

SILVICULTURAL NONPOINT SOURCE TASK FORCE

FINAL REPORT

MARCH, 1985

**Idaho Department of Health & Welfare
Division of Environment
Statehouse
Boise, ID 83720**

FINAL REPORT: Silvicultural Nonpoint Source Task Force

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DEFINITIONS

Cobble embeddedness. A measurement of the sealing of the surface cobble in the stream bottom by sand and fine material. This is the major detrimental change in fish habitat caused by sediment deposition. Cobble refers to bottom material between 2.5 and 10 inches in diameter, which is preferred by trout and salmon as spawning material.

Cumulative impact. A change in habitat conditions at a critical stream reach caused by the addition of individual impacts over time or space. Recovery does not occur before the next individual practice is begun.

Individual impact. A change in habitat conditions in a stream or tributary which is isolated in time or space from other impacts. The magnitude of impact may be from negligible to severe.

Logging methods. Systems used for the movement of logs from the stump to the landing: 1) Tractor skidding- uses crawler or wheel type units. 2) Cable logging- is a yarding system employing winches in a fixed position. Skyline units have an extended reach and can suspend all or part of the log off the ground. 3) Aerial logging- balloon and helicopter yarding suspends the entire log off the ground preventing ground disturbance.

Sediment yield. The total sediment outflow from a drainage basin in a specific period of time. It includes bedload as well as suspended load. Suspended sediment is sediment that is carried in suspension by turbulence. Bedload sediment is the coarser material moving on or near the stream bed.

Turbidity. A measurement of the murkiness of water caused by suspended sediment.

ABBREVIATIONS USED

- AFS - American Fisheries Society
- BMP - Best Management Practice
- EAR - Environmental Analysis Report
- FPA - Forest Practices Act and Rules and Regulations
- FPAAC - Forest Practices Act Advisory Committee
- ICL - Idaho Conservation League
- IDHW-DOE - Idaho Department of Health and Welfare-Division of Environment
- IDL - Idaho Department of Lands
- IF&G - Idaho Fish and Game
- IFIC - Idaho Forest Industries Council (Formerly North Idaho Forestry Association)
- NEPA - National Environmental Policy Act
- USFS - United States Forest Service

EXECUTIVE SUMMARY

TASK FORCE OBJECTIVES

The Silvicultural Nonpoint Source Task Force was initiated by the Health and Welfare Board in January, 1983 to answer the following questions in regards to the application of Water Quality Standards to forest practices:

1. Do Best Management Practices provide adequate protection for protected uses defined in the Water Quality Standards?
2. Are current forest practices impacting water quality (protected uses) and to what extent?
3. Are the existing regulatory controls for silvicultural operations adequate to prevent water quality impacts?

STUDY APPROACH

The Task Force functioned as an interdisciplinary team composed of individuals with expertise in Silviculture, Hydrology, Geology/Soil Science, Forest Road Construction, Fishery Biology, and Water Quality. These individuals also represented the major agencies and public interest groups involved in the issue of nonpoint source pollution on forested lands.

The Task Force made on-site evaluations of 25 silvicultural activities. Sites were selected on a random basis and included 10 USFS timber sales, 10 private operations, and 5 IDL timber sales. Approximately 45% of the timber volume is harvested from national forests, 45% from private industrial and nonindustrial lands, and 10% from state endowment lands.

Site selection included consideration of geographic location, geologic land type, logging method, proximity to streams, and the need to examine recent activities. It is recognized that 25 sites do not represent a statistically valid sample of forest operations in Idaho. However, observed trends in compliance with practices, of impacts on streams, and of administrative procedures used by land management agencies are felt to be representative.

On-site evaluations were based on a rating of compliance with proposed FPA Rules, and included observation of stream impacts, and evaluation of the potential hazard to water quality created by the operation.

STATE FOREST LANDS ADMINISTERED BY IDAHO DEPARTMENT OF LANDS

FINDINGS

Administrative procedures and management practices used by IDL were found to be insufficient to provide an adequate level of water quality protection. Three of the 5 inspected timber sales resulted in major impacts or potential hazards to fisheries habitat.

Recurring practices observed to cause water quality impacts or potential hazards were:

1. Reuse of existing roads located too close to stream channels.
2. Poor road construction and maintenance practices.
3. Cut and fill slope stabilization not being completed prior to the runoff season.
4. Ground skidding during wet weather or on steep erodible slopes. Skid trails located parallel with tributary channels such that erosion control was insufficient to prevent sediment delivery.
5. Soil hazards not identified in planning the timber sales.
6. Contracts did not require timely erosion control associated with road construction and timber harvest.

CONCLUSIONS AND RECOMMENDATIONS

1. Planning is inadequate to identify potential hazards to water quality in preparation of timber sales. The IDL Forest Management Bureau should develop and institute a more rigorous water quality impact analysis procedure in their planning process.
2. Specialists-engineers, soil scientists, biologists-were not used to help plan and administer timber sales to assure protection of other resource values. Efforts should be made to involve these specialists in the timber management program. Recognizing the budget limitations of state agencies, this may need to be addressed by cooperative agreements with other state or federal agencies.

3. Internal procedures to insure compliance with the FPA Rules are inadequate. A process within IDL should be developed to obtain an independent evaluation of compliance with the FPA Rules on state lands.
4. Interagency review of proposed timber sales by other state agencies should be improved. Interagency review would help identify those areas where potential conflict with other state agency goals and state regulations could be identified and resolved. A detailed review and analysis is currently required on federal land in Idaho by NEPA regulations; however, no similar requirement exists for state lands.
5. Specific recommendations on the timber harvest and road building activities:
 - a. Erosion control practices need to be installed, maintained, and kept current during the timber harvest and road-building operation.
 - b. A policy on stabilizing cut banks and fill slopes should require grass seeding of exposed material within the same construction season to encourage root development prior to runoff.
 - c. Guidelines for use of tractor skidding should be developed. Identification of the appropriate logging method in sensitive land types is an important consideration in preventing excessive erosion and protecting water quality.
 - d. Road location and design should be pre-planned in conformance with the section on Road Specifications and Plans in the FPA Rules.

In reviewing these conclusions and recommendations, the existing limitations in manpower and resources in the Forest Management Bureau should be kept in mind. A small number of field foresters are responsible for a variety of duties on a large number of scattered acres. Only with additional specialists in Hydrology, Engineering, and Biology (or through coordination with other state agencies) and more personnel to supervise harvesting would it be reasonable to expect the Department to maintain the harvest target and upgrade compliance with the more stringent soil and water quality protection requirements of the proposed FPA Rules.

UNITED STATES FOREST SERVICE

FINDINGS

Seven of the 10 sites inspected were considered as meeting or exceeding the FPA Rules. Minor departures from a limited number of FPA Rules were noted in 3 sales. Water quality impacts occurred at only 1 site, and this was rated as a minor impact. Overall, USFS sites were found to use practices in excess of those required in the proposed FPA Rules. Administration of forest practices provided high levels of water quality protection.

CONCLUSIONS AND RECOMMENDATIONS

1. Planning is well done at least in part due to the preparation of detailed environmental assessments for each timber sale, and consideration for their potential impacts on water quality. Planning is done by a team of resource specialists with multiple resource management responsibilities.
2. Roads are planned, located, designed, constructed, and maintained to appropriate standards. Measures to prevent erosion are used extensively. Road management procedures are successful in limiting the erosion hazard.
3. Erosion control and road stabilization measures are kept current with the activity.
4. Mitigative measures based on USFS technology exceed the requirements of the proposed FPA Rules. Practices are adjusted on the ground based on soil and watershed sensitivity as needed to protect the fisheries resource.
5. Logging systems which minimize soil and stream disturbance are applied in sensitive land types.
6. Costs associated with implementing these procedures are acknowledged to be several times those used by the Idaho Department of Lands and private landowners.
7. The Forest Service should continue to field verify and work on techniques to improve the reliability for monitoring, modeling, and predicting cumulative impacts on protected uses.

PRIVATE OPERATIONS

FINDINGS

Protection of water quality values was considered adequate at 6 of the 10 sites. These 6 sites were on industrial timber lands. This was due, in part, to the low hazard land types on which these operations were conducted and in part to the minimal stream values in these particular operations, as well as the way in which the forest practices were conducted. At each of the remaining 4 sites, a major departure from the FPA Rules resulted in a major impact (1 site) or potential major hazard (3 sites) to fisheries habitat. Recurring reasons for violation of the FPA Rules included:

1. Inadequate planning in location and design of roads.
2. Reuse of existing roads and skid trails located close to stream channels.
3. Inadequate road drainage and stream crossing structures.
4. Erosion control practices were not completed in a timely manner prior to the runoff season.

CONCLUSIONS AND RECOMMENDATIONS

1. Administration and enforcement of the FPA Rules by IDL is inadequate to insure compliance. IDL does not have the manpower needed to work with owners and operators in gaining compliance. Increased assistance to landowners and operators before the activity occurs is necessary; this will require additional IDL personnel.
2. Voluntary compliance with the Rules on industrial ownership was observed to be generally higher than on non-industrial ownerships.
3. Planning efforts vary widely with goals of the owner and internal personnel capabilities. Private landowners generally do not have the resources needed to evaluate cumulative watershed impacts.
4. Adherence to the existing and proposed FPA Rules on small private ownerships varied considerably from good to gross neglect.

5. The following changes to the FPA and the FPA Rules are recommended to achieve water quality protection on private lands.
- a. Adopt the changes to the FPA Rules recently proposed by the Forest Practices Act Advisory Committee (Sept., 1984).
 - b. Amend the FPA to strengthen its enforcement provisions and correct deficiencies in the existing enforcement procedures.
 - c. Clarify the Forest Practices Act by amending the FPA Rules to require a reasonable minimum notification period which will allow IDL to review harvest plans prior to the activity.
 - d. Amend the FPA to recognize the owners liability in complying with the Act. The FPA currently requires only the operator to comply with the FPA Rules.
 - e. Amend the FPA to require bonding of operators. Licensing of operators should also be considered. With the large number of operations which occur yearly on private ownership, it is unrealistic to expect IDL to inspect each operation. Bonding and/or licensing is a mechanism which encourages compliance with minimal inspection staff. Generally, most operators will comply with the Rules if a mechanism exists which encourages their knowledge of the Act. Bonding and/or licensing provides the mechanism to assure that operators are familiar with the Rules, and provides an expedient means for dealing with the small minority of repeat offenders.

FOREST PRACTICES ACT AS BEST MANAGEMENT PRACTICES

Current and proposed FPA Rules were evaluated during the on-site evaluations to determine their effectiveness as a set of management practices. The following conclusions and recommendations are made:

1. The current FPA Rules (adopted 1976) are difficult to interpret due to the vague wording and advisory language of certain sections. Revision of the FPA Rules is necessary to increase protection of water quality and the effectiveness of best management practices.
2. The Forest Practices Act Advisory Committee (FPAAC) for IDL completed recommendations to the Rules in September, 1984. The Task Force reviewed these recommendations and agrees with the changes made by the FPAAC with two exceptions which are based on the on-site evaluations. The Task Force recommends that two rules be changed. These rules address stabilization of erodible materials prior to runoff and the limitations on tractor skidding based on slope (See Section VI). With these two changes, the FPAAC version of the FPA Rules are considered as best management practices as defined in the Clean Water Act.

OBSERVED STREAM IMPACTS

Of the 25 sites inspected, 14 were within proximity to a Class I stream. At 9 of these sites obvious cobble embeddedness indicated that sediment delivery from past and/or ongoing nonpoint source activities may have already caused sustained damage to fishery habitat.

