

WATER QUALITY BUREAU REPORT

**SOUTHEASTERN IDAHO FOREST PRACTICES  
WATER QUALITY AUDIT**

**1988**



**Idaho Department of Health & Welfare  
Division of Environmental Quality  
Water Quality Bureau  
450 W. State Street  
Boise, Idaho 83720**

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**SOUTHEASTERN IDAHO FOREST PRACTICES WATER QUALITY  
AUDIT - 1988**

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## EXECUTIVE SUMMARY

Ten projects were audited on federal and state lands in southern and eastern Idaho. State personnel involved in the forest practices water quality program conducted the audit during the first week of August, 1988. Members of the audit team had expertise in fisheries biology, forestry, water quality and BMP application and effectiveness. The projects audited were chosen from a pool of thirty. These projects were listed for the interagency forest practices water quality audit, but were dropped from consideration, because they were widely scattered in a region which produces 8.5% of the statewide timber harvest. Projects for audit were chosen to fit a travel plan and include at least one forest operation on the Challis, Sawtooth, Salmon, Targhee and Caribou National Forests.

Projects were examined subjectively by walking roads, skid trails and streams. Compliance with individual BMPs was determined. Soil erosion surfaces and actual or potential pathways by which eroded materials could be transported to the streams were identified. Class I streams were examined to assess their water quality condition and the impact of the project. The audit was conducted during the second summer of two consecutive low precipitation years in the region.

### Results and Recommendations:

#### Compliance and Implementation

Compliance with the BMPs on Forest Service and state projects was high; 98% and 92% of the opportunities to apply the BMPs, respectively. Compliance on BLM projects was 84%. Unacceptable implementation was found on two of the ten sales audited. The two unacceptable projects were managed by IDL and BLM.

#### BMP Effectiveness

The BMPs were observed to prevent sediment from reaching streams in 100% of the cases where the BMPs were applied. Where the BMPs were not applied, pollutants were delivered to the waters in 64% of the cases.

#### Stream Conditions:

Class I streams assessed during the audit had low levels of sedimentation and their stream banks were in good condition. Pristine

upstream conditions were found for three of seven class I streams assessed. The projects audited had minimal impacts on one class I stream. Impacts to two class II stream reaches were identified. Other nonpoint source activities affecting the streams assessed included grazing, mining, adjacent forest projects, channelization, road encroachment and recreational vehicular traffic. These impacts were heavy on four stream reaches located below the audited projects.

Implementation Record and Recommendations:

Rule implementation problems were specific to the landowner.

U.S. Forest Service:

All Forest Service projects audited had an acceptable level of BMP implementation. Timber sale administrators did appear to have an insufficient knowledge of the Forest Practices Act and their obligation to implement its rules to comply with the Clean Water Act. Federal land managers need a mechanism to obtain a variance to the rules, when justified. This mechanism is currently not available.

Recommendations:

- : Provide more intensive training for national forest staff on the Clean Water Act, its implementation by the state and the role of the Forest Practices Act Rules and Regulations as the BMPs.
- : Provide training for field level timber staff and engineers in application of the FPA rules and regulations, with emphasis on BMP techniques.
- : Develop a procedure for obtaining FPA variances. Incorporate variance procedures into Forest Service manual supplements for Region 4.

BLM:

One of the two BLM projects audited had an unacceptable level of BMP implementation. Implementation problems appeared to develop because the sale administrator was responsible for a number of projects spread over a very large geographic area. As a result the administrator was unable to provide the operator supervision necessary for good BMP implementation. BLM personnel, like other federal personnel were not

very knowledgeable of the Forest Practices Act or their obligation to implement its rules to comply with the Clean Water Act.

Recommendations:

- : Provide more intensive training for BLM staff on the Clean Water Act, its implementation by the state and the role of the Forest Practices Act Rules and Regulations as the BMPs.
- : Consider methods of obtaining better operator supervision on BLM projects.

Department of Lands:

One IDL project was judged to have an unacceptable level of BMP implementation. This project apparently had a history of an uncontrolled operator. A contributing factor to the problems encountered on this sale was the remote location of the project and correspondingly, the limited amount of time the timber sale administrator could spend on the site.

Recommendations:

- : Consider the remoteness of a project site to timber sale supervisory personnel during planning; allow enough time to assure adequate supervision of the project.

## INTRODUCTION

Forest practices audits are conducted as one measure of the effectiveness of the regulatory system in protecting water quality during timber harvest operations. The audits are based on state and federal regulatory authority described in the Forest Practices Water Quality Management Plan (1988).

The management plan describes the feedback loop process for control of nonpoint source pollution from project activities. The Idaho Department of Health and Welfare-Division of Environmental Quality (DEQ) is delegated authority to implement the nonpoint source sections of the federal Clean Water Act. DEQ's primary role is to evaluate the Best Management Practices (BMPs) for adequacy in protecting beneficial uses of water. The Idaho Department of Lands (IDL) is the designated management agency for state and private lands, and the U.S. Forest Service (USFS) and Bureau of Land Management (BLM) are the designated management agencies for the public lands they administer.

The Idaho Water Quality Standards and Wastewater Treatment Requirements (IDAPA 16.01.2003,01) define a Best Management Practice as:

" a practice or combination of practices determined by the Department to be the most effective and practicable means of preventing or reducing the amount of pollution generated by nonpoint sources."

