



Sustainable Management System

Inspection

Porous Landscape Detention and Storm Drain Inspection

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Activity Description

Porous Landscape Detention (PLD) is a common type of Stormwater BMP utilized within the Front Range of Colorado. PLDs consist of a low-lying vegetated area underlain by a sand bed with an underdrain pipe. A shallow surcharge zone exists above the PLD for temporary storage of the Water Quality Capture Volume (WQCV). During a storm, accumulated runoff ponds in the vegetated zone and gradually infiltrates into the underlying sand bed, filling the void spaces of the sand. The underdrain gradually dewateres the sand bed and discharges the runoff to a nearby channel, swale, or storm sewer. The PLD provides for filtering, adsorption, and biological uptake of constituents in stormwater¹. The popularity of PLDs has increased because they allow the WQCV to be provided on a site that has little open area available for stormwater management.

Inspecting Porous Landscape Detention (PLD)

Access and Easements

Inspection or maintenance personnel may find **detailed drawings in C3.0xx** containing the locations of the access points and potential maintenance easements of the PLDs.

Stormwater Best Management Practice (BMP) Locations

Inspection or maintenance personnel may find **detailed drawings in C3.0xx** containing the locations of the PLDs. See Appendix 1 for site inspection walk-through map.

Porous Landscape Detention (PLD) Features

¹ Design of Stormwater Filtering Systems, Centers for Watershed Protection, December 1996



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PLDs have a number of features that are designed to serve a particular function. Many times the proper function of one feature depends on another. It is important for maintenance personnel to understand the function of each of these features to prevent damage to any feature during maintenance operations. Below is a list and description of the most common features within a PLD and the corresponding maintenance inspection items that can be anticipated:

Table 1: Typical Inspection & Maintenance Requirements Matrix

	Sediment Removal	Weed control	Trash/ Debris Removal	Erosion	Overgrown Vegetation Removal	Removal/ Replacement	Structure Repair
Inflow Points	X		X				X
Landscaping	X	X	X	X	X		
Filter Media	X	X	X	X	X	X	
Underdrain System						X	
Overflow Outlet Works	X		X				X
Embankment		X	X	X	X		

Inflow Points

Inflow points or outfalls into PLDs are the point of stormwater discharge into the facility. An inflow point is commonly a curb cut with a concrete or riprap rundown. In limited cases, a storm sewer pipe outfall with a flared end section may be the inflow point into the PLD.

An energy dissipater (riprap or concrete wall) is typically immediately downstream of the discharge point into the PLD to protect the PLD from erosion. In some cases, the storm sewer outfall can have a toe-wall or cut-off wall immediately below the structure to prevent undercutting of the outfall from erosion.

The typical maintenance activities that are available for inflow points are:

a. Riprap Displaced – Due to the repeated impact/force of water, riprap can shift and settle. If any portion of the riprap rundown or apron appears to have settled, soil is present between the riprap, or the riprap has shifted, maintenance may be required to ensure future erosion is prevented.

b. Erosion Present/Outfall Undercut – In some situations, the energy dissipater may not have been sized, constructed, or maintained appropriately and erosion has occurred. Any erosion within the vicinity of the inflow point will require maintenance to prevent damage



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to the structure(s) and sediment transport within the facility. It is imperative that material utilized to correct erosion problems within the filter media meets the requirements for filter media as shown on the approved construction drawings.

d. Sediment Accumulation – Because of the turbulence in the water created by the energy dissipater, sediment often deposits immediately downstream of the inflow point. To prevent a loss in performance of the upstream infrastructure, sediment that accumulates in this area must be removed on a regular basis.

e. Structural Damage – Structural damage can occur at any time during the life of the facility. Typically, for an inflow, the structural damage occurs to the concrete or riprap rundown or pipe flared end section (concrete or steel). Structural damage can lead to additional operating problems with the facility, including loss of hydraulic performance.

Landscaping

The landscaped area consists of specific plant materials and associated landscaping mulch in the bottom of the PLD. These plantings provide several functions for the PLD. Planting not only provides an aesthetic value for the PLD, but in many cases assists with biological uptake or removal of pollutants.

