

Workshop on Fort Campbell's Policy for Storm Water Erosion and Sediment Control at Construction Sites

March 16, 2006

Marshall & Associates, Inc.

Agenda for Workshop on Fort Campbell's Policy for Storm Water Erosion and Sediment Control at Construction Sites

March 16, 2006 at Army Education Center Auditorium

1:00 pm	Welcome and Introductions
1:05 pm	Opening Remarks from State Regulators (TN and KY)
1:20 pm	Overview of Storm Water Policy
1:40 pm	Contractor Submittal Requirements
2:00 pm	Storm Water Pollution Prevention Plan
2:20 pm	Low Impact Development
2:30 pm	Break
2:45 pm	Construction Site Assessment Checklist
2:55 pm	Construction Site Inspection Report Form
3:05 pm	Final (95%) Stabilization
3:15 pm	Field Application "Do's and Don'ts"
3:30 pm	Q & A "Roundtable" with State Regulators and Ft. Campbell Environmental Assessment Personnel
3:50 pm	Closing Remarks from State Regulators (TN and KY)
4:00 pm	Adjourn

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Overview of Storm Water Policy

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The Fort Campbell Military Installation encompasses over 105,000 acres in Tennessee and Kentucky. The drainage area supports 14 USGS name-recognized creeks within 3 separate watersheds:

- Skinner Creek → North
- Casey Creek → West
(to Lower Cumberland)
- Little West Fork Creek → East
(to Red River)

Derivatives of 1972 Clean Water Act

For Storm Water, Fort Campbell operates under the jurisdiction of two States, each with separate permits applications:

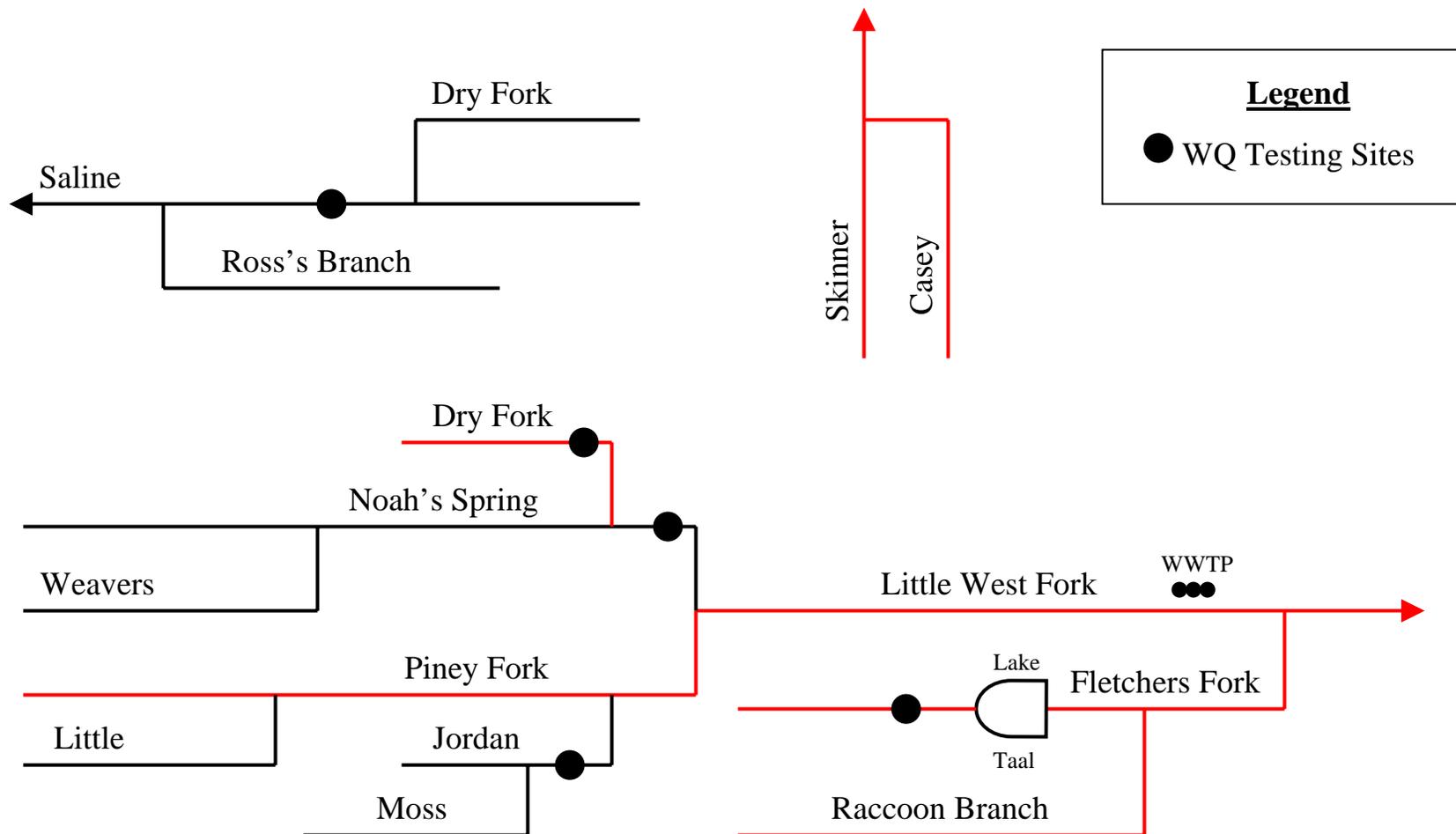
1. General Permit
2. MS4 Permit

And in the future...

by the requirements established as a result of
the

Base-wide TMDL study (303d listed streams)

Schematic of Creeks Fort Campbell Military Reservation



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The trend has always been for tighter controls on smaller projects...

and this trend will continue, especially due to TMDL - 303d streams.

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Today, our focus is meeting the requirements of the General Permit:

- TDEC website
- KY Department of Environment website
- Fort Campbell website

Policy

- Meet Permit requirements
- Do not negatively impact Storm Water Runoff
- Cannot start construction until Storm Water Plan is in place and operational

Objectives

- To protect Public Health...etc.

But in the Field...

- To minimize erosion
- To capture all sediment on-site
- To reduce pollutants in runoff to maximum extent practicable

Permit Does Not Cover

- Actus Lend Lease
- Clarksville Gas and Water
- Water/Waste Water Treatment
(CH2M Hill)

Policy Document (Ft. Campbell Website)

- Permits
- NOI/NOT Forms
- Listing of 303d streams
- **Template for 5 acre or less Storm Water Pollution Prevention Plan (SWPPP)**
 - 5 acre or more SWPPP
- Low Impact Development
- Timber Harvesting
- **Construction Site Assessment Checklist**
- Construction Site Status Form
- **Final Stabilization (95%) Spec**

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- Fort Campbell will issue NOIs and NOTs
- Self-regulating under authority of States... does not mean State will not inspect!

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- Project Designer (DPW Engineer/Corps of Engineers, etc.) determines if Storm Water Pollution Prevention Plan is required
- Contractor submits SWPPP with their Work/Quality Control Plan
- Issues discussed at Pre-Award meeting

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Contractor Submittal Requirements

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Contractor Submittals

Contract Phase

- SWPPP Data Form with Authorizing Signature
- "Drawing" of Erosion and Sediment Control Plan

During Construction

- Site Inspection Form

At end of Project

- Verbal request to Contracting Agency for 95% Stabilization inspection (coordinated assessment-CA, Design Entity, DPW Environmental and Contractor)

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Storm Water Pollution Prevention Plan

5 Acre or Less

Storm Water Pollution Prevention Plan

- Template Provided
- Contractor to Submit
 - Authorized Information Form
 - Drawing of Erosion and Sediment Control Plan (Appendix C → Not A and B)
 - Inspection Form

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- P.E. Required if Design for Temporary or Permanent Sediment Basin Required
- SWPP for greater than 5 acres requires P.E. for "Stand-Alone" Plan

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Not Required (Appendix A)

- Site Location Map
(only latitude and longitude required on data form)
- Benchmark Location
- USGS Map

(May Not Be) Required (Appendix B)

- Existing and Proposed Contours

Required

- Appendix C → Drawing of Erosion and Sediment Control Plan
- Appendix D → Specs/Typical Drawings (TDEC)
- Appendix E → Inspection Form

Design Hydrology

- 4.5 inches of rain within 24 hours
(5 year event)

Pre-Construction Vegetation

- Maintain Maximum Amount
- Sequence Construction to Minimize Area
- 15 day Max (7 day max after final grading is goal)
- Mulching and Temporary Seeding
- Gravel Base for Paved Areas

