



Oak Park Conservancy District Stormwater Best Management Practices (BMPs) Sediment Management Practices (SMPs)		SMP-14
Activity: Temporary Outlet Protection		
PLANNING CONSIDERATIONS: Design Life: 1 yr Acreage Needed: Minimal Estimated Unit Cost: Avg: \$100 Range: \$50-\$150 Monthly Maintenance: 60% of Installation		
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	Target Pollutants	
	Significant ♦ Partial ♦ Low or Unknown ◇	
Sediment ♦ Heavy Metals ◇ Nutrients ◇ Oxygen Demanding Substances ◇ Toxic Materials ◇ Oil & Grease ◇ Bacteria & Viruses ◇ Floatable Materials ◇ Construction Waste ◇		
Description	<p>This protection outlet is constructed of rock, grouted rip-rap or concrete rubble. This prevents scour of the soil due to high pipe flow velocities. The dissipation of flow energy to produce non-erosive velocities is also a function of this BMP.</p>	
Suitable Applications	<ul style="list-style-type: none"> ➤ Areas where culverts, conduits or channels are sufficient to erode the immediate downstream reach. ➤ Outlets of pipes, drains, culverts, conduits, channels, locations at the bottom of mild to steep slopes, outlets of which carry continuous flows of water, short intense flows of water, lined conveyances discharge to unlined conveyance ➤ Sediment trap is recommended if runoff is sediment laden ➤ Do not use grouted rip-rap during freezing, will cause grout to break 	

Activity: Temporary Outlet Protection**Installation Procedures**

- Should be designed and sized by a licensed professional engineer as a part of the culvert, conduit or channel design.
- Apply a rip-rap apron for temporary use during construction
- Apron should consist of a zero grade, alignment with receiving stream, avoid damaging the underlain filter fabric. Keep apron straight throughout the length of the stream curving in the upper section of the harpoon if curve is needed. Bank reinforcement should be downstream to account for the curved apron

Maintenance

- Grouted or wire-tied rock rip-rap minimizes maintenance requirements
- Inspect weekly and before and after rainfall events
- Inspect apron for displacement and/or damage to the underlying fabric, scour beneath the rip-rap and around outlet.
- Remove devices as soon as work is completed to the construction site

Inspection Checklist

- Rock washed out by large storms is replaced.
- Sediment captured by the rock outlet protection may be difficult to remove without removing the rock.
- Grouted rip-rap may break up in areas of freeze and thaw.
- Grouted rip-rap may break up from hydrostatic pressure without adequate drainage.