The plants are carefully selected for use in the PLDs. Plants utilized in PLDs must be able to grow in dry sandy soils but also be able to withstand frequent inundation by stormwater runoff. These plants also must be able to withstand a variety of pollutants commonly found in stormwater runoff. In addition, plants utilized in PLDs cannot have a deep extensive root system that may cause maintenance difficulty or damage to the facility.

The typical maintenance activities that are available for landscaped areas are:

a. Woody Growth/Weeds Present – Undesirable vegetation can grow in and around the landscaped area in the PLD that can significantly affect the performance of the facility. This type of vegetation includes dense areas of shrubs (willows), grasses and noxious weeds. If undesired vegetation is not routinely removed, the growth can cause debris/sediment to accumulate, resulting in blockage of the filter media. Also, shrub, grass and weed roots can cause damage to the filter media and underdrain system. Routine management is essential to prevent more extensive and costly future maintenance.

b. General Landscape Care – The landscape elements of the PLD are the same as any other landscape area and need to be provided with regular care.

Underdrain System



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The underdrain system consists of a layer of geotextile fabric and perforated PVC pipes. The geotextile fabric is utilized to prevent the filter media from entering the underdrain system. Runoff is discharged through the perforated PVC pipe.

The typical maintenance activities that are available for underdrain system are:

With proper maintenance of the landscape areas and filter media, there should be a minimum amount of maintenance required on the underdrain system. Generally the only maintenance performed on the underdrain system is jet-vac cleaning.

Overflow Outlet Works

Generally, the initial runoff (“first flush”) or WQCV during the storm event contains the majority of the pollutants. PLDs are designed to treat only the WQCV and any amount over the WQCV is allowed to go to a detention facility without water quality treatment. The overflow outlet works allows runoff amounts over the WQCV to exit the PLD to the detention facility. The outlet works is typically constructed of a reinforced concrete box in the embankment of the PLD. The concrete structure typically has a steel grate to trap litter and other debris from entering the storm sewer system. Proper inspection and maintenance of the outlet works is essential in ensuring the long-term operation of the PLD.

The most typical maintenance activities that are available for overflow outlet works are:

- a. Structural Damage* - The overflow outlet structure is primarily constructed of concrete, which can crack, spall, and settle. The steel grate on the overflow outlet structure is also susceptible to damage.
- b. Woody Growth/Weeds Present* – The presence of plant material not part of the original landscaping, such as wetland plants or other woody growth, can clog the overflow outlet works during a larger storm event, causing flooding damage to adjacent areas. This plant material may indicate a clogging of the filter media and may require additional investigation.
- c. Trash/Debris* – Trash and debris can accumulate in the upper area after large events, or from illegal dumping. Over time, this material can clog the PLD outlet works.

Embankments

Some PLDs utilize irrigated turf grass embankment to store the WQCV.

The typical maintenance activities that are available for embankments areas are:

- a. Vegetation Sparse* – The embankments are one of the most visible parts of the PLD, and therefore aesthetics is important. Adequate and properly maintained vegetation can



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greatly increase the overall appearance of the PLD. Vegetation can reduce the potential for erosion and subsequent sediment transport to the filter media, thereby reducing the need for more costly maintenance.

b. Erosion – Inadequate vegetative cover may result in erosion of the embankments. Erosion that occurs on the embankments can cause clogging of the filter media.

Miscellaneous

There are a variety of inspection/maintenance issues that may not be attributed to a single feature within the PLD. This category on the inspection form is for maintenance items that are commonly found in the PLD, but may not be attributed to an individual feature.

a. Access – Access needs to be maintained.

Inspection Forms

PLD Inspection forms are located in Appendix 2. Inspections should be conducted at a minimum quarterly during the four seasons. During the rainy season, with high precipitation events, we recommend more frequent inspections.

Inspection forms shall be completed by the person(s) conducting the inspection activities. These inspection forms shall be kept a minimum of 5 years and made available on the DZF's SMS.

Roles and Responsibilities-Maintaining Porous Landscape Detentions (PLD)

Maintenance Department

Any maintenance work to be performed on the PLD inlet structure, associated piping or storm drains, is the responsibility of the Maintenance Department. Personnel should have experience to properly maintain PLDs and receive training on this inspection form and the design aspects of the PLDs on site.

