

PATHWAY ANALYSIS - Parks Operations and Maintenance Conference Cal

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							Def./Quant.	Direct							Barriers
							Def./NonQ	Direct							Buffers
							Cond/Q.	Indirect							Contaminants
Cond/NQ	Indirect	Impervious Surfaces	Point=1	Once =1	Low=1										
0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
LI	DOC	Chapter Name	Sect #	Sect. Name	Description	Discussion/Justification	Filter	Impact	Pathway/Conveyance	+/-/0 (a)	Mag. (b)	Dur. (c)	Int. (d)	ST	Tot.
1	POMCall	General	NA	General	No formally documented plan defining policies or procedures for the application of pesticides or maintenance. The City has an adopted Integrated Vegetation and Pest Management Plan.	1 - The City has no formally adopted operations and maintenance plans. Ideally, these plans would specify mowing schedules, pesticide use, fertilizer use, and other maintenance and operational procedures to minimize the negative consequences of these activities. In the absence of these procedures, City employees use their best judgment. Documented policies and procedures might help reduce fertilizer and pesticide use and thus reduce contaminants. (a) - Negative: Plans and procedures might reduce impacts of operations and maintenance on water quality and stream habitat. (b) - Reach: The policy applies to park lands. (c) - Chronic: If established, policies and procedures would persist until amended. (d) - Low: The policy alone is a weak tool to achieve results.	D/N	Indirect	Contaminants	NEG	2	3	1	6	6
2	POMCall	Stormwater	NA	Stormwater	Parks do not have stormwater collection systems. Some parks do have internal drains, though some are out-dated. Some parks are connected to the sewer system and thus the CSO line; others are not. Some parks have surface drains, although they are not adequately designed.	1 - Parks are not hooked up to the City's stormwater treatment system. Provided on site treatment is adequate; no impact to water quality or habitat is anticipated. (a) - Neutral: No impact is anticipated. (b) - Reach: The condition applies to all parks. (c) - Chronic: The condition is expected to persist. (d) - NA	D/Q	Indirect	Impervious Surfaces	NTRL	0	0	0	0	0
3	POMCall	Equipment Wash	NA	Equipment Wash	Equipment wash down is performed where equipment is stored. Grease cutters and nonpetroleum-based products are used. Washing occurs in Avery Park only.	1 - Equipment wash-down areas can be a source of contaminants. Soaps, polishes, waxes, and grease removers contain chemicals that may be harmful to water quality and may impact stream habitat. (a) - Negative: Washdown areas are a source of chemical contaminants. (b) - Reach: The condition applies to all parks. (c) - Chronic: The condition will persist until operations change. (d) - Low: Wash-down areas are not a large source of contaminants.	D/Q	Indirect	Contaminants	NEG	2	3	1	6	6
4	POMCall	Pesticide Use	NA	Herbicide Use	The City has a small program that uses backpack sprayers primarily. Roundup and Surflan are used periodically on developed landscape areas or on invasive plants, such as blackberries, along stream corridors. Application techniques and practices vary by site.	1 - Herbicides contain chemicals that may harm water quality and impact stream habitat. (a) - Negative: Herbicides are a source of chemical contaminants. (b) - Reach: The condition applies to all parks. (c) - Chronic: The condition will persist until operations change. (d) - Low: Herbicides are not used extensively and application techniques are adapted to site conditions. Therefore, impacts are expected to be low.	D/Q	Indirect	Contaminants	NEG	2	3	1	6	6

