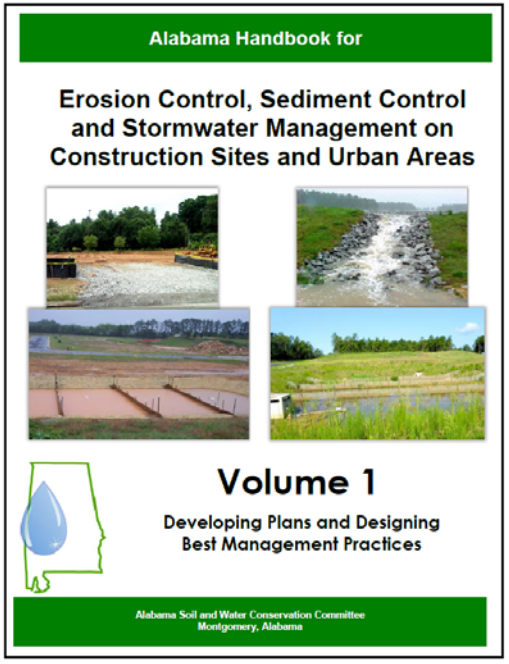
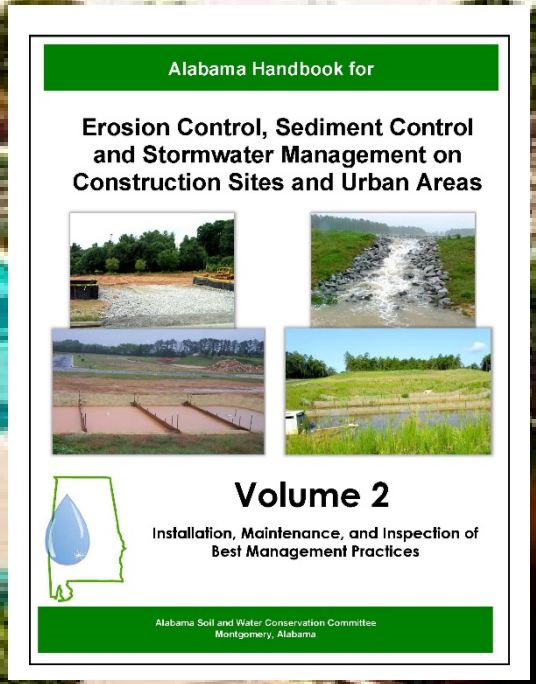
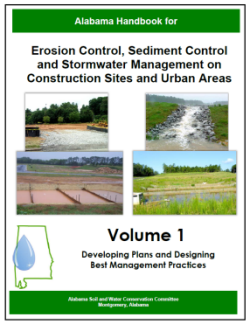
“Tweak, Tweak, Tweak”
The Latest Changes to the AL Handbook for Erosion and Sediment Control

(for presentation at the 2015 Alabama Water Resources Conference)

