

**The ABC's of BMP's**

**Aux Sable Watershed Plan**

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**Why are BMP's Important**

- Best Management Practices (BMPs) developed as a set of practices which help to achieve goals of the Clean Water Act and its amendments, NPDES Phase 1 and 2 General Permits, and Municipal Separate Storm Sewer Systems (MS4) program.

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**6 Major Categories**

- Categories based on required minimum control measures:
  1. Public Education
  2. Public Involvement
  3. Illicit Discharge
  4. Construction
  5. Post Construction
  6. Good House Keeping

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## Conservation Tillage

- Reduce tillage
  - Increases residue
  - Reduces erosion
  - Increases available moisture
  - Reduces compaction
  - Increases Organic Matter Content
  - Increases available spring moisture



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## Contour Farming

- Rows are parallel to slope
  - Reduces run-off velocity
  - Reduces erosion of top soil
  - Increases amount of water infiltration
  - Can include grasses rows



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## Heavy Use Area Protection

- Provide stone protection over heavy traffic areas
  - Reduce sediment tracked by vehicles
  - Reduce sediment load in storm sewers and road-side ditches



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## Stream Bank Fencing

- Fencing along stream bank or buffer
  - Eliminates livestock traffic through stream
  - Reduces amount of fecal matter reaching water
  - Protects banks from compaction and destruction from over grazing



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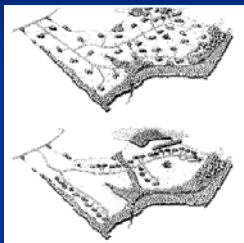
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## Open Space Development Planning

- Protect Natural Resources while meeting economic goals
  - Smaller lots clustered together
  - Retain natural features and topography
  - Reduce necessary grading of site



A site developed using open space design principles (bottom) maintains more undeveloped common space than the conventional development plan (top) (Source: Arendt, 1996)

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## Protection of Natural Features

- Incorporating existing features into development
  - Create buffers along streams and wetlands
  - Reduce tree clearing for manicured lawns



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## Eliminating Curbs and Gutters

- Design new subdivisions to use road side swales
  - More filtering of stormwater
  - More infiltration of stormwater run-off



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## Minimize Grading

- Plan developments to utilize natural topography without much grading
  - Reduces visual uniformity of subdivision
  - Reduces amount of “open” soil potential for erosion



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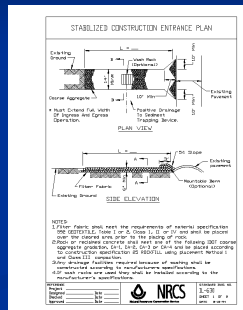
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## Construction Entrances

- Stone protection at site entrances
  - Reduce sediment tracked by vehicles
  - Reduce sediment load in storm sewers and road-side ditches



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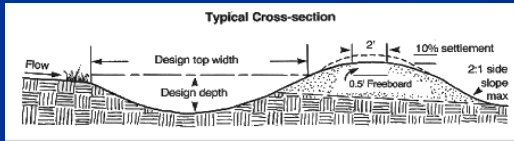
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## Permanent Diversions

- Graded channel to direct run-off
  - Carries run-off and sediment to areas where sediment can be filtered
  - Usually used during grading and removed before site is finished



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## Rock Check Dams

- Rock placed across channels to reduce water velocity
  - Allows sediment to settle before continuing down stream
  - Reduces down cutting and erosion



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## Erosion Control Blanket / Mulch

- Used to provide temporary or permanent cover after vegetation has been seeded
  - Protects seeds and soil from being washed away during precipitation events
  - Helps to maintain final grades before vegetation establishment



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## Permeable Pavers / Porous Cement

- Hard material with spaces for water to infiltrate into the ground
  - Reduces volume needed in basins
  - Allows filtering of water during infiltration
  - Reduces quantity of surface run-off in storm sewer and eventually streams




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## Conservation Easement

- Legal protection of land from development
  - Various types of protection allowed
  - Can protect streams, farmland, wetlands, etc.



■ Valley Conservation Council Executive Director John Eckman presents Ham Hill Farm owner Maurice Smith with the official sign announcing that the more than 900 acres of the 700-acre farm have been placed in a conservation easement. The easement preserves the farm in perpetuity from development and Smith urged other farmers to follow in his footsteps to preserve family farms in Virginia. (Photo by Patte Wood)

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## Dry Bottom Detention Basin

- Storm water basin with manicured turf grass
  - Bottom is not usually wet
  - Used in areas where basin can be used as open space for residents
  - Not favored by regulators




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## Wet Bottom Detention Basin

- Typical detention basin or pond
  - Usually has standing water
  - Can also be used for recreational purposes



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## Wetland Bottom Detention Basin

- Basin is designed to have enough water to support wetland vegetation without being dominated by open water
  - Favored by regulators
  - Provides potential habitat for many species
  - Increases water quality leaving basin



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## Level Spreader

- Device used to reduce water velocities at outlets
  - Spreads flow out over large distance
  - Prevents scour from high velocity or quantity events
  - Minimal visibility



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## Bioswales

- Swale planted with native vegetation to direct water
  - Filters contaminants out of stormwater run-off
  - Aesthetically pleasing
  - Promotes infiltration

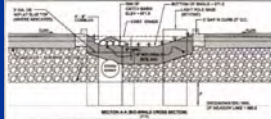


Figure 2. Bioswale Cross Section

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## Rain Gardens

- Similar to Bioswale, but does not transport water
  - Collects run-off to filter, infiltrate, and evaporate
  - Water is not transported away from BMP by storm sewer
  - Specific vegetation chosen
  - Aesthetically pleasing




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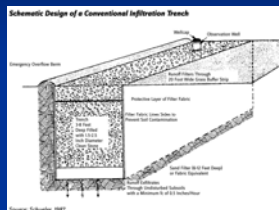
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## Infiltration Gallery

- A trench filled with specific material to catch run-off and transport it to a larger chamber
  - Chamber can retain storm water in place of pond, underground
  - Sediment can settle before water is discharged




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**Further Reference**

- US EPA BMP Menu
  - <http://cfpub.epa.gov/npdes/stormwater/menuofbmps/index.cfm>
- USDA – NRCS
  - <http://www.nrcs.usda.gov/technical/water.html>
- DuPage County List of MS4 Resources
  - [http://www.dupageco.org/dec/generic.cfm?doc\\_id=3415](http://www.dupageco.org/dec/generic.cfm?doc_id=3415)
- Illinois Urban Manual
  - <http://www.il.nrcs.usda.gov/technical/engineer/urban/contents.html>

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