohibit pollution from entering some of the most pristine and biologically diverse sections of California's coast. The original asphalt concrete parking lot at Kellogg Park was replaced with permeable pavers to capture surface runoff and filter out pollutants before the water can reach the ocean.

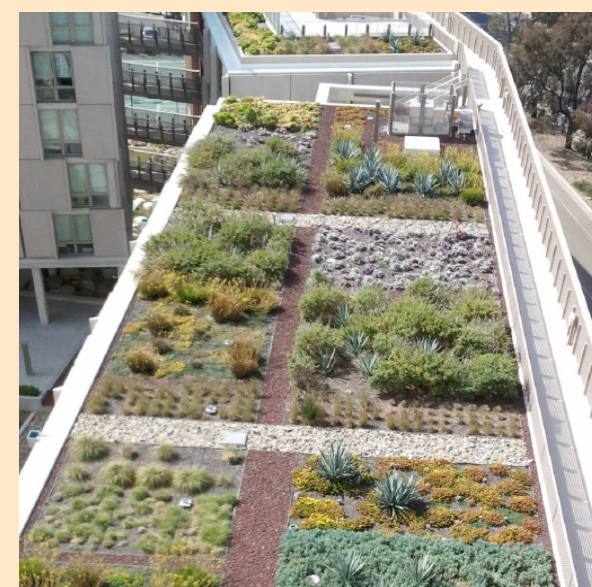


Planter Box

These above ground containers use a combination of plants and soils to temporarily store and filter storm water runoff from rooftops. A soil mix within the container acts as both a support for native plants and as a filter to capture pollutants found in the runoff. Additionally, naturally occurring microbes within the soil can further break down any captured pollutants.

UCSD KEELING APARTMENTS Keeling Apartments, 92161

This rooftop garden has over 4,000 different plants that help to absorb rainwater, provide building insulation and reduce energy costs. Greywater from the Keeling apartments is used to irrigate the green roof plants when rainwater is scarce.



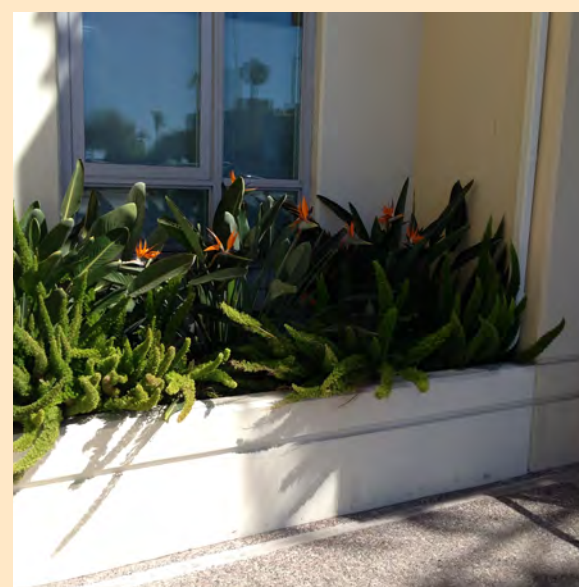
COUNTY OPERATIONS CENTER 5500 Overland Avenue, 92123

The 7,500 square foot green roof on the Campus Center Building not only reduces storm water runoff, but shades and insulates the building. Green Roof plants and soils capture and retain storm water on site. Plants absorb the water and excess flows are filtered through the soils to underdrains. The plants were selected based on the rooftop microclimate to tolerate intense sunlight and dry winds.



BREEZA CONDOS Pacific Hwy at Ash St., 92101

There are three planter boxes installed along the West side of the building that collect storm water runoff from the roof top downspouts. The combination of plants and soils within the boxes help treat the runoff before underdrains direct it to the storm drain system.



MTRP VISITOR'S CENTER 1 Father Junipero Serra Trail., 92119

This 54 gallon octagonal rain barrel was installed as part of the City of San Diego's Rain Barrel Downspout Disconnect Pilot program. Gravity flow systems installed adjacent to existing landscape areas have the greatest potential for flow and pollutant reduction (metals and bacteria). A darker colored, opaque barrel should be used to limit penetration of sunlight and prevent algal growth within the barrel.



SDG&E INNOVATION CENTER 4760 Clairemont Mesa Blvd., 92117

Throughout the facility are strategically placed wall mounted rain harvesting containers. The slim design of these 62 gallon rain barrels saves space while harvesting rain water for landscape use. Please check in at the front desk if you are interested in taking a closer look at these rain harvesting devices.



SCRIPPS INSTITUTION OF OCEANOGRAPHY Marine Science Development Center, Kennel Way, La Jolla, 92037

This gravity flow planter and rain barrel combination was installed as part of the City of San Diego's Rain Barrel Downspout Disconnect Pilot program. The rain barrel initially captures the storm flow from the roof while overflow tubes direct excess to the planter box. Plants and soils within the planter box filter runoff and further break down pollutants.



