

**2006 BEST MANAGEMENT PRACTICES EVALUATION
PROGRAM REPORT
USDA FOREST SERVICE
LAKE TAHOE BASIN MANAGEMENT UNIT**



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TABLE OF CONTENTS

Executive Summary	2
1. INTRODUCTION	4
2. OBJECTIVES AND METHODS	4
3. RESULTS	5
3.1 Results Summary	5
3.2 Results by Program Area	7
Timber	7
T01: Streamside Management Zones	8
T04: Landings	9
T05: Timber Sale Administration	10
T06: Special Erosion Control and Revegetation	10
Engineering	11
E08: Road Surface, Drainage and Slope Protection	11
E09: Stream Crossings	12
E10: Road Decommissioning	13
E11: Control of Sidecast Material	14
E13: In-Channel Construction Practices	14
E15: Rip Rap Composition	15
E20: Management of Roads during Wet Periods	15
Recreation	16
R22: Developed Recreation Sites	16
R30: Dispersed Recreation Sites	18
Other	20
G24: Range Management	20
F25: Prescribed Fire	21
V29: Revegetation of Surface Disturbed Areas	21
4. SUMMARY	22
4.1 ADAPTIVE MANAGEMENT RECOMMENDATIONS	22
5. REFERENCES	23

EXECUTIVE SUMMARY

In 2006, the Lake Tahoe Basin Management Unit (LTBMU) completed 33 Best Management Practices Evaluation Program (BMPEP) evaluations, as part of the Pacific Southwest Region's effort to evaluate the implementation and effectiveness of BMPs created for protecting soil and water resources associated with Timber, Engineering, Recreation, Grazing, and Revegetation activities. This was short of the Regional target of 43 evaluations because of a lack of projects meeting the Regional target criteria for evaluation under Road Surface & Slope Protection (E08), In-channel Construction Practices (E13), Prescribed Fire (F25), and Dispersed Recreation Sites (R30). Of the 33 random evaluations completed, 28 (85%) rated BMPs effective and five (15%) rated BMPs not effective.

Seven of the eight random Timber evaluations rated the BMPs implemented and effective and one rated not implemented and effective. The implementation failure occurred at the Landings BMP (T04) on the Agate 22A unit and was due to the lack of proper drainage from the landing and concentrated runoff, which has the potential to continue until corrective action is taken.

Of the 13 Engineering evaluations, 11 rated the BMPs implemented and effective, one rated implemented and not effective, and one rated not implemented and not effective. One effectiveness failure, noted during the evaluation of Management of Roads During Wet Periods (E20), occurred due to an unauthorized opening of a gate on the Fibreboard Freeway (Road16N93) by an unknown party. The other failure occurred due to the lack of design plans incorporating BMPs for a chipsealing project on Angora road.

Of the six Recreation evaluations completed, four rated implemented and effective, one rated not implemented and effective, and one rated not implemented and not effective. The implementation failure that resulted in an ineffective rating (R22) occurred at the Echo Lake Trailhead due to drainage from the lower parking lot entering the lake and stream. The implementation failure-but-effective occurred at the Watson Lake dispersed camping area, due to vehicle access to the shore and bare soil hillslopes supplying sediment to the lake. This evaluation rated effective, although sediment entered the lake, due to the way various site characteristics (such as control of human waste and refuse) are weighted in the BMPEP effectiveness calculations for the Dispersed Recreation Sites (R30) evaluation. Although this evaluation was rated as effective using the Regional scoring rule set imbedded within the BMPEP evaluation database, the BMP is considered ineffective by the LTBMU because of the higher level of concern we have in the Basin regarding erosion and sediment transport; mitigations are recommended.

Of the four Revegetation (V29) evaluations, three rated BMPs implemented and effective, and one rated implemented and not effective. The ineffective rating was due to a small amount of sediment entering Trout Creek from a section of riprap.

The one Prescribed Fire evaluation (F25), implemented for a broadcast burn on the northshore (UB-4), rated BMPs implemented and effective, and the one Grazing evaluation (G24), completed on the Baldwin Allotment, rated BMPs implemented and

not effective. The ineffective rating for the Baldwin Allotment was a result of bank trampling and overgrazing in crucial areas.

The following are actions that are either recommended or have already been implemented to correct BMP deficiencies documented in this report.

- Include more definitive and clear description of the treatment of landings and heavily used skid trails in future NEPA documents.
- Update the potential for erosion at the Beaver Bridge crossing at Cold Creek on Powerline Trail, if corrective action is needed.
- Ensure that burn piles located within the Stream Environmental Zone (SEZ) boundary at Meeks Meadow are removed from the SEZ before burning or disposed of in some other manner.
- Ensure all gates are closed during seasonal closures.
- Coordinate with permittee holders to redesign the Echo Lake parking lot and nearby trail to prevent runoff and sediment from reaching the channel.
- Install physical barriers and signage to create SEZ buffer around Watson Lake. Establish ground cover near the northern most camp site to prevent sediment from entering the lake.
- Maintain better documentation of road BMP planning and design in order to better identify the source of ineffective implementation procedures on project specifications.

1. INTRODUCTION

This report summarizes the results of the United States Department of Agriculture, Forest Service (USFS) Best Management Practices Evaluation Program (BMPEP) for 2006 for the LTBMU. The objectives of this program are to: 1) fulfill USFS monitoring commitments to the State Water Resources Control Board (SWRCB), as described in the SWRCB/USFS Management Agency Agreement and *Water Quality Management for National Forest System Lands in California (USDA Forest Service, 2000)*; 2) assess and document the efficacy of the USFS water quality management program, specifically the implementation and effectiveness of BMPs; and 3) facilitate adaptive management by identifying program shortcomings and recommending improvements.