At 7 of the 14 Class I streams, sediment delivery from the current operation was thought to be high enough to cause a significant individual impact or contribute to future impacts.

At many other sites the forest operation was located at a great distance from a Class I stream, such that potential for conflict with protected uses was low. This demonstrates that there is a low potential for many logging operations to conflict with protected uses simply because of the distance that separates the activity from the stream.

IMPLICATIONS FOR CUMULATIVE IMPACTS

Cumulative impacts in a watershed can only be quantified by time consuming monitoring after the fact, or predicted by use of complex models. This was beyond the scope of the Task Force.

Cumulative impacts refer to the addition of individual impacts over time. By evaluating the individual impacts, the Task Force felt that valuable information was gained in regard to the administrative procedures used which would provide protection from cumulative impacts in the watershed.

Evaluation of the future risk for cumulative impacts includes consideration of the land type hazard, the management practices used, and scheduling of the forest operations in a watershed over time and space. Three categories of land type hazard - low, moderate, and high - were defined in terms of slope and geology. The conclusions of this analysis are divided into two sections - USFS operations, and state and private lands-based on the major differences in administration observed between these groups.

CUMULATIVE IMPACTS UNDER USFS ADMINISTRATION

It was determined that the level of planning, administration, and utilization of alternate practices on USFS lands generally exceeds the requirements of the proposed FPA Rules (BMPs). Appropriate management practices are determined by the level of protection needed at a particular site. Watershed planning is the key to this process. Management practices are prescribed based on the watershed objectives. The ability to schedule forest practices in a watershed over time and space is an important component of this process. These procedures provide reasonable assurance that sustained damage to a protected use will not occur from individual impacts in any land type or cumulative effects in low or moderate land types.

Under USFS administration, the major identified hazard for water quality impacts is associated with the potential for cumulative effects resulting from mass failure potential in high-hazard land types. The significant hazards occur with the road construction and maintenance component of the overall harvest operation on these lands.

RECOMMENDATION: In regard to evaluating the potential for violating Water Quality Standards, the USFS should concentrate their efforts in model development and calibration in high-hazard land types. In other land types, the existing USFS procedures should be considered sufficient to meet the Water Quality Standards. The existing USFS procedures refer to watershed planning, scheduling of activities over space and time, as well as the specific management practices which are in excess of the FPA. Monitoring should be used to verify that current procedures continue to

provide protection of water quality objectives in these less sensitive land types. Procedures should be modified if warranted by results of the monitoring program.

CUMULATIVE IMPACTS: ADMINISTRATION ON STATE AND PRIVATE LANDS

1. Current FPA-BMPs provide reasonable assurance that sustained damage to a protected use will not occur from individual impacts in low-hazard and moderate-hazard land types. The potential for sustaining major impacts from cumulative effects is high for road construction on high-hazard land types and moderate on moderate-hazard land types.
2. Implementation of proposed rule changes on state and private lands will reduce potential for sustained damage to a protected use. Further reductions in hazards from cumulative effects will necessitate watershed planning which considers scheduling of forest operations over space and time. It should be noted that this investigation did not attempt to demonstrate whether further reductions from cumulative effects is or is not necessary.

RECOMMENDATION: Implementation and enforcement of the proposed FPA Rules should eliminate the majority of the problems identified in this study on state and private lands. Following an adequate period for implementation of proposed Rules, the cumulative impact potential should be evaluated, and further modifications made to the FPA Rules if warranted by the findings.

WATER QUALITY STANDARDS

The revisions made to the Water Quality Standards in nonpoint source activities are acceptable given the present state of knowledge regarding the effects of sedimentation on fisheries from forest practices. The Standards embody the major concepts of the Clean Water Act in regard to nonpoint sources—that is, that beneficial uses must be protected, and secondly that Best Management Practices identified by the state are the tools for achieving this goal.

The Task Force identified a set of FPA Rules which, if enforced, will provide protection of beneficial uses in the majority of circumstances. It is recognized that these practices alone do not assure protection of

fisheries habitat in high-hazard land types. Additional procedures and measures identified for state and private lands will be needed to reduce the hazard to water quality to lower levels. At the present time, the current state of knowledge on impacts of sediment on fisheries is not sufficient to warrant inclusion of specific criteria for protection of fisheries. Ongoing research and monitoring efforts may provide the knowledge needed to define the relationship which will allow development of specific criteria.

RECOMMENDATION: No further action on amending the nonpoint source Water Quality Standards as adopted by the Board of Health and Welfare in January, 1983 is recommended at this time.

I. INTRODUCTION

A. BACKGROUND

In January, 1983 the Board of Health and Welfare directed the Division of Environment to establish an interdisciplinary Task Force to study the problems of nonpoint source pollution. This information would help the Board make future decisions on Water Quality Standards. The Task Force was established by the Board to provide technically sound answers to questions which arose during the public debate regarding the Water Quality Standards and forest practices:

1. Do Best Management Practices provide adequate protection for protected uses defined in the Water Quality Standards?
2. Are current forest practices impacting water quality (protected uses) and to what extent?
3. Are the existing regulatory controls for silvicultural operations adequate to prevent water quality impacts?

REGULATORY BACKGROUND

The Federal Clean Water Act as amended in 1972 (PL 92-500) and in 1977 (PL 95-217) was intended by Congress to provide a means to restore the quality of water resources and maintain their beneficial uses. In regards to nonpoint sources of pollution, Section 208 of the Act authorized development of state and local control strategies. At the state level, Section 39-107, Idaho Code, authorizes the Board of Health and Welfare to adopt rules, regulations, and standards necessary to protect the environment and public health.

The Idaho Forest Practices Water Quality Management Plan was completed in 1979 consistent with the intent of Section 208. The Plan identified the Forest Practices Act-Rules and Regulations (IDL) with *recommended modifications* as approved Best Management Practices as defined in the Clean Water Act. The Idaho Water Quality Standards and Wastewater Treatment Requirements were subsequently amended in 1980 to include reference to the FPA Rules as Best Management Practices.

Several substantive changes were made to the Water Quality Standards in 1980: 1) Deletion of the "antidegradation" language; 2) separation of standards which apply to point and nonpoint sources; and 3) inclusion of approved Best Management Practices for nonpoint sources including

silviculture. In revising the Standards, language restricting discharges was changed to read "no pollutant may be discharged . . . that . . . will injure designated or protected uses."

In addition to Idaho Standards and the Clean Water Act other regulations are pertinent to management of pollution sources on federal ground. The NEPA (1970) requires federal land management agencies to prepare environmental assessments of their activities. Other legislation and executive orders require the USFS to manage national forests to balance multiple uses.

CURRENT CONTROVERSY

In 1982 the USFS petitioned the IDHW-DOE to change the Standards relating to injury of protected uses. The USFS felt that strict interpretation of this regulation would prohibit timber harvest opportunities in national forests. The USFS' request was made in response to unfavorable comments by IDHW-DOE regarding an Environmental Assessment for a proposed timber sale. The comments indicated that the estimated impact of 20% reduction in fisheries potential for that particular proposal would constitute a violation of Water Quality Standards by injuring a designated protected use.

Three additional petitions were submitted by interested parties - the Idaho Conservation League, the American Fisheries Society, and the Idaho Forest Industries Council; and public hearings were held. In response, the Health and Welfare Board adopted a compromise position in revising the Standards. At the same time the Board requested the IDHW-DOE to form a Task Force which would provide technical information regarding the impacts of nonpoint sources on water quality and their control by BMPs. The scope of this project was narrowed to address only forest practices by the Department and the Board.

B. OBJECTIVES

The Task Force identified three major objectives and associated tasks.

1. Determine if silvicultural operations in the state are meeting BMPs, and assess the impact on protected uses of water.

This would be accomplished by conducting a number of on-site evaluations of silvicultural operations representing a cross section of geologic types and timber harvest methods in various land ownerships.

2. Assess the adequacy of BMP implementation procedures on silvicultural lands in the state. This would be accomplished by partitioning the inspection sites into the three major administrative units responsible for forest operations in the state: USFS, state endowment lands, and private lands. The sites visited represent case studies of the procedures used by land management agencies and private landowners in meeting Water Quality Standards. The strengths and weaknesses of their procedures would become evident during these inspections.
3. If needed, recommend revisions to the implementation arrangements in the Forest Practices Water Quality Management Plan to achieve water quality protection goals.

II. MATERIALS AND METHODS

A. COMPOSITION OF TASK FORCE

The Department recognized that the make-up of the Task Force is an important consideration when addressing a highly controversial issue. The acceptance of the findings is dependent on the balance of the groups represented as well as the technical qualifications of the individuals selected. The Division sought nominations from agencies for individuals with expertise in the following fields: Silviculture, Hydrology, Geology/Soil Science, Forest Road Construction, Fishery Biology, and Water Quality.

Representation by state regulatory and management agencies was desired since these agencies would be responsible for implementing the Task Force recommendations. In addition, joint participation by these agencies will foster development of a consistent state approach in regards to resource management.

Involvement by both regions of the USFS was desired since they are administered separately and have extensive land holdings. The Task Force members were able to draw on the Forest Services' technical resources as well as act as a liaison with the regional office and individual Forests.

The other petitioners to the Water Quality Standards were invited to participate since these groups had demonstrated their involvement in the issue by developing and submitting petitions.

The agencies and groups represented on the Task Force are:

- IDHW-DOE - is the designated state water quality agency for the Clean Water Act, and the state environmental protection agency.
- IDL - is the administering agency for the FPA, and is responsible for management of state lands which provide revenues for the state endowment fund for education.
- IF&G - is responsible for the management of Idaho's fish and wildlife populations. Habitat protection and enhancement is a basic requirement in meeting agency goals.
- ICL - is an advocate for environmental protection in Idaho.
- AFS - Society of Professional Fishery Biologists interested in enhancement of Idaho's aquatic and fisheries resources.
- IFIC - is the representative for the Idaho timber industry.
- USFS - Responsible for administration of 68 % of the commercial forests in Idaho.

Representatives selected by the agencies are :

IDHW-DOE	- Steve Bauer , Chairman Sr. Water Quality Analyst	Water Quality
IDL	- Donald Jones Assistant Director, Forestry and Fire	Silviculture
	- Dewey Almas Bureau Chief, Private Forestry (Served as alternate and IDL participant on field audits)	Silviculture
ID F&G	- Virgil Moore State Fisheries Manager	Fishery Biology
ICL	- Doli Obee Environmental Advocate	Citizen Representative
AFS	- Jack Griffith Assoc. Professor, Idaho State University	Fishery Biology
IFIC	- Dale McGreer Potlatch Corp.	Geomorphology and Hydrology
USFS	- Michael Cook Forest Engineer, Nezperce National Forest Region 1	Road Construction
USFS	- Philip Jahn Soil Scientist, Payette National Forest Region 4	Watershed Sciences

The Task Force was accompanied by observers on most field trips. Observers included Elbert Moore, NPS specialist-EPA; Marv Wittman, Chairman-Idaho Health and Welfare Board; Joe Hinson, Executive Director-Idaho Forest Industries Council; Gene Wirsig-Potlatch Corporation; staff members with Division of Environment and Idaho Department of Lands; and representatives of Montana-EPA and Montana Water Quality Bureau.

B. SELECTION OF SITES FOR ON-SITE EVALUATIONS

SITE SELECTION CRITERIA

It was the consensus of the group that the central question of the adequacy of BMPs could only be addressed by assessing the frequency of forest practices which caused water quality impacts; this would require a random sampling procedure. Time for the field inspections was limited to 25 days. With an average of 1 site per day, this would allow for a

maximum sample of 25 sites. The rationale for the sampling system is shown in Appendix A.