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5	POMCall	Nutrient Management	NA	Nutrient Management	Fertilizers are applied primarily to playing fields. Some high-use turf areas have subsurface drainage.	1 - Fertilizers applied to playing fields can be transported by stormwater runoff into surface waters. Runoff containing high levels of nutrients that contaminate surface waters cause algae blooms and deplete dissolved oxygen in stream waters. The problem is compounded by subsurface drainage that reduces stormwater infiltration. (a) - Negative: Fertilizers and nutrients harm water quality and impact stream habitat (b) - Reach: The condition applies to all parks (c) - Chronic: The condition will persist until operations change (d) - Medium: Most nutrients are water soluble and are easily transported into surface waters. Fertilizers are routinely applied in excess.	D/Q	Indirect	Contaminants	NEG	3	3	2	8	8
6	POMCall	Ornamental Pond	NA	Ornamental Pond	A pond is connected to Squaw Creek. "Aquashade" is a product that is added on a seasonal basis to pond waters to block light. The pond contains koi and ducks. "Organica" is a product that is added to keep the water clear.	1 - Products applied to ornamental ponds contain chemicals that may be harmful to water quality and stream habitat. Animal waste from ducks contributes excessive nutrients to pond water. Pond water then contaminates Squaw Creek. Waters containing high levels of nutrients cause algae blooms and deplete dissolved oxygen in stream waters. (a) - Negative: Chemicals and nutrients harm water quality and impact stream habitat. (b) - Point: The condition applies to a single park pond. (c) - Chronic: The condition will persist until operations change. (d) - Medium: The pond is tied to Squaw Creek.	D/Q	Direct	Contaminants	NEG	1	3	2	6	6
7	POMCall	St Mary's Boardwalk	NA	St. Mary's Boardwalk	The boardwalk over the St. Mary's River and riparian areas is constructed of treated wood.	1 - Treated wood may contain copper and arsenic that may wash or be leached into stream waters. High levels of these elements would be harmful to water quality and stream habitat. (a) - Negative: Chemicals may harm water quality and impact stream habitat. (b) - Point: The condition applies to a single boardwalk. (c) - Chronic: The condition will persist until operations change. (d) - Medium: The structure is in the river.	D/Q	Direct	Contaminants	NEG	1	3	1	5	5
8	POMCall	Mowing and Pruning	NA	Mowing and Pruning	Some woody debris is chipped and left in chip piles.	1 - Woody debris and chipped wood would not impact water quality or habitat. (a) - Neutral: No impact to water quality and stream habitat is expected. (b) - Reach: The condition applies to all City park operations. (c) - Chronic: The condition will persist until operations change. (d) - NA	D/N	Indirect	Contaminants	NTRL	2	3	1	6	6

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9	POMCall	Mowing and Pruning	NA	Mowing and Pruning	Rough mowing is done on a monthly schedule (6 months) for about 100 acres. Mowing height is about 6 to 8 inches. Fire safety issues mandate mowing.	1 - Mowing turf areas or fields increases stormwater runoff by reducing vegetation absorption and decreasing the friction coefficient of surface flows. Long grasses and woody vegetation help slow surface flow and reduce erosion caused by storm events. Erosion and sedimentation can harm stream habitat. Surface runoff from unshaded turf and field areas also may increase stream water temperatures. (a) - Negative: Mowing increases runoff, contributing to erosion and sedimentation. (b) - Reach: The condition applies to all City park operations. (c) - Chronic: The condition will persist until operations change. (d) - Low: Impacts from mowing are slight.	D/N	Indirect	Impervious Surfaces	NEG	2	3	1	6	6
10	POMCall	Mowing and Pruning	NA	Mowing and Pruning	Recreational fields are mowed on a weekly basis (6 months) for a total of about 80 acres. Mowing height is about 2 1/2 inches.	1 - Mowing turf areas or fields increases stormwater runoff by reducing vegetation absorption and decreasing the friction coefficient of surface flows. Long grasses and woody vegetation help slow surface flow and reduce erosion caused by storm events. Erosion and sedimentation can harm stream habitat. Surface runoff from unshaded turf and field areas may also increase stream water temperatures. (a) - Negative: Mowing increases runoff, contributing to erosion and sedimentation. (b) - Reach: The condition applies to all City park operations. (c) - Chronic: The condition will persist until operations change. (d) - Medium: Compacted playing fields are effectively impervious.	D/N	Indirect	Impervious Surfaces	NEG	2	3	1	6	6
11	POMCall	Prescribed Burns	NA	Prescribed Burns	Burns are performed at a TNC restoration site at Bald Hill.	1 - Prescribed burns increase stormwater runoff by reducing vegetation absorption and decreasing the friction coefficient of surface flows. Erosion and sedimentation can harm stream habitat. Surface runoff from unshaded burned areas also may increase stream water temperatures. (a) - Negative: Burning increases runoff, contributing to erosion and sedimentation. (b) - Point: Such burns are specific land management techniques. (c) - Episodic: Prescribed burns are infrequent practices. (e) - Low: Extent of the impact depends upon the size of the burn and its proximity to surface waters.	D/N	Indirect	Contaminants	NEG	1	2	1	4	4