2. OBJECTIVES AND METHODS

Onsite evaluations are used to assess both BMP implementation and effectiveness. Implementation evaluations determine the extent to which planned, prescribed and/or required water quality protection measures were actually put in place on project sites. Effectiveness evaluations gauge the extent to which the practices met their water quality protection objectives. Component ratings for project planning, implementation, and effectiveness are entered into the BMPEP database, along with ratings of the degree, duration, and extent of any problems that exist. Based on conditions observed during the evaluation, weightings are applied to the component ratings to determine an overall rating for implementation and effectiveness of the projects.

Additional details on the BMPs, protocols, and site selection can be found in *Investigating Water Quality in the Pacific Southwest Region, Best Management Practices Evaluation Program (BMPEP) User's Guide (USDA Forest Service, 2002)* and *Water Quality Management for National Forest System Lands in California (USDA Forest Service, 2000)*.

Procedures vary greatly, but the overall approach for each onsite evaluation is consistent. For BMP implementation, evaluators ask a variety of specific questions intended to determine whether the project was executed on the ground, as planned and described in project documents. A range of possible scores are allocated to each question, depending on its relative importance and the degree to which a particular requirement is met (e.g., whether the project exceeds, meets, departs immaterially, or departs substantially from requirements). Scores for all implementation questions are then summed and compared to a pre-determined threshold to conclude whether a given suite of BMPs were implemented. BMP effectiveness is determined through evaluation of indirect measures of water quality protection, including observations (e.g., evidence of sediment delivery to channels) and quantitative measurements (e.g., amount of ground cover, percent of stream shade). A scoring system similar to that used for BMP implementation is used to determine BMP effectiveness.

This scoring approach results in a 2 x 2 matrix, where a given suite of BMPs are placed into one of four categories: implemented and effective (I-E); implemented, but not effective (I-NE); not implemented, but effective (NI-E) and not implemented and not effective

(NI-NE). A ranking of NI-E results when BMPs were not implemented, or were not installed according to specifications, and there is no evidence of potential water quality impairment. No evidence of impairment can result when: 1) incorrectly installed BMPs were still effective, 2) no BMP was necessary for the specific situation, 3) no precipitation event occurred to provide evidence of impairment, or 4) only project planning deficiencies were noted.

For sites with poor implementation or effectiveness scores, observers are asked to identify the reasons and suggest corrective actions. For those sites with poor effectiveness, evaluators estimate the degree, duration and magnitude of any existing or potential impacts to water quality, based on published Region 5 guidelines. This type of “hillslope monitoring” uses indirect measures to evaluate BMP effectiveness; poor scores represent potential, rather than actual, impairment of beneficial uses by a given activity.

Best Management Practices Evaluation Program protocols are applied to both randomly and non-randomly selected project sites. The number of random evaluations to be completed each year is assigned to the National Forests by the Regional Office based on: 1) the relative importance of the BMP in protecting water quality in the Region, and 2) those management activities most common on the individual Forest. Forests can supplement these randomly selected sites with additional sites based on local monitoring needs, such as those prescribed in an environmental document. Only data from onsite evaluations made at randomly selected sites are used to assess BMP implementation and effectiveness at a Regional programmatic level.

Under certain circumstances, evaluations for E08 (Road Drainage Control), E09 (Stream Crossings), and E11 (Control of Sidecast Material) are conducted simultaneously. This resulted in seven E08 evaluations being conducted when there were only two targets that fulfilled the regional criteria for evaluation under E08. Likewise, five E11 evaluations were conducted although only two targets met regional criteria for evaluation under E11. These evaluations were entered with the selection code “S01: Part of LMP,” (LMP is the Land Management Plan / Forest Plan) since they were triggered as part of the BMPEP protocol and not part of the random selection.

3. RESULTS

3.1 Results Summary

The LTBMU accomplishments are summarized in Table 1. The LTBMU completed 33 of the 43 Regional BMPEP assigned targets. The deficiency in evaluations completed was the result of a limited number of projects that met the Regional BMPEP selection criteria this year. Targets were not met in four areas: Road Surface & Slope Protection (E08), In-channel Construction Practices (E13), Dispersed Recreation Sites (R30), and Prescribed Fire (F25).

In 2006, 85% of the evaluations were rated as effective, which is slightly higher than the average of 82% over the last five years, but lower than the 2005 rating of 95% effective. Of these 33 evaluations, 25 (76%) rated BMPs both implemented and effective, three

(9%) rated BMPs not implemented and effective, three (9%) rated BMPs implemented and not effective, and two (6%) rated not implemented and not effective (Table 2).

Table1. 2006 BMPEP targets and selections for the LTBMU.