The Task Force agreed that the following should be incorporated into the sampling design:

1. Land Ownership
 - a. USFS
 - b. Private Ownership
 - c. State Endowment Lands
2. Geographic Location
3. Logging Method
4. Geologic/ Landform Type

After reviewing several stratified sampling procedures it was decided that evaluation of the data according to land ownership category was the primary consideration in designing the sampling system. Percent harvest volume, administrative division of the state in the FPA into North and South, and equal sample size were further considerations. This resulted in the following sample matrix:

SITE SELECTION MATRIX

IDAHO	USFS	STATE	PRIVATE	TOTAL
NORTH	5		5	10
SOUTH	5	5	5	10
TOTAL				25

The following procedure and criteria were set up to select individual sites:

1. Obtain a representative sample within the 3 administrative categories, i.e., USFS, State, and Private.
2. From the pool of operations select the sample sites through a random process.

3. The individual sites will have to meet minimum criteria:
 - a. Minimum Size: The unit will include a minimum size of 10 acres treated.
 - b. Proximity to Streams: A Class I stream is within or adjacent to the unit. Adjacent means within 100 feet of the cutting unit boundary. There should be at least 500 linear feet of Class I stream in the unit.
 - c. A road building or timber harvest activity occurred in the unit within the last year.

4. The total sample will include a minimum of 25 to 35 percent within granitic landtypes.

SITE SELECTION PROCEDURE

The actual site selection procedure varied within the major land ownership categories due to the type of information available. Information regarding the criteria was not always available. However, at any decision point a random procedure was used to select individual sample sites. The list of selected sites is shown in Table 1, location in Figure 1.

USFS: A letter was sent to the Supervisors of the 10 national forests in Idaho requesting a list of all timber sales which met the minimum criteria. Seven Forests returned lists which contained 51 potential sites; 3 Forests had no sales which met the criteria. Because of the travel distance involved, the Caribou (3 sites) and Salmon (3 sites) National Forests were eliminated from the list.

IDL: A list of sites which met the Task Force criteria was not available from IDL. The Chairman of the Task Force met with the Chief, Bureau of Forest Management, to sort through the files to develop a potential list. An overall listing contained 112 potential timber sales in 7 supervisory areas. The file for every 5th entry from this list was examined in regard to recent activity, size of sale, and proximity to streams. A number of these sales were eliminated because the area had not been logged to date. This resulted in a list of 19 candidate sales. The IDL Foresters administering the sale were called to obtain information on geology and stream class. This eliminated additional areas which left 11 candidate timber sales.

PRIVATE: It was estimated that approximately 3,000 forest practice notifications are filed with the IDL each year from industrial and private woodlands. The filing system for these notifications did not contain sufficient information to be useful in selecting the private operations. Therefore, a letter was sent to IDL Woodland Foresters and Fire Wardens requesting that they develop a list of operations under their jurisdiction which met the Task Force criteria. This resulted in a list which contained 35 candidate sites.

When the list of candidate sites was completed, sites were selected using a random process that satisfied the sample matrix, and resulted in logistically feasible field trips. No information outside of that needed to meet the criteria was solicited or accepted.

TABLE 1. Forest operations selected for on-site evaluation during 1984.

NORTH IDAHO

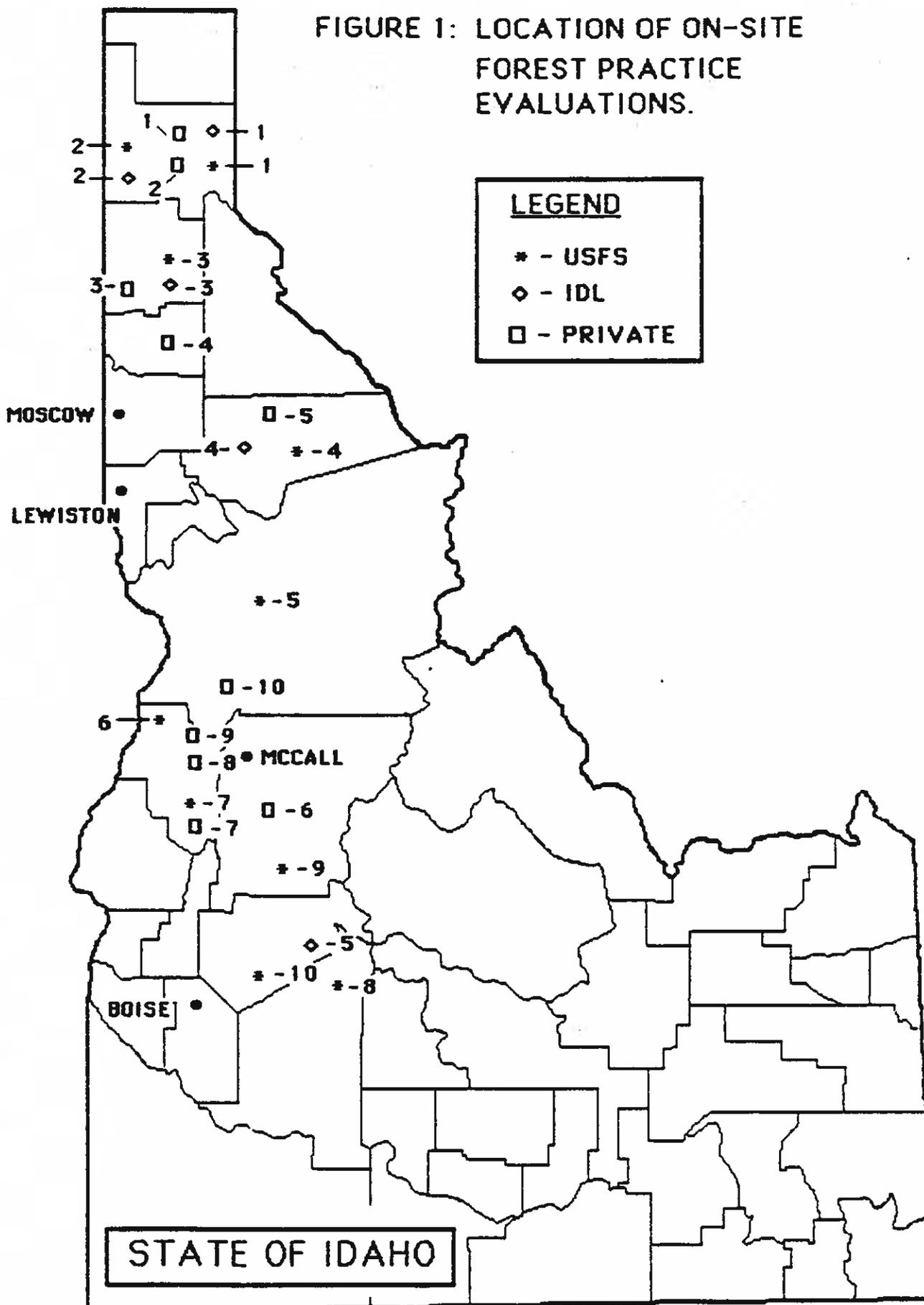
TIMBER SALE	OWNERSHIP	AGENCY/OWNER	LOCATION
SPRING DONE	1. USFS	PANHANDLE N. F.	SANDPOINT SEC. 24,25 T58N R1E
OLSON TUNNEL	2. USFS	PANHANDLE N. F.	PRIEST RIVER SEC. 1,12,13 T57N R6W
CEDAR CREEK	3. USFS	PANHANDLE N. F.	COEUR D'ALENE SEC. 14, T49N R2W
CAMP ELEVEN	4. USFS	CLEARWATER N. F.	HEADQUARTERS SEC. 17,20 T39N R6E
DEER CREEK	5. USFS	NEZ PERCE N. F.	GRANGEVILLE SEC. 1,12 T28N R9E
TRAPPER CREEK OSR	1. IDL	PEND OREILLE LAKE S. A.	SANDPOINT SEC. 6, T58N R2E
CRAZY-LITTLE PINE	2. IDL	PEND OREILLE LAKE S. A.	PRIEST RIVER SEC. 32 & 34, T 57 N R4W
KILLARNEY LAKE	3. IDL	ST. JOE S. A.	COEUR D'ALENE SEC. 16, T48N R2W
LIGHTENING PT. RELOG	4. IDL	CLEARWATER S. A.	HEADQUARTERS SEC. 12,13 T39N R4E
N. F. GROUSE CREEK	1. PRIVATE	INDUSTRIAL	SANDPOINT SEC. 17, T59N R1E
GOLD FORK CREEK	2. PRIVATE	NONINDUSTRIAL	SANDPOINT SEC. 12, T58N R1W
BELMGROVE CR.	3. PRIVATE	NONINDUSTRIAL	COEUR D'ALENE LAKE SEC. 26,35, T.49N R5W
THOMAS CREEK	4. PRIVATE	NONINDUSTRIAL	ST. MARIES SEC. 12,T46N R2W
LITTLE MEADOW CREEK	5. PRIVATE	INDUSTRIAL	HEADQUARTERS SEC. 25-28, T40N R4E

TABLE 1 CONTINUED

SOUTH IDAHO

TIMBER SALE	OWNERSHIP	AGENCY/OWNER	LOCATION
DECORAH	6. USFS	PAYETTE N. F.	CUPRUM SEC. 25,26,34,35,36 T21N R3W SEC. 30,31 T21N R2W SEC. 1-5,8,10,11,14 T20N R3W
MIDDLE FORK	7. USFS	PAYETTE N. F.	COUNCIL SEC. 1,2,11,12 T15N R1E SEC. 5,6,7,8, T15N R2E SEC. 31,32 T16N R2E
BONAPARTE	8. USFS	BOISE N. F.	MOUNTAIN HOME SEC. 23, T4N R10E
BRYAN CREEK	9. USFS	BOISE N. F.	CROUCH SEC. 14,15 T12N R5E
TOLLGATE	10. USFS	BOISE N. F.	IDAHO CITY SEC. 5,6,7,8 T5N R5E
WILLOW CREEK	1. IDL	SOUTHWEST S. A.	IDAHO CITY SEC. 16, T7N R8E
LAFFINWELL	6. PRIVATE	INDUSTRIAL	DONNELLY SEC. 11,12,14,23 T16N R4E
MICA CREEK	7. PRIVATE	INDUSTRIAL	CASCADE SEC. 17,20 T15N R2E
LITTLE SALMON CR.	8. PRIVATE	INDUSTRIAL	MCCALL SEC. 13,14,24,25 T18N R1E
LITTLE MUD CR.	9. PRIVATE	INDUSTRIAL	MCCALL SEC. 8,9,15,17,20,21 22,27,28,29,32 T20N R1E
FRENCH CR.	10. PRIVATE	NONINDUSTRIAL	RIGGINS SEC. 25,26 T24N R3E

FIGURE 1: LOCATION OF ON-SITE
FOREST PRACTICE
EVALUATIONS.



C. FIELD EVALUATION PROCEDURE

The field evaluation form was based on procedures used by audit teams in Washington and Oregon. The basis for the form is the subjective evaluation of compliance with the FPA Rules and observation of stream impacts. The FPA was used as the basic tool, since these Rules are recognized in the Water Quality Standards as approved BMPs.

In developing the field evaluation procedure several assumptions were made. The evaluation would be subjective and would be based on the professional judgement of the Task Force members present. Because of the limited time no physical parameters would be measured. Evaluation of impacts was based on observed impacts or potential hazards to fishery habitat.