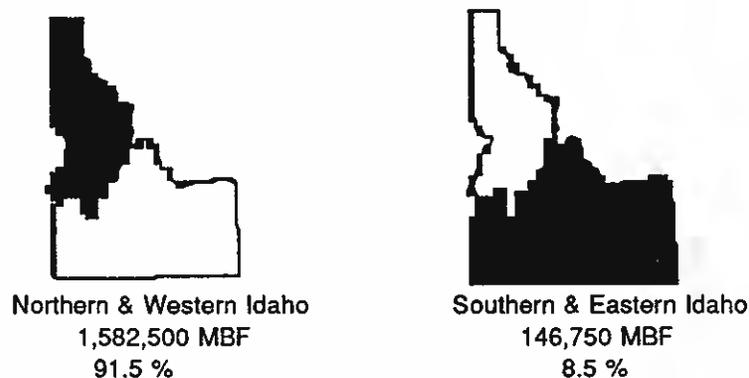
The Rules and Regulations Pertaining to the Idaho Forest Practices Act (IDAPA 20.15) are identified in the standards as the BMPs for forest practices. IDL administers these rules on state and private land. As BMPs the rules are recognized as the minimum management requirements on federal lands. The FPA Rules (IDAPA 20.15.01.s) define a forest practice as:

" the harvest of forest tree species, road construction associated with harvesting of forest tree species, reforestation, use of chemicals or fertilizers for the purpose of growing or managing forest tree species or the management of slashings resulting from harvest management or improvement of forest tree species."

For clarity a forest practice is referred to as a project in this report. The audit described in this report was confined to projects involving forest harvest and forest road construction.

The management plan calls for an audit of the BMPs every four years. An audit of forest projects was planned and executed during 1988. During the planning of the 1988 audit, the interagency audit team conducting the audit chose to concentrate its efforts in the northern and western parts of the state, where the majority of the timber (91%) is harvested (Figure 1). Although this was a reasonable decision, DEQ was uncomfortable omitting a region of the state which contains five national forests and large tracts of Bureau of Land Management (BLM) lands. Except for participation in a brief audit of IDL and private projects in the region during 1987, water quality personnel had not assessed compliance with or the effectiveness of BMPs in the southern and eastern parts of the state. The audit of projects on federal and state ownerships in southern and eastern Idaho was conducted to assess implementation and the effectiveness of the BMPs in that portion of the state.

Figure 1. Geographic Distribution of Projects in Idaho.



Note: Shown as the total volume cut during 1987 in MBF.

## METHODOLOGY

### Audit Team:

The audit team was composed of DEQ and IDL personnel. Team members had expertise in forestry, fisheries biology, water quality and BMP application and effectiveness. Two members of the team were participants in the interagency team which audited 42 projects in northern and western Idaho during the summer of 1988.

### Project Selection:

Lists of operations to be audited were obtained from the USFS, BLM, and IDL. The suggested criteria for project nominations were as follows:

- Land disturbance by roading and/or logging began in 1986 or 1987.
- A class I stream is present on the area or within 150 feet.
- Land disturbance affected an area of at least 10 acres.
- The operation can be reached by road.
- The audit team has permission to visit the site on private land. Permission was never denied.
- Preferably a sale map of the area is available.

Subsequent inspection of ten projects in southeastern Idaho revealed that four did not fully meet the criteria. These were included in the audit nonetheless.

The criteria of primary importance were the presence of class I waters and disturbance by either forest roading or logging. These two criteria assure the close proximity of sensitive beneficial uses of class I streams to potential nonpoint sources of pollution. Since projects yield the most sediment in their initial two years, the team preferred to audit projects begun either in 1986 or 1987. Projects larger than 10 acres were sought because projects of this size or greater were believed to provide a more representative sample of a project. The criteria concerning road access, permission to visit and a project map were included to expedite auditing the project. Permission to visit a site was not denied for any project.

Thirty projects, exclusively on state and federal ownerships, were dropped from consideration when the interagency team decided against auditing projects in southern and eastern Idaho. These thirty projects were the pool from which selections were made for the audit discussed in this report (Table I). In southern and eastern Idaho, 379 projects were conducted on federal and state lands during 1986 & 1987. The thirty projects in the pool represent 8% of the total projects in the region.

Table I. Projects Profile Southern and Eastern Idaho in 1986 and 1987

Ownership	USFS	State	BLM	Total
Total Forest Projects	353	16	10	379
Projects Meeting Criteria	23	5	2	30
Projects Audited	7	1	2	10
Percentage Audited	30%	20%	100%	33%

Note: Percentages of projects which met the audit criteria.

At least one project was selected for the southeastern audit from each national forest (Challis, Sawtooth, Salmon, Targhee and Caribou National Forests). Both projects meeting the criteria on BLM lands were selected (Table I). Since previous audits had examined primarily state projects, only one was selected for audit. Projects were selected to fit into a travel plan and were not randomly selected.

#### Rating Forms:

Rating forms developed for the interagency audit were used to audit the projects. A copy of the rating form is presented in Appendix A.

#### Project Inspection Protocol:

An audit generally consisted of:

1. obtain background information on the project prior to the site inspection (Appendix A, pages 1&2).
2. obtain an overview of the operation from the responsible agency manager.
3. study a map of the project and decide a method permitting inspection of as much of the project as possible in the allotted time. The audit team subjectively examined associated class I streams and completed a stream assessment based on the protocol in Appendix B.
4. inspect the operation in the time allotted to view the critical features.
5. complete the audit forms by consensus of the audit team members.

The audit team inspected the upland and riparian areas of the project to determine compliance with the rules, identify soil erosion surfaces and identify actual or potential pathways by which eroded materials were or potentially could be transported to streams. Input from any observers was sought and considered by the audit team. Final decisions on any project were reserved to the audit team members.

Audits of projects required between two and four and one half hours plus travel time, dependent on their size and the number of problems identified.

#### Audit Time Frame:

Audits of the projects selected were conducted from August 8-12, 1988. Weather conditions during the audits were dry. The previous two years were well below normal with respect to precipitation.

