



# US Forest Service's National BMP Program

## Development of BMP Monitoring Protocols

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# Monitoring Program Objectives



- **Monitor BMP implementation and effectiveness**
- **BMPs that address water quality & Clean Water Act objectives**
  - Focus:** Nonpoint source pollutants (sediment; fuels and related chemical pollutants; other specific types of chemicals; trash, and human and domestic animal wastes)
- **All major land-disturbing and land-use activities that the FS engages in**
  - i.e., beyond traditional forestry BMPs**



# Resource Areas Covered By BMP Protocols



**Aquatic Ecosystem Improvements**  
**Chemical Uses**  
**Facilities Management**  
**Fire Management**  
**Minerals Management**  
**Range (Grazing) Management**  
**Recreation Management**  
**Roads Management**  
**Vegetation Management**  
**Water Uses**



# Monitoring Program Outcomes



- Understand how we're doing now
- Identify resource areas that need improvement
- Work toward improving conditions
- **ULTIMATELY – Adaptive Management**  
To maintain and improve water quality and aquatic health



**Forest Level**  
**Regional Level**  
**National Level**



# Monitoring Program Has 3 Parts



## ➤ Protocols – forms and instructions

Will be published as: National Best Management Practices for Water Quality Management on National Forest System Lands,  
Volume 2: National Core BMP Monitoring Technical Guide (FS-990b)

## ➤ Interim database

## ➤ Scoring routines

Returning User

National Best Management Practices Monitoring Protocols

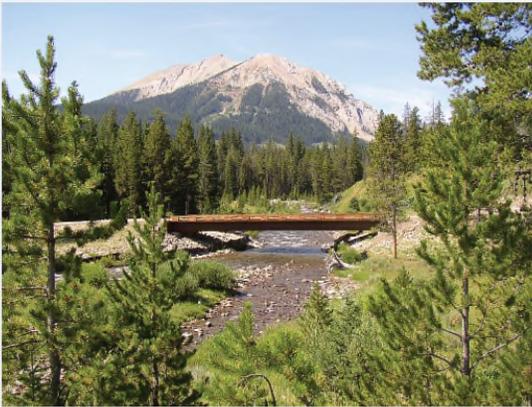
Welcome

Review user data

Region code

Forest code

To update a Region or Forest code click in the appropriate box and type a new 2-digit value.  
Example: Region = 02  
Forest = 06



# Monitoring Protocol Development



- **Developed over about 10 years**
  - Interdisciplinary teams of 5-10 people per resource area**
  - Primarily Ranger District and Forest level staff**
- **Objective questions**
  - Yes/No, Select from lists**
  - Effectiveness based primarily on visual observations**
  - Water quality monitoring not required, but monitoring data can be considered in answers**
  - Information useful at the local level**



# Monitoring Protocol Development (cont.)



- **Pilot tested over multiple years**
- **Multiple periods of revisions**

**Following national rollout in FY13**

**Following FY14 use and initial training sessions**

**Following FY15 internal and external review  
(minor revisions)**



# Monitoring Forms and Instructions



## 42 monitoring forms

**Planning is explicitly considered in all the forms, as planning is perhaps the most important BMP**

**There are NFS projects and features for which monitoring forms do not exist or no forms are applicable**



# General Categories of Monitored Projects/Sites



## Active projects

Disturbance is on-going at the time BMP monitoring is performed; e.g., construction or reconstruction projects  
Evaluation is focused on BMPs that are applied to prevent NPS pollution during the disturbance  
Many of these BMPs typically are temporary and may be removed or replaced with other more permanent BMPs as the project is completed

## Completed projects

Project contract or plan is closed out at the time of monitoring  
Evaluation is focused on permanent BMPs

## Existing sites

Evaluation is typically of BMPs used for operation/use, but may include BMPs employed for routine maintenance



# Monitoring Forms and Instructions



**All forms have same general format; 4 sections**

- **Header – general information and descriptive information for sorting and categorizing**
- **Implementation**
- **Effectiveness**
- **General Comments**

**Similar or identical questions among forms – efficiency in use**



# Monitoring Forms and Instructions



## All sets of instructions have same general format

- Title box on first page (includes references to core BMPs; indicates version of instructions)
- Introduction
- Population Development and Sample Selection
- Timing of Monitoring
- Who Should Conduct the Evaluations; ID teams
- Instructions for Completing the Field Observations
  - Primarily deals with effectiveness
  - Parts of project area or site to evaluate
- Initial and Follow-up Evaluations
- Instructions for Completing Form 'XXX' (i.e., question-by-question instructions)



# BMP Monitoring



## BMP Implementation

**Were the site-specific BMP prescriptions implemented as planned or designed?**

## BMP Effectiveness

**Were the site-specific BMP prescriptions as implemented, effective at controlling nonpoint source pollution and protecting aquatic health?**



# BMP Monitoring



- **Most header and most implementation section questions require information in office documents**
- **Effectiveness questions depend entirely or almost entirely on field observations (though monitoring data records can be employed)**
- **Implementation questions typically consider the entire project area or site because BMPs usually are prescribed for entire site/project and not for just parts of it**
- **Effectiveness questions typically consider areas smaller than the entire project or site; focus is on areas near waterbodies and waterbodies**



# Implementation



**To answer “Were the site-specific BMP prescriptions implemented as planned or designed?”**

## **Projects: two primary questions**

- 1. Did all the BMPs from planning and other BMP guidance documents make it into the contract or plan?**
  - 2. Were all the BMPs in the contract or plan implemented fully?**
- 

## **Existing sites or features: two primary questions**

- 1. Are there operation and maintenance guidance documents that contain BMPs?**
- 2. Have all the BMPs in the operation and maintenance guidance documents been implemented fully?**



# Effectiveness



**To answer “Were the site-specific BMP prescriptions as implemented, effective at controlling nonpoint source pollution and protecting aquatic health?”**

**Four primary questions (applies to active projects, completed projects, and existing sites)**

**1. Where was nonpoint source pollution observed?**

**Where some was expected, does it exceed amounts anticipated during planning?**

**2. What types of evidence do you observe?**

**3. What were the sources?**

**4. What were the causes?**

**Many effectiveness questions tie back to one or more implementation questions**



# Implementation and Effectiveness



## Both sections end with the same questions

41. Are any corrective actions needed to improve implementation? Select one:

- a. Yes (go to question 42)
- b. No (go to question 43)

42. Provide information about corrective actions needed to improve implementation, and reference the question number to which each correction applies.

43. Are any adaptive management actions needed to improve implementation? Select one:

- a. Yes (go to question 44)
- b. No (go to question 45 if effectiveness is to be evaluated at this time; otherwise go to General Comments)

44. Provide information about adaptive management actions needed to improve implementation, and reference the question number to which each action applies. Go to question 45 if effectiveness is to be evaluated at this time; otherwise go to General Comments after answering this question.



# Implementation and Effectiveness



## Corrective Actions vs. Adaptive Management Actions

**Corrective actions** usually address or fix problems associated with the site or project being evaluated; tend to be actions taken in the short-term

**Adaptive management (AM) actions** tend to address recurring deficiencies in planning, problems due to repeated poor selection of BMPs, or recurring failure to follow a defined process (e.g., not including all BMPs from NEPA decision in contract)





# Questions?

<http://www.fs.fed.us/biology/watershed/BMP.html>