Evaluation	Form	Region 5 Target	Targets Available	Random Selections Completed	Random Selections
Streamside Management Zones	T01	1	11	1	Meeks Meadow hand thinning Unit 14-12 (2005)
Landings	T04	3	11	3	Blackwood CTL Unit 1-3A (2005), Crag CTL Unit 4 (2005), Agate CTL Unit 22 (2005)
Timber Sale Administration	T05	1	1	1	Ward CTL Unit 5 (2006)
Special Erosion Control & Revegetation	T06	3	18	3	Crag CTL Unit 3 (2005), Crag CTL Unit 4 (2005), Agate CTL Unit 22 (2005)
Road Surface & Slope Protection *	E08	5	2	2	1214 Angora Road (Surfacing and reconstruction of drainage in 2005), 12N17 Fountain Place and Powerline Connector (Graded in 2005)
Stream Crossings*	E09	4	4	4	Mid Trout culvert on 1201 (2005), Trout Creek Bridge (2005), 1394-Spring Creek, 1396-Spring Creek
Road Decommissioning	E10	2	2	2	1379B.1(off of 1306) (Decommissioned 700 feet in 2005), 1330 (upper Emerald Bay Tract; decommissioned 300 feet in 2005)
Control of Sidecast Material*	E11	2	2	2	Mid Trout Creek culvert on 1201 (2005), 1396-Spring Creek
In-channel Construction Practices	E13	5	5	0	Blackwood Canyon Bridge (1503), Lam Watah Trail
Rip Rap Composition	E15	1	1	1	Saxon Bridge
Management of Roads During Wet Periods	E20	2	2	2	14N32, 16N93
Developed Recreation Sites	R22	3	3	3	Pope Beach, Big Meadow Trailhead, Echo Trailhead
Range Management	G24	1	1	1	Baldwin Allotment
Prescribed Fire	F25	2	1	1	UB-4 Prescribed Burn (2005)
Revegetation of Surface Disturbed Areas	V29	4	5	4	Trout Creek Bridge (2005), Tahoe City House (2005), Beaver Bridge (2005), Hartoonian Trail (2005)
Dispersed Recreation Sites	R30	4	3	3	Watson Lake, McKinney Rubicon, Blackwood Canyon
TOTALS		43	72	33	

Table 2. 2006 BMPEP random onsite evaluation results for the LTBMU by program area.

Program Area & Form	Number of Evaluations	Implemented & Effective	Not Implemented & Effective	Implemented & Not Effective	Not Implemented & Not Effective
Timber					
T01	1	1	0	0	0
T04	3	2	1	0	0
T05	1	1	0	0	0
T06	3	3	0	0	0
Subtotal #	8	7	1	0	0
Subtotal %	24.2%	87.5%	12.5%	0.0%	0.0%
Engineering					
E08	2	1	0	0	1
E09	4	4	0	0	0
E10	2	2	0	0	0
E11	2	2	0	0	0
E13	0	0	0	0	0
E15	1	1	0	0	0
E20	2	1	0	1	0
Subtotal #	13	11	0	1	1
Subtotal %	39.4%	84.6%	0.0%	7.7%	7.7%
Recreation					
R22	3	2	0	0	1
R30	3	2	1	0	0
Subtotal #	6	4	1	0	1
Subtotal %	18.2%	66.7%	16.7%	0.0%	16.7%
Other					
G24	1	0	0	1	0
F25	1	1	0	0	0
V29	4	3	0	1	0
Total # Evaluations	33	26	2	3	2
TOTAL PERCENT		78.8%	6.1%	9.1%	6.1%

3.2 Results by Program Area

Individual evaluations are described in this section, including comments documented on the evaluation forms. For each evaluation type, the specific BMPs evaluated are listed, along with the BMP number from the *Water Quality Management for National Forest System Lands in California (USDA Forest Service, 2000)* handbook.

~ Timber (Vegetation Management) ~

Timber evaluations are completed at least one year after operations are complete, except for the Timber Sale Administration Evaluation, which is completed during operations. For the purposes of this report, the term Timber refers to Fuels Reduction Projects designed to reduce fuel loading (rather than commercial logging operations). Vegetation

management projects were implemented utilizing a harvester/forwarder logging system instead of traditional tractor skidding equipment. This system utilizes mechanized equipment with a reported ground pressure ranging from 4 psi for the harvester on tracks to 13 psi for a fully loaded forwarder. The equipment operates over a slash mat when not utilizing existing roads. The harvester cuts trees and strips the branches off them and loads them onto a forwarder, which transports logs to a landing area where they are then loaded onto trucks. Pre-existing roads, or a chipped and slash covered area, are used for the landing to prevent additional ground disturbance. When fuels treatment / thinning operations are completed, slash consisting of limbs and branches is piled and burned, chipped, or masticated.

In 2006, the Agate, Blackwood, Crag and Ward fuels reduction projects were evaluated for BMP Implementation and Effectiveness. Of the eight timber evaluations completed in 2006, seven rated BMPs implemented and effective, while one rated BMPs not implemented but effective.

T01: Streamside Management Zones

BMPs Evaluated:

- ✓ Streamside Management Zone Designation (1-8)
- ✓ Stream Course and Aquatic Protection (1-19)
- ✓ Slash Treatment in Sensitive Areas (1-22)

Meeks Meadow Unit 14-12 – Implemented & Effective

In the Lake Tahoe Basin, the guidelines for SEZ protection, as defined by the Tahoe Regional Planning Authority (TRPA, Water Quality Management Plan for the Lake Tahoe Region, Volume III, SEZ Protection and Restoration Program, 1988), are stricter than those for Stream Management Zones (SMZs) as described by the Sierra Nevada Forest Plan Amendment (Region 5, USFS, Sierra Nevada Forest Plan Amendment, 2004). As a result, contracts and NEPA documents require protection for SEZs. All BMPEP evaluations will consider protection for SEZs, which by default ensures protection for SMZs.