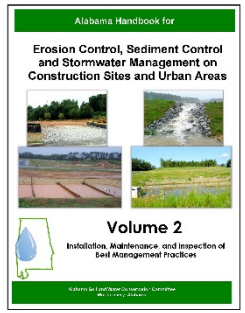
Perry Oakes, PE, Consultant







2014 Handbook Changes



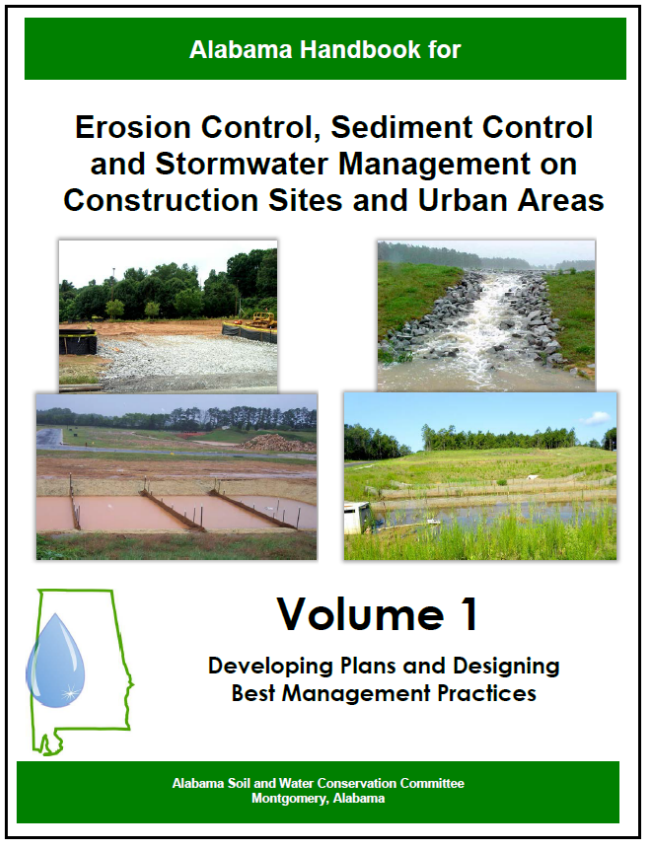
From Foreword of 2009 Handbook

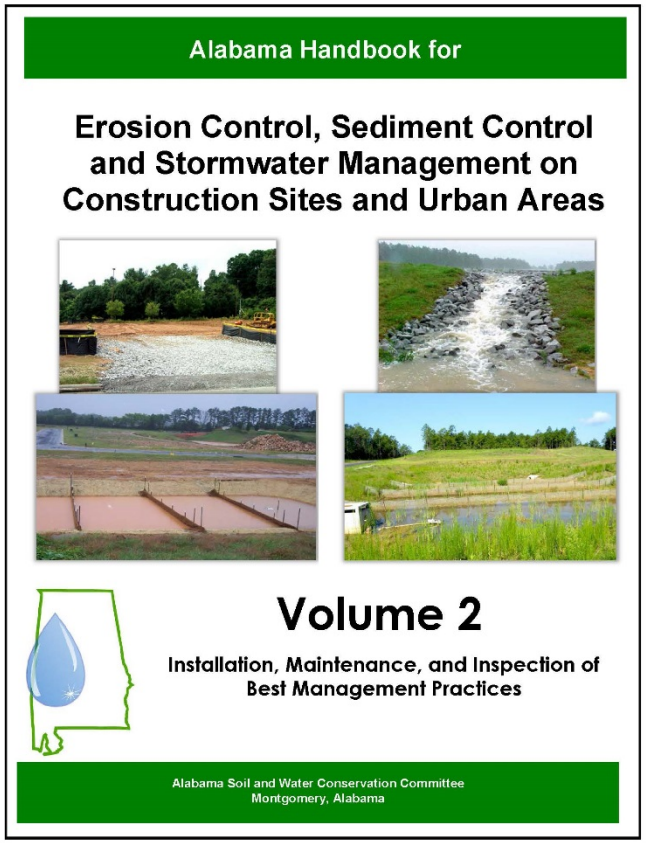
Constructive comments on the contents of the 2009 Handbook should be provided in writing to the Alabama Soil and Water Conservation Committee at the following address:

Alabama Soil and Water Conservation Committee
P.O. Box 304880
Montgomery, AL 36130-4800

In February of 2014, requests were sent to active industry participants, regulators, researchers, and others for suggested changes

"We have addressed all suggestions and concerns that were provided",

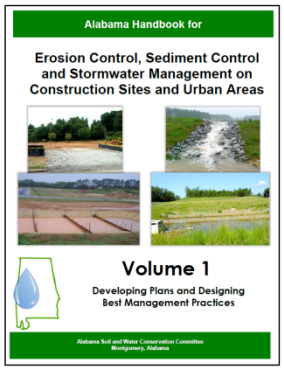




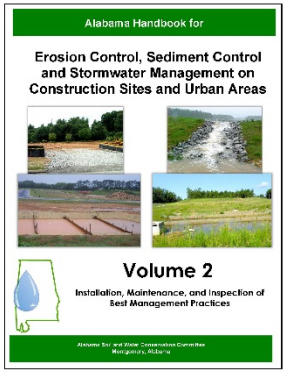
For: planners and designers

For: contractors and inspectors

Electronic emphasis.



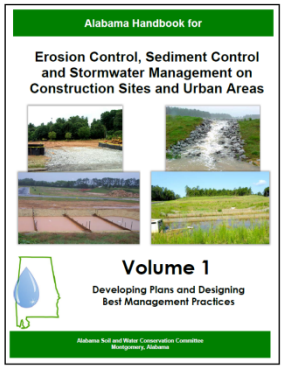
Addressed Invasive Species



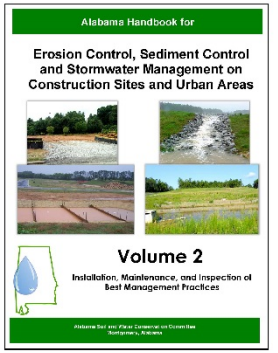
1. Significance of exotic invasive species added to Chapter 2 .

