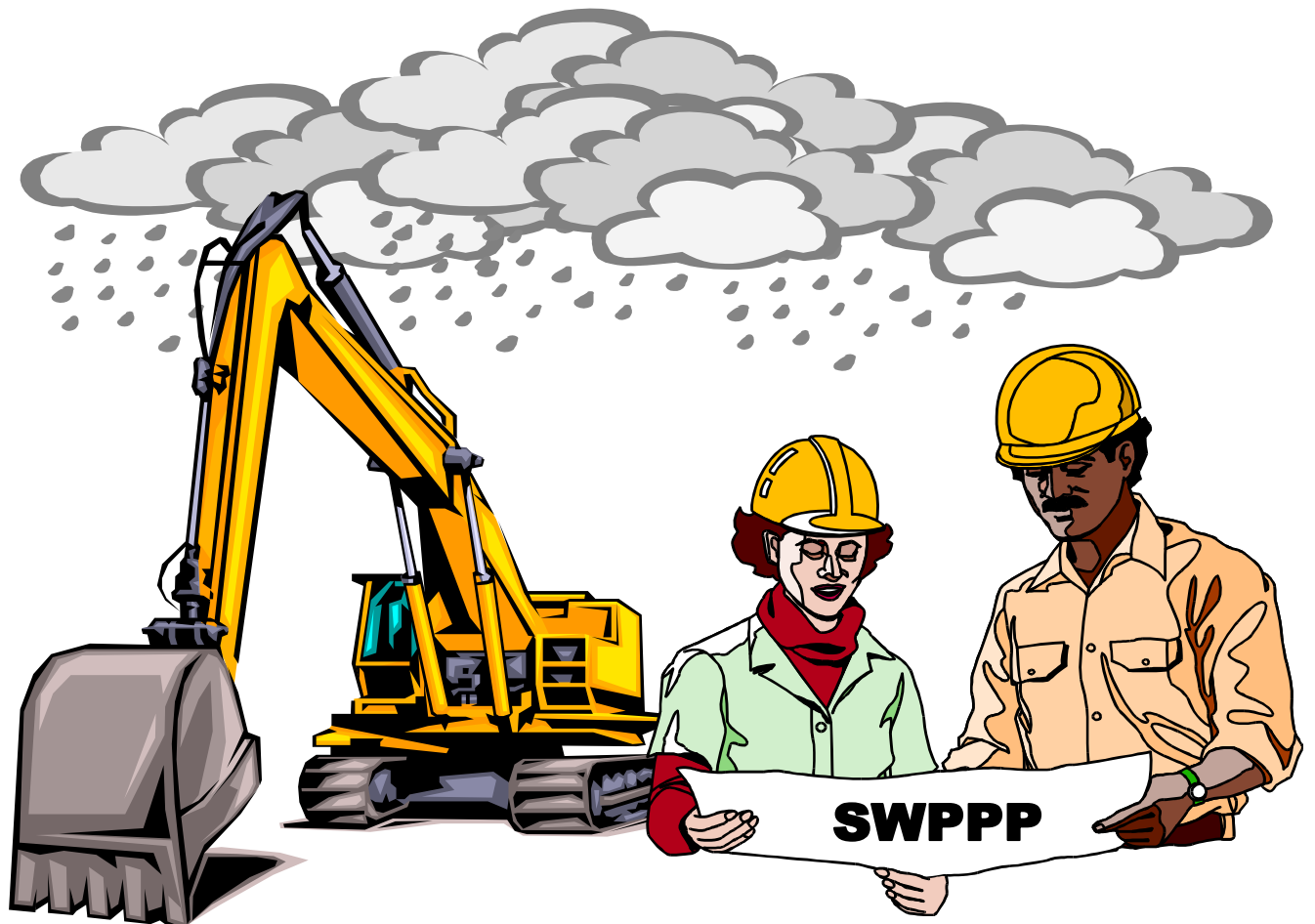


# MISSISSIPPI STORM WATER POLLUTION PREVENTION PLAN (SWPPP) GUIDANCE MANUAL FOR CONSTRUCTION ACTIVITIES



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*This manual is primarily derived from Chapters 2, 3 and 4 of EPA's AStorm Water Management for Construction Activities, Developing Pollution Prevention Plans and Best Management Practices, © September 1992, and Chapters 3, 4 and 5 of The Mississippi Department of Environmental Quality, Mississippi Soil & Water Conservation Commission and USDA Soil Conservation Service's APlanning & Design Manual for the Control of Erosion, Sediment & Stormwater, © April 1994. It was originally edited by Mississippi Office of Pollution Control staff Kenneth LaFleur and Louis Lavallee, and most recently by Jim Morris, Kenneth LaFleur, and Adam Smith, who thank those who reviewed and commented on the draft. See our web site for more StormWater information at [www.deq.state.ms.us](http://www.deq.state.ms.us).*

## INTRODUCTION

This booklet is a guide for developing a **Storm Water Pollution Prevention Plan (SWPPP)** for the Mississippi Department of Environmental Quality (MDEQ) as required in the State of Mississippi's Construction Storm Water General NPDES Permit. The permit should be consulted for complete requirements. For a more thorough description of erosion and sediment controls, see **Planning & Design Manual for the Control of Erosion, Sediment & Stormwater**,<sup>@</sup> MDEQ, MSSWCC, U. S. Dept. of Agriculture NRCS, Jackson, MS, 1994. This manual may be purchased from MDEQ by completing the form found on page 21. The manual is also available electronically at <http://abe.msstate.edu/csd/p-dm/>.

This guide is organized according to the six parts of SWPPP planning and implementation: **(PART I) collect site information, (PART II) choose controls, (PART III) draft SWPPP, (PART IV) apply for permit coverage, (PART V) implement controls, and (PART VI) stabilize site and terminate coverage.**

### Always consider the following items in developing a SWPPP:

- **Disturb** the smallest area possible. Also, when you disturb large areas that have high erosion potential, the cost of erosion and sediment controls greatly increase.
- **Preserve** existing vegetation where possible, especially trees.
- **Avoid** disturbing sensitive areas such as:
  - Steep and/or unstable slopes.
  - Land upslope of surface waters.
  - Areas with erodible soils.
  - Existing drainage channels.
- **Divert** upslope water around disturbed areas.
- **Limit** exposure of disturbed areas to the shortest time possible.
- **Re-vegetate** disturbed areas as soon as possible.
- **Slow rainfall runoff velocities** to prevent erosive flows.
- **Remove sediment from storm water before it leaves the site** by allowing runoff to pond in controlled areas to drop out sediment. Filter runoff by using natural vegetation, brush barriers, silt fences or hay bales.
- **Transport runoff** down steep slopes through lined channels or piping.
- **Minimize** the amount of cut and fill.