Grounds/Horticulture Department

Any maintenance work to be performed on the vegetation or soils of the PLD will be conducted by the Grounds and Horticulture Department. Personnel should have experience to properly maintain PLDs and receive training on this inspection form and the design aspects of the PLDs on site.

PLD Maintenance Forms

Any inspection finding that requires maintenance will be submitted to the appropriate department using DZF's digital work order system (M-Pulse). The work order program



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provides a record of each maintenance operation performed by maintenance contractors or on-site staff.

PLD Maintenance Categories and Activities

A typical PLD Maintenance Program will consist of three broad categories of work: Routine, Restoration (minor), and Rehabilitation (major). Within each category of work, a variety of maintenance activities can be performed on a PLD. A maintenance activity can be specific to each feature within the PLD, or general to the overall facility. This section of the SOP explains each of the categories and briefly describes the typical maintenance activities for a PLD.

A variety of maintenance activities is typical of PLDs. The maintenance activities range in magnitude from routine trash pickup to the reconstruction of the PLD filter media or underdrain system. Below is a description of each maintenance activity, the objectives, and frequency of actions:

ROUTINE MAINTENANCE ACTIVITIES

Routine maintenance consists of trash and debris pickup, and landscape care in the PLD during the growing season. It may also include activities such as weed control or mowing/pruning. These activities normally can be performed numerous times during the year. These items do not require any prior approval or documentation.

These activities are the responsibility of the Grounds and Horticulture Department.

The Routine Maintenance Activities are summarized below, and further described in the following sections.

Table 2

Maintenance Activity	Minimum Frequency	Look for:	Maintenance Action
Trash/Debris Removal	Twice annually	Trash & debris in PLD	Remove and dispose of trash/debris
Overflow Outlet or Storm Drains Works Cleaning	As needed - after significant	Clogged outlet structure; ponding water	Remove and dispose of debris/trash/sediment



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	rain events – twice annually minimum	above outlet elevation	to allow outlet to function properly
Weed Control	As needed, based upon inspection	Noxious weeds; Unwanted vegetation	Treat with approved method of treatment (see DZF.SMS.301.21) or hand pull
Mowing/Pruning	As needed, based on inspection	Excessive grass height/aesthetics	At height necessary to maintain aesthetics. (Depends on location of PLD, and other factors)

Summary of Routine Maintenance Activities

Mowing/Pruning

On an as needed bases, mowing or pruning of vegetation may be necessary to improve the overall appearance of the PLD. All clippings or vegetative debris should be removed from the PLD to avoid clogging of the system.

Frequency – Routine – As needed based upon inspection

Trash/Debris Removal

Trash and debris must be removed from the entire PLD area to minimize outlet clogging and to improve aesthetics. This activity must be performed prior to mowing operations.

Frequency – Routine – Prior to mowing operations and minimum of twice annually.

Overflow Outlet Works Cleaning

Debris and other materials can clog the overflow outlet work's grate. This activity must be performed anytime other maintenance activities are conducted to ensure proper operation.

Frequency - Routine – After significant rainfall event or concurrently with other maintenance activities.

Weed Control

Noxious weeds and other unwanted vegetation must be treated as needed throughout the PLD. This activity can be performed either through mechanical means (mowing/pulling) or with herbicide (see DZF.SMS.301.21 for approved chemical treatment practices).

Consultation with a local Weed Inspector is highly recommended prior to the use of



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herbicide. Herbicides should be utilized sparingly and as a last resort. All herbicide applications should be in accordance with the manufacturer's recommendations.

Frequency – Routine – As needed based on inspections.

RESTORATION MAINTENANCE ACTIVITIES

This work consists of a variety of isolated or small-scale maintenance/operational problems. Most of this work can be completed by a small crew, hand tools, and small equipment. In the event that the PLD needs to be dewatered, care should be given to ensure sediment, filter material and other pollutants are not discharged. All dewatering activities shall be properly permitted.

Depending on the task, these activities will be coordinated between Grounds/Horticulture Department and Maintenance Department.

