

APPENDIX 2A
MAINTENANCE GUIDELINES

MAINTENANCE COMPONENT	DEFECT	CONDITIONS WHEN MAINTENANCE IS NEEDED	RESULTS EXPECTED WHEN MAINTENANCE IS PERFORMED	SCHEDULED FREQUENCY OF MAINTENANCE/INSPECTION
A. PONDS				
General	Trash & debris	Any trash & debris that exceeds 1 c.f. per 1,000 sq. ft. (this is about equal to the amount of trash it would take to fill up one standard size office garbage can). In general, there should be no visual evidence of dumping.	Trash & debris cleared from site.	Twice per year.
	Poisonous vegetation	Any poisonous vegetation that may constitute a hazard to County personnel or the public. Examples of poisonous vegetation include: tansy ragwort, poison oak, stinging nettles, devils club.	No danger of poisonous vegetation where City personnel or the public might normally be.	Twice per year.
	Pollution	Oil, gasoline, or other contaminants that could: 1) cause damage to plant, animal, or marine life; 2) constitute a fire hazard; or 3) be flushed downstream during rainstorms.	No contaminants present other than a surface film.	Twice per year.
	Unmowed grass/ground cover	If facility is located in private residential area, mowing is needed when grass exceeds 18" in height. In other areas, the general policy is to make the pond site match adjacent ground cover and terrain as long as there is no interference with the function of the facility.	When mowing is needed, grass/ground cover should be mowed to 4" in height.	Twice per year.
	Rodent holes	Any evidence of rodent holes, if facility is acting as a dam or berm, or any evidence of water piping through dam or berm via rodent holes.	Rodents destroyed and dam or berm repaired.	Twice per year.
	Insects	When insects such as wasps and hornets interfere with maintenance activities.	Insects destroyed or removed from site.	Twice per year.
	Tree growth	Tree growth does not allow maintenance access or interferes with maintenance activity (i.e. slope mowing, silt removal, vactoring or equipment movement). If trees are not interfering with access, leave trees.	Trees do not hinder maintenance activities. Selectively cultivate trees such as alders for firewood.	Twice per year.

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Side slopes of pond	Erosion		Slopes should be stabilized by using appropriate erosion control measure(s); e.g. rock reinforcement, planting of grass, compaction, etc.	Twice per year.
Storage volume	Sediment	Accumulated sediment that exceeds 10% of the design storm depth.	Sediment cleaned out to designed pond shape and depth; pond re-seeded if necessary to control erosion.	Twice per year.
Pond dikes	Settlements	Any part of dike that has settled 4" lower than the design elevation.	Dike should be built back to the design elevation.	Twice per year.
Emergency overflow/ spillway	Rock missing	Only one layer of rock exists above native soil in area five sq. ft. or larger, or any exposure of native soils.	Replace rocks to design standards.	Twice per year.
	Does not control storm flow	Emergency overflow or spillway is not large enough to handle heavy rainstorms.	Increase capacity of overflow so that there is no danger of flood damage to downstream property. Re-evaluate de-sign and enlarge storage, adjust control structure, etc.	Twice per year.
Debris barrier-general	Trash & debris	Trash or debris that is plugging more than 20% of the openings in the barrier.	Barrier clear to receive capacity flow.	Twice per year (typ)
Debris barrier-metal	Damaged/missing bars	Bars are bent out of shape more than 3" .	Bars in place with no bends more than 3/4" .	Twice per year
		Bars are missing or entire barrier is missing.	Bars in place according to design.	Twice per year
		Bars are loose and rust is causing 50% deterioration to any part of barrier.	Repair or replace barrier to design standard.	Twice per year
B. CLOSED DETENTION SYSTEMS (TANKS/VAULTS)				
	Plugged air	1/2 of the end area of a vent is blocked at any point with	Vents free of debris and sediment.	Twice per year.

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	vents	debris and sediment.		
	Debris & sediment	Accumulated sediment depth exceeds 10% of the storage depth or 1/2 length of storage vault or any point depth exceeds 15% of storage depth.	Sediment cleaned out.	Twice per year.
	Gaps between tank/pipe sections	Any crack allowing material to be transported into facility.	All gaps between tank/pipe sections are sealed.	Twice per year
Manhole	Cover not in place	Cover is missing or only partially in place. Any open manhole requires a cover.	Manhole is closed.	Twice per year

C. CONTROL STRUCTURES

Control structure or manhole	Ladder rungs unsafe	Ladder is unsafe due to missing rungs, misalignment, rust or cracks.	Ladder meets with design standards and allows maintenance persons safe access.	Twice per year (typ)
	Trash & debris (includes sediment)	Distance between debris build-up and bottom of orifice plate is less than 1 1/2 feet.	All trash & debris removed.	Twice per year
	Damage to outlet structure	Structure is not securely attached to manhole wall and outlet pipe.	Structure is securely attached to wall and outlet pipe.	Twice per year
		Structure is out of plumb more than 6" .	Structure is plumb.	
		Connections to outlet pipe are not watertight and show signs of rust.	Connections to outlet pipe are watertight; structure repaired or replaced and works as designed.	Twice per year
	Cleanout gate	Cleanout gate is not watertight or is missing.	Gate is watertight and works as designed.	Twice per year

