

# **Idaho 2020 Interagency Forest Practices Water Quality Audit**

---



**State of Idaho  
Department of Environmental Quality  
December 2020**



# **Idaho 2020 Interagency Forest Practices Water Quality Audit**

## **2020 Forest Practices Audit Team:**

Hawk Stone, Idaho Department of Environmental Quality

Gary Hess, Idaho Department of Lands

**December 2020**



**Hawk Stone  
Idaho Department of Environmental Quality  
Technical Services Division  
1410 N. Hilton  
Boise, ID 83706**

## **Acknowledgments**

The 2020 audit team thanks the staff members of the Idaho Department of Lands, Idaho Department of Environmental Quality, United States Forest Service, and Bureau of Land Management who assembled the information used in selecting and locating timber sales.

We thank the foresters and supervisors who assisted with the sale visits made during this audit and the members of the public who accompanied us. In particular, we're grateful for members of the Idaho Forest Owners Association (IFOA) for joining us on almost every non-industrial private sale. Their expertise, and sometimes personal knowledge, of the sites proved helpful.

Not least, we thank our families for tolerating our long absences during a grueling field season that involved ten weeks and 15,000 miles of travel.

Lastly, we thank our agencies for permitting us to conduct fieldwork during the Covid-19 pandemic. This type of fieldwork was well-suited to social distancing, and the sense of normalcy and peace offered by working outdoors was appreciated by both of the auditors.

Planning advice for the 2020 audit was provided by the Idaho Forest Practices Act Committee. The cover photograph was taken by Hawk Stone from a timber sale on the east side of Lake Coeur d'Alene.

## Table of Contents

Executive Summary .....	vi
1 2020 Idaho Forest Practices Water Quality Audit .....	1
1.1 Background.....	1
1.2 Purpose and Objectives .....	1
2 Rule Compliance .....	1
2.1 Assessment Scope .....	1
2.2 Assessment Methods .....	2
2.2.1 Audit Team .....	2
2.2.2 Timber Sale Selection.....	2
2.2.3 Audit Process .....	5
2.2.4 Data Assessment.....	5
2.2.5 Quality Assurance.....	5
2.3 Assessment Results .....	5
2.3.1 Overall Rule Compliance .....	5
2.3.2 Compliance by Rule Group .....	6
2.3.3 Compliance by Ownership .....	7
2.3.4 Compliance by Individual Rule .....	9
2.3.5 Compliance Distribution.....	22
2.3.6 Results Summary .....	23
2.4 Rule Effectiveness and Discussion.....	23
2.5 Special Investigations .....	25
2.6 Recommendations .....	27
3 References.....	28
Appendix A. Idaho Forest Practices Rules Audited in 2020 .....	29
Appendix B. Field Form .....	32
Appendix C. Photographs .....	36

## List of Tables

Table 1. Compliance rates by rule group. ....	7
Table 2. Summary of 2016 overall rule compliance by landownership category. ....	8
Table 3. Overall rule compliance rates by landownership category across audit years. ....	9
Table 4. Summary of compliance with general rules. ....	10
Table 5. Summary of compliance with harvest and stream protection rules. ....	12
Table 6. Summary of compliance with road rules. ....	15
Table 7. Summary of compliance with restocking rules. ....	18
Table 8. Summary of compliance with chemical and petroleum product rules. ....	19

## List of Figures

Figure 1. Locations of audited timber sales. ....	4
Figure 2. Average compliance rates since 1984. ....	6
Figure 3. Compliance by rule group. ....	7
Figure 4. Compliance by ownership. ....	8
Figure 5. Overall compliance rates by landownership category across audit years. ....	9
Figure 6. Summary of compliance with general rules. ....	11
Figure 7. Summary of compliance with harvest and stream protection rules. ....	14
Figure 8. Summary of compliance with road rules. ....	17
Figure 9. Summary of compliance with restocking rules. ....	18
Figure 10. Summary of compliance with chemical and petroleum product rules. ....	21
Figure 11. Distribution of compliance. ....	22
Figure 12. Revegetated skid trail in Heavy Equipment Fire Task Force sale. ....	36
Figure 13: Socially-distanced fieldwork. ....	37
Figure 14 Large convoy of interested observers. ....	37
Figure 15: Uncontained fuel storage tank. ....	38
Figure 16 Pile of road maintenance debris left in SPZ, immediately adjacent to the stream. ....	38
Figure 17 Long berm of grader debris being pushed into the stream. ....	39
Figure 18 Pile of road maintenance material stored next to stream. ....	39

## Executive Summary

The tenth quadrennial statewide Forest Practices Water Quality Audit was conducted between May and October 2020. The purpose of the audit was to assess compliance with the “Rules Pertaining to the Idaho Forest Practices Act” (IDAPA 20.02.01) under Idaho Code §38-13. The audit team included representatives from the Idaho Department of Environmental Quality (DEQ) and Idaho Department of Lands (IDL). Candidate timber sales to be audited were selected based on the following criteria:

- Sale operations began between January 2018 and October 2020, or the site was previously audited during the 2016 cycle.
- Cutting units bordered or contained at least 500 feet of a Class I (fish-bearing) stream.
- Cutting units included at least 5 cumulative acres of harvested area.

The final audit panel was selected randomly with the following stratifiers:

- At least 10 sites in each of four ownership categories: federal, private industrial, private nonindustrial, and state
- At least one operation in each of the IDL and federal administrative areas
- At least one operation in each of four geographic areas of the state (north, central, southwest, east)

20 of these sites were originally audited in 2016. These revisits allowed the team to assess compliance with replanting and road maintenance rules.