## PART I

### COLLECT SITE INFORMATION

- **Existing soils information** - Are the soils susceptible to erosion? For information see the Natural Resources Conservation Service (NRCS) soil surveys or call the District Conservationist through the State Office in Jackson at 601/965-5196 or 5205. The NRCS is the former Soil Conservation Service.
- **Receiving water(s)** - Identify the lake, stream, pond or wetland that will receive site runoff. If sensitive water bodies are downstream (for example: wild and scenic rivers, recreational streams, natural aquatic sites, private ponds and lakes or receiving streams listed on the 303(d) list) extra erosion controls may be needed. A discussion of the 303(d) list follows. For assistance, see the appropriate USGS Quad map(s), a photocopy of which must be submitted with the SWPPP. For USGS Quad maps contact the MS Office of Geology at 601/961-5523.

- **List of Impaired Water bodies (Pursuant to Section 303(d) of the Clean Water Act)** - Mississippi's waters are used for public water supply, shell fish harvesting, recreation, and fishing & aquatic life support. MDEQ assesses State waters every two years to determine if their uses are supported. A water body is said to be impaired when its use is partially or non-supportive. Construction sites, whose receiving streams are on the list of impaired waters because of siltation, suspended solids, sediment, turbidity or habitat alterations, require additional erosion and sediment controls. These additional controls are intended to ensure that sediment will not enter impaired waters. For more information concerning 303(d) listed streams, please contact the Water Quality Assessment Branch of the MDEQ at 601-961-5171.
- **U. S. Army Corps of Engineers** - If your project is rerouting, filling or crossing a water conveyance of any kind, you should contact the U. S. Army Corps of Engineers, Regulatory Branch in your area for possible permitting requirements. For information call the Vicksburg District at 601/631-5289 or 5290 or the Mobile District at 334/694-3776.
- **Calculating total acreage disturbed** - This includes the total area disturbed over the course of the project. For subdivisions include roads, utilities, drainage and home sites. A minimum of 10,000 ft<sup>2</sup> per home site or the entire lot, if smaller, shall be included. Acreage may be determined by dividing square footage by 43,560, as demonstrated in the following example:
 

Convert 54,450 ft<sup>2</sup> to acres *(square footage is obtained by multiplying the length of the disturbed area by the width of the disturbed area)*

  - Divide 54,450 ft<sup>2</sup> by 43,560 square feet per acre:
  - $54,450 \text{ ft}^2 \div 43,560 \text{ ft}^2/\text{acre} = 1.25 \text{ acres.}$
- **Determine drainage areas** for each point where concentrated flow will leave the site. Drainage areas are portions of the site where runoff will flow in one particular direction or to a particular discharge point. This will help you select and design the appropriate sediment control. The USGS Quad map(s) may be useful.

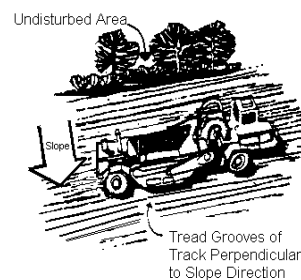
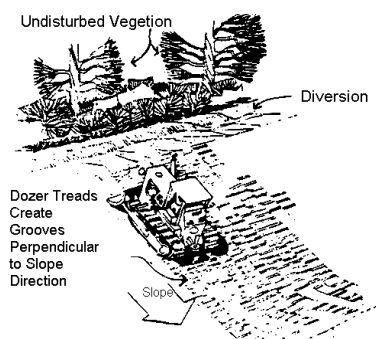
## PART II

### CHOOSE CONTROLS

**Select vegetative and structural controls; housekeeping practices; and post construction/storm water management measures & controls** to be used prior to, during and after land disturbing activities. Also, language in deeds, covenants, etc., that require sediment and erosion controls for individual lots in residential subdivisions is required. The SWPPP must include a description of the measures and controls that will be used throughout the construction project. Incorporate any municipal, county or other required controls into your SWPPP.

1. **Vegetative Controls** Vegetation is an inexpensive and effective way to protect soil from raindrop impact, a major erosion force. It also decreases erosion from flowing water by reducing its velocity. Roots hold soil and increase infiltration. **Topsoil should be added where existing soils are not suitable for adequate vegetative growth.** Amendments may include composted manures, sawdust or sludge. Check with the Mississippi Department of Environmental Quality, Solid Waste Branch, at 601-961-5171 before using sewage sludge.
  - **Vegetative buffer zones** are undisturbed or planted vegetated areas that surround a development, land disturbance activity or that border an intermittent stream or permanent water body. Buffer zones aid in sediment filtration and removal. Construction site runoff should be spread out over entire buffer zone length if possible. A minimum 15-foot wide buffer zone is recommended. A minimum 150-foot buffer zone is recommended adjacent to perennial streams and water bodies.

- **Sod stabilization**, the most effective vegetative practice available, involves establishing long-term stands of grass with sod on exposed surfaces. When installed and maintained properly, sodding can be more than 99 percent effective in reducing erosion.
- **Protection of trees** involves preserving and protecting selected trees that exist on the site prior to development. Mature trees provide extensive canopy and root systems that hold soil in place. Shade trees also keep soils from drying rapidly and becoming susceptible to erosion, as well as increasing property value.
- **Tillage, with lime and fertilizer**, may be important before seeding. The local county agent with the Cooperative Extension Service can analyze soil for lime and fertilizer needs.
- **Temporary seeding** is the planting of fast-growing annual grasses to hold the soil in areas that will not be disturbed again for 30 or more days. For long term protection (greater than one year), permanent seeding should be initiated. The following seeding chart lists annuals that may be used. Mulching helps insure seed growth and is essential when slopes are steep, weather is hot or dry and soil conditions are poor.
- **Permanent seeding** is the use of perennial grass (with trees & shrubs) to stabilize the soil. The seeding chart lists perennials that may be used. Vegetation is often not fully established until one year from planting. Inspect, repair and re-seed as needed, evaluating choice of seed and quantities of lime and fertilizer. Use temporary seeding if the time of year is not appropriate for permanent seeding. **Sodding may be needed in highly erodible areas.**
- **Mulching** is the placement of hay, grass, wood chips, straw, or synthetic material on the soil. Mulch holds moisture, dampens temperature extremes and retards erosion on steep slopes during seed establishment. Soils that cannot be seeded due to the season should be mulched to provide temporary protection.
- **Erosion & Sediment Control Blankets** are machine-produced mats of straw or other fibers held together with netting that provide temporary or permanent stabilization in critical areas, such as slopes or channels, so that vegetation may be established.
- **Surface roughening**, using heavy equipment, creates horizontal grooves across the slope which reduce runoff velocity/erosion and aid the growth of seed. Roughened slopes should be immediately seeded and mulched.