Table 3: Summary of Restoration Maintenance Activities

Maintenance Activity	Minimum Frequency	Look for:	Maintenance Action
Sediment/Pollutant Removal	As needed; Based on infiltration test	Sediment build-up; decrease in infiltration rate	Remove and dispose of sediment
Erosion Repair	As needed, based upon inspection	Rills/gullies forming on embankments	Repair eroded areas & Re-vegetate; address cause
Jet Vac/Cleaning underdrain system	As needed, based upon inspection	Sediment build-up /non draining system	Clean drains; Jet-Vac if needed

Sediment/Pollutant Removal

Sediment/Pollutant removal is necessary to ensure proper function of the filter media. The infiltration rate of the PLD needs to be checked in order to ensure proper functioning of the PLD. Generally, a PLD should drain completely within 12-hours of a storm event. If drain times exceed the 12-hour drain time then maintenance of the filter media shall be required.

Generally, the top 3-inches of filter media should be removed at each removal period. Additional amounts of filter media may need to be removed if deeper sections of the filter media are contaminated. New filter media will need to replace the removed filter media. It



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is critical that only sand that meets the American Society for Testing and Materials (ASTM) C-33 standard be utilized in the replacement of the filter media.

ASTM C-33 Sand Standard

US Standard Sieve Size (Number)	Total Percent Passing (%)
9.5 mm (3/8 inch)	100
4.75 mm (No. 4)	95-100
2.36 mm (No. 8)	80-100
1.18 mm (No. 16)	50-85
600 mm (No. 30)	25-60
300 mm (No. 50)	10-30
150 mm (No. 100)	2-10

In addition, only Peat Moss that meets current City specifications (Drainage Criteria Manual, V. 2) and percentages shall be utilized with the filter media.

Other types of sand or soil material may lead to clogging of the PLD. The minor sediment removal activities can typically be addressed with shovels, rakes, and smaller equipment. Major sediment removal activities will require larger and more specialized equipment. Extreme care should be taken when utilizing motorized or heavy equipment to ensure damage to the underdrain system does not occur. The major sediment removal activities will also require surveying with an engineer's level, and consultation with DZF's Planning Department to ensure design volumes/grades are achieved.

Stormwater sediments removed from PLDs do not meet the regulatory definition of "hazardous waste". However, these sediments can be contaminated with a wide array of organic and inorganic pollutants and handling must be done with care. Sediments should be transported by motor vehicle only after they are dewatered. All sediments must be



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taken to a licensed landfill for proper disposal. Should a spill occur during transportation, prompt and thorough cleanup and disposal is imperative.

Frequency – Non-routine – As necessary, based upon inspections and infiltration tests. Sediment removal in the forebay and trickle channel may be necessary as frequently as every 1-2 years.

Erosion Repair

The repair of eroded areas is necessary to ensure the proper functioning of the PLD, to minimize sediment transport, and to reduce potential impacts to other features. Erosion can vary in magnitude from minor repairs to filter media and embankments, to rills and gullies in the embankments and inflow points. The repair of eroded areas may require the use of excavators, earthmoving equipment, riprap, concrete, and sod. Extreme care should be taken when utilizing motorized or heavy equipment to ensure damage to the underdrain system does not occur. Major erosion repair to the pond embankments, spillways, and adjacent to structures will require consultation with the DZF's Planning staff.

Frequency – Non-routine – As necessary, based upon inspections.

Jet-Vac/Clearing Drains

A PLD contains an underdrain system that allows treated stormwater runoff to exit the facility. These underdrain systems can develop blockages that can result in a decrease of hydraulic capacity and create standing water. Many times the blockage to this infrastructure can be difficult to access and/or clean. Specialized equipment (jet-vac machines) may be necessary to clear debris from these difficult areas.

Frequency – Non-routine – As necessary, based upon inspections.

REHABILITATION MAINTENANCE ACTIVITIES

This work consists of larger maintenance/operational problems and failures within the stormwater management facilities. All of this work requires consultation with the DZF's Planning staff to ensure the proper maintenance is performed. This work requires that Engineering staff review the original design and construction drawings to assess the situation and assign the necessary maintenance. This work may also require more specialized maintenance equipment, design/details, surveying, or assistance through private contractors and consultants.