One SMZ evaluation was completed for the Meeks Meadow Unit 14-12 hand thinning unit, located on the north side of Meeks Meadow. A gated dirt road runs along the north boundary of this meadow and, with the exception of a few areas, defines the edge of the meadow environment from the hillside. During the layout of this project, the dirt road was used to define the edge of the meadow and hence the boundary within which burn piles were to be excluded. However, the presence of primary riparian indicator species on the north side of the road in some areas requires the meadow boundary to be extended north, beyond the road. The presence of the fuel piles in their current location does not threaten the integrity of the SEZ as long as they are left unburned. The Fire and Fuels Management personnel have been notified of the situation and their plans to burn these piles have been put off until arrangements can be made to relocate these piles or dispose of them in another manner.



Meeks Meadow Unit 14-12 – burn piles located within SEZ boundary as defined by primary riparian indicator species (2006).

T04: Landings

BMPs Evaluated:

- ✓ Log Landing Location (1-12)
- ✓ Log Landing Erosion Control (1-16)

Three Landing evaluations were completed. Two evaluations rated BMPs implemented and effective, and one evaluation rated BMPs not implemented and effective.

Agate Unit 22A – Not Implemented & Effective

This unit is located south of Brockway Summit on Highway 267 and north of FSR 16N93. This landing was located at the junction of FSR 16N93 and a small user defined road. This landing was chipped after use to provide soil cover and logs were placed to prevent off road vehicle access from this location. The combination of compacted soil and no diversions for runoff resulted in concentrated flow from the edge of one of these logs that eventually enters the road drainage system, but the flow is dispersed more than 200 feet from the edge of the SEZ. The BMP evaluation resulted in a rating of not implemented due to the lack of proper drainage features on this landing. This problem will likely persist over time if corrective action is not taken. Recommendations have been made to the Vegetation and Fuels Management staff to install drainage structures on this landing.

Blackwood Unit 1-3A – Implemented & Effective

This small landing is located north of Barker Pass Road, approximately ¼ mile west of Highway 89 on the west shore of Lake Tahoe. The landing was covered with chips during project implementation; a depth of greater than 6” of chips was observed during the BMP evaluation. The soil was heavily compacted and was mixed with chips. Waterbars were installed to disperse overland flow that would otherwise reach the Barker Pass Road drainage system; however, some sediment was transported beyond the waterbars into the cutslope ditch on the Barker Pass Road. Nevertheless, there is very

little potential for sediment from this landing to impact water quality due to the length and nature of the flow path to the nearest water body.

Crag Unit 4 – Implemented & Effective

This unit is located north of Highway 89, northwest of Tahoe City. This landing is the furthest southwest landing in Unit 4 and is scheduled to be used in future years as part of the continuing fuels reduction project. This landing provides proper drainage and does not threaten water quality or the integrity of any SMZ.

T05: Timber Sale Administration

BMPs Evaluated:

- ✓ Erosion Prevention & Control Measures During Timber Sale Operations (1-13)
- ✓ Erosion Control Structure Maintenance (1-20)
- ✓ Acceptance of Timber Sale Erosion Control Measures Before Sale Closure (1-21)
- ✓ Modification of Timber Sale Contract (1-25)

Ward Unit 5 – Implemented & Effective

One Timber Sale Administration evaluation was completed in Ward Unit 5 that rated BMPs implemented and effective. This unit is located west of Highway 89, at the end of Tahoe Woods Boulevard, approximately 1 mile south of Tahoe City. The average ground cover from chips and slash was approximately 90%. No problems were noted in this unit.

T06: Special Erosion Control and Revegetation

BMPs Evaluated:

- ✓ Special Erosion Prevention Measures on Disturbed Land (1-14)
- ✓ Revegetation of Areas Disturbed by Harvest Activities (1-15)

Three Special Erosion Control and Revegetation evaluations were completed that rated BMPs implemented and effective. This form is used to evaluate BMPs for timber activities that require additional erosion control and revegetation measures. While there were no instances that required additional erosion control or revegetation BMPs last year, this form was applied to the LTBMU's standard protocols for dry ground mechanical operation and chip covering of the harvested unit upon completion.

Agate Unit 22A – Implemented & Effective

For this unit, a skid trail was evaluated for Special Erosion Control and Revegetation. This skid trail was located in the middle of the unit, northwest of FSR 16N93, on an existing segment of road that is no longer in use. The skid trail was chip covered to prevent excessive soil compaction and displacement during project implementation. The skid trail currently has over 90% cover and functional waterbars where applicable.

Crag Unit 3 – Implemented & Effective

For this unit a skid trail was evaluated for Special Erosion Control and Revegetation. This skid trail is located in the middle of Crag Unit 3 just south of FSR 16N73. The skid trail was chip covered to prevent excessive soil compaction and displacement during project implementation. The skid trail currently has over 90% cover and functional waterbars where applicable.

Crag Unit 4 – Implemented & Effective

For this unit a landing was evaluated for Special Erosion Control and Revegetation. This landing is located approximately ¼ mile from the southern boundary of Unit 4, along FSR 16N73. This landing was chip covered to prevent excessive soil compaction and displacement during project implementation, and currently has over 90% soil cover. This landing is scheduled to be used as part of the ongoing fuels management project over the next few years.

~ Engineering ~

E08: Road Surface, Drainage, and Slope Protection

BMPs Evaluated:

- ✓ Erosion Control Plan (2-2)
- ✓ Stabilization of Road Slope Surfaces and Spoil Disposal Areas (2-4)
- ✓ Road Slope Stabilization Construction Practices (2-5)
- ✓ Control of Drainage (2-7)
- ✓ Construction of Stable Embankments (2-10)

The regional goal of five BMPEP evaluations for E08 was not fulfilled due to the lack of qualifying projects. Only two projects met the criteria for random evaluations, one rated not implemented and not effective and one rated implemented and effective.