#### Limitations of the Audit Methodology:

The audit technique consisted of a one time field inspection and assessment. Roads, skid trails and streams were walked. This approach documents first and second year erosion and sedimentation problems. The first and second years are recognized as the high erosion years on projects. The stream assessment was based on visual appraisal of sediment deposition in salmonid spawning and rearing habitats. The results are highly subjective and represent only a snapshot of BMP effectiveness and sediment impacts evident at the time of inspection. They do not reflect potential future impacts. The concept of cumulative effects could not be addressed in this audit. These questions will require long term monitoring and demonstration projects to resolve and are being addressed in other studies.

A single action is often regulated by several rules. In cases of noncompliance or BMP ineffectiveness, only the major or substantive rule was noted, although other rules were often referenced. This procedure allowed the audit team to focus on the major aspect of the noncompliance and facilitate improvement of the BMPs. As a result of this procedure, an absolute number of noncompliances cannot be provided, but the numbers listed are a fair representation of compliance and noncompliance.

Although the previous two years were considered drought conditions, the team judged that the number of noncompliances would not have increased substantially. Compliance is basically a function of operators

following the BMPs; this is not weather dependent. Below normal precipitation decreased delivery of sediment to stream channels in the opinion of area hydrologists. Decreased delivery to stream channels may have affected the perceived impact of the projects audited on the Class I streams. The team does not know if this condition of lower precipitation had a positive effect on the perceived effectiveness of the BMPs. The team believes that the condition of low precipitation does not change the overall conclusions and recommendations of this audit, especially in evaluation of the regulatory system and implementation of the BMPs.

Thirty-eight of the 59 BMPs are related to road planning, construction and maintenance; 13 of these are related to road planning. The road planning BMPs were generally not audited in the field. Evaluation of these rules would require review of plans and specifications, which the audit team rarely had. Planning rules were rated by the audit team when construction problems indicated that planning specifications had failed. However, road construction and maintenance rules were inspected.

## RESULTS & DISCUSSION

### Compliance With and Effectiveness of BMPs:

The audit team rated compliance with the specific FPA rules. Separately, the team noted if rules that were complied with were effective in controlling surface erosion and sediment delivery.

The BMPs were complied with in the majority of cases where they were applicable (Table II). The BMPs were complied with 98 and 92% of the time on USFS and state projects. BLM projects complied in 86% of the cases.

TABLE II. APPLICATION AND EFFECTIVENESS OF BEST MANAGEMENT PRACTICES

LANDOWNER	# PROJECTS INSPECTED	# BMPs RATED	BMPs NOT APPLIED				BMPs APPLIED			
			NUMBER NOT APPLIED		POLLUTANTS DELIVERED TO STREAM, WHERE BMPs NOT APPLIED		NUMBER APPLIED		BMPs APPLIED & NOT EFFECTIVE	
			Number	(%)	Number	(%)	Number	(%)	Number	(%)
USFS	7	191	4	(2)	1	(25)	187	(98)	0	(-)
IDL	1	37	3	(8)	1	(33)	34	(92)	0	(-)
BLM	2	43	7	(16)	7	(100)	36	(84)	0	(-)
<b>TOTAL</b>	<b>10</b>	<b>271</b>	<b>14</b>	<b>(5)</b>	<b>9</b>	<b>(64)</b>	<b>257</b>	<b>(95)</b>	<b>0</b>	<b>(-)</b>

Note: USFS - U.S. Forest Service, IDL - Idaho Department of Lands and BLM - Bureau of Land Management

The BMPs were found to be effective in every case where they were applied. When BMPs were not implemented, water quality impacts resulted an average of 64% of the time. The general effectiveness of the BMPs when applied and the high chance of water quality impact, even in dry years, when not applied, emphasizes the importance of strict compliance with the BMPs.

Implementation Problems:

Projects considered to have an unacceptable level of BMP compliance are identified by landowner category in Table III. The audit team judged overall degree of compliance of the individual projects with the BMPs. This is in contrast to the individual rule percentages discussed above. A project may be viewed as unacceptable for a number of reasons - one rule not complied with repeatedly, a number of rules with a minor degree of noncompliance, or one problem that was considered a major source of sediment, etc. A project was not judged unacceptable if only a few minor noncompliances were noted or if an existing nonpoint source problem was observed. The type of impact in the table does not indicate magnitude and does not indicate that the projects resulted in a major stream impact. This column only indicates the type of impact that can be expected as a result of the unacceptable activity. Stream impacts observed during the audit are discussed in the section on page 12.

Table III. Unacceptable Projects, Their Causes and Impacts by Land Ownership

Ownership	Sales with Unacceptable Level of BMP Implementation	Cause	Type of Impact
IDL	1	Road construction delivered sediment to class II stream; excessive steep skid roads in violation of FPA rules.	sediment
BLM	1	Landing in SPZ; slash capable of culvert blockage in class II stream; oil filters in class II stream; no class II SPZ provided; sidecast of debris to class II stream; culverts plugged by debris and sediment, all violations of FPA rules.	sediment blockage by slash oil in stream

The IDL project has a road which encroaches on a class II stream. The fill has failed into the stream. The operator on the project began construction of the road prior to pre-operation consultation with IDL. Although the center line for the road was flagged in a proper location, the operator ignored the flagging and placed the road too close to the class II stream. On another area of the sale a steep slope has numerous skid roads (an estimated 20-30% of the slope was in roads) the least steep at sixty percent slope. Even though the slope below was jammer skidded, this equally steep slope was tractor skidded with an excessive number of skid roads. Another quarter mile of road across the top of the slope would have allowed jammer skidding of the upper slope. The central problem appears to have been the remoteness of the project from IDL's Eastern Supervisory Area Office in Idaho Falls. The distance made on-site supervision of an operator, prone not to implement plans, difficult.