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Table 4
Summary of Rehabilitation Maintenance Activities

Maintenance Activity	Minimum Frequency	Look for:	Maintenance Action
Major Sediment/Pollutant Removal	As needed – based upon scheduled inspections	Large quantities of sediment; reduced pond capacity	Remove and dispose of sediment. Repair vegetation as needed
Major Erosion Repair	As needed – based upon scheduled inspections	Severe erosion including gullies forming, excessive soil displacement, areas of settlement, holes	Repair erosion – find cause of problem and address to avoid future erosion
Structural Repair	As needed – based upon scheduled inspections	Deterioration and/or damage to structural components – broken concrete, damaged pipes & outlet works	Structural repair to restore the structure to its original design
PLD Rebuild	As needed – due to complete failure of PLD	Removal of filter media and underdrain system	Contact City Engineering

Major Sediment/Pollutant Removal

Major sediment removal consists of removal of large quantities of pollutants/sediment/filter media/landscaping material. Extreme care should be taken when utilizing motorized or heavy equipment to ensure damage to the underdrain system does not occur. Some PLDs also contain an impermeable liner that can be easily damaged if care is not taken when removing the filter media. Stormwater sediments removed from PLDs do not meet the regulatory definition of “hazardous waste”. However, these sediments can be contaminated with a wide array of organic and inorganic pollutants and handling must be done with care to ensure proper removal and disposal. Sediments should be transported by motor vehicle only after they are dewatered. All sediments must be taken to a licensed



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landfill for proper disposal. Should a spill occur during transportation, prompt and thorough cleanup and disposal is imperative. Vegetated areas need special care to ensure design volumes and grades are preserved or may need to be replaced due to the removal activities. *Frequency* – Non-routine – Repair as needed, based upon inspections.

Major Erosion Repair

Major erosion repair consists of filling and revegetating areas of severe erosion. Determining the cause of the erosion as well as correcting the condition that caused the erosion should also be part of the erosion repair. Care should be given to ensure design grades and volumes are preserved. Extreme care should be taken when utilizing motorized or heavy equipment to ensure damage to the underdrain system does not occur.

Frequency – Non-routine – Repair as needed, based upon inspections.

Structural Repair

A PLD generally includes a concrete overflow outlet structure that can deteriorate or be damaged during the service life of the facility. These structures are constructed of steel and concrete that can degrade or be damaged and may need to be repaired or re-constructed from time to time. Major repairs to structures may require input from a structural engineer and specialized contractors.

Frequency – Non-routine – Repair as needed, based upon inspections.

PLD Rebuild

In very rare cases, a PLD may need to be rebuilt. Generally, the need for a complete rebuild is a result of improper construction, improper maintenance resulting in structural damage to the underdrain system, or extensive contamination of the PLD.

Frequency – Non-routine – As needed based upon inspections.

Reference:

This Manual is adapted from the SEMSWA (2007) and the Douglas County, Colorado (2005), Standard Operating Procedure for Extended Detention Basin (EDB) Inspection and Maintenance

Appendix 1

Site inspection walk-through map



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Appendix 2

Denver Zoo Porous Landscape Detention (PLD) and Storm Drain Quarterly Inspection Form

Date: _____

Inspector: _____

Weather: _____

Date of Last Rainfall: _____ Amount: _____ Inches

Reason for Inspection: (circle one) Routine Complaint After significant rainfall event

Inspection Scoring:
 0 = No deficiencies identified 2 = Routine maintenance required
 1 = Monitor (potential for future problem) 3 = Immediate repair necessary
 N/A = Not applicable

PLD-G

Outlet (Inflow Points to PLD)	Score	Overflow Outlet Works	Score
Rip Rap Displaced/Rundown or Pipe Damage		Structural Damage	
Erosion Present/Outfall Undercut		Woody Growth/Weeds Present	
Sediment Accumulation		Trash/Debris	
Structural Damage			
Landscaping	Score	Embankments	Score
Woody Growth/Weeds Present		Vegetation Sparse	
General Landscape Care		Erosion Present	
Underdrain System	Score	Miscellaneous	Score
Evidence of Clogged System (jet-vac cleaning required)		Access	