Road 1214-Not Implemented and Not Effective

Road 1214, commonly referred as the Angora Road, was chip-sealed in 2005. In the section of concern, the road is on the periphery of a montane meadow, fed by spring channels. The road was rated as unsuccessful for implementation and effectiveness. This evaluation was rated as not implemented, as there were no plans for this in-house chipseal resurfacing project, including temporary and permanent BMPS. This project was completed by a local Forest Service road crew. A rating of not effective resulted from a minor amount of sediment from the fillslope reaching a spring channel next to the road which drains into the meadow. Corrective action is not needed as continued erosion is not expected to occur.

Road 1217-Implemented and Effective

This road is graveled and was last maintained through surface blading in 2005. No streams are located within 300 feet of the road. The road grade is less than 3% and no rills were observed on August 3, 2006.

E09: Stream Crossings

BMPs Evaluated:

- ✓ General Guidelines for Location and Design of Roads (2-1)
- ✓ Stabilization of Road Slope Surfaces and Spoil Disposal Areas (2-4)
- ✓ Road Slope Stabilization Construction Practices (2-5)
- ✓ Control of Road Drainage (2-7)
- ✓ Construction of Stable Embankments (fills) (2-10)
- ✓ Stabilization of Road Slope Surfaces and Spoil Disposal Areas (2-4)

All four of the evaluations rated BMPs successful for implementation and effectiveness.

Road 1201-Implemented and Effective

The 1201 crossing crosses a tributary to Trout Creek. The stream is perennial and there was no evidence of sediment reaching the channel. The crossing was observed to be stable as there was no evidence of plugging or piping.

Road 12N08-Implemented and Effective

The new crossing, completed in 2005 is a bridge, configured to pass a 100-year flow of 1,300 cfs. The road crosses Trout Creek at this location and is downstream of FS Road 1201. The crossing was rated successful for implementation and effectiveness, although there was scour downstream of the crossing that extended for two channel widths below the outlet.

Road 1214-Implemented and Effective

The crossing of a spring channel was rated successful for implementation and effectiveness, although the fillslope at the crossing has less than 50% effective cover because no sediment reached the channel. However, there is a diversion potential if the crossing fails. Outflow from the crossing is restricted due to the low gradient of the adjacent meadow and a downed tree in the channel. The tree backs up runoff immediately downstream of the crossing. The tree needs to be removed to prevent failure of the crossing.

Road 1394-Implemented and Effective

The road crosses a perennial channel and the crossing was rated successful for implementation and effectiveness. Fillslopes have vigorous cover and no sediment was observed reaching the stream. Scour is evident but extends less than two channel widths below the outlet.

Road 1396-Implemented and Effective

The road crosses a perennial channel and the crossing was rated as successful for implementation and effectiveness. Scour is evident downstream of the channel as a result of a sharp change in stream gradient, but this scour does not appear to be associated with the design of this crossing. A tree and bedrock in the channel prevent the channel from head cutting upstream to the crossing.

E10: Road Decommissioning

BMPs Evaluated:

- ✓ Obliteration or Decommissioning of Roads (2-26)

Two roads were evaluated and BMPs in both were rated as implemented and effective.

1330-Implemented and effective

This road accesses a recreation residence tract. At the end of the road, a 300-foot section was decommissioned by a local Forest Service road crew. Decommissioning entailed barricading the decommissioned segment with 2-foot and 4-foot boulders and scattering woody debris in the old road bed. The decommissioned section crosses no streams and there was no evidence of erosion or unauthorized use. A Forest Service gate at the entrance of the road and State Highway 89, which is always closed, aids in preventing unauthorized use.



Decommissioned road segment on FS Road 1330.

1379B.1-Implemented and effective

Seven hundred feet of this road was decommissioned with a local Forest Service road crew. Decommissioning was completed through ripping of the old road bed. The decommissioned section crosses no streams and there was no evidence of erosion or unauthorized use.



Decommissioned road 1379B.1

E11: Control of Sidecast Material

BMPs Evaluated:

- ✓ Control of Sidecast Material During Construction & Maintenance (2-11)

Two roads were evaluated and both were rated as implemented and effective.

Road 1201-Implemented and Effective

There was no evidence of sidecast material within the SMZ of the tributary to Trout Creek.

Road 1396-Implemented and Effective

There was no evidence of sidecast material within the SMZ of an unnamed perennial stream, tributary to Spring Creek.

E13: In-Channel Construction Practices

BMPs Evaluated:

- ✓ Controlling in-Channel Excavation (2-14)
- ✓ Diversion of Flows Around Construction Sites (2-15)
- ✓ Bridge and Culvert Installation (2-17)

The BMPEP for In-Channel Construction Practices (E13) requires conducting field evaluations during implementation the first year, as well as field evaluations after the site has experienced one winter. In 2005, there were no evaluations of BMPs done for the implementation phase of any projects qualifying for In-Channel Construction Practices (E13). As a result, there were no qualifying projects to evaluate for effectiveness in 2006.