One BLM project was judged by the team to have an unacceptable level of BMP implementation. Of the twenty BMPs applicable to the sale, seven (35%) were rated as being in noncompliance. The resulting impacts on the class II stream included over twenty cubic yards of sediment delivery, blockage of drainage culverts by slash and an unknown quantity of crankcase oil delivered to the stream. A disregard for the BMPs was apparent on the project. The audit team found that the sale administrator was responsible for many other projects distributed over a very wide geographical area. The administrator's workload and travel time precluded close supervision on any of his sales. On this project, inadequate supervision by the sale administrator apparently lead to unacceptable BMP implementation by the operator.

#### Impacts to Streams:

##### Project Impacts:

Pollutants were delivered to three of the eleven (27%) streams associated with the projects audited (Table IV). One project contributed a significant amount of pollutants to the adjacent stream, while two other projects had minimal impacts on the streams. Another minimal impact on one project was to the streamside vegetation. In this case sufficient streamside vegetation was removed in the process of soil scarification to possibly effect the thermal stability of the stream.

Table V. Stream Impacts And Assessment

STREAM	SEDIMENT IMPACTS (Low, Intermediate, High)	STREAMBANK CONDITION (Poor, Moderate, Good)	CAUSAL AGENT (Current(C)/Pre-FPA(P)) Major(Ma)/Minor(Mi)	PROJECT RELATED IMPACT (None observed, Minimal, Unobservable, Not Investigated (NI))
Thatcher Creek	Low	Good	Mining-P, Ma	Minimal
Fourth of July Creek	Moderate	Good	Mining-P, Ma	None Observed
Van Horn Creek	Low	Good	Grazing (in sale area) - C, Mi (Pristine upstream)	None Observed
McDevitt Creek	NI	NI	None (Pristine upstream)	Minimal
Stein Gulch	Low	Good	None (Pristine upstream)	None Observed
Wright Creek	Low	Good	None (Pristine upstream)	None Observed
Moose Creek	Low	Good	Diversion- C, Mi; LOD removal-C, Mi	Minimal to Stream Banks
Lucky Dog	Low	Good	None	None Observed
Sheep Creek	NI	NI	Grazing-C, Ma; Channelization-P, Ma	None Observed
Wolverine Creek	NI	NI	Adjacent forest projects - C, Ma, Grazing-C, Ma; Channelization-P, Ma Road encroachment-C, Ma; Recreational vehicular traffic-C, Mi	Extensive
East Fork Mink Creek	NI	NI	Grazing-C, Mi; Recreational vehicular traffic-C, Mi	None Observed

Note: NI - not investigated because stream was class II at location of project.

Table IV. Water Quality Impacts to Streams of the Projects Audited

Impact Level	Number	Percentage
No pollutants observed to enter stream	8	73
Minimal amount of pollutants enter stream	2	18
Significant sediment delivery to stream	1	9
Total	11	100

Stream Assessment:

The class I streams assessed during the audit have low sediment impacts and good streambank condition (Table V). One class I stream has moderate sedimentation which probably resulted from mining upstream. Mining, grazing and stream diversion were the nonpoint source activities identified as affecting the class I streams. Three of the seven class I streams were pristine upstream of the project. The class II streams examined during the audit had several nonpoint source activities along their banks, which included grazing, channelization, adjacent projects, road encroachment and recreational vehicular traffic. Reaches heavily impacted by these nonpoint source activities were identified on four streams below the audited projects. Two of the four class II streams were in poor condition at locations well below the projects as a result of other nonpoint source activities. One was pristine upstream of the project.

Conclusions and Recommendations:

Effectiveness of BMPs

BMPs were found to be effective in minimizing erosion and subsequent sedimentation of streams when conscientiously applied. Water quality problems occur when BMPs are not used. When the rules were followed the audit team judged the rules to be effective 100% of the time. When the rules were not followed sediment was delivered to streams 64% of the time.

## Application of BMPs

Application of BMPs varied by landownership category. When summarized over all inspections individually rated BMPs were applied 95% of the time. When considered on a project basis, two of the ten projects (20%) were judged by the audit team to have an unacceptable level of BMP implementation.

**Forest Service:** Forest Service personnel responsible for planning and administering projects were often insufficiently aware of the state's role in administering nonpoint source sections of the Clean Water Act. They were often unaware that the rules and regulations of the Forest Practices Act are the BMPs and that they must be followed on federal projects to comply with the Clean Water Act. Although this was not apparently an impediment to BMP compliance on Forest Service operations, this problem which has been identified elsewhere in the state can lead to poor BMP implementation.

### Recommendation:

- : Provide more intensive training for national forest staff on the Clean Water Act, its implementation by the state and the role of the Forest Practices Act Rules and Regulations as the BMPs.
- : Provide training for field level timber staff and engineers in application of the FPA rules and regulations, with emphasis on BMP techniques.
- : Develop a procedure for obtaining FPA variances. Incorporate variance procedures into Forest Service manual supplements for Region 4.

**Bureau of Land Management:** Agency personnel planning and administering projects had a similar lack of knowledge in the state's role in nonpoint source water quality management. However, the audit team found BLM personnel were assigned too many sales over too broad a geographic area to effectively administer the implementation of proper projects.

#### Recommendations:

- : Provide more intensive training for BLM staff on the Clean Water Act, its implementation by the state and the role of the Forest Practices Act Rules and Regulations as the BMPs.
- : Consider methods of obtaining better operator supervision on BLM projects.

