

Construction Site Stormwater Best Management Practices

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Presentation Overview

- **Best Management Practices (BMPs)**
 - Uses/Purposes/Considerations
 - Flow interception/redirection
 - Pollution prevention
 - Erosion prevention and sediment management
 - Active treatment
 - Role of the Municipal Inspector with BMPs
 - Update to the Hierarchy of BMPs
 - Six categories of BMPs

Best Management Practices

- **Prevent pollutants from leaving the site**

- **Sediment**
- Concrete washout
- Paint
- Oil and grease
- Litter
- Waste
- Construction materials

- **By preventing**

- Contact with stormwater runoff
- Mobilization of pollutants
- Illicit discharge



Source: Michigan DEQ

Best Management Practices: Role of the Inspector

- **Inspectors don't select BMPs for private developers to use – they determine compliance**
- **Ask questions**
- **Know appropriate use**
- **Recognize proper installation**
- **Observe if maintenance is needed**
- **Note if additional controls are needed**

Best Management Practices

- **Typical order of six BMP categories:**
 - Erosion Control
 - Sediment Control
 - Good Site Management
 - Non-Stormwater Management
 - Run-on and Run-off Control
 - Active Treatment Systems (ATS)

Best Management Practices

Overall goal: reduce pollutants and control run-off

1. Control run-on from other sites
2. Reduce sources of pollutants on-site
(Good Site Management and Non-Stormwater management)
3. Control erosion
4. Control sediment
5. Active Treatment Systems, if needed

Best Management Practices

- **Revised Order of Six BMP categories:**
 - Run-on and Run-off Control
 - Good Site Management
 - Non-Stormwater Management
 - Erosion Control
 - Sediment Control
 - Active Treatment Systems (ATS)

Run-on and Runoff BMPs

■ Run-on Controls

- Keep water from off-site, upstream property from flowing through construction site
 - May bring off-site pollutants
 - May increase stormwater runoff flows
 - causing erosion or
 - overwhelming BMPs

11. <u>Run-on and Runoff Control</u>		
<input type="checkbox"/> Earth Dikes / Drainage Swales		
<input type="checkbox"/> Sampling is conducted, if required		

Good Site Management

- **a.k.a. Good housekeeping**
- **Materials that have potential to be pollutants in stormwater**
 - Material storage/use
 - Waste storage
 - Stockpiles
 - Porta potties
 - Waste disposal



Good Site Management

13. Good Site Management

<input type="checkbox"/> Soil Stockpiles		
<input type="checkbox"/> Waste Systems Management		
<input type="checkbox"/> Construction Materials (wood, cement,...)		
<input type="checkbox"/> Hazardous Materials (paint, solvents)		
<input type="checkbox"/> Petroleum Products (oil, fuel)		
<input type="checkbox"/> Vehicle Servicing		

Good Site Management

Keep stormwater from coming into contact with materials that can mobilize

- Keep materials from being exposed
- Keep materials from leaking
- Keep potential discharges from leaving the site (e.g., placement)
- Safety and disposal issues



Good Site Management

Check for:

- Covered and contained stockpiles
- Covered and elevated material storage
- Placement of portable toilets and secondary containment



Good Site Management

Stockpiles

- Cover when not being used
- Protect all year long
- Placement (e.g., not in gutter)
- Berm around stockpile or upstream side



Non-Stormwater Management

- **Activities that have potential to discharge pollutants:**

- Potable water use
- Paving/grinding operations
- Vehicle/equipment use, cleaning, fueling and maintenance
- Concrete work
- Waste and recycling disposal



Non-Stormwater Management BMPs

14. Non-Stormwater Management

☐ Concrete/Stucco washout area

☐ Architectural copper rinsewater

☐ Other:

Non-Stormwater Management

■ Concrete Washout

- Large enough for volume expected
- Lined – prevent contact with or leaching into soils
- pH issue
- Dispose of hardened concrete







Non-Stormwater Management



- Place drip pans, tarp, or containers under leaky vehicles/ equipment
- Fix leaks promptly
- Fuel, repair and wash equipment/vehicles off site