BMPs at three projects were evaluated for In-channel Construction Practices (E13) implementation: Cookhouse Meadow Restoration, Blackwood Canyon Bridge (FS Road 1503), and Lam Watah Trail (Boardwalk). The Blackwood Canyon Bridge was completed in November, 2006 and the Cookhouse Meadow Restoration project was completed in October, 2006. The effectiveness portion of the E13 evaluation will be done for both of these projects in 2007. The Lam Watah Trail was not fully completed in 2006, however the actual in-channel work is complete. This site will be monitored in 2007 to evaluate whether or not any in-channel work is being performed. If necessary, another E13 implementation evaluation will be conducted in 2007 to ensure consistent in-channel construction practices. Otherwise, the final effectiveness evaluation for the Lam Watah Trail will be conducted and reported in the 2007 report.

E15: Rip Rap Composition

BMPs Evaluated:

- ✓ Specifying Riprap Composition (2-20)

12N08-Implemented and Effective

Rip-rap composition was completed in 2005 for 12N08, where the road crosses Saxon Creek. This project was part of the Powerline Road/Fountain Place project and the BMPs evaluated were rated successful for implementation and effectiveness. Angular cobbles were placed upstream and downstream of the crossing. There was no evidence of scour and the rip-rap was designed so as to allow hikers and dogs access to the creek. Also, large woody debris was placed around the crossing to deter recreational enthusiasts from disturbing the streambanks.



12N08 at Saxon Creek on September 6, 2006.

E20: Management of Roads During Wet Periods

BMPs Evaluated:

- ✓ Traffic Control During Wet Periods (2-24)
- ✓ Management by Closure to Use (7-7)

BMPs at two roads were evaluated for implementation and effectiveness using the E20 protocol. BMPs at one road (14N32) were rated as implemented and effective, whereas BMPs at the other road (16N93) were rated as implemented and not effective.

14N32-Implemented and Effective

This road has a native surface and is commonly referred as the Genoa Peak Road and is also a designated OHV route. Due to heavy rain in late May, both gates remained closed until June 22, 2006. The BMPs at this road were rated successful for implementation and effectiveness on June 22, 2006. The road is seasonally closed during wet periods until the snow melts off the road (Senkier and Ross, 2005). There was no evidence of rilling, ruts, or sedimentation.

16N93-Implemented and Not Effective

This road has a native surface and is located between a residential area in Kings Beach and Highway 267, also known as the Fiberboard Freeway. On June 6, 2006 the gate on the Highway 267 end of the road was open and the gate near the neighborhood was closed. The Basin's Gate Management Plan states that "no gates should be opened in the summer without prior approval by the Road Manager." Discussions with the Engineering staff indicated that the gate was locked, but was subsequently opened by other than authorized Forest Service personnel because road conditions were unsuitable for use. The BMPs evaluated were rated not effective due to road-derived sediment impacting an ephemeral stream and the formation of ruts. Wood chips placed in the ruts were not effective, as seen in the photograph below. The Engineering Department will monitor this gate closure more frequently.



16N93 Road ruts and ponding water on June 6, 2006.

~ Recreation~

R22: Developed Recreation Sites

BMPs Evaluated:

- ✓ Control of Sanitation Facilities (4-4)
- ✓ Control of Solid Waste Disposal (4-5)
- ✓ Assuring that Organizational Camps Have Proper Sanitation and Water Supply Facilities (4-6)
- ✓ Protection of Water Quality Within Developed and Dispersed Recreation Areas (4-9)
- ✓ Location of Pack and Riding Stock Facilities and Use in Wilderness, Primitive, and Wilderness Study Areas (4-10)

BMPs at two of three sites were rated as implemented and effective, and one was rated as not implemented and not effective.

Echo Lake Trailhead-Not Implemented and Not Effective

The selection of sites to be included in the random sample pool for evaluation using the Developed Recreation Sites (R22) protocol is developed from "all developed recreation sites on the Forest where the Forest Service provides a service such as sanitation, water

refuse removal, etc.” The Echo Lake Trailhead and parking area were included because they provide a building with vault toilets that are serviced by the Forest Service. Parking occurs at an upper parking area, a lower parking lot, and a road between the two parking areas. The BMPs for the trailhead were rated as not being implemented, due to the lack of design features necessary to convey runoff from the lower parking lot. The lower parking lot includes parking and structures for special use permittees. The evaluated BMPs were rated as not effective, as runoff and sediment from the lower parking lot reach the outlet stream from Lower Echo Lake. The source of runoff on August 28, 2006 was a spring in the lower parking lot, due to a plugged CMP. Runoff traveled down the lower parking lot and onto a trail between the parking lot and outlet stream. Eroded sediment from the trail, transported by uncontrolled runoff from the parking lot, was observed in the perennial stream. This site should be evaluated for future BMPs that would control and disperse the runoff from the lower parking lot. The CMP also needs to be unplugged and the trail needs adequate drainage.

Echo Lake Trailhead-Source of runoff in Lower parking lot. August 28, 2006.



Echo Lake Trailhead-Trail and stream Downstream of the Lower parking lot. August 28, 2006.

Big Meadow Trailhead-Implemented and Effective

The Big Meadow Trail head has a paved parking area for passenger vehicles and horse trailers. It also has a building with two vault toilets and an interpretive sign for the Tahoe Rim Trail, in addition to a depiction of the Washoe People. The trailhead BMPs were rated as implemented and effective. Runoff and sediment from the parking lot are effectively directed into rock-lined ditches, which empty into rock-lined swales. Ground cover is sufficient to reduce erosion. There are no perennial channels in the area.