Infiltration Trench

An infiltration trench is a long, narrow trench lined with filter fabric and backfilled with stone or other soil media to collect and temporarily store runoff until it can, ultimately, soak into the ground.

SANFORD CONSORTIUM 2880 Torrey Pines Scenic Dr., 92037

Two infiltration trenches were installed in the parking lots along the main walkway to the facility. Curb cuts on the parking lot side capture storm flows and direct them into the trench where the water seeps into storm water storage tanks beneath the parking lot.



SDG&E INNOVATION CENTER 4760 Clairemont Mesa Blvd., 92117

Two infiltration trenches run along either side of the main walkway from the parking lot to the center's entrance. Flush curbs allow water from the parking lot to flow directly into the trenches. As the soils in this parking lot could not absorb storm flows at an appropriate rate, underdrains were installed to direct the filtered water to the storm drain system to prevent flooding.



Vegetated Filter Strips

These broad, gently sloping landscaped areas use densely planted vegetation or grasses to strain and slow storm water runoff to encourage pollutants to settle out; commonly used as a pretreatment.

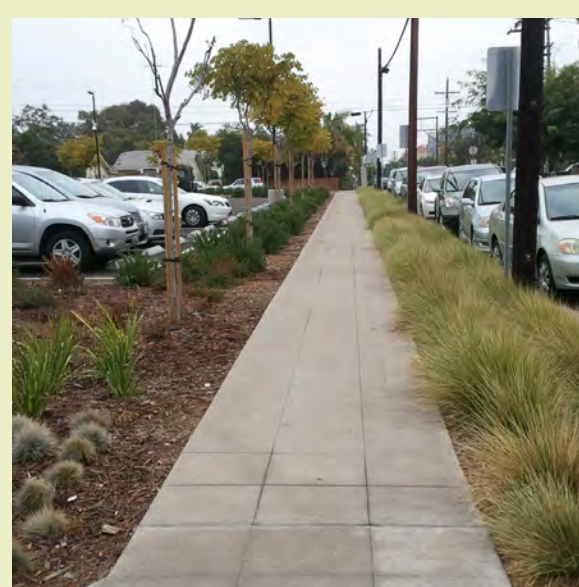
COUNTY OPERATIONS CENTER 5500 Overland Avenue, 92123

Vegetated filter strips can be found surrounding the main office buildings throughout the complex. Downspouts collect rooftop runoff and direct flows into the densely planted vegetation within the filter strip to encourage infiltration and allow sediment and other pollutants to settle out. Rocky dissipaters installed beneath the downspouts help prevent erosion as water is dispersed into the area. Excess runoff is directed into storm drain inlets set within the filter strip.



1st & MONTECITO PARKING LOT First St. and Montecito Way, 92103

The lot's permeable pavement and surrounding concrete curbs were built flush with the vegetated filter strips to encourage water flow off the parking lot into the surrounding landscaped areas. The drought tolerant landscaping is closely planted to slow water flow and encourage absorption and filtration by local soils.



Vegetated Swales

Vegetated swales are shallow, open channels with gently sloping sides that remove pollutants from storm water by physically straining and filtering it through vegetation and soils within the channel.

COUNTY OPERATIONS CENTER 5500 Overland Avenue, 92123

The swales along the east side of the parking lot have been installed to capture and retain storm water runoff from the parking areas and filter it through the soil. Curb cuts were strategically placed to divert flows into the swale. At one end of the swale an overflow inlet diverts flows into the storm water conveyance system.



GENESEE PLAZA SHOPPING CENTER 5950 Balboa Avenue, 92111

These vegetated swales collect parking lot runoff from the east end of the center. Runoff travels through curb cut outs and flows across the grassy swales where the water is slowed and allowed to infiltrate. Excess flows are conveyed into the storm drain inlets found at the end of the channel.



San Diego Low Impact Development Structure Locations

#	Name	Address	Latitude	Longitude
Bioretention				
1	43rd & LOGAN BIORETENTION POND	43rd Street at Logan Avenue, 92113	32.69681200	-117.10237000
2	43rd & LOGAN FILTRATION TRENCHES	43rd Street at Logan Avenue, 92113	32.69661300	-117.10194900
3	43rd & LOGAN FILTRATION TRENCHES	43rd Street at Logan Avenue, 92113	32.69598300	-117.10228200
4	Mt. ABERNATHY GREEN STREET	Mt. Abernathy Ave @ Camber St., 92117	32.82467800	-117.17374400
5	Mt. ABERNATHY GREEN STREET	Mt. Abernathy Ave @ Camber St., 92117	32.82476700	-117.17369300
6	Mt. ABERNATHY GREEN STREET	Charing St. @ Charing Pl., 92117	32.82316400	-117.17375500
7	Mt. ABERNATHY GREEN STREET	Chelford St. @ Charing Pl., 92117	32.82278000	-117.17267500
8	UCSD KEELING APARTMENTS	9500 Gilman Drive, 92161	32.87387100	-117.24299000
9	SANFORD CONSORTIUM	2880 Torrey Pines Scenic Drive, 92037	32.88897300	-117.24373100
10	SANFORD CONSORTIUM	2880 Torrey Pines Scenic Drive, 92037	32.88938100	-117.24431500