A secondary objective during the field reviews was to evaluate the adequacy of the Rules as a tool in protecting water quality. This is complicated by the fact that there are several versions proposed:

1. Existing FPA Rules and Regulations adopted in 1976, Title 38, Chapter 13, Idaho Code.
2. Changes proposed by 208 study. IN: Forest Practices Water Quality Management Plan, IDHW-DOE, 1979. Used as basis for field evaluation form.
3. A 3rd version was developed by the Forest Practices Act Advisory Committee (IDL) in 1984. This is an edited version of the 208 proposed rules.

The form was designed to evaluate the existing rules as well as the rules proposed by the 208 committee in 1979.

Each applicable rule was rated in the field for both compliance and water quality impact using a rating system from 1 to 5, with 1 being a low rating and 5 being a superior rating. The field evaluation form is shown in Appendix B. The rating system is shown below:

COMPLIANCE RATING

1. Grossly neglected the rule requirement.
2. Major departure from the intent of the rule.
3. Minor departure from the intent of the rule.
4. Met rule requirement.
5. Exceeds requirements of the Forest Practice Rules.

WATER QUALITY IMPACTS RATING

1. Severe hazard to water quality or fishery habitat, damage is extensive spatially-recovery is expected to be slow, so as to prolong the damage over time.
 2. Major hazard to water quality or fishery habitat, but limited spatially or is temporary.
 3. Minor or temporary hazard to water quality or fishery habitat.
 4. Adequate protection for water quality and fishery habitat.
 5. Improved protection of water quality or fisheries habitat over pre-existing conditions.
-

FIELD PROCEDURE

In the field the Task Force met with a representative(s) from the land management agency and requested an overview of the operation. On USFS sites the Timber Sale Administrator and District Ranger were usually present, and a copy of the sale map and EAR was available. IDL Foresters provided sale maps and a 1-page synopsis of the timber sale. The group then concentrated their efforts at examining areas where erosion hazards were high and where sediment could be delivered to streams. This included walking skid trails near draws or channels, walking the major streams within the sale boundary, examining stream crossings, and observing road construction and maintenance practices. Notes were made on the type of geology, soil type, and the logging method. Streams were examined for observable impacts to bank integrity, direct sediment delivery, and obvious cobble embeddedness; and notes were made on existing fishery use.

The rule rating was arrived at by consensus. Where consensus was not reached, the individuals rated the rule and the scores were averaged. After the group gained experience in using the rating system, most rating was done by consensus.

LIMITATIONS OF THE FIELD EVALUATION

In interpreting the results of the on-site evaluations, the limitations of the field procedure must be kept in mind:

1. Impacts on stream shading, vegetative cover, and bank stability could be easily evaluated by observation. The actual impact of sedimentation

on fisheries habitat could only be evaluated if 1 runoff season had transpired since logging and/or road construction.

2. The potential for future hazards to stream sedimentation was evaluated by observing the potential for direct sediment delivery into stream channels. This is based on the experience of the Task Force members in analyzing the erosion hazards associated with timber harvest and road construction and maintenance.
3. The individual impact of the operation and the potential for contributing to cumulative impacts by the specified project could be evaluated. Cumulative impacts of other activities within the watershed could not be evaluated. This includes silvicultural practices as well as other nonpoint sources of sediment.
4. The effect of sediment on streams was evaluated by observing the impact on cobble embeddedness. Evaluating cobble embeddedness by observation is limited to extremes in condition—either obviously embedded or no obvious embeddedness.
5. Evaluation of how inspected streams were impacted by an individual silvicultural practice was difficult in cases where sedimentation from past activities was evident. Sources of instream sediment could not always be identified. Although in some cases it clearly was associated with the immediate silvicultural practice; in some cases it clearly was not. Instream sediment may be present naturally and/or due to other forest practices operations or other nonpoint sources, all occurring through time.

III. RESULTS

A. IDAHO DEPARTMENT OF LANDS

COMPLIANCE WITH FPA RULES/STREAM IMPACTS

Five sites were evaluated out of a possible 130 ongoing or recently completed sales; thus, results from this limited sample must be considered cautiously.

A summary of the rating for the IDL sites is shown in Table 2. Seventy-two percent of the individual practices met the intent of the proposed FPA Rules. Twelve percent were considered a major departure from the Rules, and 15 percent a minor departure. No gross neglect of the Rules was observed. (NOTE: The proposed FPA Rules clarify the existing FPA Rules. Except in infrequent circumstances, violation of the Rules refers to the proposed Rules as well as the existing Rules.)

Most of the hazard to fisheries habitat was associated with road construction and maintenance practices. Thirty-seven percent of the individual road construction rules were rated as providing less than adequate protection. The majority of these were considered a minor or temporary hazard (See Table 2).

Overall rating of the sites is shown in Table 3. Three sites included actions which were considered to be major departures from the intent of the FPA Rules. In 2 cases this resulted in major to severe impacts to fisheries habitat on Class I streams. In the 3rd case, the potential for impacting the stream was rated as a major hazard; the actual impact was not rated since the site had not experienced a runoff event prior to the Task Force's visit.

At the Willow Creek site, reuse of existing roads near the stream channel and poor erosion control practices were responsible for observed violations. Sediment delivery associated with this operation increased bedload sediment in a disturbed tributary to Willow Creek, which was being used by cutthroat trout.

At Lightning Point Releg the tractor yarding system, as used, was considered inappropriate for the the hazardous site conditions. Road reconstruction and maintenance practices were in violation of the FPA. It was observed that sediment from this operation was deposited in Lightning Creek. Cobble embeddedness in this stream was high. Observed cobble embeddedness levels are the result of the Lightning Point operation added to the existing condition. The relative contribution from past activities compared to the present operation cannot be determined without monitoring.

At the Trapper Creek site a highly erodible soil was exposed at an isolated road cut. The fill slope of the road was composed of sand which was raveling into the stream channel. This site was rated a major hazard due to the potential for this material to be delivered to a Class I stream.

At the other 2 sites log skidding in a wet area and leaving slash in the stream channel were judged as a minor departure from the FPA Rules. The drainage areas involved were minor stream courses which had no protected uses in the sale area and would not affect any downstream uses.

Therefore, no impact on protected uses occurred from these activities.

Recurring reasons for less than full compliance with the FPA Rules were:

1. Reuse of existing roads located too close to stream channels.
2. Poor road construction and maintenance practices.
3. Cut and fill slope stabilization not consistently completed prior to the runoff season.
4. Ground skidding during wet weather or on steep erodible slopes. Skid trails located parallel with tributary channels such that erosion control was insufficient to prevent sediment delivery.
5. Soil hazards not identified in planning the timber sales.
6. Contracts did not require timely erosion control associated with road construction and timber harvest.

EVALUATION OF ADMINISTRATIVE AND PLANNING PROCEDURES

In addition to looking at the physical site conditions the Task Force made observations regarding the administration of the timber sale program as it relates to environmental protection. The Task Force tried to identify the underlying shortcomings of the program in addition to the specific site problems discussed above.

1. Planning is inadequate to identify potential hazards to water quality in preparation of silvicultural activities.
2. Specialists - engineers, soil scientists, biologists - were not used to help plan and administer sales, except when requested from another agency on an informal and limited basis.

The timber sale activities might have been conducted with reduced impacts on water quality if information on soil hazards, stream habitat potential and sensitivity, and alternate road practices had been considered, and had been given a higher priority in the sale plan.

3. Internal processes to insure compliance with the FPA Rules are inadequate.

There is no internal process to check and assure that the Rules are being followed on state lands. Foresters in the Forest Management Bureau administer the timber sale and are responsible for meeting the FPA Rules. These foresters complete frequent logging inspection reports and road construction reports but the reports do not include specific mention of FPA compliance.

4. Emphasis on reuse of old roads that were originally built near stream channels leads to water quality conflicts.

Many existing road systems were planned before the impact to streams was a consideration. It is often difficult to reuse roads that were improperly located and built next to stream channels without impacting the stream. Reopening these roads or maintaining these roads results in delivery of sediment to the stream channel. To continue to use these roads without causing water quality impacts will require extra mitigative measures and maintenance procedures or relocation of the problem road section.

5. Interagency review by other state agencies could be improved.

There is currently no mechanism in place to encourage formal review from all interested state agencies. Interagency review would help identify those areas where the potential conflict with other state agency goals and state regulations could be identified and resolved. These agencies may also be able to provide input from specialists noted in conclusion # 2 above.

6. Consideration of management alternatives appears to be limited by the agency's mandate to maximize return to the school endowment fund.

This may be a stumbling block to pursuing alternate practices suggested by the Task Force. Whether this mandate or its interpretation leads to conflicts with water quality regulations needs

to be studied further. It should be noted that OM 901 of the IDL's Operations Manual contains an objective which provides for watershed and wildlife habitat protection.

RECOMMENDATIONS

1. The IDL Forest Management Bureau should develop and institute a more rigorous Water Quality Impact Analysis procedure. At minimum the presale plan should identify specific practices and remedial actions needed to meet the proposed FPA Rules.
2. Efforts should be made to involve specialists - engineers, soil scientists, biologists - in the timber management program. Priority should be placed on involvement of a logging engineer with soils-hydrology training. Involvement by soil scientists and biologists may be pursued through cooperative arrangements with the Soil Conservation Districts and the Idaho Fish and Game Department.
3. An internal process should be developed to obtain an independent evaluation of compliance with the FPA Rules on state lands. An independent inspection program would provide the Director feedback on the Department's dual role of harvesting timber and regulating forest practices.
4. Proposed timber sales should be reviewed by other state agencies prior to the activity. This would ensure that management of state lands is being conducted in compliance with other state regulations and management goals. The IDHW-DOE should review state sales prior to implementation for compliance with the Idaho Water Quality Standards. The Idaho Fish and Game Department is occasionally asked for input on the existing fishery values of streams within the timber sale area. A process to enhance this involvement is needed. They should be contacted for input to identify the need, if any, for protection of the fisheries.
5. Specific recommendations on the timber harvest and road building activities:
 - a. Erosion control practices need to be installed and maintained during the silvicultural operation. Because forest practice activities often cover several seasons, erosion control practices need to be kept current and installed prior to the runoff seasons throughout the operation.

- b. The policy on stabilizing cut banks and fill slopes should require grass seeding of exposed material within the same construction season to encourage root development prior to runoff. The Task Force noted that seeding of exposed material was a very effective mitigation tool where practiced which reduces erosion during the critical period following disturbance. Grass seeding should be kept current with ground disturbing road maintenance activities.
- c. Guidelines for use of tractor skidding should be developed. Identification of the appropriate logging method in sensitive land types is an important consideration in preventing excessive erosion and protecting water quality.
- d. Road locations and design should be pre-planned in conformance with Section 814.03, Road Specifications and Plans, of the proposed FPA Rules (Rule 4 of FPAAC version).

In reviewing these conclusions and recommendations the existing limitations in manpower and resources in the Forest Management Bureau must be kept in mind. Thirty-nine field foresters are responsible for administering 880,000 acres of commercial forest, and maintain a target harvest of 165 million board feet from an average of 130 active harvest contracts each year. These foresters are responsible for a variety of duties including: supervision of site preparation, reforestation, cone/seed collection, thinning contracts, tree genetic projects, forest fire overhead, and easement and access road surveys. Only with additional specialists in Hydrology, Engineering, and Biology and more personnel to supervise harvesting would it be reasonable to expect the Department to maintain the harvest target and upgrade compliance with the more stringent soil and water quality protection requirements of the proposed FPA Rules.

TABLE 2. IDAHO DEPARTMENT OF LANDS: Summary of the rating of individual rules for five operations.