Pope Beach-Implemented and Effective

This recreational area is located on the south shore of Lake Tahoe and is operated by California Land Management. The recreational site provides parking, refuse disposal, bathrooms, and drinking water. The beach is one of the most popular beaches on the south shore of Lake Tahoe. The lake is less than 100 yards from the parking area. This site's BMPs were rated successful for implementation and effectiveness.



Pope Beach parking area upgraded in 2006. October 13, 2006.

R30: Dispersed Recreation Sites

BMPs Evaluated:

- ✓ Control of Sanitation Facilities (4-4)
- ✓ Control of Solid Waste Disposal (4-5)
- ✓ Assuring that Organizational Camps Have Proper Sanitation and Water Supply Facilities (4-6)
- ✓ Protection of Water Quality Within Developed and Dispersed Recreation Areas (4-9)
- ✓ Location of Pack and Riding Stock Facilities and Use in Wilderness, Primitive, and Wilderness Study Areas (4-10)

The BMPs at two sites were rated as implemented and effective, and at one site they were rated as not implemented and effective.

Watson Lake Dispersed Camping Area-Not Implemented and Effective

The sample pool for evaluating Dispersed Recreation Sites is developed from sites that “receive continued and concentrated use and are maintained at least annually by the Forest Service.” The Watson Lake Dispersed Camping Area is a primitive camping and recreational site, as there are no sanitation or refuse facilities. Outside of the Wilderness Area, it’s the only dispersed camping allowed next to a lake in the Tahoe Basin. Campsites are numbered and have Forest Service-provided campfire rings. Parking is designated in a graveled parking area.

This area lacked needed BMPs and was therefore rated unsuccessful for implementation. The following problems were noted:

- There is insufficient ground cover between the northernmost campsites and the western shore of the lake.
- Vehicles are able to drive to the edge of the lake and, as a result, increase sediment transport to the lake.
- Two non-approved fire rings within 20 feet of the lake were found during both site visits.

Additionally, immediately following Labor Day weekend, considerable piles of discarded lumber were found throughout the site. According to the scoring rule set embedded in the Regional database, which gives primary weight to factors such as transport of human waste and refuse to a water body, the BMPs are effective. However, the LTBMU rates the BMPs as ineffective, because of evidence of sediment transported to the lake. Corrective action to provide a physical SEZ buffer and restore compacted and denuded areas is recommended.



Watson Lake - Unapproved fire ring and Discarded lumber following Labor Day weekend.

McKinney OHV Staging Area-Implemented and Effective

This area provides parking in a graveled parking lot and two vault toilets at the eastern entrance of the McKinney Rubicon Trail. There are signs posted in the parking area informing recreational enthusiasts that fires and overnight camping are not allowed at the site. The BMPs were rated successful for implementation and effectiveness. The BMPs were evaluated after the Labor Day weekend; there were no signs of erosion or sedimentation into the nearby water body (an abandoned oxbow of McKinney Creek).

Blackwood Canyon Dispersed Camping-Implemented and Effective

This dispersed camping area is located off Forest Service Road 15N38. Campsites are located on either side of the road and away from Blackwood Creek. Campsites are numbered and have bear-proof food storage lockers and Forest Service-provided campfire rings. A building houses two vault toilets and there is a dumpster for refuse. The road and parking area are graveled and there were no indicators of erosion. Within this area is a day use area with picnic tables. The entire area does not pose a risk to the water quality of Blackwood Creek. The BMPs were rated for effectiveness after the Labor Day weekend and were rated successful for implementation. It was noted, however, that an illegal BBQ full of trash was found in the day use area. In addition, an illegal fire ring associated with an illegal campsite was found next to an abandoned gravel mine pit. Neither site posed a risk to water quality.



*Blackwood Canyon Dispersed Campsite
September 5, 2006*

~ Other Evaluations ~

G24: Range Management

BMPs Evaluated:

- ✓ Range Analysis and Planning (8-1)
- ✓ Grazing Permit System (8-2)
- ✓ Rangeland Improvements (8-3)

Baldwin Allotment – Implemented & Not Effective

The Baldwin Allotment is the only active grazing allotment in the Lake Tahoe Basin and it is located north of Highway 89 on the south shore of Lake Tahoe. Since it is the only qualifying site for this evaluation, it is not truly a random selection and it' BMPs are evaluated every year. The allotment lies within the Tallac Creek watershed and is grazed each year from July through October. It consists of five pastures, in which the horses are rotated throughout the grazing period. The effectiveness portion of the evaluation was conducted using the guidelines set forth in the G24 protocol. The BMPs on this site were

not effective, as evidenced by trampled banks and the effects of overgrazing in crucial areas. To date, various management strategies have been applied to this area with limited success. This pasture was closed to grazing in September, 2006. The authority to allow future grazing in this pasture is currently under consideration.

F25: Prescribed Fire

BMPs Evaluated:

- ✓ Consideration of Water Quality in Formulating Fire Prescriptions (6-2)
- ✓ Protection of Water Quality from Prescribed Burning Effects (6-3)

UB-4 Prescribed Burn – Implemented & Effective

The UB-4 broadcast burn is located west of Brockway Summit and north of FSR 16N73. Due to the limited number of qualifying activities in 2005, the regional target of two Prescribed Fire evaluations was not met in 2006, and this evaluation is not random. This broadcast burn was completed in September of 2005. Erosion control features were adequate on the fire line and prescription elements were well documented. The resulting groundcover was approximately 63%, slightly over the target of 60%. No pre-burn soil hydrophobicity tests were done. The post-burn tests showed soils to be 60% strongly, 8% moderately, and 32% weakly hydrophobic. Hydrophobicity tests were conducted in an unburned site downhill from the prescribed burn and showed lower hydrophobicity. However, it is important to note that the soil in this unburned location had noticeably higher soil moisture. An increase in soil moisture is generally associated with a decrease in soil hydrophobicity (Huffman et al., 2001), which complicates the interpretation of these results and likely underestimates the presence of hydrophobic soils in the unburned area. Future prescribed burns will involve soil moisture and hydrophobicity tests both before and after treatment, in order to better document any differences between pre- and post-burn conditions.

V29: Revegetation of Surface Disturbed Areas

BMPs Evaluated:

- ✓ Revegetation of Surface Disturbed Areas (5-4)

Four projects were evaluated for Revegetation of Surface Disturbed Areas. Three of these evaluations rated BMPs implemented and effective and one rated BMPs implemented and not effective. For the purposes of these evaluations, revegetation refers to restoration efforts that increase effective ground cover by placing woody material, rock, and seeding with native grasses to improve ground stability and minimize erosion.

Beaver Bridge on Cold Creek – Implemented & Effective

This evaluation was completed at the Beaver Bridge on Pioneer Trail which crosses Cold Creek. This project consisted of the closure and full restoration of several sections of recreational trails, compacted skid trails, steep slopes, and equipment staging areas. This included tilling and the addition of compost, fertilizer, seed, mulch, and subsequent irrigation. All areas were in excellent condition with ample ground cover. One potential

problem area located just southwest of the bridge was noted due to steep slopes and loose soil, but no signs of erosion were present.

Hartoonian Trail – Implemented & Effective

This evaluation was completed on a section of roads located northwest of the Cold Creek crossing on Pioneer Trail. This project involved converting a section of road to a trail and establishing ground cover to prevent erosion. Ground cover was approximately 50-60% on sections of the old road that had been converted to trails. No problems were observed during this evaluation.



Hartoonian Trail – >60% ground cover over most of the rehabilitated trail.

Tahoe City House – Implemented & Effective

This evaluation was completed on an old building plot along the Tahoe Rim Trail along the Truckee River near Tahoe City. This project involved removing a building formerly used for USFS employee housing and reestablishing vegetation in this area. Native seed mixes and soil treatments were used to ensure the success of the project. A small rill coming off a user-created trail through the site was noted and brought to the attention of the Engineering Department. No other problems were observed during this evaluation.

Trout Creek Bridge – Implemented & Not Effective

This evaluation was completed on a vegetation project associated with the Trout Creek Bridge on the Powerline Road. This project included the restoration and revegetation of five non-vegetated areas, three compacted staging areas, and eight disturbed areas at the corners of the bridges. Treatments included amendments to the soil, tilling, aeration, and seeding. This BMP evaluation resulted in a rating of not effective, due to one isolated section, less than 100 square feet on the left bank of the downstream side of the bridge, that showed signs of a minor amount of sediment reaching the channel. The sediment originated from an area of cobble riprap with a small amount of interstitial sand; the potential for continued erosion is very limited. This issue has been reported to the Engineering Department and a follow-up evaluation will be conducted in 2007.

4. SUMMARY

Forest-wide, BMPs in 2006 were effective 85% of the time, which is slightly above the average of 82% from the last five years, but down from 95% reported in 2005. Of the five remaining evaluations (15%), three were implemented and not effective, while two were not implemented and not effective. Two (6%) of these evaluations rated BMPs not implemented, yet still effective, since there were no potential negative impacts to beneficial uses of water.

Of the ineffective BMPs, one was found in the Timber program evaluations (related to a landing), three in the Engineering program evaluations (related to a road chipseal project, gate closure during wet periods, and revegetation at an upgraded stream crossing), two in the Recreation program (related to a trailhead and campground), and one in the Grazing program (related to the Baldwin Grazing allotment).

Follow-up evaluations to be conducted in 2007 are as follows:

- Landing at timber harvest unit Agate 22 (T04),
- Angora Lake Road chipsealing project (E08)
- Echo Lake Trailhead (R22)
- Watson Lake Dispersed Camping (R30).
- Powerline Trail Beaver Bridge over Trout and Cold Creek (V29)
- Baldwin Grazing Allotment

Follow-up evaluations for 2006, as recommended in the 2005 BMPEP report, included Bayview Campground (not yet reevaluated) and the Baldwin Grazing Allotment. Both will be reevaluated as part of the 2007 follow-up evaluations.

4.1 Adaptive Management Corrective Action Recommendations

The following are actions that are either recommended or have already been implemented to correct BMP deficiencies documented in this report.

- Include a more definitive and clear description of the treatment of landings and heavily used skid trails in future NEPA documents.
- Update the Beaver Bridge crossing of Cold Creek on Powerline Trail if corrective action is needed.
- Ensure that burn piles located within the SEZ boundary (Meeks Meadow) are removed from the SEZ before burning, or disposed of in some other manner.
- Ensure all gates are closed during seasonal closures.
- Coordinate with permit holders to redesign the Echo Lake parking lot and nearby trail to prevent runoff and sediment from reaching the channel.
- Install physical barriers and signage to create SEZ buffer around Watson Lake. Establish ground cover near the northern most camp site to prevent sediment from entering the lake.
- Maintain better documentation of road BMP planning and design in order to better identify the source of ineffective implementation procedures on project specifications.

5. REFERENCES

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