# SEEDING CHART FOR THE STATE OF MISSISSIPPI

SPECIES	SEEDING RATE/ACRE	PLANTING TIME	DESIRED pH RANGE	FERTILIZATION RATE/ACRE	METHOD OF ESTABLISHMENT	ZONE OF ADAPTABILITY <sup>1</sup>
<b>Common Bermuda</b>	15 lbs. alone 10 lbs. mixture	3/1 - 7/15 9/1 - 11/30	6.0 - 7.0	600 lbs. 13-13-13	seed or sod	All
<b>Bahia</b>	40 lbs. alone 30 lbs. mixture	3/1 - 7/15 9/1 - 11/30	6.0 - 7.0	600 lbs. 13-13-13	seed	Central South
<b>Fescue</b>	40 lbs. alone 30 lbs. mixture	9/1 - 11/30	6.0 - 7.0	600 lbs. 13-13-13	seed	North Central
<b>Saint Augustine</b>	--	3/1 - 7/15	6.0 - 7.0	600 lbs. 13-13-13	sod only	Central South
<b>Centipede</b>	4 lbs. alone 2.5 lbs. mix	3/1 - 7/15	6.0 - 7.0	600 lbs. 13-13-13	seed or sod	All
<b>Carpet Grass</b>	15 lbs. alone 10 lbs. mixture	3/1 - 7/15	6.0 - 7.0	600 lbs. 13-13-13	seed or sod	All
<b>Oysia Grass</b>	--	3/1 - 7/15	6.0 - 7.0	600 lbs. 13-13-13	sod only	All
<b>Creeping Red Fescue</b>	30 lbs. alone 22.5 lbs. mix	9/1 - 11/30	6.0 - 7.0	600 lbs. 13-13-13	seed	All
<b>Weeping Lovegrass</b>	10 lbs. alone 5 lbs. mix	3/1 - 7/15	6.0 - 7.0	600 lbs. 13-13-13	seed	All
<b>*Wheat</b>	90 lbs. alone	9/1 - 11/30	6.0 - 7.0	600 lbs. 13-13-13	seed	All
<b>*Ryegrass</b>	30 lbs.	9/1 - 11/30	6.0 - 7.0	600 lbs. 13-13-13	seed	All
<b>*White Clover</b>	5 lbs.	9/1 - 11/30	6.0 - 7.0	400 lbs. 6-24-24	seed	All
<b>*Crimson Clover</b>	25 lbs. alone 15 lbs. mix	9/1 - 11/30	6.0 - 7.0	400 lbs. 6-24-24	seed	All
<b>Sericea Lespedeza</b>	40 lbs.	3/1 - 7/15 9/1 - 11/30	6.0 - 7.0	400 lbs. 6-24-24	seed	All
<b>*Hairy Vetch</b>	30 lbs.	9/1 - 11/30	6.0 - 7.0	400 lbs. 6-24-24	seed	All
<b>*Browntop Millet</b>	40 lbs. alone 15 lbs. mix	4/1 - 8/30	6.0 - 7.0	600 lbs. 13-13-13	seed	All

\* Annuals. For permanent seeding, annuals can only be used in a mixture with perennials.

<sup>1</sup>**North-** north of Hwy. 82, **Central-** south of Hwy. 82 & north of Hwy. 84. **South-** South of Hwy. 84

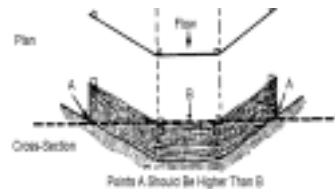
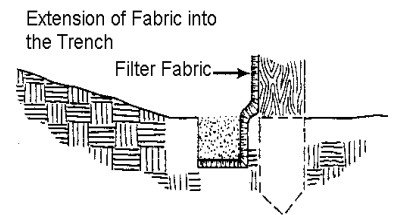
2. **Structural Controls** divert flows away from disturbed areas, reduce runoff velocities, filter out sediment and remove sediment by ponding.

**Temporary structures** are installed before and during construction. After removing temporary storm water controls the area should be vegetated. **Permanent structures** remain after construction.

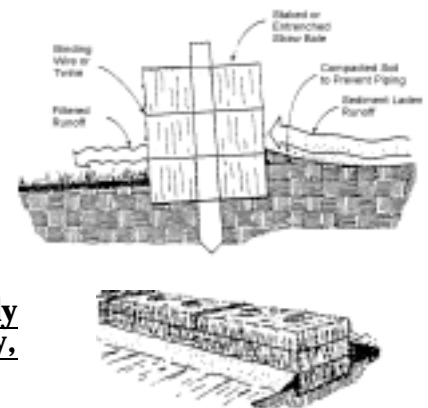
- **Diversion** ridges/channels of stabilized soil can divert off-site runoff from disturbed areas or sediment-laden runoff into sediment basins. If diversions will remain in place more than 30 days they should be covered with temporary or permanent vegetation. Diversions must have enough grade to assure drainage, but not enough to cause erosion within the channel. Allow sufficient room around diversions to permit machine regrading, if needed. The maximum allowable drainage area is five acres.



- **Silt fences** are used below small disturbed areas to capture sediment from sheet flow. Eight inches of fence should be buried in a trench about four inches deep and four inches wide. **Silt fences that are not buried are improperly installed, have no useful function, are a waste of money, and could result in substantial fines.** The maximum slope length behind a fence is 100 feet with maximum gradient two horizontal to one vertical. Under no circumstances should silt fences be installed across flowing streams. They may be placed in minor swales or ditch lines where the maximum contributing drainage area is no more than two acres. The fence must be maintained and sediment removed when deposits reach one-half the fence height. After the fence is no longer needed, the area should be graded, seeded and mulched.



