

## Vegetated Swale Operation and Maintenance Plan

**Annual inspections are required.** It is recommended that the facility is inspected on a monthly basis to ensure proper function. The plan below describes inspection and maintenance activities, and may be used as an inspection log. Contact the design engineer, Clean Water Services or City representative for more information.

Identified Problem	Condition to Check for	Maintenance Activity	Maintenance Timing	✓ Task Complete Comments
Obstructed Inlet/Outlet	Material such as vegetation, sediment is blocking more than 10% of Inlet/outlet pipe or basin opening	Remove blockages from facility	 WINTER SPRING	
Flow not distributed evenly	Flows unevenly distributed through swale due to uneven or clogged flow spreader	Level and clean the spreader so that flows spread evenly over entire swale width	 WINTER SPRING	
Sediment Accumulation in Treatment Area	Sediment depth in treatment area exceeds 3 inches	Remove sediment from treatment area. Ensure facility is level from side to side and drains freely toward outlet; no standing water once inflow has ceased	 SUMMER FALL	Ideally in the dry season
Tree/Shrub Growth	Tree/shrub growth shades out wetland/emergent grass in treatment area. Interferes with access for maintenance/inspection	Prune trees and shrubs that block sun from reaching treatment area. Remove trees that block access points. Do not remove trees that are not interfering with access or maintenance without first contacting Clean Water Services or local City	 WINTER	Ideal timing for pruning is winter
Hazard Trees	Observed dead, dying or diseased trees	Remove hazard trees. A certified arborist may be needed to determine health of tree or removal requirements	As Needed	

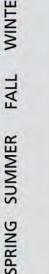
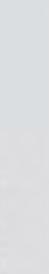
## Vegetated Swale Operation and Maintenance Plan (continued)

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Identified Problem	Condition to Check for	Maintenance Activity	Maintenance Timing	✓ Task Complete Comments
Erosion	Erosion or channelization that impacts or effects the function of the facility or creates a safety concern	Repair eroded areas and stabilized using proper erosion control measures. Establish appropriate vegetation as needed.	  WINTER  SPRING	
Poor Vegetation Coverage	80% survival of approved vegetation and no bare areas large enough to affect function of facility	Determine cause of poor growth and correct the condition. Replant per the approved planting plan and applicable standards at time of construction. Remove excessive weeds and all invasive plants.	  SPRING  FALL	Ideal time to plant is spring and fall seasons
Invasive Vegetation as outlined in Appendix A	Invasive vegetation is found in facility. Examples include: Himalayan Blackberry; Reed Canary Grass; Teasel; English Ivy; Nightshade; Clematis; Cattail; Thistle; Scotch Broom	Remove excessive weeds and all invasive plants. Attempt to control even if complete eradication is not feasible. Refer to Clean Water Services Integrated Pest Management Plan for appropriate control methods, including proper use of chemical treatment	  SPRING  SUMMER  FALL	
Excessive Vegetation	Vegetation grows so tall it competes with or shades approved emergent wetland grass/shrubs; interferes with access or becomes fire danger	Cut tall grass to 4" to 6" and remove clippings. Prune emergent wetland grass/shrubs that have become overgrown.		Ideal time to prune emergent wetland grass is spring. Cut grass in dry months
Trash and Debris	Visual evidence of trash, debris or dumping	Trash and debris removed from facility. Dispose of properly	  SPRING  SUMMER  FALL  WINTER	

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Identified Problem	Condition to Check for	Maintenance Activity	Maintenance Timing	✓ Task Complete Comments
Standing Water	Standing water in the swale between storms that does not drain freely	Remove sediment or trash blockages; improve grade from end to end of swale; no standing water 24 hours after any major storm (1-inch in 24 hours)	 WINTER SPRING Inspect after any major storm (1-inch in 24 hours)	
Vector Control	Evidence of rodents or water piping through facility via rodent holes. Harmful insects such as wasps and hornets interfere with maintenance/ inspection activities	Repair facility if damaged. Remove harmful insects, use professional if needed. Refer to Clean Water Services Integrated Pest Management Plan for management options	As Needed	
Contamination and Pollution	Evidence of oil, gasoline, contaminants, or other pollutants. Look for sheens, odor or signs of contamination	If contaminants or pollutants present, coordinate removal/ cleanup with local jurisdiction	 SPRING  SUMMER  FALL  WINTER	
Grate Damaged, missing or not in place	Grate is missing or only partially in place, may have missing or broken grate members	Grate must be in place and meet design standards. Replace or repair any open structure, replace grate if missing.	As Needed	
Damage to Outlet Structure	Frame not sitting flush on top slab (more than $\frac{3}{4}$ inch between frame and top slab); frame not securely attached	Ensure frame is firmly attached and sits flush on riser rings or on top of slab. Structure replaced or repaired to design standards	As Needed	

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Identified Problem	Condition to Check for	Maintenance Activity	Maintenance Timing	✓ Task Complete Comments
Damage to Outlet Structure	Fractures or Cracks in Walls or Bottom. Maintenance person determines the structure is unsound. Soil entering structure through cracks	Structure replaced or repaired to design standards	As Needed	
Damage to Outlet Structure	Settlement or Misalignment. Failure of basin has created a safety, function, or design problem	Structure replaced or repaired to design standards	As Needed	