A. COMPLIANCE WITH FPA RULES AND REGULATIONS (%).

RATING	TIMBER HARVEST	ROAD CONSTRUCTION	TOTAL
5. EXCEEDS REQUIREMENTS	6	0	3
4. FULL COMPLIANCE	66	63	64
3. MINOR DEPARTURE	15	26	21
2. MAJOR DEPARTURE	13	11	12
1. GROSS NEGLECT	0	0	0
NUMBER RATED	78.0	90.0	158.0

B. HAZARD TO FISHERIES HABITAT (%).

RATING	TIMBER HARVEST	ROAD CONSTRUCTION	TOTAL
5. IMPROVED PROTECTION	0	0	0
4. ADEQUATE PROTECTION	78	61	69
3. MINOR OR TEMP. HAZARD	12	28	20
2. MAJOR HAZARD	10	10	10
1. SEVERE HAZARD	1	1	1
NUMBER RATED	78.0	90.0	168.0

TABLE 3: IDL-OVERALL JOB RATING

SITE	COMPLIANCE WITH PROPOSED RULES	IMPACTS TO PROTECTED USES	COMMENTS	GEOLOGY	LAND* TYPE HAZARD	STREAM CLASS	STREAM DESCRIPTION
Crazy-Little Pine	Minor Departure	Adequate Protection	Skidding in wet areas should have been avoided. No protected uses.	Glacial Till	L	II	Headwater seeps. No potential downstream impacts.
Killarney Lake	Minor Departure	Adequate Protection	Slash and debris left in channel, no protected uses.	Hard Metamorphics	L	II	Short intermittent tributary to slough of Killarney Lake.
Lightening Pt. Relog	Major Departure	Severe Impact	Tractor yarding system used on steep highly erodible soils. Poor road maintenance practices.	Mica Schist (Soft Metamorphics)	H	I	N.F. Silver Cr. Spawning and rearing habitat for wild trout, heavily impacted by sediment.
Trapper Creek OSR	Major Departure	Major Hazard	Engineering hazard of soil not identified in planning stage.	Glacial Outwash	H	I	Trapper Cr. Spawning and rearing habitat for resident cutthroat trout.
Willow Creek	Major Departure	Major Impact	Reuse of existing road near stream channel. Poor practices.	Batholith	H	I	Small tributary to Willow Cr. Habitat for wild trout.

*NOTES: LAND TYPE HAZARD - Low, moderate, high rating based on combination of soil erodibility and slope.

B. U. S. FOREST SERVICE

COMPLIANCE WITH FPA RULES/STREAM IMPACTS

Ninety-six percent of the individual practices at the 10 sites met or exceeded the FPA Rules (Table 4). Less than 4 percent were considered a minor departure from the Rules, and less than 1 percent were considered a major departure. No gross neglect of the Rules was observed.

An overall rating of the site shows that 7 of the 10 sites were judged as meeting or exceeding the FPA Rules (Table 5). Three sites included minor departures from 1 or more of the Rules.

Poor road drainage practices and a culvert which acted as a fish passage barrier at a stream crossing accounted for the lower rating at the Middle Fork-Weiser River site. This problem was considered a minor departure because this was an isolated occurrence in a timber sale covering several hundred acres. The violation resulted in a minor impact on a stream containing trout.

At the Tollgate Timber Sale minor problems were noted with the road construction and maintenance practices leading to limited erosion of fill slopes. Rocky Gulch is the major stream course within the sale area. It does not support a fishery or any other protected use; therefore, the problems noted did not have any water quality impact. Rocky Gulch is a tributary of Mores Creek which has been greatly impacted by historical placer mining and, therefore, no downstream impacts from the timber sale were anticipated.

The Bonaparte Timber Sale was located on steep granitic soils with a very high soil erodibility. Minor departure from the Rules was associated with construction of roads using sidecast methods without compacting the road surface, and also with the difficulty in reestablishing vegetation on disturbed areas. The planned location of the roads away from stream channels and the use of skyline yarding prevented stream impacts. However, the Task Force recognized that the operation created the potential for cumulative impacts associated with mass failure hazard.

EVALUATION OF ADMINISTRATIVE AND PLANNING PROCEDURES

1. Planning is well done at least in part due to the preparation of detailed environmental assessments for each timber sale, and consideration for their potential impacts on water quality. Planning is done by a team of resource specialists with multiple resource management responsibilities.

2. Roads are planned, located, designed, constructed, and maintained to high standards. Measures to prevent erosion are used extensively. Road closure procedures are successful in limiting the erosion hazard.
3. Erosion control and road stabilization measures are kept current with the activity.
4. Mitigative measures based on USFS technology exceed the requirements of the proposed FPA Rules. Practices are adjusted on the ground based on soil and watershed sensitivity as needed to protect the fisheries resource.
5. Logging systems which prevent soil and stream disturbance are applied in sensitive land types.
6. Costs associated with implementing these procedures are acknowledged to be several times those used by the Idaho Department of Lands and private landowners.

RECOMMENDATIONS

1. The Forest Service should continue to work on techniques for monitoring, modeling, and predicting cumulative impacts on protected uses.

TABLE 4. U.S. FOREST SERVICE: Summary of the rating of individual rules for ten operations.

A. COMPLIANCE WITH FPA RULES AND REGULATIONS (%).

RATING	TIMBER HARVEST	ROAD CONSTRUCTION	TOTAL
5. EXCEEDS REQUIREMENTS	29	20	25
4. FULL COMPLIANCE	68	74	71
3. MINOR DEPARTURE	3	5	3.5
2. MAJOR DEPARTURE	0	1	0.5
1. GROSS NEGLECT	0	0	0
NUMBER RATED	150.0	221.0	371.0

B. HAZARD TO FISHERIES HABITAT (%).

RATING	TIMBER HARVEST	ROAD CONSTRUCTION	TOTAL
5. IMPROVED PROTECTION	0	2	1
4. ADEQUATE PROTECTION	99	94	96
3. MINOR OR TEMP. HAZARD	1	3	2
2. MAJOR HAZARD	0	1	1
1. SEVERE HAZARD	0	0	0
NUMBER RATED	151.0	221.0	372.0

TABLE 5: USFS-OVERALL JOB RATING

SITE	COMPLIANCE WITH PROPOSED RULES	IMPACTS TO PROTECTED USES	COMMENTS	GEOLOGY	LAND* TYPE HAZARD	STREAM CLASS CONDITION	STREAM DESCRIPTION
Bonaparte	Minor Departure	Adequate Protection	Mass failure hazard, presently no impact. High standards for road location, design construction. Cable & aerial logging system.	Batholith	H	II	Tributaries to Feather R. No protected uses within sale boundary.
Bryan Creek	Exceeds Requirements	Adequate Protection	High standards for road location, design construction. Cable & aerial logging system.	Batholith	H	I	Cutting units situated on small tributaries to M.F. Payette R.- wild trout.
Camp Eleven	Exceeds Requirements	Adequate Protection	High standards for road, location, design, and construction.	Highly Altered Granitics	M	I	S.F. Beaver Cr. Spawning & rearing habitat for wild trout, impacted by past activities.
Cedar Creek	Met Requirements	Adequate Protection	Road location, buffer strips.	Hard Metamorphics	L	I	S.F. Cedar Cr. Spawning & rearing habitat for wild trout, potential adfluvial cutthroat run for Cd'A Lake.
Decorah	Met Requirements	Adequate Protection	Appropriate logging system.	Hard Metamorphics	L	I	Indian Cr. Spawning & rearing habitat for wild trout.
Deer Creek	Exceed Requirements	Adequate Protection	High standards for road location, design & construction.	Batholith	H	II	Small tributary within sale boundary.
Middle Fork of Weiser	Minor Departure	Minor Impact	Isolated problem at stream crossing.	Basalt	L	I	Mica Cr. Spawning & rearing habitat for rainbow trout.
Olson Tunnel	Met Requirements	Adequate Protection	Wide buffer strips on streams.	Highly Altered Granitics	M	II	Headwater springs/seeps within sale area.
Spring Done	Exceed Requirements	Adequate Protection	Wide buffer strips on streams.	Glacial Till	L	II	First order tributaries within sale boundary.
Tollgate	Minor Departure	Adequate Protection	No protected uses.	Batholith	H	II	Rocky Gulch. Minor tributary to Mores Creek.

C. PRIVATE OWNERSHIP

COMPLIANCE WITH FPA RULES/STREAM IMPACTS.

Eighty-one percent of the individual practices at the 10 sites met the FPA Rules (Table 6). Eighteen percent of the individual practices did not meet the full intent of the FPA Rules. Ten percent were considered a minor departure, 5 percent a major departure, and 3 percent were judged as gross neglect. Noncompliance was associated primarily with road construction and maintenance practices; 24 percent of the Rules rated for the road category did not meet the intent of the FPA.

Hazards to fishery habitat were associated primarily with road construction practices (23 percent). The majority of these individual ratings were considered a minor or temporary hazard (19 percent). Less than 1 percent were considered a severe hazard.

Adequate protection of water quality values was provided at 6 of the sites (Table 7). These sites are administered by major corporate ownerships. Three of these sites in Southern Idaho involved stable basalt soils, and the streams within the sale area were Class II streams which did not support protected uses. At the Little Meadow Creek site minor departures from the Rules were noted; however, the stream does not support a fishery (Class II) so no impact on protected uses occurred. Two of these operations involved Class I streams. Stream impacts were prevented by the nature of the soils (low erodibility), and the way in which forest practices were conducted, i.e., high compliance with the FPA Rules.

The remaining 4 of the 10 sites were on small private ownerships. At 1 site, a major impact to fisheries habitat occurred; at 3 sites, impacts were rated as a major potential hazard to fisheries habitat.

At Bellgrove Creek forest practices were conducted over most of the site with a high degree of compliance. Reuse of an existing road segment located next to the stream channel and removal of a stream crossing led to damaging sedimentation of the stream. The impact was judged as a major impact because the small stream is used for spawning by cutthroat trout.

At French Creek a major hazard to water quality was associated with reconstruction of the haul road located adjacent to a Class I stream. French Creek is a tributary of the Salmon River and is classified as an anadromous fishery. The site was located on steep topography with highly erodible batholith soils. Coarse sandy material had eroded from the fill slope into French Creek during the runoff season; however, no deposition of sediment in the channel below the operation was observed. This is due to the steep gradient of the stream which would have transported most of the

delivered sediment downstream to the Salmon River. Therefore, the impact that had occurred thus far was considered temporary. Potential future hazards from this operation are considered major due to continuing road maintenance activities and the potential for mass failure. If the operation had been conducted in compliance with the proposed FPA Rules, the hazards would have been reduced. It should be noted that an IDL inspection of the site based on the current regulations found the operation to be satisfactory.

At the Gold Fork Creek site a poorly constructed stream crossing was considered a major departure from the FPA Rules. Construction of the stream crossing resulted in delivery of sediment to the stream channel. The stream crossing was considered a continuing major hazard to the stream due to sediment associated with future road use and maintenance. Stream impacts could have been prevented by compliance with the FPA Rules (and by reference to the Idaho Stream Protection Act). The site was inspected by IDL for compliance with the existing FPA Rules. The inspection report was unsatisfactory; however, no future action by IDL is planned.

At the Thomas Creek site a major hazard to water quality was associated with a poorly conducted logging operation. The operation was located at the headwaters of the stream. A trout population was noted downstream about one-half mile. Severe impacts to downstream uses were prevented by the stable rocky soils within the logging operation. No downstream delivery of sediment was observed. Although the operation was conducted in violation of the FPA Rules, the IDL Woodland Forester inspecting the site noted that the Department would be unable to take any action against the operator to gain compliance.

Recurring reasons for less than full compliance with the FPA Rules were:

1. Inadequate planning in location and design of roads.
2. Reuse of existing roads and skid trails located close to stream channels.
3. Inadequate road drainage and stream crossing structures.
4. Erosion control practices not being completed in a timely manner prior to the runoff season.