Grates to be inspected

Visually inspect the interior of the inlets and outlet on TEP storm line E. Storm line E is predominantly under the service drive, south of the Elephant Holding Building, as shown on TEP Drawing C3.01. Remove any accumulated debris, as necessary, from the interior side of the grate. These grates include:

	Needs attention or check mark
Storm Inlet E.5 in the service drive, east of Elephant Holding Building Stall #6	
Storm Inlet E3.1 at the south edge of the service drive, east of Gate 15	
Storm Inlet E.4 in the middle of the service drive, southeast of the Elephant Holding Building hay trailer ramp	



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Trench drain at the bottom (west end) of the Elephant Holding Building hay trailer ramp	
Storm Inlet E.3 in the middle of the service drive, north of Gate 15	
Storm Inlet E.2 in the middle of the service drive, outside of the Waste Management Building office door	
Storm Inlet E.1 in the middle of the service drive, northwest of the Waste Management Building	
Storm outlet E in PLD G, southeast of the Waste Management Building	
Trench drain under Gate 15. This is not tied-in to the STM E system.	

Inspection summary/Additional Comments: _____

This inspection form shall be kept indefinitely on the DZF SMS site.

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PLD-C

Outlet (Inflow Points to PLD)	Score	Overflow Outlet Works	Score
Rip Rap Displaced/Rundown or Pipe Damage		Structural Damage	
Erosion Present/Outfall Undercut		Woody Growth/Weeds Present	
Sediment Accumulation		Trash/Debris	
Structural Damage			
Landscaping	Score	Embankments	Score
Woody Growth/Weeds Present		Vegetation Sparse	
General Landscape Care		Erosion Present	
Underdrain System	Score	Miscellaneous	Score
Evidence of Clogged System (jet-vac cleaning required)		Access	

Grates to be inspected

Visually inspect the interior of the inlets and outlets on storm lines. Remove any accumulated debris, as necessary, from the interior side of the grate. These grates include:

	Needs attention or check mark
Storm Inlet D.1	

PLD-E

Outlet (Inflow Points to PLD)	Score	Overflow Outlet Works	Score
Rip Rap Displaced/Rundown or Pipe Damage		Structural Damage	
Erosion Present/Outfall Undercut		Woody Growth/Weeds Present	
Sediment Accumulation		Trash/Debris	
Structural Damage			
Landscaping	Score	Embankments	Score
Woody Growth/Weeds Present		Vegetation Sparse	
General Landscape Care		Erosion Present	
Underdrain System	Score	Miscellaneous	Score
Evidence of Clogged System (jet-vac cleaning required)		Access	

Grates to be inspected

Visually inspect the interior of the inlets and outlets on storm lines. Remove any accumulated debris, as necessary, from the interior side of the grate. These grates include:

	Needs attention or check mark



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Storm Inlet F.1	
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PLD-M

Outlet (Inflow Points to PLD)	Score	Overflow Outlet Works	Score
Rip Rap Displaced/Rundown or Pipe Damage		Structural Damage	
Erosion Present/Outfall Undercut		Woody Growth/Weeds Present	
Sediment Accumulation		Trash/Debris	
Structural Damage			
Landscaping	Score	Embankments	Score
Woody Growth/Weeds Present		Vegetation Sparse	
General Landscape Care		Erosion Present	
Underdrain System	Score	Miscellaneous	Score
Evidence of Clogged System (jet-vac cleaning required)		Access	

Grates to be inspected

Visually inspect the interior of the inlets and outlets on storm lines. Remove any accumulated debris, as necessary, from the interior side of the grate. These grates include:

	Needs attention or check mark
Storm Inlet F.2	

PLD-R

Outlet (Inflow Points to PLD)	Score	Overflow Outlet Works	Score
Rip Rap Displaced/Rundown or Pipe Damage		Structural Damage	
Erosion Present/Outfall Undercut		Woody Growth/Weeds Present	
Sediment Accumulation		Trash/Debris	
Structural Damage			
Landscaping	Score	Embankments	Score
Woody Growth/Weeds Present		Vegetation Sparse	
General Landscape Care		Erosion Present	
Underdrain System	Score	Miscellaneous	Score
Evidence of Clogged System (jet-vac cleaning required)		Access	