Department of Lands: Only one sale was audited in this land ownership category, but it demonstrated a problem in BMP implementation. It was apparent that the sale administrator had difficulty controlling the actions of the timber operator. The operator's actions lead to noncompliance with the BMPs and impacts on Class II headwaters of McDevitt Creek. The audit team cannot judge the sufficiency of IDL personnel's efforts to control the timber operator, but a factor may have been the remote location of the project from the supervisory area office. This problem should be considered when planning projects in this region of the state where forest resources are widely scattered.

#### Recommendations:

- : Consider the remoteness of a project site to timber sale supervisory personnel during planning; allow enough time to assure adequate supervision of the project.

The implementation problem related to the inability of timber sale administrators to effectively oversee the operators performance, when sales are remote or the sale administrator is charged with covering many sales over a broad geographic area was identified in two management agencies. On the two projects the unacceptable implementation resulted from inadequate supervision of the operator.

#### BMP Evaluation

It is difficult in many cases without the input of a fisheries biologist to identify a class I stream. Often the audit team would debate whether a stream was class I or II. It was noticed on at least one sale that a class I stream had been classified as class II. Fortunately the stream had been afforded the protection of a class I stream. The agencies should classify their class I streams with in-house staff or the expertise of other relevant agencies.

The BMPs were effective in the area audited. The audit did not cover some areas of eastern Idaho where complaints about projects have been made by DEQ field offices and cooperating agencies. No projects were audited in the Centennial, Snake River, Caribou, Webster or Preuss Ranges or the Bighole Mountains. Additional audits will be required to assess compliance and effectiveness of the BMPs in these areas.

**APPENDIX A: Forms Used To Rate Projects Audited**

## IDAHO FOREST PRACTICE EVALUATION WORKSHEET

DATE: \_\_\_\_\_

## LOCATION

SITE (Describe): \_\_\_\_\_  
\_\_\_\_\_

COUNTY \_\_\_\_\_ DESCRIPTION (Sec, T.,R, P.M. \_\_\_\_\_)

OWNER \_\_\_\_\_

OPERATOR \_\_\_\_\_

FPA FOREST REGION ( ): North \_\_\_\_\_ South \_\_\_\_\_

USFS \_\_\_\_\_ State \_\_\_\_\_ Private Industrial \_\_\_\_\_

Private Non-industrial \_\_\_\_\_

## PHYSICAL ENVIRONMENT

ELEVATION: Mean \_\_\_\_\_ Range \_\_\_\_\_

SLOPE: Mean \_\_\_\_\_ Range \_\_\_\_\_

CLIMATE: Annual Precipitation (in.) \_\_\_\_\_

Antecedent Conditions \_\_\_\_\_

GEOLOGY &amp; SOILS: \_\_\_\_\_

(describe) \_\_\_\_\_  
\_\_\_\_\_

Hazard Rating (see attachment) \_\_\_\_\_

VEGETATION: Forest Stand \_\_\_\_\_

(describe with Riparian Vegetation \_\_\_\_\_

H.T. &amp; sere) \_\_\_\_\_

## PRACTICES

STAGE ( ): Road Construction \_\_\_\_\_ Harvest \_\_\_\_\_

Slash Management \_\_\_\_\_ Reforestation \_\_\_\_\_

ROADS: New Road Construction \_\_\_\_\_

Road Reconstruction: Heavy \_\_\_\_\_ Light \_\_\_\_\_

(describe) \_\_\_\_\_

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include, if possible road drainage template, culvert spacing, road gradient (0-5%, 5-10%, 10%+), prism width, sideslope %, aspect, road age, erosion practices

MILES OF NEW ROAD CONSTRUCTION \_\_\_\_\_ RECONSTRUCTION \_\_\_\_\_

HARVEST:  
(Acres & Yarding  
System, # of  
Landings

Clearcut \_\_\_\_\_  
Ind. Selection \_\_\_\_\_  
OSR \_\_\_\_\_

Seed Tree \_\_\_\_\_  
Shelterwood \_\_\_\_\_

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SITE PREPARATION  
& REFORESTATION:  
(Describe)

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## BMP COMPLIANCE & EFFECTIVENESS

	COMPLIANCE	EFFECTIVENESS	RESPONSIBILITY	REMARKS
<b>FOREST PRACTICES ACT RULE</b>				
<b>3C SOIL PROTECTION</b>				
C-1 SKIDDING EROSION				
C-2 30% LIMITATION				
C-3a # OF SKID TRAILS				
C-3b TRACTOR SIZE APPROPRIATE				
C-4 CABLE YARDING				
<b>3D LOCATION OF LANDINGS</b>				
D-1 LOCATE LANDINGS & SKID TRAILS OUT OF SPZ				
D-2 SIZE OF LANDINGS				
D-3 LANDING FILL STABILIZATION				
<b>3E DRAINAGE SYSTEMS</b>				
E-1 DRAINAGE SKID TRAILS STABILIZATION				
E-2 DRAINAGE LANDINGS STABILIZATION				
<b>3F TREATMENT OF WASTE MATERIAL</b>				
F-1 SLASH OUT CLASS I STREAM				
F-2 SLASH OUT CLASS II STREAM				
F-3 SOIL OUT OF SP ZONES				
F-4 OIL, FUEL OUT SP ZONES				
<b>3G STREAM PROTECTION</b>				
G-1 SKIDDING, STREAM XING SP ZONES				
G-2 CABLE STREAM XING SP ZONES				
G-3 SHADING, STABIL., FILTER CLASS I				
G-4 SHADING, STABIL., FILTER CLASS II				
<b>3H SCENIC &amp; WILDLIFE CONSIDERATION</b>				
H-3 WET AREAS CONSIDERATION				
<b>ADDITIONAL NOTES:</b>				