EVALUATION OF ADMINISTRATIVE AND PLANNING PROCEDURES

1. Administration and enforcement of the FPA Rules by IDL is inadequate to insure compliance. IDL does not have the manpower needed to work with owners and operators in gaining compliance. Enforcement of some Rules is difficult due to the vague wording (advisory language) of the current Rules, and the complicated enforcement procedures adopted in 1980.
2. Adherence to the Rules on industrial ownership was observed to be generally higher than on non-industrial ownerships. This is done on a voluntary basis since there is insufficient IDL enforcement personnel.
3. Planning efforts vary widely with goals of the owner and internal personnel capabilities.
4. Adherence to the Rules on small private ownerships varied considerably from good to gross neglect.
5. Evaluation of the cumulative effect of forest practices on streams by private landowners is difficult.

RECOMMENDATIONS

1. Increase assistance to landowners by the IDL before the activity occurs: increased manpower is necessary.
2. Adopt the changes to the FPA recently proposed (Sept., 1984) by the IDL FPAAC. (See Section VI).
3. Amend the FPA to strengthen its enforcement provisions and correct deficiencies in the existing enforcement procedures.
4. Clarify the Forest Practices Act by amending the FPA Rules to require a reasonable minimum notification period which will allow IDL to review harvest plans prior to the activity.
5. Amend the FPA to recognize the owners liability in complying with the Act. The FPA currently requires only the operator to comply with the FPA Rules.

6. Amend the FPA to require bonding of all operators. Compliance with the FPA Rules on private ownerships is dependent on application of good practices by informed and conscientious operators. Enforcement after the fact cannot correct the damage to streams; this is especially true regarding sedimentation of streams. Bonding of operators should promote compliance with BMPs.

7. Amend the FPA to require licensing of operators. Licensing will assure that operators meet minimum requirements regarding knowledge of the FPA Rules. Licensing provides an expedient way to assure that competent operators are involved in forest practice activities, and provides a mechanism for dealing with repeat offenders. It is recognized that licensing in comparison to bonding will require additional administrative costs.

TABLE 6. PRIVATE OPERATIONS: Summary of the rating of individual rules for ten operations.

A. COMPLIANCE WITH FPA RULES AND REGULATIONS (%).

RATING	TIMBER HARVEST	ROAD CONSTRUCTION	TOTAL
5. EXCEEDS REQUIREMENTS	2	0	1
4. FULL COMPLIANCE	86	76	81
3. MINOR DEPARTURE	6	13	10
2. MAJOR DEPARTURE	3	7	5
1. GROSS NEGLECT	3	4	3
NUMBER RATED	155.0	172.0	327.0

B. HAZARD TO FISHERIES HABITAT (%).

RATING	TIMBER HARVEST	ROAD CONSTRUCTION	TOTAL
5. IMPROVED PROTECTION	0	0	0
4. ADEQUATE PROTECTION	92	77	84
3. MINOR OR TEMP. HAZARD	7	19	13
2. MAJOR HAZARD	0	3.5	2
1. SEVERE HAZARD	1	0.5	1
NUMBER RATED	153.0	172.0	327.0

TABLE 7: PRIVATE OWNERSHIP-OVERALL JOB RATING

SITE	COMPLIANCE WITH PROPOSED RULES	IMPACTS TO PROTECTED USES	COMMENTS	GEOLOGY	LAND ^m TYPE HAZARD	STREAM CLASS	STREAM DESCRIPTION
Bellgrove	Minor Departure	Major Impact	Reuse of existing road at critical location near stream.	Soft Meta-morphics	M	I	Bellgrove Cr. Tributary to Cd'A Lake, spawning habitat for adfluvial cutthroat trout.
French Creek	Major Departure	Major Hazard	Reconstruction of road at hazardous location near stream.	Basalt	H	I	French Cr. has spawning habitat for anadromous salmonids.
Gold Fork	Major Departure	Major Hazard	Poorly constructed stream crossing creates continuing hazard.	Alluvium	L	I	Gold Fork Cr. Spawning for Kamloops trout.
N.F. Grouse Creek	Met Requirements	Adequate Protection	Gentle terrain, careful logging in SPZ.	Glacial Till	L	I	N.F. Grouse Cr. Important spawning habitat for Kamloops trout.
Laffinwell	Met Requirements	Adequate Protection	Stable soils, no protected uses.	Basalt	L	II	Tributary to Rapid Cr. No protected uses.
Little Meadow	Minor Departure	Adequate Protection	Road relocated away from creek, no protected uses.	Alluvium	M	II	Tributary to Dworshak Res. No protected uses.
Little Mud	Met Requirements	Adequate Protection	Stable soils, no protected uses.	Basalt	L	II	Small silt bottom stream with low fisheries value.
Little Salmon	Met Requirements	Adequate Protection	Stable soils, no protected uses.	Basalt	L	II	Headwater tributaries to Little Salmon R. No fisheries habitat.
Mica Creek	Met Requirements	Adequate Protection	Stable soils, good practices.	Basalt	L	I	Mica Cr. Spawning & rearing habitat for Rainbow trout.
Thomas Creek	Gross Neglect	Major Hazard	Severe impact prevented by stable soils. No observed downstream impacts.	Basalt	L	I	Small stream with resident cutthroat trout, logging activity in headwaters.

IV. STREAM CLASS DEFINITIONS

Definition of streams developed in the 208 proposed FPA Rules were used in the on-site evaluations. These Rules recognize two stream classes based on protected uses; Class I and Class II streams (see Definitions).

Of the 25 sites examined, 14 sites included Class I streams, and 11 sites contained Class II streams. In practice, since there are only 2 categories, streams that did not meet the definition of Class I were called Class II by default. At 3 sites, the drainages were small first order draws or seeps that neither support protected uses nor have any potential downstream impacts.

It was the intention of the Task Force to sample only streams that met the Class I definition. In soliciting candidate sites from land management agencies this criterion was emphasized; however, only half of the sites selected contained Class I streams. This discrepancy points out the difficulty in using these proposed definitions in practice as part of the FPA Rules. Also, it serves to show that there is a low potential for many logging operations to conflict with protected uses, simply because the operation is located at a great distance from a Class I stream or a Class II stream that would deliver sediment to a Class I stream.

The 2 Stream Class definitions were developed by the 208 Technical Committee in order to designate forest practices appropriate to the protection needed for the stream. This is recognized as a useful administrative tool. However, in practice, application of the definition by operators and regulatory agencies without further guidance will lead to considerable confusion.

To remedy this problem a statewide stream mapping and classification effort is needed. Since the definition is based primarily on fisheries usage, the Idaho Fish and Game Department should spearhead this effort in cooperation with other state and federal agencies. In the interim, if the proposed definitions are adopted, operators and agency staff should contact the Idaho Fish and Game Department for a determination of stream class.

It should be noted that applying the two stream class definitions to the wide variety of stream types in Idaho is a major oversimplification. Although the proposed regulations are a major improvement over the existing regulations, the stream classification leaves room for improvement. The approach used in the State of Washington Forest Practices Act, which recognizes four stream classes based on physical site conditions as well as stream uses is a useful procedure. We feel that a statewide effort at mapping and classifying streams with regard to protected use potential would provide the needed data base to resolve many of the conflicts between land management and regulatory agencies.

V. DISCUSSION OF STREAM IMPACTS

To put our results into perspective relating to Water Quality Standards several concepts in regards to stream impacts need to be considered. The impact on a stream depends on physical factors of the site, the quality of the job (i.e., the practices used), and the relation of the operation to other forest practices. A specific operation may have an individual impact as well as contribute to cumulative impacts when added to other sources in the watershed. The other sources usually of importance in a forested watershed include: mining, grazing, other logging operations, and the associated transportation system. The magnitude of the impact needs to be considered; all nonpoint source activities generally increase erosion and sedimentation rates; however, the resulting impact may vary from negligible to severe. Another consideration is the existing stream sediment condition at the time the forest practice activity is conducted. Past activities may have heavily impacted the watershed, such that any additional input will cause the sediment load to exceed the threshold for sustained damage to the fishery.

This discussion will be restricted to the impacts of sediment. Erosion resulting in increases in suspended sediment and bedload sediment was the most common impact observed. Impacts on stream shading, bank stability, or fisheries physical habitat, other than influenced by sedimentation, were rarely observed in the sample.

EXISTING STREAM CONDITION

Observation of cobble embeddedness was used to determine the impact of watershed activities on the stream. Examination of cobble embeddedness during the on-site visit is useful in determining the existing stream condition; however, it is not possible to determine the source of the sediment. Past watershed activities as well as ongoing activities may have contributed to the observed sediment condition. Past activities which may have contributed to the sediment load include historical activities such as railroad logging, flume logging, hydraulic mining, placer mining, and associated road building, as well as recent silvicultural activities.

Observation of cobble embeddedness only detects two extremes in stream condition - either below the threshold level or above it. Current research by USFS shows that an observer would visually be able to notice impacts only when they were severe, i.e., embeddedness over 40 percent.

Of the 25 sites inspected, 14 were within proximity to a Class I stream, that is, a stream that could be used by resident or adfluvial trout. Of these 14 streams, obvious cobble embeddedness was observed in 9 streams. Therefore, at these 9 sites we can assume that sediment delivery from past activities may have already caused serious injury to fishery habitat.

No obvious cobble embeddedness was observed in 3 Class I streams- Indian Creek, S. F. Cedar Creek, and French Creek. The sediment condition in Indian Creek was measured by the Payette National Forest; low cobble embeddedness was attributed to a catastrophic discharge event associated with a dam failure which washed out the sediment. In S.F. Cedar Creek, the low sediment condition is due to the type of soils in the watershed. These soils do not produce the sand-size material which would tend to seal the cobble. At French Creek, the steep gradient channel and high water velocities would be expected to transport sand size material out of the channel.

INDIVIDUAL IMPACTS

Observation of sediment delivery to a receiving stream was the criterion used to determine individual impacts. The Task Force rated the magnitude of individual impacts on a 5-step scale - severe impact, major impact, minor impact, adequate protection, and improvement over existing conditions. In addition, we evaluated the risk that the operation presented to future impacts.

At 6 of the 14 Class I streams, sediment delivery from the current operation was thought to be high enough to cause a significant individual impact on fisheries habitat or contribute to cumulative impacts (See Table 8). Site specific monitoring before and after the activity would be required to get a better resolution of the impact (or lack of an impact) from the operation. Monitoring was not a possibility given the time constraints for the Task Force.