#	Name	Address	Latitude	Longitude
Bioswales				
11	UCSD KEELING APARTMENTS	9500 Gilman Drive, 92161	32.873478	-117.243186
12	THE BOYS AND GIRLS CLUB CLAIREMONT	4635 Clairemont Mesa Blvd., 92117	-117.190875	-117.20236800
13	SAN DIEGO INTERNATIONAL AIRPORT	Terminal 2 - 3225 N. Harbor Drive, 92101	32.73091100	-117.20236800

#	Name	Address	Latitude	Longitude
Permeable Pavement				
14	T2 SAN DIEGO INTERNATIONAL AIRPORT	3225 N Harbor Dr, San Diego, CA 92101	32.73034300	-117.20240600
15	DEPARTMENT OF TRANSPORTATION	4050 Taylor Street, San Diego, CA 92110	32.75683800	-117.19878500
16	1st & MONTECITO PARKING LOT	1st Ave. @ Montecito Way, 92103	32.75309500	-117.16486800
17	KELLOGG PARK GREEN LOT	Camino Del Oro @ Calle Frescota, 92037	32.85689200	-117.25654900
18	SANFORD CONSORTIUM	2880 Torrey Pines Scenic Drive, 92037	32.88902700	-117.24432100

#	Name	Address	Latitude	Longitude
Vegetated Swales				
19	COUNTY OPERATIONS CENTER	9325 Hazard Way, San Diego, CA 92123	32.83522800	-117.12867700
20	GENESEE PLAZA SHOPPING CENTER	5950 Balboa Avenue, San Diego, CA 92111	32.82098300	-117.17632400
21	GENESEE PLAZA SHOPPING CENTER	5950 Balboa Avenue, San Diego, CA 92111	32.82157800	-117.17600200

#	Name	Address	Latitude	Longitude
Infiltration Trench				
22	SDG&E INNOVATION CENTER	4760 Clairemont Mesa Blvd, San Diego, CA	32.83503800	-117.18826300
23	SANFORD CONSORTIUM	2880 Torrey Pines Scenic Drive, 92037	32.88878600	-117.24423500
24	SANFORD CONSORTIUM	2880 Torrey Pines Scenic Drive, 92037	32.88839400	-117.24469900

#	Name	Address	Latitude	Longitude
Vegetated Filter Strips				
25	KELLOGG PARK GREEN LOT	Camino Del Oro @ Calle Frescota, 92037	32.85750500	-117.25607700
26	COUNTY OPERATIONS CENTER	5520 Overland Avenue, San Diego, CA 92123	32.83387100	-117.12975600
27	1st & MONTECITO PARKING LOT	1st Ave. @ Montecito Way, 92103	32.75294000	-117.16482400

#	Name	Address	Latitude	Longitude
Cisterns & Rain Barrels				
28	MISSION TRAILS VISITOR'S CENTER	1 Father Junipero Serra Trail, CA 92119	32.82021700	-117.05673000
29	SDG&E INNOVATION CENTER	4760 Clairemont Mesa Blvd, San Diego, CA	32.83564900	-117.18808000
30	SCRIPPS INST. OF OCEANOGRAPHY	MSDC, Kennel Way, La Jolla, CA 92037	32.86640200	-117.25363600

#	Name	Address	Latitude	Longitude
Planter Box/Green Roof				
31	SCRIPPS INST. OF OCEANOGRAPHY	MSDC, Kennel Way, La Jolla, CA 92037	32.86640200	-117.25363600
32	UCSD KEELING APARTMENTS	9500 Gilman Drive, 92161	32.87397400	-117.24318100
33	COUNTY OPERATIONS CENTER	5520 Overland Avenue, San Diego, CA 92123	32.83423600	-117.12948200
34	BREEZA CONDOS	1431 Pacific Highway, San Diego, CA 92101	32.72026800	-117.17086600



To access the complete San Diego Low Impact Development Design Manual, visit: sandiego.gov/stormwater/pdf/lidmanual.pdf
 To access the Storm Water Design Standards Manual, visit: sandiego.gov/development-services/news/pdf/stormwatermanual.pdf
 To report storm water pollution, call (619) 235-1000.