Erosion and Sediment Controls

- Mulching and Temporary Seeding
- Gravel Base for Paved Areas
- Silt Fencing
- Check Dams
 - Hay Bales
- Sediment Basins (P.E. required)

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- Install at base of slope on down gradient side on contour, entrenched and staked

- Divert Off-site Storm Water
 - Berms
 - Diversion Channels

- Replace after 50% Capacity

Protect Interior of Site

- Storm Water Intakes
- Sinkholes
- Injection Wells
- Stockpiles
 - 7 day maximum
 - Tarp, mat or mulch

Access Roads

- No. 1 or No. 3 stone
- 6 inches thick
- 50 feet long

Street Sweeping / Dust Suppression

Construction Materials

- Designate areas on drawing (do not locate in low-lying area)
- Protect them from run off
- Cannot stockpile waste
- Chemicals → may require separate permit (check daily for signs of spillage)
- Leaky machinery (cannot wash machinery unless wash water is treated → setting basins, etc.)
- Keep site clean (good housekeeping)

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Utilities

- 7 day maximum for each linear section

Inspections

- Twice Weekly for Projects in Tennessee (or within 24 hours after the end of a ½ inch storm event)
- Once Weekly for Projects in Kentucky (or within 24 hours after the end of a ½ inch storm event)
- If site straddles the states, twice weekly inspection criteria will prevail
- Qualified (TDEC Certified or equivalent) Inspector
- Rain gauge not required (but recommended)
- Always check outfall points
- 7 day maximum to fix problem
- Be Proactive

Record Keeping

- Dates of Major Grading
- Dates of Temporary or Permanent Start / Stop
- Dates of Implementation of Erosion Control Measures
- Rainfall Amounts
- Submit Inspection Forms with Monthly Invoice





















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Low Impact Development

Low Impact Development

- Soil Amendments
- Bioretention
- Filter Strips
- **Vegetated Buffers**
- **Grassed Swales**
- **Inlet Pollution Removal Devices**
- Tree Filter Boxes
- Permeable Pavement

- UFC 3-210-10 (Unified Facilities Criteria Design: Low Impact Development Manual)
Oct. 2004
- *Low Impact Development Design Strategies: An integrated design approach.*
Prepared By Prince George's County, MD. June 1999
- Low Impact Development-Technical Guidance Manual For Puget Sound. Publication
No. PSAT 05-03. January 2005.



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Construction Site Assessment Checklist

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Construction Site Inspection Report Form

Ft. Campbell, KY Construction Storm Water Inspection Report Form

NPDES Permit No. _____	Notice of Coverage (NOC) Date _____	County _____
Name of Project _____		Project No. _____
Developer and/or Contractor Name _____		Contract No. _____
Outfall No. _____ (or station number, or other identifier of drainage area represented)		

Month		Year		E&S Controls in Order		Month		Year		E&S Controls in Order		Month		Year		E&S Controls in Order	
Inspections Performed				E&S Controls in Order		Inspections Performed				E&S Controls in Order		Inspections Performed				E&S Controls in Order	
Week 1	Date		Initials		Initials	Week 1	Date		Initials		Initials	Week 1	Date		Initials		Initials
Insp. 1		Y <input type="checkbox"/> N <input type="checkbox"/>		Y <input type="checkbox"/> N <input type="checkbox"/>		Insp. 1		Y <input type="checkbox"/> N <input type="checkbox"/>		Y <input type="checkbox"/> N <input type="checkbox"/>		Insp. 1		Y <input type="checkbox"/> N <input type="checkbox"/>		Y <input type="checkbox"/> N <input type="checkbox"/>	
Insp. 2		Y <input type="checkbox"/> N <input type="checkbox"/>		Y <input type="checkbox"/> N <input type="checkbox"/>		Insp. 2		Y <input type="checkbox"/> N <input type="checkbox"/>		Y <input type="checkbox"/> N <input type="checkbox"/>		Insp. 2		Y <input type="checkbox"/> N <input type="checkbox"/>		Y <input type="checkbox"/> N <input type="checkbox"/>	
Week 2	Date		Initials		Initials	Week 2	Date		Initials		Initials	Week 2	Date		Initials		Initials
Insp. 1		Y <input type="checkbox"/> N <input type="checkbox"/>		Y <input type="checkbox"/> N <input type="checkbox"/>		Insp. 1		Y <input type="checkbox"/> N <input type="checkbox"/>		Y <input type="checkbox"/> N <input type="checkbox"/>		Insp. 1		Y <input type="checkbox"/> N <input type="checkbox"/>		Y <input type="checkbox"/> N <input type="checkbox"/>	
Insp. 2		Y <input type="checkbox"/> N <input type="checkbox"/>		Y <input type="checkbox"/> N <input type="checkbox"/>		Insp. 2		Y <input type="checkbox"/> N <input type="checkbox"/>		Y <input type="checkbox"/> N <input type="checkbox"/>		Insp. 2		Y <input type="checkbox"/> N <input type="checkbox"/>		Y <input type="checkbox"/> N <input type="checkbox"/>	
Week 3	Date		Initials		Initials	Week 3	Date		Initials		Initials	Week 3	Date		Initials		Initials
Insp. 1		Y <input type="checkbox"/> N <input type="checkbox"/>		Y <input type="checkbox"/> N <input type="checkbox"/>		Insp. 1		Y <input type="checkbox"/> N <input type="checkbox"/>		Y <input type="checkbox"/> N <input type="checkbox"/>		Insp. 1		Y <input type="checkbox"/> N <input type="checkbox"/>		Y <input type="checkbox"/> N <input type="checkbox"/>	
Insp. 2		Y <input type="checkbox"/> N <input type="checkbox"/>		Y <input type="checkbox"/> N <input type="checkbox"/>		Insp. 2		Y <input type="checkbox"/> N <input type="checkbox"/>		Y <input type="checkbox"/> N <input type="checkbox"/>		Insp. 2		Y <input type="checkbox"/> N <input type="checkbox"/>		Y <input type="checkbox"/> N <input type="checkbox"/>	
Week 4	Date		Initials		Initials	Week 4	Date		Initials		Initials	Week 4	Date		Initials		Initials
Insp. 1		Y <input type="checkbox"/> N <input type="checkbox"/>		Y <input type="checkbox"/> N <input type="checkbox"/>		Insp. 1		Y <input type="checkbox"/> N <input type="checkbox"/>		Y <input type="checkbox"/> N <input type="checkbox"/>		Insp. 1		Y <input type="checkbox"/> N <input type="checkbox"/>		Y <input type="checkbox"/> N <input type="checkbox"/>	
Insp. 2		Y <input type="checkbox"/> N <input type="checkbox"/>		Y <input type="checkbox"/> N <input type="checkbox"/>		Insp. 2		Y <input type="checkbox"/> N <input type="checkbox"/>		Y <input type="checkbox"/> N <input type="checkbox"/>		Insp. 2		Y <input type="checkbox"/> N <input type="checkbox"/>		Y <input type="checkbox"/> N <input type="checkbox"/>	
Week 5	Date		Initials		Initials	Week 5	Date		Initials		Initials	Week 5	Date		Initials		Initials
Insp. 1		Y <input type="checkbox"/> N <input type="checkbox"/>		Y <input type="checkbox"/> N <input type="checkbox"/>		Insp. 1		Y <input type="checkbox"/> N <input type="checkbox"/>		Y <input type="checkbox"/> N <input type="checkbox"/>		Insp. 1		Y <input type="checkbox"/> N <input type="checkbox"/>		Y <input type="checkbox"/> N <input type="checkbox"/>	
Insp. 2		Y <input type="checkbox"/> N <input type="checkbox"/>		Y <input type="checkbox"/> N <input type="checkbox"/>		Insp. 2		Y <input type="checkbox"/> N <input type="checkbox"/>		Y <input type="checkbox"/> N <input type="checkbox"/>		Insp. 2		Y <input type="checkbox"/> N <input type="checkbox"/>		Y <input type="checkbox"/> N <input type="checkbox"/>	

Information and Instructions

1. The purpose of this form is to report inspections of storm water discharge points and the condition of erosion and sediment controls (E&S Controls) at the construction site.
2. You are required to inspect outfall points (where discharges from the site enter streams or wet weather conveyances) to ascertain whether your erosion control measures are effective in preventing soil from leaving the construction site and entering nearby streams. You are also required to inspect the erosion and sediment control measures being used at the site, whether these controls have been installed according to the storm water pollution prevention plan and whether these controls are in working order. These inspections are required at least twice per week.
3. For each month, space is given for each week of the month. To record the inspections and observations for a week, write the date on which the inspections were performed in the box labeled "Date." Check the box beside Y or N to indicate if the inspections, both of outfall points and of the erosion and sediment control measures, were performed, and check the box beside Y or N to indicate if erosion and sediment controls are in place and in working order. If N is checked, corrective action must be taken immediately. Sign your initials in space reserved for initials.
4. Submit a copy of this form each week to the Contracting Agency. Continue to use the same form, and submit with original signatures every four months, and/or at the end of the year, and/or when the Notice of Termination is Filed.
5. For discharges identified for additional requirements under part III.F., inspections, described in paragraphs c., d., and e., of the General Permit, shall be performed before anticipated storm events (or series of storm events such as intermittent showers over one or more days), within 24 hours after the end of a storm event of 0.5 inches or greater, and at least twice a week.

(Continued on back. This form when used shall be front and back on one sheet of paper.)

Month		Year			
	Inspections Performed			E&S Controls in Order	
Week 1	Date		Initials		Initials
Insp. 1		Y <input type="checkbox"/> N <input type="checkbox"/>		Y <input type="checkbox"/> N <input type="checkbox"/>	
Insp. 2		Y <input type="checkbox"/> N <input type="checkbox"/>		Y <input type="checkbox"/> N <input type="checkbox"/>	
Week 2	Date		Initials		Initials
Insp. 1		Y <input type="checkbox"/> N <input type="checkbox"/>		Y <input type="checkbox"/> N <input type="checkbox"/>	
Insp. 2		Y <input type="checkbox"/> N <input type="checkbox"/>		Y <input type="checkbox"/> N <input type="checkbox"/>	
Week 3	Date		Initials		Initials
Insp. 1		Y <input type="checkbox"/> N <input type="checkbox"/>		Y <input type="checkbox"/> N <input type="checkbox"/>	
Insp. 2		Y <input type="checkbox"/> N <input type="checkbox"/>		Y <input type="checkbox"/> N <input type="checkbox"/>	
Week 4	Date		Initials		Initials
Insp. 1		Y <input type="checkbox"/> N <input type="checkbox"/>		Y <input type="checkbox"/> N <input type="checkbox"/>	
Insp. 2		Y <input type="checkbox"/> N <input type="checkbox"/>		Y <input type="checkbox"/> N <input type="checkbox"/>	
Week 5	Date		Initials		Initials
Insp. 1		Y <input type="checkbox"/> N <input type="checkbox"/>		Y <input type="checkbox"/> N <input type="checkbox"/>	
Insp. 2		Y <input type="checkbox"/> N <input type="checkbox"/>		Y <input type="checkbox"/> N <input type="checkbox"/>	

Rainfall Event Inspections:			
Date	Rainfall Amount	E&S Controls in Order	
			Initials
		Y <input type="checkbox"/> N <input type="checkbox"/>	
		Y <input type="checkbox"/> N <input type="checkbox"/>	
		Y <input type="checkbox"/> N <input type="checkbox"/>	
		Y <input type="checkbox"/> N <input type="checkbox"/>	
		Y <input type="checkbox"/> N <input type="checkbox"/>	
		Y <input type="checkbox"/> N <input type="checkbox"/>	
		Y <input type="checkbox"/> N <input type="checkbox"/>	
		Y <input type="checkbox"/> N <input type="checkbox"/>	
		Y <input type="checkbox"/> N <input type="checkbox"/>	
		Y <input type="checkbox"/> N <input type="checkbox"/>	

Provide the following information for the person(s) who have performed and initialed the above inspections. If more than two persons have performed these inspections, give information for the two persons who performed the most numbers of inspections.

Initials: _____	Name _____ Phone No. (____) _____
Initials: _____	Name _____ Phone No. (____) _____

Weekly Inspector Comments _____

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated information presented. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, I certify that inspections of storm water discharge points (outfalls) and of erosion and sediment controls have been performed as recorded in the table above. I certify that erosion and sediment controls in the drainage area of the identified outfall were installed as planned and designed and in working order as recorded in the table above. I am aware there are significant penalties for submitting false information, including the possibility of imprisonment for knowing violations.