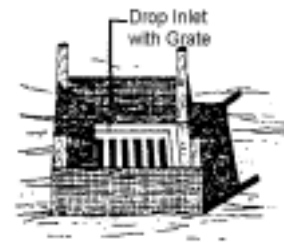
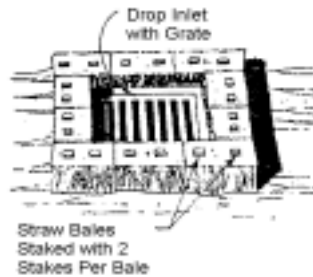
- **Straw bale barriers** are also used on small disturbed areas to capture sediment from sheet flow. The drainage area must be restricted to 1/8 acre per 100 feet of barrier. Maximum gradient behind the barrier is three horizontal to one vertical. The barrier must be located so that the water depth does not exceed one foot at any point. Straw bales, with bindings oriented around the sides, shall be entrenched a minimum of four inches and anchored with two stakes driven toward the previously laid bale. **Straw bales that are not buried are improperly installed, have no useful function, are a waste of money, and could result in substantial fines.**



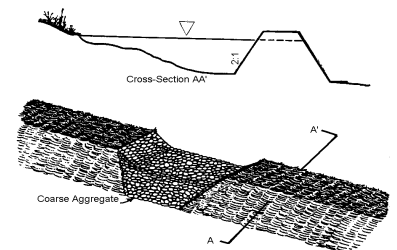
Gaps between bales shall be wedged with straw. Loose straw scattered immediately uphill increases barrier efficiency. Under no circumstances should straw bale barriers be constructed in live streams. For minor dry swales, the end bale bottoms shall be higher than the middle bale top to assure runoff will not flow around the barrier. Repair damaged bales, end runs and undercutting. Remove sediment when it reaches one-half barrier height. When upslope areas are stabilized, remove bales and grade, seed and mulch barrier line.



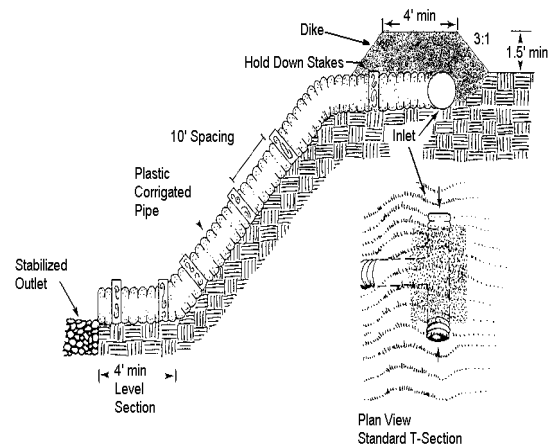
- **Storm Drain Inlet Protection** is a sediment filter (aggregate, silt fence, straw bales) or an excavated sediment trap around a storm drain inlet. Storm sewers installed before their drainage area is stabilized can convey large amounts of sediment to streams. Straw bale and silt fence inlet protection is for drainage areas of less than one acre and slopes no greater than 5 percent.



- **Sediment basins** allow sediment to settle out. Sediment basins are made by diking, excavating or a combination of the two. The Planning and Design manual recommends a basin capacity of **134 yd<sup>3</sup>** per acre drainage area. Because of typical basin shapes and embankment side slope requirements of 2:1 or flatter, the capacity of the basin may be estimated by using the trapezoidal rule approximation of 40% x height x surface area. Sediment should be removed when the volume has been reduced to 27yd<sup>3</sup> per acre drainage area. The length should be twice the width, with maximum surface area and outlet as far from the inlet as possible. If using a dike, it must be well compacted and vegetated, with an outlet pipe or coarse aggregate spillway. Install basins prior to construction but not in flowing streams. Use diversions to direct drainage to basins. Mississippi's Construction Storm Water General Permit requires that a sediment basin be installed in any drainage location where more than 10 acres in the upstream basin are disturbed at one time. See Planning and Design manual for design details.



- **Slope drains** are piping or lined channels carrying storm water downslope without erosion. Runoff is directed to the drain by earthen diversion with a minimum height of 18 inches. At the inlet, the diversion and inlet cover must be 6 inches higher than the top of the piping. The diversion and especially the inlet cover must be well compacted. Install



pipng hold-downs at 10-foot intervals and line the outlet area with riprap or other material to prevent scour and undermining. The maximum drainage area per drain should be five acres. Permanent slope drains would be subsurface or paved flumes.

### SIZE OF SLOPE DRAIN

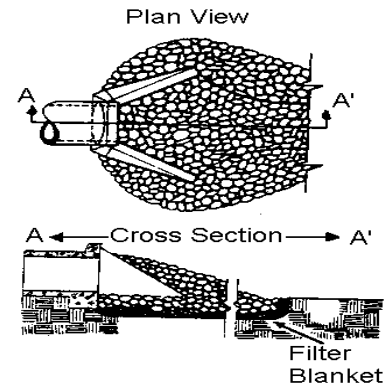
<u>Maximum Drainage Area (Acres)</u>	<u>Piping Diameter (Inches)</u>
0.5	12
0.75	15
1.5	18
2.5	21
3.5	24
5.0	30

- **Slope breaks**, diversions or benches, are used to reduce the slope length of a cut or fill to minimize rill erosion and prevent gullyng. Drainage area should be less than one acre.



	<u>Slopes</u>	<u>Slope Breaks</u>	<u>Spacing (ft)</u>
Steep Slopes	2:1		20
	3:1		35
	4:1		45
Gradual Slopes	15 - 25%		50
	10 - 15%		80
	6 - 10%		125
	3 - 6%		200
	< 3%		300

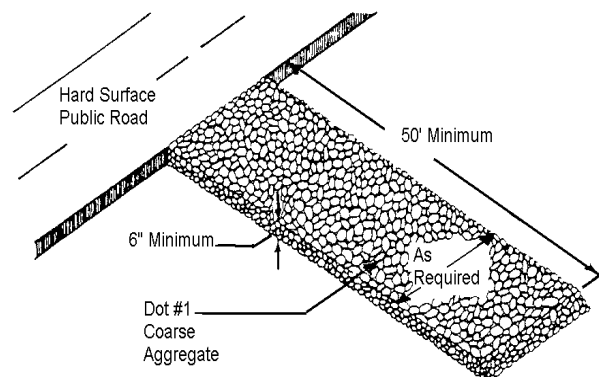
- **Riprap outlet protection** is placed at the outlet end of culverts or channels to reduce the depth, velocity and energy of water so that the flow will not erode the receiving downstream reach.



- **Check dams** are small dams constructed across swales or drainage ditches to reduce flow velocity and erosion. They are not used in streams. Check dams can be constructed of stone, straw bales, or logs, with a maximum height of two feet. **The check dam center must be at least 6 inches lower than the outer edges to prevent erosion around the edges.** The maximum spacing between dams should be such that the toe of the upstream dam is at the same elevation as the top of the downstream dam. Accumulated sediment should be removed from behind the check dams when it reaches one half the dam height. Erosion around dam edges should be corrected immediately, insuring that the dam center is six inches lower than the edges. In grass-lined ditches, grass must be established prior to dam removal. The dam site should be seeded and mulched or sodded, as needed. This practice is limited to small open channels that drain 10 acres or less.



