



Monitoring the Forest Service's BMPs



Assessing the First Year of National Program Implementation



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National BMP Program Components



- National Core BMPs
- National Core BMP Monitoring Protocols
- Data Management System
- Corresponding national direction





Monitoring Program Vision



Forest Service wants:

- A credible management tool
- Document use of National Core BMPs
- Document effectiveness of BMPs at protecting water quality at different scales
- To provide information for adaptive management of land and resource management activities and BMP processes for water resource protection.



Benefits



- Improved protection of soil and water resources.
 - Adaptive management at multiple scales
 - Enhanced environmental analysis & decision-making
 - Improved communication & program integration





BMP Monitoring Overview



- 42 activity-based monitoring protocols within 10 resource areas
- Objective assessments of BMP implementation and effectiveness
- Planning evaluated for every monitoring protocol
- Sample-based, project-scale
- Completed by interdisciplinary teams





BMP Monitoring Overview



42 Protocols	
Aquatic Ecosystems	2
Chemical Uses	3
Facilities	4
Fire	2
Minerals	4
Range	1
Recreation	9
Roads	9
Vegetation Management	3
Water Uses	5



BMP Monitoring Key Questions



- Are BMPs being implemented as planned?
- Are they effective meeting soil and water resource protection objectives?
- What are the causes of poor implementation or effectiveness?
- When do problems occur?
- Are corrective actions necessary?





BMP Monitoring Objectives



- Implemented by a mix of resource specialists
- Based on readily collectible & interpretable data
- Reproducible
- Allows for data analysis
- Data useful at local level





BMP Monitoring Protocols



- Standardized procedures
- Emphasizes objective observations and techniques
- Focuses on BMP process and objectives





BMP Monitoring Protocols



➤ Each Protocol has:

- A process for sample selection
- Detailed instructions
- Forms
- Entry screens in the database
- A rating system for:
 - BMP Implementation
 - BMP Effectiveness

Best Management Practices Evaluation
AqEco A. Construction of
Aquatic Ecosystem Improvements
(Includes BMPs AqEco-1, AqEco-2, AqEco-3, AqEco-4, Fac-2, Fac-10, Road-2, and Road-5, and Road-9)
DRAFT January 2013

Header (2 pages)

1. Type of review being performed today. Select one:		2. If current review is for an initial evaluation of effectiveness only, what was the date of the implementation review for this site?
Implementation	Effectiveness	
Follow-up Implementation		3. If current review is a follow-up evaluation, what was the date of the most recent evaluation?
Follow-up Implementation	Follow-up Effectiveness	
4. Today's date:		4. Today's date:
5. If this is a follow-up evaluation, describe all of the corrective actions that were applied to protect or improve water quality since the initial evaluation:		
6. If this is a follow-up evaluation, describe all of the adaptive management actions that were applied to protect or improve water quality since the initial evaluation:		
7. Reviewers and Titles:		
8. Region number:	9a. Proclaimed Forest or Grassland number and name:	10. District number and name:
	9b. Administrative Forest or Grassland number and name:	
11. Reason for monitoring. Select all that apply:		
WO/RO Targets	Land Management Plan Monitoring	Project Review
		Quality Assurance
		Other (specify):

Standard Header

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1. Type of review performed:

2. If current review is initial Effectiveness, date of Implementation review:

3. If current review is Follow-up, date of most recent evaluation:

4. Date of current evaluation:

5. If current review is Follow-up, describe corrective actions applied since initial evaluation (max 2000 char):



BMP Monitoring Outcomes



- Potential corrective actions for the site
- Site ratings for implementation and effectiveness
- Programmatic ratings and trends at multiple scales
- Identification of adaptive management needs at programmatic level





BMP Monitoring



- 3 components to each protocol
 - Pre-work
 - Field Work
 - Post-work





BMP Monitoring Pre-work



- Review of BMP Monitoring Protocol(s) and Form(s)
- Review of planning documents
 - Examples: NEPA, contract, agreement, permit
- Establish sample population and pool; select samples
- Coordination of site visit with interdisciplinary team