CUMULATIVE IMPACTS

The current controversy described in the Introduction was caused by the concern for the impact of logging on a watershed basis, that is, the additive effects of sediment produced by various forest practices on a sensitive protected use. The evaluation of future risk in this report is based on the professional judgement of the Task Force members. Cumulative effects can only be quantified by costly and time-consuming

TABLE 8: SUMMARY OF IMPACTS FOR THE 25 INSPECTED OPERATIONS

OWNER	SITE	CLASS	FISH	PRE-EXIST ¹ SEDIMENT CONDITIONS	PROJECT ² SEDIMENT	CUM. IMPACT POTENTIAL (AS INSPECTED)	CUM. IMPACT POTENTIAL (PROPOSED FPA)	OTHER SOURCES
IDL								
1	CRAZY CR.	II	0	NA	NA	NO	NO	NONE
2	KILLARNEY	II	0	NA	NA	NO	NO	NONE
3	LT. POINT	I	WILD	YES	YES	HIGH	MOD	LOGGING
4	TRAPPER CR.	I	WILD	YES	NO	MOD	LOW	LOGGING
5	WILLOW CR.	I	WILD	YES	YES	HIGH	LOW	LOGGING
USFS								
1	BONAPARTE	II	0	YES	NO	MOD	MOD	LOGGING, MINING
2	BRYAN CR.	I	WILD	YES	NO	LOW	LOW	P. GRAZING
3	CAMP 11	I	WILD	YES	NO	LOW	LOW	LOGGING
4	CEDAR CR.	I	WILD	NO	NO	LOW	LOW	LOGGING, MINING
5	DECORAH	I	WILD	NO	NO	LOW	LOW	MINING
6	DEER CR.	II	0	YES	NO	LOW	LOW	LOGGING
7	MID. FORK	I	WILD	YES	YES	LOW	LOW	GRAZING**
8	OLSON TUN.	II	0	NO	NO	NO	NO	NONE
9	SPRING/DONE	II	0	NO	NO	LOW	LOW	NONE
10	TOLLGATE	II	0	YES	NO	LOW	LOW	LOGGING
PRIVATE OPERATIONS								
1	BELLGROVE CREEK	I	WILD	YES	YES	HIGH	LOW	LOGGING
2	FRENCH CREEK	I	ANDR.	NO	YES	MOD	MOD	LOGGING
3	GOLD FORK	I	WILD	NA	YES	MOD	LOW	NONE
4	GROUSE CREEK	I	WILD	YES	NO	LOW	LOW	ROADS
5	LAFFINWELL	II	0	N.I.	NO	LOW	LOW	GRAZING**
6	L. MEADOW CR.	II	0	N.I.	YES	LOW	LOW	LOGGING
7	L. MUD CR.	II	0	N.A.	YES	LOW	LOW	GRAZING**
8	L. SALMON CR.	II	0	NO	NO	LOW	LOW	GRAZING**
9	MICA CR.	I	WILD	YES	NO	MOD	LOW	LOGGING
10	THOMAS CR.	I	0	NO	?	MOD	LOW	GRAZING**

NOTE:

¹PRE-EXISTING SEDIMENT CONDITION - OBVIOUS COBBLE EMBEDDEDNESS OR BEDLOAD SEDIMENT OBSERVED.

²PROJECT SEDIMENT - OBSERVED SEDIMENT DELIVERY OF DAMAGING MAGNITUDE FROM THE CURRENT FOREST OPERATION.

CUMULATIVE IMPACT POTENTIAL: (SEE TEXT)

OTHER IMPACTS: ** - INDICATES SIGNIFICANT PRESENT POLLUTION SOURCE.

monitoring after the fact, or by predicting the impact through modeling such as the R1-R4 model used by the USFS in Idaho. This model displays relative potential for impacts between alternatives being considered.

The risk that the site presents to continuing impacts on the stream depends on site-specific factors - primarily the geologic erosion hazard and the stream's capability to support protected uses and transport sediment - together with the way in which the silvicultural operation was conducted. The risk for cumulative impacts from the operations was estimated as none, low, moderate, and high:

No Risk: The streamcourses within the area do not support any protected uses. There are no potential downstream impacts from the project due to physical site limitations.

Low risk: The potential for sediment delivery to a fisheries stream from the site is low, so as not to contribute to cumulative effects which would cause sustained damage to a protected use.

Moderate risk: The potential for sediment delivery from the site is high enough to present a significant hazard to water quality when added to other sources. The site alone will not (did not) cause sustained damage to a protected use.

High Risk: The potential for continuing sediment delivery from the project is high, so as to contribute to cumulative impacts in the watershed which will cause serious injury. The site may have caused sustained damage to a protected use as an individual impact.

The cumulative impact potential for the 25 operations as implemented was as rated by the Task Force (Table 8). Three sites were rated as presenting no risk, 13 sites as low risks, 6 as moderate risks, and 3 as high risks for contributing to cumulative watershed impacts.

To relate this information to the objective of the Task Force, we analyzed each operation that was rated as moderate or high risk to determine if risks to cumulative impacts would have been lowered if the operations had been conducted in compliance with the proposed FPA Rules. This risk analysis applies only to the inspected operation; the site was considered independently from the watershed. Existing stream conditions are not considered in this analysis because we are interested in evaluating the current procedures used - not all past activities. The risks were lowered for state and private operations conducted on low and moderate

hazard land types as shown in Table 8. The rating for the USFS sites were unchanged. If the proposed FPA Rules were complied with no operations would remain in the high risk category, 4 sites would still be considered as moderate risks, and the rest would be considered as low risks.

The 4 sites that were rated as moderate risks are located on steep terrain, 3 of these sites are in areas with high or very high soil erodibility (2 in the batholith). Mitigative measures beyond that prescribed in the proposed FPA Rules would be needed to reduce the risk of cumulative impacts to lower levels.

IMPLICATIONS FOR THE CUMULATIVE EFFECT ISSUE BASED ON THE SAMPLE SITES

Administration of silvicultural activities for prevention of cumulative effects includes consideration of the land type hazard, the management practices used, and scheduling of the forest operations in the watershed over time and space.

Land type hazard is dependent primarily on two factors, slope and geology, as shown in Table 9. The general geologic categories shown have been found to be useful groupings for USFS planning. The hazard ratings in the body of the table are based on the combined experience of the Task Force. Site specific conditions, such as presence of an ash cap, determine the actual hazard rating for a site.

Table 9. Risk Comparison of Land Type Hazard Groups.

LAND TYPE HAZARD			
SLOPE	GEOLOGIC TYPES		
	I HARD METAMORPHIC, GLACIAL TILL, HARD SEDIMENTS, AND BASALT.	II SOFT METAMORPHIC, SOFT SEDIMENTS, PYROCLASTICS AND HARD GRANITICS.	III GLACIAL OUTWASH, DECOMPOSED (LOW CLAY CONTENT) GRANITICS.
<45%	L	L	L
45-60%	L	M	M
60-75%	M	M	H
>75%	H	H	H

CUMULATIVE IMPACTS UNDER USFS ADMINISTRATION

Based on the evaluation of USFS procedures at the 10 sites, we can draw some general conclusions regarding protection of water quality values under Forest Service administration.

It was determined that the level of planning, administration, and utilization of alternate practices on USFS lands was generally in excess of the requirements shown in the proposed FPA Rules (BMPs). Appropriate management practices are determined by the level of protection needed at a particular site. Watershed planning is the key to this process. Management practices are prescribed based on the watershed objectives. The ability to schedule forest practices in a watershed over time and space is an important component of this process. These procedures provide reasonable assurance that sustained damage to a protected use will not occur from individual impacts in any land type or cumulative effects in low or moderate land types. This is depicted in Table 10.

Under USFS administration the major identified hazard for water quality impacts is associated with the potential for cumulative effects resulting from mass failure potential in high-hazard land types. The significant hazards occur with the road construction and maintenance component of the overall harvest operation on these lands.

Table 10. Potential for sustained damage to a protected use under USFS administration.

LAND TYPE HAZARD	INDIVIDUAL POTENTIAL	CUMULATIVE POTENTIAL
LOW	LOW	LOW
MODERATE	LOW	LOW
HIGH	LOW	<< MOD >>

CONCLUSIONS REGARDING ADMINISTRATION ON STATE AND PRIVATE LANDS

1. Current FPA-BMPs provide reasonable assurance that sustained damage to a protected use will not occur from individual impacts in low-hazard

and moderate-hazard land types. The potential for sustaining major impacts from cumulative effects is high for road construction on high-hazard land types and moderate on moderate-hazard land types (Table 11).

2. Implementation of proposed Rule changes on state and private lands will reduce potential for sustained damage to a protected use as shown in Table 12. Further reductions in hazards from cumulative effects will necessitate watershed planning which considers scheduling of forest operations over time and space, and use of additional practices not identified in the proposed Rules. Hazards would be reduced to similar levels as shown in Table 10 for the USFS.

Table 11. Potential for sustained damage to a protected use on state and private lands using current FPA Rules.

LAND TYPE HAZARD	INDIVIDUAL POTENTIAL	CUMULATIVE POTENTIAL
LOW	LOW	LOW
MODERATE	LOW	<< MOD >>
HIGH	<< MOD >>	<< HIGH >>

Table 12. Potential for sustained damage to a protected use on state and private lands using proposed FPA Rules. Further reductions in cumulative impact potential can only be achieved through watershed planning.

LAND TYPE HAZARD	INDIVIDUAL POTENTIAL	CUMULATIVE POTENTIAL
LOW	LOW	LOW
MODERATE	LOW	<< MOD >>
HIGH	LOW	<< HIGH >>

VI. RECOMMENDED CHANGES TO THE FPA RULES

The Forest Practices Act Advisory Committee (FPAAC) for IDL completed recommendations on revising the FPA Rules in September, 1984. These revisions are based on the changes proposed in the 208 Forest Practices Water Quality Management Plan (1979). The FPAAC revised advisory language to enforceable language where possible. The Task Force reviewed the changes recommended by the FPAAC and agrees with most of the changes. However, there are two significant additions based on the on-site evaluations which we feel are necessary for the FPA Rules to be considered as Best Management Practices as defined in the Clean Water Act.

1. Require stabilization of cut and fill slopes near stream channels during the same construction season by seeding or other suitable means.

Unstable cut and fill slopes associated with new or reconstructed roads were the major reoccurring source of sediment noted by the Task Force during the on-site visits. The Task Force also noted that prompt seeding of these slopes in the fall where practiced was very effective in reducing erosion. In some cases it was evident that the grass that sprouted in the fall provided erosion protection even during the first critical runoff season. It is the opinion of the Task Force that seeding is a cost-effective method of stabilizing cut and fill slopes that have the potential for delivery of sediment to streams. For this reason we recommend that the Rule be changed to read:

RULE 814.04 (3) (Rule 4,c,iv. FPAAC version)

Where exposed material (excavation, embankment, borrow pits, waste piles, etc.) is potentially erodible, and where sediments would enter streams, stabilize prior to fall or spring runoff by seeding, compacting, riprapping, benching, mulching, or other suitable means.

It should be noted that this change would be consistent with the FPTAC recommended changes to Rule 813.05(2) (Rule 3,e,1. FPAAC version) which requires that erosion control practices for skid and fire trails be kept current to control erosion prior to runoff.

2. Require that in logging settings where slopes are predominately steeper than 45 percent, tractor skidding requires a variance.

The reason for this addition is that tractor logging in steep land types with high soil erodibility presents a major potential hazard to water quality. In some situations tractor logging may not be satisfactory regardless of the control procedures used, in other situations tractor logging may be used if skid trails are laid out carefully and extra mitigative measures are prescribed. The variance procedure requires the operator to contact the IDL Woodland Forester prior to entering the sale area. This procedure would result in a consultation with the Forester during which the hazards to streams could be evaluated and alternate logging methods considered before the entry is made. Consideration of stream values, evaluation of the geologic erosion hazard, and opportunities for mitigation should be considered in granting the variance.

Inclusion of these ideas into the Rules would require an additional rule which could be included in Section 813.03 (Rule 3.FPAAC version):

Tractor skidding requires a variance per rule 2.a where slopes within a proposed logging setting (that is, the timbered area tributary to a landing or group of contiguous landings) are steeper than 45 percent as measured over 50% of the area.

VII. WATER QUALITY STANDARDS

The revisions made to the Water Quality Standards regarding nonpoint source pollution in January, 1983 were briefly reviewed by the Task Force. These Standards were felt to be acceptable at this time given the present state of knowledge regarding the effects of sedimentation on fisheries from forest practices.