- **Construction entrance/exits** are stone stabilized site entrances which reduce sediment tracked onto public roads. Aggregate should be at least six inches thick and 50 feet long. Tire washing may also be needed.



- **Level spreaders** are diversion outlets allowing the flow to disperse uniformly over surrounding vegetated areas. Spreaders should be constructed on undisturbed soil with downstream areas having established vegetation. Used to divert upslope waters around disturbed areas.



- 3. Controls for individual lots in subdivisions and commercial developments.** The Construction General Permit requires language that requires builders/lot owners to prevent or mitigate sediment from leaving their lot. The following is example SWPPP language that includes lot purchase contract language:

After the general contractor has completed the construction of the improvements necessary for a subdivision development on this property, the developer will be required to carry forward all erosion controls measures set forth in the plan to ensure builders and/or new owners within the proposed subdivision will take measures to prevent or mitigate sediment from leaving individual lots. The developer will be required to present to the new lot owner of builder in writing the parts of the SWPPP that will be appropriate for their lot. The developer will be required to set the following condition on the builder or new lot owner:

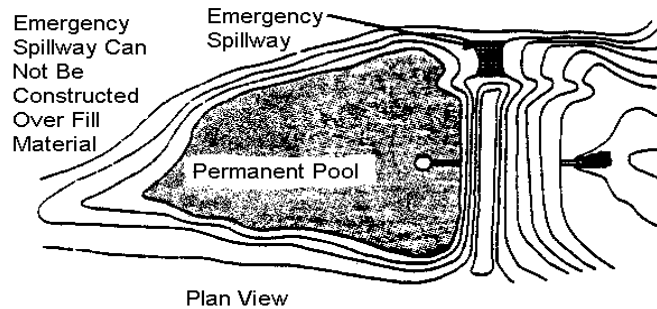
The Purchaser shall be required to maintain property in such a condition as to minimize off-site damage from erosion, sediment deposits and storm water. This requirement will be in effect from the beginning of site preparation and continued through the establishment of permanent vegetative cover. Purchaser acknowledges and agrees that Seller is not responsible for damages which may be suffered by Purchaser or other property owners or parties as a result of site preparation work carried out by Purchaser and his/her subcontractors and Purchaser agrees to hold Seller harmless from any such damages sustained in connection therewith.

- 4. Housekeeping Practices.** Pollutants that may enter storm water from construction sites because of poor housekeeping include oils, grease, paints, gasoline, solvents, litter, debris, and sanitary waste. The SWPPP should:

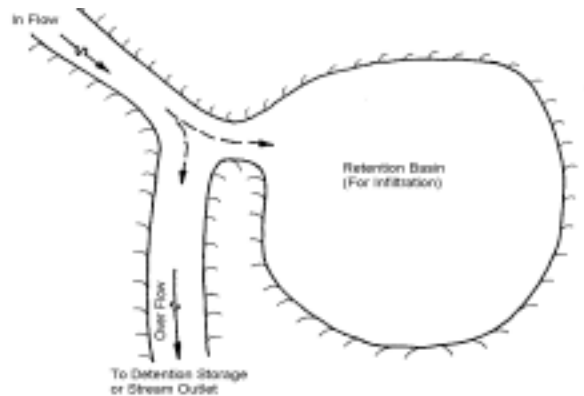
- designate areas for equipment maintenance and repair;
- provide waste receptacles at convenient locations and provide regular collection of waste;
- provide protected storage areas for chemicals, paints, solvents, fertilizers, and other potentially toxic materials; and
- provide adequately maintained sanitary facilities.

5. **Post Construction/Storm Water Management Measures.** The Construction General Permit requires the SWPPP to describe measures that will be installed to control pollutants in storm water after construction is complete. These controls include, but are not limited to, one or more of the following:

- **Detention ponds** detain runoff in a basin for a limited time releasing it slowly, allowing most of the sediment to drop out.



- **Retention Ponds** provides complete onsite storage and treatment of a specific volume of storm water runoff by using infiltration and evaporation. The specific volume is typically the first inch or half inch of storm water runoff containing the first flush of pollutants.



- **Constructed wetlands** are modified natural or constructed shallow basins for treatment of waters by wetland vegetation. Constructed wetlands are operated wet. They can achieve a high removal rate of sediments, BOD, organic nutrients and metals. They can also create wildlife habitat, recreation, and landscape amenities as well as corresponding higher property values.
- **Vegetated swales and natural depressions** are grass-lined, filtering sediments from the runoff and preventing erosion. Vegetated swales should have side slopes of 4:1 or flatter.

- **Velocity dissipation devices** prevent erosion from high runoff velocity, such as **riprap** placed at the discharge point.
- **Exfiltration trenches** are a feasible option where soils are permeable and the water table is well below the surface. Exfiltration trenches retain storm water for release into the soil. Storm water runoff is temporarily stored in perforated pipe or coarse aggregate and allowed to infiltrate the trench walls and, to some extent, trench bottoms. Trenches require regular maintenance to prevent clogs.

## **PART III**

### **PREPARE SWPPP**

- 1. Write a Description of Controls.** Once you have finished selecting the vegetative and structural controls, list each control you plan to use.
- 2. Prepare a scaled site map** showing original and proposed contour lines, drainage ways, north arrow, and all erosion & vegetative and structural sediment controls (see the attached sample SWPPP and site plan).
- 3. Implementation Sequence.** Indicate the order in which activities will take place. When work is discontinued for 30 days or more in a disturbed area or completed, appropriate vegetative and structural practices must be initiated within seven calendar days. Several general implementation principles are:
  - **install** downslope and perimeter controls before other site work. Build sediment basins before major site grading.
  - **divert** upslope water around area before major site grading.
  - **do not disturb** an area until it is necessary.
  - **time** construction activities to limit impact from seasonal weather.
  - **cover or stabilize** disturbed areas as soon as possible.
  - **do not remove** temporary controls until after site stabilization.
- 4. Inspection and Maintenance Schedules.** A description of an inspection and maintenance schedule for all disturbed areas, material storage areas, and erosion and sediment controls that were identified as part of the plan shall be included in the SWPPP. Non-functioning controls shall be repaired, replaced or supplemented with functional controls within 24 hours of discovery or as soon as field conditions allow. During permit coverage all erosion controls must be inspected at least once per week and after heavy rain. Controls must be in good operating condition until the area they protect has been completely stabilized and the construction activity is complete.