2. Tables for Shrubs, Vines and Groundcover revised to remove invasive species
   Replaced with native species - assisted by Auburn University Horticulture Dept.

3. Some groups recognize tall fescue, sericea lespedeza, and bermudagrass as problems.
   The Alabama Invasive Plant Council has the lists and expertise if you have interest –
   http://www.se-eppc.org/alabama/

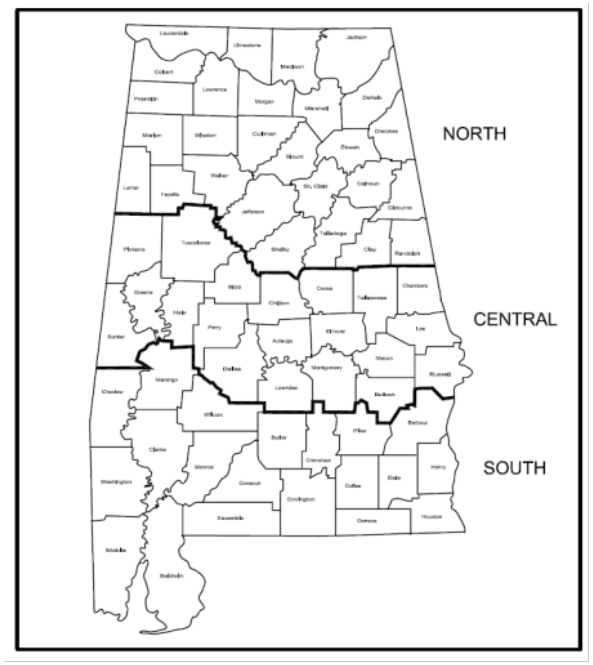


More on Vegetation



Areas of Adaptation Map

1. Retained boundaries – asked ALDOT to match boundaries.
2. There is latitude for a qualified design professional to make some judgments . related to species and planting date



Tree Planting Practice

1. Added the use of tubes and mats in establishment.
2. Revised guidance for planting depth of longleaf pines (rooted vs. containerized).

Also gave an example of how to calculate Pure Live Seed from Germination and Purity.

Permanent Seeding
Temporary Seeding
Grassed Swale
Filter Strip

Addition to Chapter 3 -Plan Preparation (sites in the **Coastal Area**)

- It is recommended that construction practices (including Detention, Retention and Bioretention) within the Coastal Area be designed to yield greater than **35%** reduction in nutrients and a minimum of **80%** reduction in total suspended solids (TSS).

No more reference to NRCS Geotextile Specification

Property	Test method	Class I	Class II	Class III	Class IV [1]
Tensile strength (lb) [2]	AS	180 minimum	um	90 minimum	115 minimum
Elongation at failure (%) [2]	TM D 4632	≥ 50		≥ 50	≥ 50
	pied from NRCS Mate		tion 5		
Puncture (pounds)	ASTM D 4833	80 m	60 minimum	0 minimum	40 minimum
Ultraviolet light (% residual tensile stren	ASTM D 4355 150-hr xposu	inimum	70 minimum	0 minimum	70 minimum
Apparent opening size (AOS)		As specified max. no.40 [3]	As sp	As specified max. no.40 [3]	As specified max. no.40 [3]
Permittivity sec–1	ASTM D		inimum	0.70 minimum	0.10 minimum

The geotextile shall be of the strength and durability required for the project to ensure the aggregate and soil base are stable. Generally, the non-woven geotextile should meet the requirements found in AASHTO M288.

Land Grading

- Clarified the slope break guidance:

Table LG-1 Guidelines for Spacing Slope Breaks [1]

Slope (H:V)	Horizontal Spacing (Ft)
1:1	20
2:1	40
3:1	60
4:1 and 5:1	80
6:1 to 9:1	120
10:1 or flatter	200

Chemical Stabilization

- Surface application of PAM and "**other**" products.
- The term "**anionic**" removed.
- Buffer Zone must apply.
- Runoff should be flowing to settling sites such as sediment basins or sediment traps or be flowing over sites such as filter strips, straw or matting that serves as a collection site for the sediments.
- Must follow MSDS's and manufacturer's recommendations.
- Use Jar Test to determine specific products.
- Do not use products in a way that will be toxic to aquatic organisms.

Erosion Control Blanket

- Uses same definitions as ECTC (Erosion Control Technology Council).
- Added a Note:

Note: The Alabama Department of Transportation (ALDOT) identifies Rolled and Hydraulic Erosion Control Products based on performance. Description of ALDOT types can be found in Section 659 of their Standard Specifications for Highway Construction. ALDOT recognizes some Hydraulic Erosion Control Products equal in performance to Rolled Products.

Groundskeeping

- Concrete trucks should be allowed to wash only in locations where discharge is appropriately treated to meet applicable regulatory requirements.
- Portable toilets should be located so that accidental spills will not discharge into a storm sewer or concentrated flow area.

Mulching

- Hydraulic Erosion Control Products (HECPs) as defined by the Erosion Control Technology Council (ECTC) can also be used as effective mulch applications. HECPs are designated as 5 different types based on product characteristics and performance.
- The Alabama Department of Transportation (ALDOT) characterizes mulches based on performance levels identified in Sections 656 and 659 of their Standard Specifications for Highway Construction.
- Removed Emulsified Asphalt.
- Use a “crimping tool” where mulch can blow.

Crimping Tool

Check Dam

- A check dam (also referred to as a “ditch check”)
- Check dams can be constructed of rock, wattles (sometimes referred to as tubes or rolls), sand bags, or other materials that may be acceptable to the design professional.
- Hay bales and logs check dams.
- The use of small graded aggregate and geotextile can be used on the upstream face of the rock check dam to increase the sediment trapping efficiency of the rock check dam. Measures must be taken to prevent undermining of the check dam.
- Wattle – ALDOT method of installation.

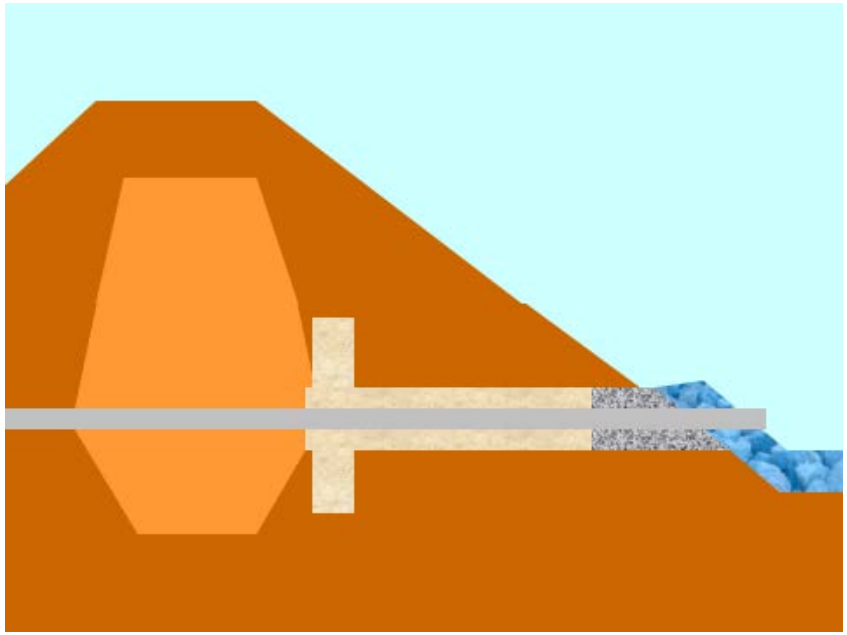
Diversion, Grass Swale

- Note: This design example uses the Permissible Velocity approach. Diversion design using the Tractive Stress approach can also be used but is not discussed in this document.

Drop Structure

(or any practice with a pipe through an embankment)

- In lieu of anti-seep collars, a sand drainage diaphragm with a filter compatible outlet can be used.



Drop Structure

(or any practice with a pipe through an embankment)

Soil “piping” failure.

Drop Structure

(or any practice with a pipe through an embankment)

- Also, locate the emergency spillway at the end of the embankment on natural ground and not over the earthfill.

Block and Gravel Inlet Protection, Fabric Drop Inlet Protection

- CAUTION: The practice will pond water causing hazardous conditions to motorists and should only be used when there is no public transportation allowed on the street.

So where is the REAL problem?

Filter Strip

- Minimum width of an effective Filter Strip is 15 ft.

Flocculant
(BRAND NEW PRACTICE)

- **Practice Definition**

  Flocculation is the chemical process of causing small, suspended soil particles to be drawn together to form “flocs”. These flocs more readily settle out compared to the individual particles due to their relatively greater mass. Products that cause flocculation of suspended soil particles (Flocculants) are often used to help polish, or minimize turbidity of stormwater runoff from construction sites. These products may contain both manufactured and natural polymers.

Flocculant

- Should be tested for ecotoxicity and proven to not be toxic if used in accordance with the manufacturer's recommendation.
- Areas where flocculant is applied must drain to a sediment basin or other BMP that promotes settling.
- Adequate time and laminar flow (calm flow) or ponding is necessary to promote effective and efficient flocculation.
- Soil tests, such the "jar test", are required to ensure that the flocculant is properly matched with the anticipated soils.
- Manufacturer's application or dosage rates and application instructions should be followed closely.
- Pretreatment to remove heavy loads and larger particles should take place in advance of flocculant introduction when possible.
- Do not apply flocculants directly to streams, wetlands, or other waters of the state.

Sediment Barrier

- Hay Bales.
- The most commonly used sediment barriers are silt fences, and manufactured sediment logs (often referred to as wattles or sediment retention fiber roll).
- Introduced “Sediment Retention Barrier.” Sediment retention barriers may be used as a “last line of defense” against sediment leaving the construction site in sensitive areas. Do not use it in lieu of adequate erosion and sediment control practices.
- Type “A” = ALDOT

Sediment Basin

- Shortened Practice Description:
  - An earthen embankment suitably located to capture runoff, with an emergency spillway lined to prevent spillway erosion, interior porous baffles to reduce turbulence and evenly distribute flows, and equipped with a floating skimmer or other approved surface dewatering device that removes water from the top of the basin. Flocculants are commonly used with a sediment basin to increase sediment capture.
- Surface dewatering (not necessarily a skimmer).
- In order to minimize risk to the public and environment, the maximum drainage area for each sediment basin should be minimized. The recommended maximum drainage area is 10 acres. The absolute maximum drainage area should be 100 acres.

Sediment Basin

- Research has shown that the surface area of the basin should be maximized to improve trapping efficiency. Results of tests show that a surface area of 435 sq. ft. per CFS (peak discharge for the 10-year, 24-hour event), is needed for effective trapping efficiency.
- Removed “Faircloth” Tables.

Changed
Straw Bale Sediment Trap
to Sediment Trap

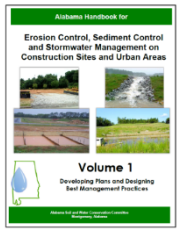
- Practice Description:
  - A sediment trap is a temporary catch basin used for the purpose of intercepting and detaining small amounts of sediment to prevent it from leaving the construction site. This practice applies within disturbed areas with very small drainage basins that are subject to sheet erosion or in minor swales. Various materials may be used for sediment traps and include straw bales, sand bags, wattles, and various man-made materials and devices.

Bioretention Area

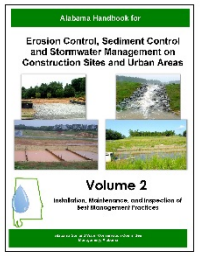
- Note: Only general guidance is provided for this practice. More specific information can be obtained from the Low Impact Development Handbook for the State of Alabama (www.aces.edu/lid).
- The non-engineered version of this practice is a Rain Garden and is not included in the Bioretention Area of this handbook, but is covered in the Low Impact Development Handbook for the State of Alabama.

Porous Pavement

- Note: Only general guidance is provided for this practice. More specific information can be obtained from the Alabama Low Impact Development (LID) Handbook.



2014 Handbook Changes



Retained in Chapter 3 – General Considerations for Preparing Plans

"New or innovative conservation measures or modification to standard measures in this handbook may be used if the proposed measure is expected by the qualified design professional to be as effective as the practice for which it is being substituted."

Electronic files available at the Alabama Soil and Water Conservation website

Handbook http://swcc.alabama.gov/pages/erosion_control.aspx?sm=b_b

CAD Drawings http://swcc.alabama.gov/pages/erosion_handbook.aspx

Soils Data Updated

There's a new Field Guide too.