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	damaged/missing			
	Orifice plate damaged/missing	Control device is not working, out of place, or bent orifice plate.	Control device is in place and orifice plate works as designed.	Twice per year
D. FENCING				
General	Missing or broken parts	Any defect in the fence that permits easy entry to a facility.	Parts in place to provide adequate security.	Quarterly
		Parts broken or missing that can be seen by the public that are below the appearance standards of the neighborhood.	Broken or missing parts replaced to conform to the standards of the neighborhood.	Quarterly
	Erosion	Erosion more than 4" high and 12-18" wide permitting an opening under a fence.	No opening under the fence that exceeds 4" in height.	Quarterly
	Damaged or missing parts	Any part of fence (including posts, top rails, and fabric) more than 1 ft. out of design alignment.	Fence is aligned and meets design standards.	Quarterly
		Missing or loose tension wire.	Tension wire in place and holding fabric.	Quarterly
		Extension arm missing, broken, or bent out of shape more than 1 1/2".	Extension arm in place with no bends larger than 3/4".	Quarterly
	Deteriorated paint or protective coating	Part or parts that have a rusting or scaling condition that has affected structural adequacy.	Structurally adequate posts or parts with a uniform protective coating.	Quarterly
	Openings/	Openings in fabric are such that an 8" diameter ball could	No openings in fence.	Quarterly

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	holes	fit through (intent is to prevent small children from entering).		
	Warning signs	Missing, loose or vandalized warning signs.	Signs in place and readable.	Quarterly
Gates	Damaged or missing parts	Missing gate or locking device.	Gates and locking devices in place.	Quarterly
		Broken or missing hinges such that gate cannot be easily opened and closed.	Hinges intact and lubed. Gate is working freely.	Quarterly
		Gate is out of plumb more than 6" and more than 1 ft. out of design alignment.	Gate is aligned and plumb.	Quarterly
		Missing stretcher bar, stretcher bands, and ties.	Stretcher bar, bands, and ties in place.	Quarterly

E. ACCESS ROADS/ EASEMENTS

General	Trash & debris	Trash & debris exceeds 1 c.f. per 1,000 sq. ft., i.e. trash and debris would fill up one standard size office garbage can.	Trash & debris cleared from site.	Twice per year
	Blocked roadway	Any obstructions restricting the access to a road surface to less than 15 ft.	Obstruction removed to allow at least 15 ft. access.	Twice per year
Road Surface	Settlement, potholes, mush spots, ruts.	When any surface defect exceeds 6" in depth and 6 sq. ft in area. In general, any surface defect that hinders or prevents maintenance access.	Road surface uniformly smooth with no evidence of settlement, potholes, mush spots, or ruts.	Twice per year
	Vegetation in road right-of-way	Weeds growing in the road surface that are more than 6" tall and less than 6" apart within a 400 sq. ft. area.	Road surface free of weeds taller than 2".	Twice per year

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Shoulders & ditches	Erosion damage	Erosion within 1 ft. of the roadway more than 8" wide and 6" deep.	Shoulder free of erosion and matching the surrounding road.	Twice per year

F. BIOFILTRATION SWALES

General	Trash & debris	See that trash & debris is removed in order to keep biofilters attractive in appearance and to prevent loss of vegetation.	Trash & debris cleared from swale.	Inspect bio-filters periodically, especially after periods of heavy runoff. Remove sediments, fertilize, and reseed as necessary. Be careful to avoid introducing fertilizers to receiving waters or ground water.
	Unmowed grass	Groomed biofilters must be mowed regularly during the summer months to promote growth and pollutant uptake. Be sure not to cut below the design flow. Remove cuttings promptly, and dispose in a way so that no pollutants can enter receiving waters.	Grass is mowed thereby allowing it to function within its intended capacity as a pollutant remover.	Periodically
	Grass/vegetation growth	If the objective is prevention of nutrient transport, mow grasses or cut emergent wetland-type plants to a low height at the end of the growing season. For other pollution control objectives, let the plants stand at a height exceeding the design water depth by at least 2" at the end of the growing season. Vegetation should at no time exceed 8" in order to avoid plugging inlets.	Grasses and emergent wetland vegetation are maintained to allow them to function in their intended roles.	Periodically
		Clean curb cuts when soil and vegetation buildup interferes with flow introduction.	All vegetation is removed allowing water to flow through the swale unimpeded.	Periodically
	Sediment accumulation	Remove sediments during summer months when they build up to 3-4" at any spot, cover biofilter vegetation, or otherwise interfere with biofilter operation. Use of	All sediment is removed and swale is restored to its design depth.	Periodically

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		equipment like a Ditch Master is strongly recommended over a backhoe or dragline. If the equipment leaves bare spots, reseed immediately.		
	Roadside ditch cleaning	Base roadside ditch cleaning on an analysis of hydraulic necessity. Use a technique such as the Ditch Master to remove only the amount of sediment necessary to restore needed hydraulic capacity leaving vegetative plant parts in place to the maximum extent possible.	Sediment is removed from roadside ditch allowing it to convey its design hydraulic capacity.	Periodically

G. OIL/WATER SEPARATORS

Spill control o/w separators	Structure is not containing oil spills and is ejecting resident oil back into stormwater system.	After each spill event.	O/W separator is retaining small oil spills and is not ejecting oil into the stormwater system.	Quarterly and after each spill event.
API o/w separators	Structure is not separating oil and is ejecting resident oil back into stormwater system.	When oil accumulation exceeds 1/2" in the first chamber or any visible oil in the second or third chamber. When the sediment level reaches 6" it should be removed.	The structure is separating and retaining oil found in the stormwater system.	Quarterly and after each spill event.
Coalescing plate	Structure is	When oil accumulation exceeds 1/2" in the first chamber	The structure is separating and retaining oil found in	Quarterly and after each spill

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separators	not separating oil and is ejecting resident oil back into stormwater system.	or any visible oil in the second or third chamber. When the sediment level reaches 6" it should be removed.	the stormwater system.	event.