## **PART IV**

### **APPLY FOR PERMIT COVERAGE**

Submit a Construction Notice of Intent (**CNOI**) to the Office of Pollution Control (OPC) along with the **SWPPP** and the **USGS Quad Map** (or copy). The CNOI summarizes information about you, your site, the prime contractor, and receiving water(s). The CNOI is due at least 30 days prior to the commencement of construction or 15 days if an approved applicable SWPPP is already on file with OPC. An **authorized representative**, as described in the general permit, must sign the CNOI. If the owner signs the CNOI and will not serve as the prime contractor, the prime contractor should sign and submit the Prime Contractors Certification form provided in the CNOI prior to actual construction.

The plan must be in compliance with applicable local storm water management, erosion and sediment control requirements.

## **PART V**

### **IMPLEMENT CONTROLS**

Erosion and sediment controls shall be constructed and the stabilization measures shall be applied in the order that was indicated in the implementation sequence. It is important that appropriate construction workers are aware of the SWPPP and have ready access to it. The owner or prime contractor must **inspect and maintain** controls, recording damages or deficiencies and corrective measures, and **complete monthly inspection reports** using the form provided in Part VII of the permit. Problems should be corrected within 24 hours or as soon as practicable after an inspection. Changes to correct deficiencies in the SWPPP should also be made as soon as practicable after the inspection. The SWPPP must accurately reflect the site and construction and be corrected if it does not. The Storm Water Construction General Permit requires the coverage recipient to display proof of coverage. This requires displaying the permit coverage number, project contact name, project contact phone number, project description, SWPPP location (only necessary if the site is inactive or does not have an on-site location to store the plan) and MDEQ-s phone number (601/961-5171) at a conspicuous place accessible by the public on or at the edge of the construction site. The Construction General Storm Water Permit provides a form for this purpose. The form which provides this information must be laminated.

## **PART VI**

### **STABILIZE SITE & TERMINATE COVERAGE**

Upon successful completion of all permanent erosion and sediment controls, the Office of Pollution Control must be notified by submission of a Notice of Termination (NOT) form. The NOT form must be fully completed by both the owner and operator and include original signatures by both parties. The NOT form is provided in Part VII of the Storm Water Construction General Permit. Monthly inspection forms must be attached to the NOT form or permit coverage cannot be terminated. If the entire NOT form is fully completed and all inspection forms are attached, a letter will be sent to both owner and operator stating the permit has been terminated. At this point, the permittees are relieved of their responsibility.

# SAMPLE STORM WATER POLLUTION PREVENTION PLAN (SWPPP)

## Site Information

The construction of two commercial buildings and associated pavements will disturb 7.2 acres. Three-fourths of this site has a medium erosion hazard. The remainder of the site has 10 to 20 percent slopes that are highly erodible. An intermittent drain on the north end of the property drains the site to AAny-Name@ Creek. AAny-Name@ Creek stream is not on the 303(d) list for siltation, turbidity or habitat alterations, therefore additional controls that are warranted for a site discharging to listed receiving streams are not required.

## Controls

**Vegetative Controls:** A 15-foot undisturbed vegetative buffer zone will be maintained around the perimeter of the site. Existing trees will be preserved where possible. All diversions will be seeded (permanent seeding) within seven calendar days of construction. Topsoil will be stockpiled for use in landscaping. Grass-lined waterways will be constructed and lined with temporary straw-net liners and will be constructed around both buildings. All 3:1 cut slopes will be roughened by disking prior to seeding. The slope on the south side of the intermittent stream will be sodded with Bermuda grass. Any disturbed areas that will be left undisturbed for thirty or more days will be seeded (temporary seeding) within seven calendar days. After final grading, all disturbed areas will be seeded (permanent seeding) within seven calendar days.

**Structural Controls:** A sediment basin will be constructed at the end of the existing intermittent drainage to the north (drainage area: 4.8 acres). A sediment basin will be constructed at the southwest corner of the property where runoff leaves the property. Storm water will be directed to these basins with the assistance of diversions and grassed waterways. Upslope waters will be diverted around disturbed areas. A level spreader will serve as the outlet for the diversion southeast of the buildings. All cut slopes will be at or below a 3:1 grade. A construction entrance will be built and any accumulation of mud on vehicle tires will be washed, if needed, during muddy conditions. Inlet protection (silt fences) will be installed at all storm drain inlets. A silt fence will be constructed around the stockpile. The eroding natural drainage way on the north end of the site will be lined with rip rap (which is covered by a Nationwide Permit # 13 - *an individual 404 Permit is not required because the activity is less than 500 linear feet and has less than 1 cubic yard of rip rap per linear foot - no notification of Corps required.*). Riprap will be placed at all culvert outlet aprons. A sediment pond will be excavated for concrete trucks to wash the mixer chutes and a memo will be sent to the concrete supplier to use a minimum amount of water. Drivers will be instructed to return any materials to the concrete batch plant and complete final washing procedures at that location.

**Housekeeping Practices.** All equipment maintenance and repair will be done offsite. Trash cans will be placed at convenient locations throughout the site. The main trash collection bin will be located on the northeast corner of the site and will be picked up weekly by the city. Paints, solvents, fertilizers, or any other potentially toxic materials will not be stored onsite. Portable sanitary facilities will be provided for construction workers.

**Post Construction/Storm Water Management Measures:** The temporary sediment basin will be converted to a detention basin after construction. Riprap will be placed at concentrated storm water discharge points to prevent erosion from high runoff velocities.