BMP Monitoring



Field Work: Implementation

- Did we do what we said we would do to protect soil and water resources?
- Multiple components of the BMP assessed through a series of questions

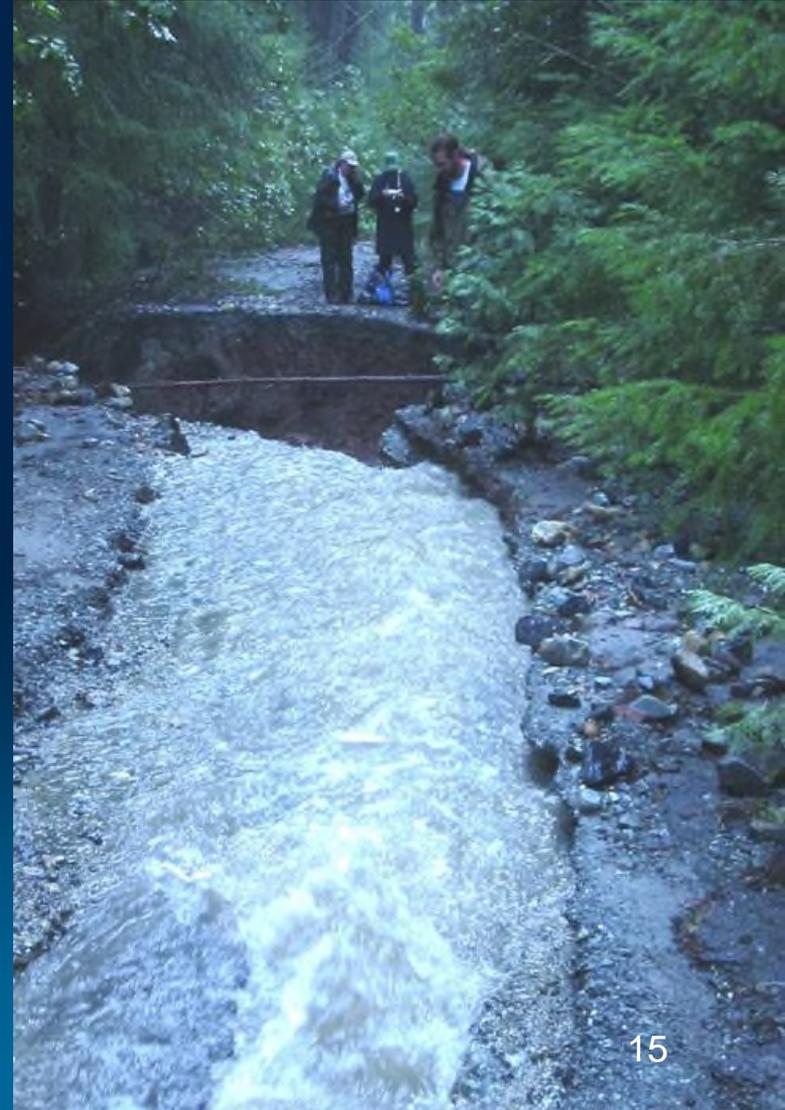




BMP Monitoring Post-Work



- Separate ratings are calculated for implementation and for effectiveness
- An overall rating is calculated for each site





BMP Monitoring

Post-Work: Database



- Interim MS Access database will store data in accessible format
- Can be used to generate information at multiple scales

Fac D Implementation

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25. Erosion control plan for project:

26. NEPA analysis completed:

27. Resource protection provisions from planning included in project plan - select one response for each:

a. Timing and scheduling	<input type="text"/>	n. Topsoil/growth medium testing	<input type="text"/>
b. Identify chemicals/hazardous materials	<input type="text"/>	o. Seedbed preparation	<input type="text"/>
c. Hazardous materials removal	<input type="text"/>	p. Interim/final vegetation re-establishment	<input type="text"/>
d. Soil cover installation	<input type="text"/>	q. Stream channel, etc. re-establishment	<input type="text"/>
e. Water control/drainage installation	<input type="text"/>	r. Aquatic habitat re-establishment	<input type="text"/>
f. Erosion control installation	<input type="text"/>	s. Other mitigation	<input type="text"/>
g. Water diversion/conveyance	<input type="text"/>	t. Physical restrictions to site access	<input type="text"/>
h. Aquatic invasive species control	<input type="text"/>	u. Post-reclamation monitoring	<input type="text"/>
i. Location of activities	<input type="text"/>	v. Operation/maintenance requirements	<input type="text"/>
j. Areal extent	<input type="text"/>	w. Drill hole/well plugging	<input type="text"/>
k. Facility removal requirements	<input type="text"/>	x. Other	<input type="text"/>
l. Contour restoration	<input type="text"/>	specify: <input type="text"/>	
m. Physical stability	<input type="text"/>		



BMP Monitoring Percent of Total Time



Region	No. BMPs Monitored	Pre	Field	Post	Travel
1	27	29%	39%	10%	22%
2	22	18%	38%	9%	34%
3	16	14%	34%	16%	36%
4	24	18%	33%	11%	38%
5	22	16%	33%	15%	36%
6	99	23%	38%	13%	26%
8	28	25%	37%	11%	27%
9	27	23%	40%	10%	27%
10	23	33%	38%	10%	19%
Total	288				
	Average % Time	22%	37%	12%	29%



BMP Monitoring A Matrix



Combined Scoring		Implementation Rating				
		Fully Successful	Mostly Successful	Marginally Successful	Not Successful	No BMPs
Effectiveness Rating	Effective	<i>Excellent</i>	<i>Excellent</i>	<i>Good</i>	<i>Fair</i>	<i>No Plan</i>
	Moderately Effective	<i>Good</i>	<i>Good</i>	<i>Fair</i>	<i>Fair</i>	<i>No Plan</i>
	Not Effective	<i>Fair</i>	<i>Fair</i>	<i>Poor</i>	<i>Poor</i>	<i>No Plan</i>



BMP Monitoring Ratings



iii. Flow Diversion Effectiveness Rating

The answer choices selected for the flow diversion questions are combined to determine a Flow Diversion Effectiveness Rating as follows:

Effectiveness Rating	Answer Choice Combinations	
No Flow Diversion	<p style="text-align: center;">Q39 is "a" or "b" <u>AND</u> Q40 and Q41 are skipped</p>	
Effective	<p style="text-align: center;">Q39 is "c", "d", or "g" <u>AND</u> Q40 is "a" or "c" <u>AND</u> Q41 is "a" or "c"</p>	
Moderately Effective	<p style="text-align: center;">Q39 is "e" or "f" <u>AND</u> Q40 is "a", "c", or "d" <u>AND</u> Q41 is "a", "c", or "d"</p>	<p style="text-align: center;">Q39 is "c", "d", or "g" <u>AND</u> Q40 is "d" <u>OR</u> Q41 is "d"</p>



BMP Monitoring Results



	Implementation	
	Northern Region	Rocky Mtn Region
Fully	36.4%	35.3%
Mostly	18.2%	0.0%
Marginal	18.2%	23.5%
No BMPs	27.3%	41.2%



BMP Monitoring Results



	Effectiveness	
	Northern Region	Rocky Mtn Region
Effective	42.9%	41.2%
Moderate	28.6%	23.5%
Not Effective	28.6%	35.3%



BMP Monitoring Results



	Composite	
	Northern Region	Rocky Mtn Region
Excellent	42.9%	33.3%
Good	28.6%	8.3%
Poor	14.3%	41.7%
No Plan	14.3%	16.7%



BMP Monitoring Conclusion



- This is only the beginning – very early in the process.
- Summarization of monitoring results will continue to show improvement.



Questions?