SCALE 1

SCALE 1

SCALE 1

SCALE 2

3

SCALE 1

SCALE 4

## BMP COMPLIANCE & EFFECTIVENESS

SCALE 1

SCALE 1

	COMPLIANCE	EFFECTIVENESS	RESPONSIBILITY	REMARKS
<b>FOREST PRACTICES ACT RULE</b>				
<b>4 ROAD CONSTRUCTION RULES</b>				
<b>4B PLANS &amp; SPECIFICATIONS</b>				
B-1a PLAN MIN. IN SP ZONES				
B-1b PLAN VEGETATION BETWEEN ROAD & STREAM				
B-2a PLAN MIN. WIDTH CUT & FILL				
B-2b PLAN MINIMUM CUTS & FILLS NEAR STREAM CHANNELS				
B-3 PLAN WASTE TO BE STABILIZED				
B-4a PLAN ROAD DRAINAGE				
B-4b PLAN ROAD DIPS, W-BARS & XING DRAINS				
B-5a PLAN ROAD & CULVERT DITCHES				
B-5b PLAN CULVERTS EROSION OF FILL				
B-5c PLAN MIN. DISCHARGE OF SEDIMENT				
B-6a PLAN MINIMUM STREAM XINGS				
B-6b PLAN CULVERT FISH PASSAGE				
B-7 PLAN REUSE OR VARIANCE ON OLD ROADS				
<b>4C ROAD CONSTRUCTION EXCESS MATERIAL, SLASH OUT SP ZONES</b>				
C-1 CONSTRUCTION FOLLOWED PLAN				
C-2 DEBRIS CLEARED FROM DRAINAGEWAYS				
C-3 STABILIZE EXPOSED AREAS				
C-5 COMPACT & MINIMIZE SOFT MATERIAL IN FILLS				
C-6a STREAM XING, OTHER LAW				
C-6b ROAD CONSTRUCTION OF STREAM CHANNELS				
C-7 REMOVE BERMS & OUTSLOPE ROADS				
<b>ADDITIONAL NOTES:</b>				

## BMP COMPLIANCE & EFFECTIVENESS

	COMPLIANCE	EFFECTIVENESS	RESPONSIBILITY	REMARKS
<b>FOREST PRACTICES ACT RULE</b>				
C-8 QUARRY DRAINAGE				
C-9a X-DRAINS, CULVERTS- MIN. EROSION				
C-9b INSTALL DRAINAGE PRIOR TO RUNOFF				
C-9c RELIEF CULVERT GRADIENT				
C-10 WET WEATHER CONSTRUCTION DELAYS				
C-11 OVERHANG CUTS & TREE HAZARDS				
<b>4D ROAD MAINTENANCE</b>				
D-1 SIDECAST OUT OF STREAMS				
D-2 REPAIR, STABILIZE SEDIMENT HAZARDS				
D-3 ACTIVE ROADS				
3a CULVERTS, DITCHES				
3b CROWN, SLOPED BERM				
3c MINIMIZE SUBGRADE DRAINAGE EROSION				
3d SURFACE OIL OUT OF STREAM				
D4 INACTIVE ROADS				
4a CULVERTS, DITCHES, SLOPES DRAINAGE				
4b ROAD CLOSURE				
D-5 ABANDONED ROADS				
5a SLOPED, DRAINAGE, VEGETATION				
5b DITCHES CLEAN				
5c ROAD CLOSED				
5d BRIDGES, CULVERTS REMOVED				
<b>ADDITIONAL NOTES:</b>				

SCALE 1

SCALE 1

3

SCALE 1

**OBSERVED PROTECTED USE IMPACTS**  
**STREAM REACH DESCRIPTION**

NAME: \_\_\_\_\_  
 REACH DESCRIPTION: \_\_\_\_\_  
 STREAM ORDER: \_\_\_\_\_ STREAM STAGE: \_\_\_\_\_  
 LENGTH OF REACH EVALUATED: \_\_\_\_\_

**OBSERVED OR KNOWN BENEFICIAL USES**  
**FISH HABITAT**

FPA STREAM CLASS: I \_\_\_\_\_ II \_\_\_\_\_  
 FISHERY TYPE\*: \_\_\_\_\_  
 IF&G STREAM CLASS\*: \_\_\_\_\_  
 PRIMARY FISHERY USE\*\*: \_\_\_\_\_  
 SPECIES PRESENT: \_\_\_\_\_  
 DOMESTIC WATER SUPPLY  
 DISTANCE TO INTAKE: \_\_\_\_\_

\*Fishery Type: 1. Warm Water Fish, 2. Hatchery Trout with no wild trout,  
 3. Wild trout (with or without hatchery supplement), 4. Kokanee 5. Steelhead and/or Chinook Salmon.

\*IF&G Stream Class: 1. Extremely critical, 2. Highly critical, 3. Critical,  
 4. Moderate, 5. Low.

\*\* Fishery Use: Spawning, Rearing, Fish Passage, Overwintering, etc.

**STREAM PROTECTION OBSERVATIONS**

REACH: \_\_\_\_\_

AS A RESULT OF:	PRE-EXISTING CONDITIONS	PROJECT RELATED IMPACTS
POOL FILLING (SEDIMENT):	_____ (1-Severe; 2-moderate; 3-slight; 4-None Evident )	_____ (None; Minimal; Extensive; NA; NI)
COBBLE EMBEDDEDNESS:	_____ (1- ≥46%; 2-31-45%; 3-16-30%; 4-0-15%)	_____ (None, Minimal; Extensive; NA; NI)
SPAWNING GRAVELS SEDIMENTED:	_____ (1-highly sedimented; 2-moderate; 3-slight; 4-no observed sedimentation)	_____ (None, Minimal; Extensive; NA; NI)

**STREAMBANK CONDITION:** \_\_\_\_\_

1-<25% of streambank covered with vegetation or by gravel or larger material, overhanging vegetation and undercut banks absent, streambanks are receiving severe mechanical alteration;

(None; Minimal; Extensive; NA; NI)

2-25-49% of streambank covered with vegetation or by gravel or larger material, overhanging vegetation and undercut banks uncommon, streambanks are receiving moderate mechanical alteration;

3-50-79% streambank covered with vegetation or by gravel or larger material, undercut banks and overhanging vegetation moderate, streambanks receiving slight alteration;

4-over 80% of streambank covered with vegetation in good condition or by boulder/rubble, little or no soil exposed, undercut banks and overhanging vegetation abundant, no mechanical streambank alteration.

**COMMENTS ON PROJECT IMPACTS**

**IMPACT TYPE: (Describe Intensity & Duration):**

Sediment \_\_\_\_\_

Temperature \_\_\_\_\_

Loss of LOD \_\_\_\_\_

Habitat Change \_\_\_\_\_

Turbidity in DWS \_\_\_\_\_

**RECOMMENDATION:** \_\_\_\_\_

Recommend  
action to  
prevent or  
mitigate  
problem

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_



REACH: \_\_\_\_\_

AS A RESULT OF:	PRE-EXISTING CONDITIONS	PROJECT RELATED IMPACTS
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POOL FILLING(SEDIMENT):	_____ (1-Severe;2 -moderate; 3-slight; 4-None Evident )	_____ (None; Minimal; Extensive; NA; NI)
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COBBLE EMBEDDEDNESS:	_____ (1- $\geq$ 46%; 2-31-45%; 3-16-30%; 4-0-15%)	_____ (None, Minimal; Extensive; NA; NI)
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SPAWNING GRAVELS SEDIMENTED:	_____ (1-highly sedimented; 2-moderate; 3-slight; 4-no observed sedimentation)	_____ (None, Minimal; Extensive; NA; NI)
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STREAMBANK CONDITION:	_____ 1-<25% of streambank covered with vegetation or by gravel or larger material, overhanging vegetation and undercut banks absent, streambanks are receiving severe mechanical alteration; 2-25-49% of streambank covered with vegetation or by gravel or larger material, overhanging vegetation and undercut banks uncommon, streambanks are receiving moderate mechanical alteration; 3-50-79% streambank covered with vegetation or by gravel or larger material, undercut banks and overhanging vegetation moderate, streambanks receiving slight alteration; 4-over 80% of streambank covered with vegetation in good condition or by boulder/rubble,little or no soil exposed, undercut banks and overhanging vegetation abundant, no mechanical streambank alteration.	_____ (None; Minimal; Extensive; NA; NI)
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REACH: \_\_\_\_\_

AS A RESULT OF:	PRE-EXISTING CONDITIONS	PPOJECT RELATED IMPACTS
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POOL FILLING(SEDIMENT):	_____ (1-Severe;2 -moderate; 3-slight; 4-None Evident )	_____ (None; Minimal; Extensive; NA; NI)
-------------------------	---------------------------------------------------------------	---------------------------------------------

COBBLE EMBEDDEDNESS:	_____ (1- $\geq$ 46%; 2-31-45%; 3-16-30%; 4-0-15%)	_____ (None, Minimal; Extensive; NA; NI)
----------------------	----------------------------------------------------------	---------------------------------------------

SPAWNING GRAVELS SEDIMENTED:	_____ (1-highly sedimented; 2-moderate; 3-slight; 4-no observed sedimentation)	_____ (None, Minimal; Extensive; NA; NI)
---------------------------------	-----------------------------------------------------------------------------------------	---------------------------------------------

**STREAMBANK CONDITION:** \_\_\_\_\_

1-<25% of streambank covered with vegetation or by gravel or larger material, overhanging vegetation and undercut banks absent, streambanks are receiving severe mechanical alteration;

(None: Minimal; Extensive: NA; NI)

2-25-49% of streambank covered with vegetation or by gravel or larger material, overhanging vegetation and undercut banks uncommon, streambanks are receiving moderate mechanical alteration;

3-50-79% streambank covered with vegetation or by gravel or larger material, undercut banks and overhanging vegetation moderate, streambanks receiving slight alteration;

4-over 80% of streambank covered with vegetation in good condition or by boulder/rubble, little or no soil exposed, undercut banks and overhanging vegetation abundant, no mechanical streambank alteration.

# BMP COMPLIANCE & EFFECTIVENESS SCALES

## Compliance Scales

- 1 - Number or severity of noncompliance high
- 2 - Unsatisfactory - Noncompliance with rule noted
- 3 - Satisfactory - Complied with the rules
- 4 - Satisfactory - Exceeded minimum rule requirements

## Effectiveness Scales

### Scale 1: Sediment Delivery

- 1 - Major and prolonged quantity of sediment delivered to Class 1 stream or delivery imminent, including from Class II stream.
- 2 - a. Minor and prolonged or major and temporary sediment delivered to Class I stream or delivery imminent.  
b. Major and prolonged quantity of sediment delivered to Class II stream.
- 3 - a. Minor and temporary quantity of sediment delivered to Class I stream.  
b. Major and temporary or minor and prolonged quantity of sediment delivered to Class II stream.
- 4 - Significant erosion and delivery of sediment to draws or floodplains; no sediment noted to Class I or II streams.
5. Soils do not reach draws, channels or floodplains.

### Scale 2: Slash Treatment

- 1 - Major quantity of slash in Class I streams.
- 2 - Minor quantities of slash in Class I stream; slash in Class II streams in quantities sufficient to depress D.O. of downstream Class I waters or with potential for transport to and blockage of downstream drainage structures.
- 3 - Slash removed from streams but likely to become entrained and transported to downstream drainage structures during stormflow.
- 4 - Slash removed or otherwise situated such that entrainment and transport are unlikely.