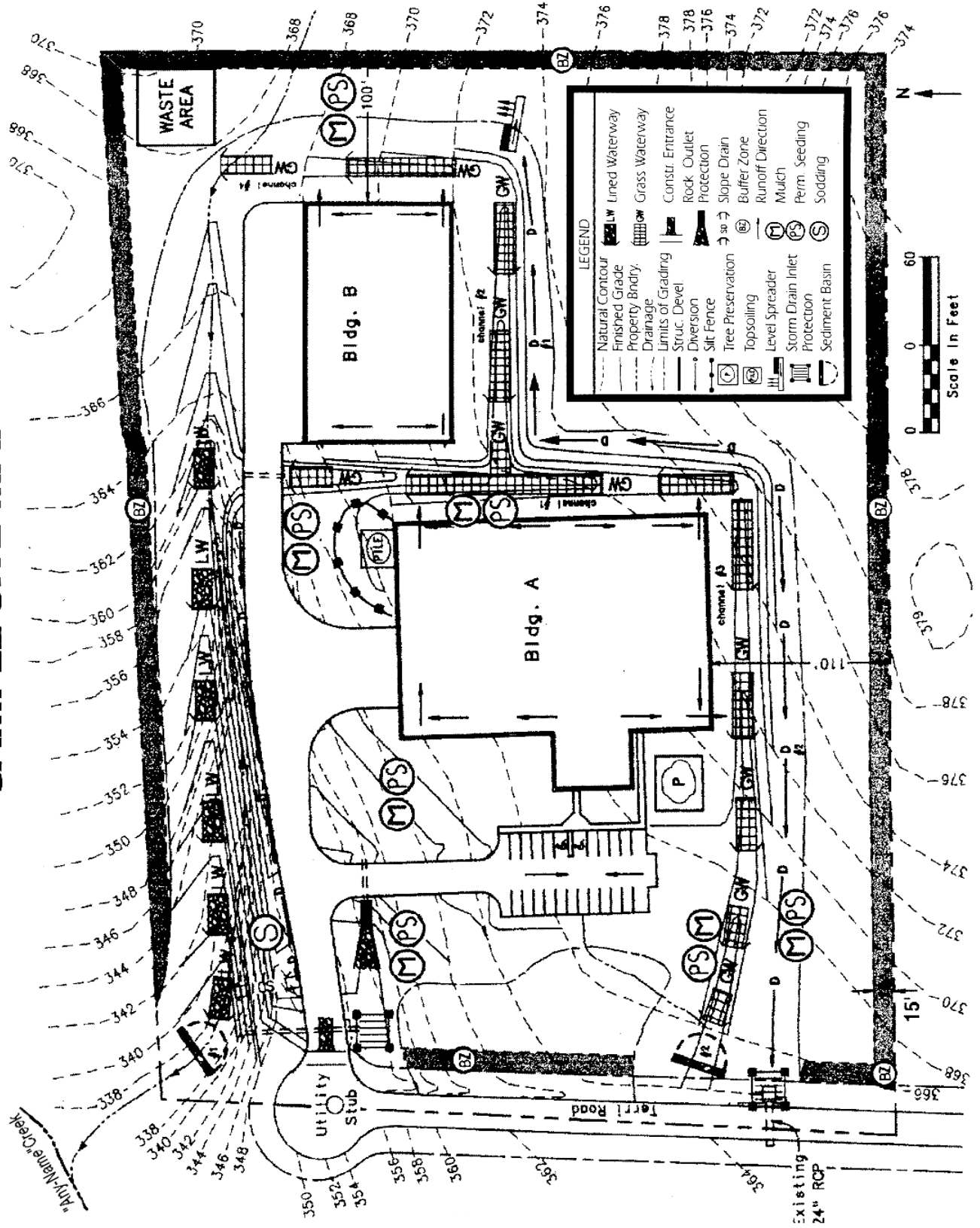
## Implementation Sequence

1/ build construction entrance/exit. 2/ install sediment basin with needed riprap. 3/ contour and riprap intermittent drainage way to the north. 4/ rough grade site, construct diversions and drainage ways, stockpile topsoil and install silt fence around stockpile, install culverts with inlet/outlet protection (silt fence), level spreader and riprap. 5/ plant needed temporary vegetation on disturbed areas. 6/ construct buildings and parking lots. 7/ finish slopes around buildings, roughen slopes and vegetate. 8/ after site is stabilized, remove all temporary measures, vegetating these areas, and convert sediment basin to a detention basin.

## Maintenance Plan

Check all disturbed areas, erosion and sediment controls after each significant rainfall but not less than once per week. Make needed repairs within 24 hours. Remove sediment from the basin, inlet protection devices and silt fences when accumulated sediment has reached 50 percent capacity. Replace non-functional silt fence. Maintain all vegetated areas to provide proper ground cover - reseed, fertilize, and mulch as needed.

# SAMPLE SITE MAP



# **Worksheet 1 - Checklist Sheet for Erosion and Sediment Controls**

*To aid in choosing all needed controls, check off practices to be used. Describe in SWPPP and show locations on site map.*

## **STRUCTURAL PRACTICES**

- |   |   |
|---|---|
| <input type="checkbox"/> Check Dam            | <input type="checkbox"/> Construction Entrance/Exit   |
| <input type="checkbox"/> Diversion            | <input type="checkbox"/> Storm Drain Inlet Protection |
| <input type="checkbox"/> Level Spreader       | <input type="checkbox"/> Lined Waterway               |
| <input type="checkbox"/> Slope Drains         | <input type="checkbox"/> Rip-Rap Outlet Protection    |
| <input type="checkbox"/> Sediment Basin       | <input type="checkbox"/> Silt Fence                   |
| <input type="checkbox"/> Slope Breaks         | <input type="checkbox"/> Straw Bale Barrier           |
| <input type="checkbox"/> Other Controls _____ |   |

## **VEGETATIVE PRACTICES**

- |   |  |
|---|--|
| <input type="checkbox"/> Mulching                 | <input type="checkbox"/> Permanent Seeding                 |
| <input type="checkbox"/> Protection of Trees      | <input type="checkbox"/> Surface Roughening                |
| <input type="checkbox"/> Sod Stabilization        | <input type="checkbox"/> Temporary Seeding                 |
| <input type="checkbox"/> Tree Preservation        | <input type="checkbox"/> Tillage, with Lime and Fertilizer |
| <input type="checkbox"/> Vegetative Buffer Strips |  |
| <input type="checkbox"/> Other Controls _____     |  |

## **CONTROLS FOR INDIVIDUAL LOTS IN SUBDIVISIONS**

- |  |  |
|--|--|
| <input type="checkbox"/> Subdivision Covenants | <input type="checkbox"/> Lot Purchase Contract             |
| <input type="checkbox"/> Local Ordinance       | <input type="checkbox"/> Architectural Review Requirements |
| <input type="checkbox"/> Other Controls _____  |  |

## **HOUSEKEEPING PRACTICES**

- |   |  |
|---|--|
| <input type="checkbox"/> Areas for maintenance and repair | <input type="checkbox"/> Waste receptacles   |
| <input type="checkbox"/> Storage for toxic materials      | <input type="checkbox"/> Sanitary facilities |
| <input type="checkbox"/> Other Controls _____             |  |

## **POST CONSTRUCTION CONTROL MEASURES**

- |  |   |
|--|---|
| <input type="checkbox"/> Detention Basin                             | <input type="checkbox"/> Retention Pond               |
| <input type="checkbox"/> Wetlands                                    | <input type="checkbox"/> Velocity Dissipation Devices |
| <input type="checkbox"/> Vegetated Swales<br>and Natural Depressions |   |
| <input type="checkbox"/> Other Controls _____                        |   |