Name _____ Title _____ Signature _____
Company _____ Date _____

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Final Stabilization

95% Stabilization

Follow Spec → Attachment 10

- Soil Preparation
- Plant Selection
- Seeding Mixtures
- Mulch
- Rock (Riprap and Check Dams)
- Permanent Ditches

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- Warranty Period does not begin until site is 95% stabilized
- 95% Stabilization can not be achieved until Representatives of Design Entity, Contracting Agency and DPW Environmental Sign-off

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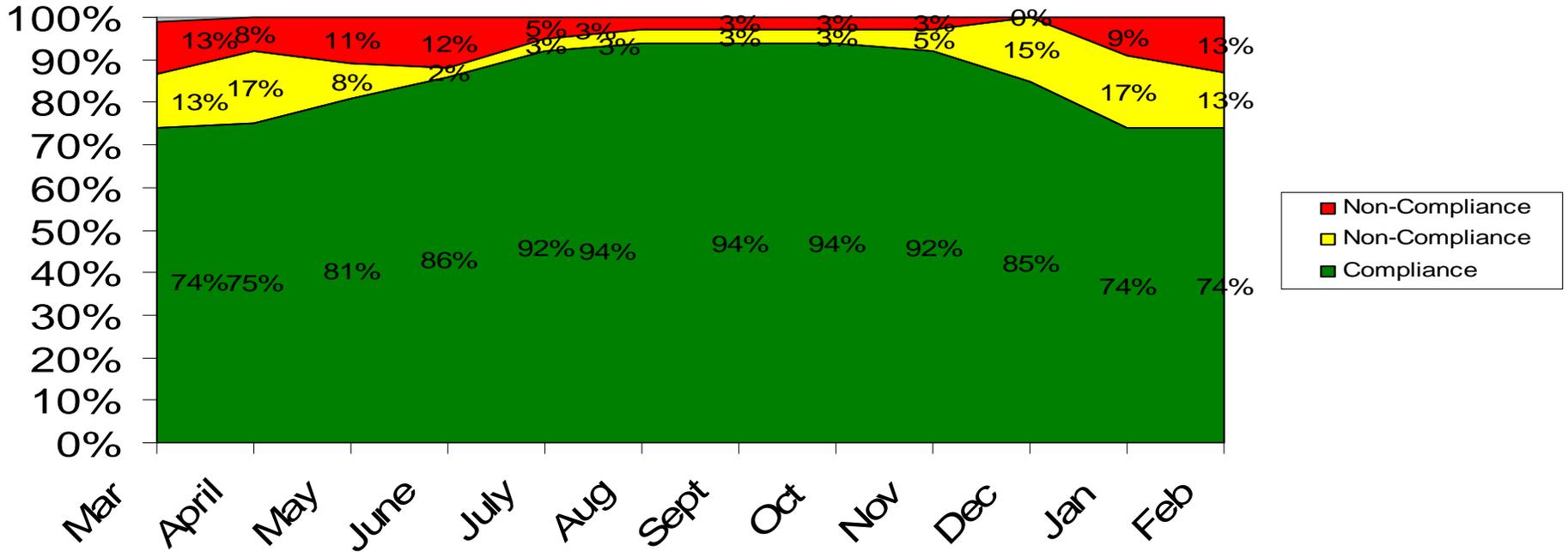
DPW will not recommend for 95%
Stabilization / Warranty Period until
removal of:

- Stockpiles
- Silt fencing
- All other erosion controls

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Field Application "Do's and Don'ts"

Storm water Construction Site Program - FCKY Status Total Projects Inspected



RED : BMP's have failed / Sediment leaving the site
No BMP'S on site
No SW Permit / SWP3/ FTC Inspection Checklist
Site has been AMBER > 2 Months

AMBER: BMP'S have reached MAX capacity loads
BMP'S needs replacement or repaired
Site not stabilized

GREEN: Site meets Compliance

Rock Check Dams



Silt fence



Stabilization Measures



Concrete Washout



BMP'S, Matting and Vegetation



Stabilized Temporary Stockpile



Temporary Stockpile Stabilized



Silt fence maintenance needed



Tracking on Public Road



No BMP's on site



Straw Bales need to be replaced



Construction activity has ceased for more than 15 days no stabilization measures initiated



**Finally –When site is stabilized BMP's
& stockpiles should be removed**



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Q &A "Roundtable" with State Regulators
and Ft. Campbell Environmental
Assessment Personnel

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Closing Remarks from State Regulators (TN and KY)