### Scale 3: Hydrocarbon or Hazardous Waste

- 1 - Hydrocarbons or hazardous wastes in streams.
- 2 - Hydrocarbons or hazardous wastes in floodplains, draws, or other locations where it could readily contaminate waters.
- 3 - Hydrocarbons or hazardous wastes isolated from streams.
- 4 - Hydrocarbons or hazardous waste not present.

### Scale 4: Stream Protection (Shading)

- 1 - Stream exposed to midday direct sunlight over substantial reach(es).
- 2 - Stream exposed to midday direct sunlight for short reach(es).
- 3 - Stream exposed to midday direct sunlight occasionally.
- 4 - Little exposure to midday direct sunlight.

**Wet Areas Consideration** - Use scales 1, 2 & 3 and replace stream with lake, bog, swamp, seep, spring or other sources where the presence of water is indicated.

## Responsibility Spectrum

- 1 - Planning
- 2 - Contracting
- 3 - Timber Sale Administrator
- 4 - Timber Operator

## Hazard Rating

<b>SLOPE:</b>	< 45% -1	<b>GEOLOGIC TYPE:</b>	
	45-70% -2	Hard metamorphics, glacial tills, hard sediments & basalts	-1
	> 70% -3	Soft metamorphics, soft sediments, pyroclastics & hard granitics	-2
		Glacial outwash, decomposed (low clay content) granitics	-3

### YARDING SYSTEM:

Aerial	-1
Skyline	-2
Jammer & High Lead	-3
Rubber tire tractor	-4*
Track tractor	-5*

\*Reduce 50% if practice on 12 inches or more snow or frozen ground.

Hazard Rating = Slope X geologic type X yarding system range: 1-45

## APPENDIX B: Protocol for Stream Quality Assessment

## Protocol of Stream Quality Assessment

- 1) Raters walk as much of the stream course as possible including above, in and below the forest practice area.
- 2) Randomly choose 100 meter reaches of similar stream channel type (i.e. slope, substrate, etc.) in each area.
- 3) Visually evaluate pool filling, cobble embeddedness, spawning gravels sedimentation and stream bank condition in each reach.
- 4) Assign subjective rating, 1-4 for each parameter.
- 5) Record each on sheets for appropriate reach.
- 6) Note any obvious problems.
- 7) Report to whole audit team any problems and the ratings for each reach during rating of the practice.

**APPENDIX C: Compilation of BMP and Sediment Delivery Data by  
Project**

DATA SUMMARY SE IDAHO

	A	B	C	D	E	F	G	H	I
	SALE	AREA (ac)	HAZARD RATING	BMPs APPLIED	BMPs EFFECTIVE	SEDIMENT DELIVERY	IMPLEMENTATION PROBLEMS	RULE CHANGES	OTHER NPS IMPACTS
1									
2									
3									
4	Dutch Creek	83	4	Not in 1 case; rule 3G-i, rated 2,3b,4	Effective	Minor & temporary to class II stream	None	None	Old mining road
5									
6									
7	Fourth of July Creek	10	3.5	Applied	Effective	None	None	None	Mining, dewatering downstream of the project
8									
9									
10	Van Horn	135	10	Not in 1 case; rule 3C-ii, rated 2,5,4	Effective	None	None	None	Pristine upstream, grazing on lower Van Horn Creek
11									
12									
13	McDivitt Creek	120	8	Not in 3 cases; rule 3c-ii rated 1,5,1; rule 3C-iii rated 2,5,1; rule 4C rated 2,3b,4	Effective	2-3 yards to class II stream with potential for prolonged delivery	Instead of using the jammer already on site on the upper slope, these 60% slopes were tractor skidded presumably to avoid building another quarter mile of road.	None	Pristine upstream, lower McDivitt Creek heavily impacted by grazing
14									
15									
16									
17									
18									
19	Lower Sheep Creek	94	4	Applied	Effective	None	None, except USFS personnel did not recognize the importance of Steen Gulch to steelhead rearing, fortunately they treated its as a class I stream.	None	Pristine upstream, some mining in Sheep Creek drainage
20									
21									
22									
23									
24									
25	Wright Creek	137	10	Applied	Effective	None	None	None	Pristine upstream, culvert downstream could block fish passage
26									
27	Lower Moose Creek	52	4.5	Not in 2 cases; rule 3G-iii rated 2,5,1; rule 4D-ii rated 2,5,1	Effective	None	Targhee Forest Plan allows removal of shade and scarification in SPZ by heavy equipment in conflict with rule 3G-iii	None	Removal of LOD, diversion and dewatering of one channel
28									
29									
30									
31									
32	Shotgun Valley	25	4	Applied	Effective	None	BLM's constructed shid trails allowed up to 35% on any geology, BLM zone forester not aware of FPA and BMPs force on federal lands	None	Channelization, grazing and degraded riparian zone
33									
34									
35									
36									
37	Wolverine Creek	40	10	Not in 7 cases; rule 3D-i rated 2,3b,4; rule 3F-ii rated 2,2,4; rule 3F-iv rated 2,1,4; rule 3G-iv rated 2,3b,1; rule 4b-vii rated 2,2b,1; rule 4D-i rated 1,2b,1; rule 4D-iva rated 2,3b,1	Effective	Major & prolonged to a class II; 20 yds of sediment and an unknown amount of hydrocarbons	BLM is spreading the zone forester too thin, BLM zone forester unfamiliar with FPA & BMPs force on federal lands	None	Cattle grazing, channelization, road encroachment, road runoff, recreational vehicular traffic
38									
39									
40									
41									
42									
43	Pocatello District	69	5	Applied	Effective	None	None	None	Grazing & recreational vehicular traffic
44	Salvage Sale								