The Standards embody the major concepts of the Clean Water Act regarding nonpoint source pollution. The bottom line is protection of beneficial uses. Identified BMPs are the tools which are to be used to reach that goal. The administrative policy of the Standards includes the statement: **In all cases, existing beneficial uses of the waters of the State will be protected.** The revisions made to the Standards in January, 1983 have not altered that goal.

The most controversial language that was adopted in January, 1983 is the definition of serious injury. The definition includes two opposing concepts: prevention of damage to the protected use, and recognition that this damage may at times be necessary because of social and economic factors. Regardless of this definition the administrative policy noted above is the controlling language in the Standards. Further clarification of what constitutes serious injury will require a better understanding of the sedimentation process, the impact on fish, and recovery rate of various streams. Research on this subject needs to be continued and encouraged.

Some Task Force members expressed concern regarding the enforcement provisions in the revised nonpoint source standards. The Division of Environment does not have the the necessary legal tools to prevent or stop a nonpoint source activity from damaging streams in a timely manner. However, this enforcement problem applies equally to point source pollution, and is due to the limitations imposed by statute in the Idaho Code. Improving enforcement capability will require changes to the Idaho Code; this cannot be addressed by making changes only to the nonpoint standards.

APPENDIX A:

FOREST PRACTICES AUDIT SAMPLING SYSTEM

Objective: A sampling design which allows assessment of whether the Idaho Forest Practices Act (FPA) Rules and Regulations adequately protect water quality and dependent beneficial uses.

The audit team agreed that the following should be incorporated within the sample:

- Sampling of operations on important geologic/landform types.
- Sampling of road construction, road maintenance, and logging activities involving a variety of logging methods and machinery.
- Sampling which would allow separate evaluation of administration and practices on state, private, and federal lands.
- Sampling which would allow evaluation of the frequency with which beneficial uses were significantly impacted, activities associated with these impacts, and areas of the Rules where revision would help prevent such impacts in the future.

Considerable discussion occurred as to whether identified problem areas should be sampled as opposed to a system where the general adequacy of the Rules (the BMPs) would be assessed. It was the consensus that the central question of the adequacy of the BMPs could only be addressed by assessing the frequency of activities which caused water quality impacts; this required some form of random sampling of all recent forest practices operations.

The team will only have a limited amount of time available for inspections. It was agreed that a stratified random sample would be necessary to assure sampling of a variety of operations in different physical and administrative situations throughout Idaho.

Consideration was then given to the following attributes: land ownership, geographic location, geology/landtype, type of activity, and logging method.

Land Ownership. The FPA is administered differently in 3 major land ownership groups: federal (nearly all USFS), state, and private. Separate sampling of large (industrial) and small private lands was also considered but was judged to be of secondary interest and likely beyond the time available to the group.

Geographic Location. Stratification by region is needed to assure sampling throughout the state. In addition, USFS lands north and south of the Salmon River are administered by USFS Regions 1 and 4, respectively. Administration of the FPA by the Department of Lands also varies between the north and south regions of the state. The group agreed to north and south regions, separated by the Salmon River. Further divisions were also considered but judged to be unnecessary and infeasible.

Logging Method. Structural sampling of different types of logging techniques (e.g., cable vs. tractor) was considered but was judged unnecessary. With a sample of operations large enough to assess the adequacy of the BMPs, a cross section of logging methods will be encountered, and BMPs applicable to these types of activities can be assessed.

Specific types of forest activities (e.g., road construction, clearcut logging, slash burning) were also considered but structural sampling was again felt unnecessary for the same reasons as with logging method.

Geologic Type/Landform Type. These factors were discussed at length and various sampling systems were considered. Potential water quality impacts and the practices necessary to prevent them vary tremendously with the soils, geology, and character of the lands involved. However, it became apparent that sampling by geologic type or landform type was not possible due to the limited time available for field inspections. Furthermore, it was agreed that a cross section of geologic/landform types was reasonably assured, given that any 2 operations are seldom alike. The group did agree to structure the sampling enough to insure that 25 to 35 percent of the locations sampled would be within the Idaho Batholith.

These considerations result in a 6-celled, 2x3 sampling matrix. The appropriate sample size within each cell was then considered. Two options were explored. The first was to assign sample sizes proportionate to amount of harvesting activity, defined by number of operations, amount

of acres harvested, or volume of harvest. Volume of harvest was judged most representative, and data were most readily available. This data allowed calculation of the 10-year average percentage of harvest volume within Idaho for each sample cell as shown:

Region	USFS	State	Private	Total
N. Idaho	28%	8%	40%	76%
S. Idaho	18%	1%	5%	24%
Total	46%	9%	45%	100%

However, this analysis revealed that an infeasibly large sample would be required in order to obtain a meaningful sample in 3 of these 6 cells. It was also pointed out that equal sized samples would allow more meaningful comparison of results between cells.

Alternate systems of equal cell sample sizes were then considered by the group. All state lands were pooled and a 5-cell system of 5 samples each was chosen.

Recently completed or advanced forest operations will be selected in order to "fill" the sample for each cell. These will be selected for private lands from 1982 forest practices notifications on file with the Department of Lands. Following a tentative site selection, the land owner/manager will be contacted to verify that his site is accessible and meets the criteria of the Task Force. A similar list of activities on state and USFS lands will be used.

The final site selection matrix and procedure is shown below:

SITE SELECTION MATRIX**				
Idaho	USFS	State	Private	Total
North	5		5	10
		5		5
South	5		5	10
Total				25

Procedure:

1. Obtain a representative sample within the 3 administrative divisions. (State lands are combined into 1 cell because of the relatively small timber volume.)
2. Specific sites will be selected through a random process.
3. The randomly selected sites will have to meet certain criteria including: a) minimum size, b) proximity to streams, c) active operation within the last year, and d) the samples will have to include a minimum percent within the granitic land types. (25%-35%).

APPENDIX B:
FIELD INSPECTION FORM

8/1/84

IDAHO FOREST PRACTICE EVALUATION WORKSHEET

DATE: _____

LOCATION

SITE (Describe): _____

COUNTY: _____ DESCRIPTION (Sect., T., R.) _____
OWNER: _____
OPERATOR: _____

FPA FOREST REGION(✓): North _____ South _____
USFS _____ State _____ Private Industrial _____ Small Landowner _____

PHYSICAL INFORMATION

ELEVATION: Mean _____ Range _____
SLOPE: Mean _____ Range _____

CLIMATE: Annual Precipitation (in.) _____
Antecedent Conditions _____

GEOLOGY & SOILS: _____
(Describe) _____

VEGETATION: Forest Stand _____
(Describe) Streamside Vegetation _____

SHADING (%): Preharvest _____ Post-Harvest _____

PRACTICES

STAGE(✓): Road Construction _____ Harvest _____
Slash Management _____ Reforestation _____

ROADS: _____
(Describe) _____

CONSTRUCTION METHOD: _____

HARVEST: Clearcut _____ Seed Tree _____
(Acres & Yarding System) Ind. Selection _____ Shelterwood _____

SITE PREPARATION & REFORESTATION: _____
(Describe) _____

FPA RULES ¹	Compliance					W. Q. Impacts					COMMENTS
	1	2	3	4	5	1	2	3	4	5	
813.00 <u>TIMBER HARVESTING</u>											
813.03 <u>SOIL PROTECTION</u> (Use the appropriate Logging method)											
(1) Avoid tractor skidding on sensitive soils											
(2) Avoid tractor skidding across slumps											
(3) Limit skid trail grade to 30%											
*(4) Skid trails kept to minimum width											
** (5) Yard uphill, lift log end in downhill yarding											
813.04 <u>LOCATION OF LANDINGS, SKID TRAILS, & FIRE TRAILS</u> (Locate to prevent risk of material from entering stream course)											
** (1) Locate on stable areas outside SPZ											
(2) Minimize size of landing											
*(3) Fill material in landings, re: stability											
(1) Locate above highwater mark											

BMP RATING SYSTEM

- NOTE: NA - Not Applicable
 III - Not Inspected
 I - Rules as recommended in Forest Practice Water Quality Management Plan, IDHW, 1979
 * - New rule, not listed in the existing FPA rules.
 ** - Modified from existing FPA rules.

Compliance with FPA Rules

- 5 - Operation exceeds requirements of the Forest Practices Rules.
 4 - Met rule requirements.
 3 - Minor departures from the intent of the rule.
 2 - Major departures from intent of the rules.
 1 - Grossly neglected rule requirements.

Impacts on Protected Uses

- 5 - Improved protection of water quality or fisheries habitat over pre-existing conditions.
 4 - Adequate protection for water quality & fisheries habitat conditions.
 3 - Minor and/or temporary hazard to water quality or fishery habitat.
 2 - Major hazard to water quality or fishery habitat, but limited spatially or is temporary-recovery is expected.
 1 - Severe hazard to water quality or fishery habitat, damage is extensive spatially-recovery is expected to be slow, so as to prolong the damage over time.

FPA RULES ¹	Compliance					W.Q. Impacts					COMMENTS
	1	2	3	4	5	1	2	3	4	5	
814.03 <u>ROAD SPECIFICATIONS AND PLANS (See Footnote)</u>											
(1) Flexible standards											
(2) Minimum width, minimize cut & fill by design											
(3) Design buffer strips											
* (4) Embankment design for disposal on stable sites											
(5) Design culverts to prevent fill erosion											
(6) Plan outsloped roads, or insloped with X-drainage											
* (7) Use relief culverts & roadside ditches when needed											
** (8) Provide dips, water bars, or X-drainage when necessary											
* (9) Minimize stream crossings, minimum standards											
(10) Avoid excessive cuts & fills near stream channels											
** (11) Culverts: fish passage on Class I streams											
* (12) Plan drainage to minimize sediment into streams											
* (13) Reuse of existing roads favored											
(8) <i>Existing rule applies only to temporary roads</i>											
(11) <i>All culverts to provide fish passage (more restrictive)</i>											
814.04 <u>ROAD CONSTRUCTION</u>											
* (1) Roads consistent with plans											
** (2) Deposit excess material outside SP7											
(3) Clear drainage ways of debris											
NOTE: If plans are not available or not reviewed, rate only section 10, 11, & 13.											

PROTECTED USE IMPACTS
STREAM/REACH IDENTIFICATION

NAME: _____
REACH DESCRIPTION: _____
STREAM ORDER: _____ STREAM STAGE: _____
LENGTH OF STREAM EVALUATION: _____

FISH HABITAT

FPA STREAM CLASS: I _____ II _____
FISHERY TYPE*: _____
IF&G STREAM CLASS*: _____
PRIMARY FISHERY USE**: _____
SPECIES PRESENT: _____

PROJECT HABITAT IMPACTS

BANK INTEGRITY: _____
DIRECT SEDIMENT DELIVERY: _____
COBBLE IMBEDDEDNESS (OBVIOUS): _____

OTHER HABITAT IMPACT SOURCES

UPSTREAM SEDIMENT SOURCES: _____
OTHER FACTORS AFFECTING BANK INTEGRITY: _____

* As described in the draft Serious Injury Table,

Fishery Type: 1. Warm Water Fish, 2. Hatchery Trout with No Wild Trout,
3. Wild Trout (with or without Hatchery Supplement), 4. Kokanee or
Steelhead, 5. Chinook Salmon.
IF&G Stream Class: 1. Extremely Critical, 2. Highly Critical,
3. Critical, 4. Moderate, 5. Low.

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

PROTECTED USE IMPACT SUMMARY

TYPE:

Sediment
Temperature
Slash Debris
Habitat Change

SOURCE:

Estimated Cause
For Practice Related

INTENSITY:

Low
Moderate
Severe

DURATION:

Past
Future

RECOMMENDATION:

Recommend Action
to Prevent or
Mitigate Problem

NOTES:
