Stormwater Management Principles by Watershed
Burlington Stormwater Program

	Stormwater Management Principle		
Watershed Where Park is Located	*Runoff Reduction*	*Water Quality Treatment*	*Water Quantity Management*
Combined Sewer	✓	*	✓
Winooski River	✓	✓	**
Direct to Lake Champlain	✓	✓	**
Stormwater Impaired Watersheds (Englesby, Centennial and Potash)	✓	✓	✓

* In order to protect downstream collection systems (pipes) and reduce operating costs at the Wastewater Treatment Plants, projects in the combined sewer should still minimize the discharge of sediment and grit through best management practices such as proper siting of gravel parking lots, deep sump catch basins, regular inspections for erosion and mechanical sweeping for debris.

**Water Quantity Management may be required in the Winooski and Lake Champlain Watersheds if the stormwater must first pass through City infrastructure (if there are capacity restrictions) or discharges to an outfall in poor condition.

Runoff Reduction: This stormwater management principle address both water quality and water quantity concerns and is important to all watersheds. It starts with minimizing impervious surface. From there, the goal is to minimize directly connected impervious surface (i.e. a parking lot which drains directly to a storm drain vs. a parking lot or path that runs off to surrouding vegetated areas). Other options include any installation of green infrastructure which enhances evapotranpiration (planting of trees which have canopies that cover impervious surface or installation of rain gardens) or infiltration (soaking of water into the ground via pervious pavers/pavements, rain gardens or subsurface infiltration). In more innovative settings, runoff reduction can involve capture and re-use of stormwater to flush toilets, wash vehicles or for irrigation purposes.

Water Quality Treatment: Water quality treatment focuses on removing any pollutants (sediment, nutrients like phosphorus, oils/grease, heavy metals) from stormwater runoff before it is discharged to the collection system or surface waters. If runoff reduction measures can't be used, other water quality practices can be employed to remove pollutants via filtration or adsorption. These measures include rain gardens, bioretention, dry swales and pervious pavement systems. In a purely water quality treatment scenario (vs. runoff reduction) these systems would have an underdrain and act more like a filter vs. the infiltrating systems in runoff reduction measures. Additional techniques can include flat bottomed grass swales or filtering runoff through a vegetated buffer, and more structural treatments such as subsurface sand filters, swirl separators and subsurface filtration systems. There are also best management practices/good housekeeping measures related to water quality such as properly siting gravel parking areas/walkways which can generate more fines/sediment than paved areas and ensuring that park visitors pick up dog waste.

Water Quantity Management: If opportunities for runoff reduction have been exhausted, there are other methods for reducing the impact of stormwater runoff flow to our systems. This is typically achieved through some sort of storage and slow release of stormwater. This can be achieved via subsurface storage (in a tank, or in the pore spaces of pervious pavement systems and rain gardens/bioretention) or surface (ponded) storage where outflow during a storm event is restricted by employing a small outlet. Typically the target for water quantity management is focused on making improvements during the 1 year, 24 hour storm (2.1") and below, and ensuring that flow rates do not increase for the 10 year storm.