Erosion & Sediment Control

- **Erosion control**

- First line of defense
- Prevent soil movement/suspension by wind or water

- **Sediment control**

- Second line of defense
- Capture soil before it leaves the site

- **Temporary or Permanent Controls**

- Remove temporary BMPs at completion

Erosion Control BMPs

9. <u>Erosion Control Measures:</u>		Inspection Finding (A / NM / P / NA)*	
<input type="checkbox"/> Jute Netting/Fiber Blankets			
<input type="checkbox"/> Mulch			
<input type="checkbox"/> Hydroseed/Soil binder/Compost blanket			
<input type="checkbox"/> Mark Areas to be Preserved			
<input type="checkbox"/> Tree Protection Fencing			
<input type="checkbox"/> Riparian Area Barrier			

Erosion Control BMPs

- **Most effective BMP - Vegetation**
 - Shields soil from impact of wind & water
 - Increases permeability/infiltration
 - Slows run-off to non-erosive velocities
 - Filters sediment out of run-off
- **Preserve existing vegetation**
- **Apply seed, compost & mulch as soon as possible (final cover)**

Erosion Control BMPs

■ Sites should consider

- Equipment needed
- Product flexibility (condition of slope)
- Used to establish vegetation
- Installation timing (e.g., sprays need time to dry before rain)
- Length of time
- Irrigation availability
- End use of site – for vegetation or building? Compost-based BMPs can be used to enhance soil

Erosion Control BMPs

- **Temporary protection of exposed soil**
 - Sprays – such as straw or bonded fiber matrix (BFM)
 - Mats – such as jute, coir or other fiber
 - Compost blankets

Sediment Control

- **Trap sediment before it leaves the site**
 - Intercept flow
 - Perimeter controls
 - site perimeter
 - storm drains
 - Filter sediment out of flow
 - Slow flow to allow sediment to settle out

Sediment Control BMPs

10. <u>Sediment Control Measures</u>		
<input type="checkbox"/> Stabilized construction entrance		
<input type="checkbox"/> Street Sweeping		
<input type="checkbox"/> Dust Control		
<input type="checkbox"/> Wattles / Fiber Rolls / Compost Socks		
<input type="checkbox"/> Silt Fences / Compost Berms		
<input type="checkbox"/> Sedimentation Basin		
<input type="checkbox"/> Check Dams		
<input type="checkbox"/> Inlet Filters (Gravel bags)		
<input type="checkbox"/> Earth Dikes / Drainage Swales		



Sediment Control BMPs

■ Silt Fence

- Perimeter control
- Sheet flow
- Not for concentrated flow
- Continuous contact with ground
- No daylight underneath – trenched in
- Ends overlap
- Remove accumulated sediment
- Stake positioned opposite of flow



Silt Fence

Correctly
installed, but
accumulated
sediment
should be
removed



Incorrectly
installed



Likely a
problem with
concentrated
flow



Sediment Control BMPs

- **Inlet protection should not:**
 - cause flooding (where does overflow go?)
 - cause sediment discharge (i.e., broken sand bags or gravel bags)
- **Inlet protection should be:**
 - maintained regularly
 - removed at end of job
- **Inlet protection may be off site**

Construction Site Entrance/Exit

- **Stabilized Construction Entrance/Exit - look for:**
 - Sediment in gravel/rumble plates or in wash racks basin
 - Signs of other exits or entrances
 - Track out in streets (combine with street sweeper BMP)
 - Minimum 50 ft. length x 30 ft. width. (Formerly - length = 12 x largest wheel diameter.) Best if long enough to accommodate the whole vehicle (with all the wheels) of the largest trucks servicing the site
 - See CASQA fact sheet TC-1 for more details on design







Rumble plates oriented incorrectly



MUD MATS
AGES 8' X 15'

SITE ACCESS / BRIDGE SOFT AREA
CONSTRUCTION ENTRANCES

RG# 659248



WHAT'S INSIDE?

LE : weed-free rice straw
 : weed seed free rice straw
XX : 2" minus compost
TER TUBES: excelsior & rock
ER BAGS : excelsior & rock
IBES : wood- and man-made fibers
AGS : ¾" rock
S : bio-matrix (peat moss)
ER: trifluralin





Construction Site Entrance

- **Additional BMPs may be needed**
 - Street sweeping
 - Wheel wash



Sediment Control

Active Treatment

- **Active Treatment Systems**
 - Adds chemicals for coagulation, flocculation and/or filtration
 - Not common - expensive
 - State General Permit requires
 - ATS Plan: O&M manual, monitoring, sampling, spill prevention plan,
 - Designated operator and training
 - Data recording system
 - Numeric effluent limits for discharge



12. ☐ Active Treatment System (if any)

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