Grates to be inspected

Visually inspect the interior of the inlets and outlets on storm lines. Remove any accumulated debris, as necessary, from the interior side of the grate. These grates include:



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	Needs attention or check mark
Storm Inlet H3.1	

PLD-X

Outlet (Inflow Points to PLD)	Score	Overflow Outlet Works	Score
Rip Rap Displaced/Rundown or Pipe Damage		Structural Damage	
Erosion Present/Outfall Undercut		Woody Growth/Weeds Present	
Sediment Accumulation		Trash/Debris	
Structural Damage			
Landscaping	Score	Embankments	Score
Woody Growth/Weeds Present		Vegetation Sparse	
General Landscape Care		Erosion Present	
Underdrain System	Score	Miscellaneous	Score
Evidence of Clogged System (jet-vac cleaning required)		Access	

Grates to be inspected

Visually inspect the interior of the inlets and outlets on storm lines. Remove any accumulated debris, as necessary, from the interior side of the grate. These grates include:

	Needs attention or check mark
Storm Inlet I.1	

PLD-Y

Outlet (Inflow Points to PLD)	Score	Overflow Outlet Works	Score
Rip Rap Displaced/Rundown or Pipe Damage		Structural Damage	
Erosion Present/Outfall Undercut		Woody Growth/Weeds Present	
Sediment Accumulation		Trash/Debris	
Structural Damage			
Landscaping	Score	Embankments	Score
Woody Growth/Weeds Present		Vegetation Sparse	
General Landscape Care		Erosion Present	
Underdrain System	Score	Miscellaneous	Score
Evidence of Clogged System (jet-vac cleaning required)		Access	

Grates to be inspected



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Visually inspect the interior of the inlets and outlets on storm lines. Remove any accumulated debris, as necessary, from the interior side of the grate. These grates include:

	Needs attention or check mark
Storm Inlet J.1	

PLD-Z

Outlet (Inflow Points to PLD)	Score	Overflow Outlet Works	Score
Rip Rap Displaced/Rundown or Pipe Damage		Structural Damage	
Erosion Present/Outfall Undercut		Woody Growth/Weeds Present	
Sediment Accumulation		Trash/Debris	
Structural Damage			
Landscaping	Score	Embankments	Score
Woody Growth/Weeds Present		Vegetation Sparse	
General Landscape Care		Erosion Present	
Underdrain System	Score	Miscellaneous	Score
Evidence of Clogged System (jet-vac cleaning required)		Access	

PLD-BB

Outlet (Inflow Points to PLD)	Score	Overflow Outlet Works	Score
Rip Rap Displaced/Rundown or Pipe Damage		Structural Damage	
Erosion Present/Outfall Undercut		Woody Growth/Weeds Present	
Sediment Accumulation		Trash/Debris	
Structural Damage			
Landscaping	Score	Embankments	Score
Woody Growth/Weeds Present		Vegetation Sparse	
General Landscape Care		Erosion Present	
Underdrain System	Score	Miscellaneous	Score
Evidence of Clogged System (jet-vac cleaning required)		Access	

PLD-CC

Outlet (Inflow Points to PLD)	Score	Overflow Outlet Works	Score
Rip Rap Displaced/Rundown or Pipe Damage		Structural Damage	
Erosion Present/Outfall Undercut		Woody Growth/Weeds Present	
Sediment Accumulation		Trash/Debris	
Structural Damage			
Landscaping	Score	Embankments	Score
Woody Growth/Weeds Present		Vegetation Sparse	



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General Landscape Care		Erosion Present	
Underdrain System	Score	Miscellaneous	Score
Evidence of Clogged System (jet-vac cleaning required)		Access	

Grates to be inspected

Visually inspect the interior of the inlets and outlets on storm lines. Remove any accumulated debris, as necessary, from the interior side of the grate. These grates include:

	Needs attention or check mark
Storm Inlet M.1	
Storm Inlet N.1	
Storm Inlet O.1	
Storm Inlet O.2	

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