## FREQUENTLY ASKED QUESTIONS

- Q. Is there a fee for CNOI applications?**
- A. No. DEQ's general permits do not require a fee at this time.
- Q. If a construction operation disturbing five or more acres is owned by a small municipality (a population of less than 100,000 people) but operated by a private contractor, is the activity regulated?**
- A. No. If the construction activity is either owned or operated by a municipality with a population of less than 100,000 it would not be required to obtain a storm water permit during Phase 1 of the storm water program because of a temporary exemption. This exemption will end, however, on March 10, 2003.
- Q. If a project will not be completed before this permit expires, how can I keep permit coverage?**
- A. If the permit is reissued or replaced with a new one before the current one expires, you will need to comply with whatever conditions the new permit requires in order to transition coverage from the old permit. This usually includes submitting a new CNOI. If the permit expires before a replacement permit can be issued, the permit will be administratively continued.
- Q. What is a SWPPP?**
- A. This acronym stands for Storm Water Pollution Prevention Plan. For construction activities, it is a plan which describes appropriate practices which will reduce or mitigate sediment from leaving the construction site - An erosion and sediment control plan.
- Q. Where can I get assistance?**
- A. If you don't have the expertise - hire an engineer or consultants who specialize in erosion and sediment control. Private land owners may go to the Natural Resource Conservation Service (NRCS).
- Q. How do I terminate a project?**
- A. When the site is stabilized, one must notify MDEQ by submitting the Notice of Termination (NOT) form found in Part VII of the Construction General Permit. The NOT form must be signed by the owner of the land and the contractor. Monthly inspection forms must be attached to the NOT or permit coverage cannot be terminated.
- Q. What is the threshold of land disturbance that will require me to obtain storm water permit coverage?**
- A. Phase I storm water regulations require five acres or more of clearing, grading or excavating obtain storm water coverage.
- Q. I have heard rumors that this acreage threshold will be reduced to one acre, is this true?**
- A. Yes, when Phase II of the storm water regulations are implemented (March 2003) one acre or more of land disturbance will be the new threshold.
- Q. For projects such as a 100-mile highway construction project, what location should be provided on the CNOI?**
- A. The beginning of a linear construction project should be used as the location on DEQ's CNOI Form.

- Q. Is clearing of lands specifically for agricultural purposes regulated construction activity (40 CFR 122.26(b)(14)(x)) under the storm water program?**
- A. No. Although the clearing of land may be greater than five acres, any amount of clearing for agricultural purposes is not considered an industrial activity under the storm water regulations. Section 402(l)(1) of the 1987 Water Quality Act exempts agricultural storm water discharges from NPDES permitting requirements including storm water permitting. This exemption only applies, however, if the clearing of land is solely for agricultural purposes.
- Q. If a construction activity that disturbs less than five acres occurs at a regulated industrial activity currently covered by the State's industrial storm water permit, does the regulated industry have to modify its pollution prevention plan to include controls for the area of construction?**
- A. Yes. Regulated industrial activities covered by Mississippi's storm water industrial general permits must revise their pollution prevention plan to address all new sources of pollution and runoff including those from construction activities disturbing less than five acres, that occurred on the site of the regulated industry. However, if less than five acres, a separate storm water permit for the construction activity is not required. If the disturbance is five acres or greater then the facility should submit a CNOI for coverage under the State's construction storm water general permit.
- Q. For a construction activity that uses off site borrow pits for excavation of fill material or sand and gravel, should the number of disturbed acres at the borrow pit be added to the number of acres at the construction site to determine the total number of disturbed acres?**
- A. No, off site borrow pits are not considered part of the on site construction activity. If a borrow pit is specifically used for the removal of materials such as sand, gravel, and clay, the pit is considered a mine and is classified under SIC code 14. Such sites would be regulated as industrial activity as defined at 40 CFR 122.26(b)(14)(iii). However, if the borrow pit is utilized for the removal of general fill material (e.g. dirt) and disturbs five or more acres of land, the pit would be considered a construction activity as defined at 40 CFR 122.26(b)(14)(x).
- Q. What is meant by a larger common plan of development or sale?**
- A. A larger common plan of development or sale is a contiguous area where multiple separate and distinct construction activities may be taking place at different times on different schedules under one plan. For example, if a developer buys a 20-acre lot and builds roads, installs pipes, and runs electricity with the intention of construction homes or other structures sometime in the future, this would be considered a common plan of development or sale. If the land is parceled off or sold, and construction occurs on plots that are less than five acres by separate, independent builders, this activity still would be subject to storm water permitting requirements if the smaller plots were included on the original site plan.
- Q. Am I required to notify the public of my construction activities?**
- A. Yes. The Construction Storm Water General Permit requires the display of permit and SWPPP information at a conspicuous place accessible by the public on or at the edge of the construction site. A sample information form can be found in the Construction General Permit.
- Q. Who must apply for permit coverage for construction activities?**
- A. Under the NPDES storm water program, the operator of a regulated activity or discharge must apply for storm water permit coverage. The operator of a construction activity is the party or parties that either individually or taken together meet the following two criteria: (1) they have operational control over the site specifications (including the ability to make modifications in specifications); and (2) they have the day-to-day operational control of those activities at the site necessary to ensure compliance with plan requirements and permit conditions (9/9/92 Federal Register page 41190). Usually the owner of the project initially files the CNOI and the contractor would complete and submit the prime contractor form when selected.

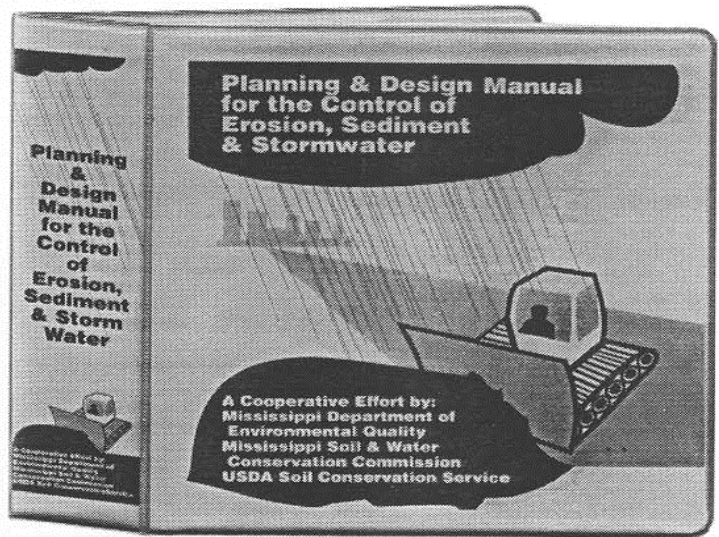
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