Overall, the audit team visited 63 timber sales, assessing up to 145 possible rules per site. The team observed 2,070 instances where Idaho Forest Practices Act rules were applicable, and of those, 1,989 instances where the requirements of the rules were met or exceeded (96% compliance). This is the exact level of compliance found in the previous audit (Stone 2016), and as before, compliance rates were fairly consistent across ownerships: private industrial timber land demonstrated the highest rate of compliance (97%), with non-industrial private and federal operations showing 96% compliance. In a slight decline from previous years, the lowest rate of compliance (95%) was on state-owned timber land.

In total, 54% of the sales were in perfect compliance with the rules. More than half of the total violations occurred on only 11% of the sales. One particular sale was responsible for 16% of the total violations.

The most common problem was inadequate road maintenance, followed by disposal and stabilization of maintenance debris near streams. On three occasions, variances were found not to have provided equal protection to the original rule, which is a condition of granting a variance. Two out of six new culverts failed to meet the requirements for fish passage.

This year, waste grease tubes and oil buckets were only found at 2 sales (5%), a significant improvement from the 16 sales in 2016.

## Policy Recommendations

DEQ recommends the following rule and administrative changes:

1. IDL's inspectors should pay particular attention to the disposal of mineral soil from maintenance and construction activities. There should be no piles of bare dirt left in the Stream Protection Zone (SPZ). Bare roadside ditches should not terminate in a stream.
2. Federal land managers should ensure that road maintenance associated with a timber sale follows the requirements of the Idaho Forest Practices Act (FPA), especially in regards to grader debris entering the stream.
3. When variances are approved, they must stipulate enough extra safeguards so that streams receive an undiminished level of protection. State land managers should ensure that any rule variances they issue follow the usual process and scrutiny.
4. Water truck operators should be reminded to properly screen their diversions.
5. The Forest Practices Advisory Committee (FPAC) should consider removing the 'daily records of chemical applications' rule (060.10) because it is duplicative of other parts of the Idaho administrative code.
6. FPAC should continue to work on establishing a minimum tree retention requirement for those class II streams that would contribute elevated temperatures to downstream waters.



# 1 2020 Idaho Forest Practices Water Quality Audit

The 2020 audit was conducted between May and October 2020. Staff from the Idaho Department of Environmental Quality (DEQ) and Idaho Department of Lands (IDL) visited 63 forestry operations to assess compliance with the “Rules Pertaining to the Idaho Forest Practices Act” (IDAPA 20.02.01) under Idaho Code §38-13 (Forest Practices Act). This report contains the audit team’s findings and recommendations.

## 1.1 Background

The administrative basis for the 2020 audit includes the federal Clean Water Act, *Forest Practices Water Quality Management Plan for the State of Idaho* (Bauer et al. 1988), *Idaho Nonpoint Source Management Plan* (DEQ 2015), and “Memorandum of Understanding Implementing the Nonpoint Source Water Quality Program in the State of Idaho” (DEQ 2020).

## 1.2 Purpose and Objectives

The purpose of the 2020 audit was to assess compliance with the “Rules Pertaining to the Idaho Forest Practices Act” (IDAPA 20.02.01), under Idaho Code §38-13 (Forest Practices Act [FPA]), and to ensure that these rules are protective of water quality.

To address the first question, each FPA rule that had a bearing on water quality was identified (Appendix A). These rules were then reworded into the form of a question. These questions were then built into an electronic field form (Appendix B). At every site, each applicable question was answered. Often, rules were found to be not applicable. For example, the question “Are quarries properly drained? (040.03f)” could only be answered if the sale used an on-site rock quarry, a fairly rare occurrence.

The number of affirmative answers, divided by the total number of applicable questions, was the compliance rate.

The second question, ensuring that the rules are protective of water quality, was more qualitative. Both auditors have substantial experience in the fields of timber harvest and water quality and used their professional judgement to critique the effectiveness of the rules. Stream beds were inspected to determine whether sediment had entered the channel, and conditions detrimental to water quality were noted on the field forms.

# 2 Rule Compliance

## 2.1 Assessment Scope

The audit was conducted as a statewide assessment of whether the FPA rules (IDAPA 20.02.01) are being implemented. Therefore, the recommendations are statewide in scope. No recommendations are made concerning individual timber sales, and individual findings will not be presented here.

## **2.2 Assessment Methods**

### **2.2.1 Audit Team**

The audit team included representatives from the IDL and DEQ. The DEQ auditor was present at every sale. The IDL auditor was present at every sale except for three, in which case an alternate IDL auditor attended. For most site visits, the private, state, or federal forester or forestry specialist was present to provide background information but was not involved in rating the operation. Landowners, operators, and interested parties were invited to attend. Representatives from the Idaho Forest Owners Association (IFOA) attended almost every non-industrial private sale. A total of 106 visitors accompanied the audit team during the summer. A website, hosted by DEQ, announced audit locations and meeting places.

### **2.2.2 Timber Sale Selection**

Candidate timber sales were selected if they met all three of the following criteria:

- Sale operations began between January 2018 and October 2020, or the site was visited during the 2016 audit cycle.
- Cutting units bordered or contained at least 500 feet of a Class I (fish-bearing) stream.
- Cutting units included at least 5 cumulative acres of harvested area.

When a state or private timber sale is planned, the operator files a notification form with IDL. These forms have check boxes indicating the activities to be performed, the chosen method of slash disposal, and the presence of environmental risk factors such as steep slopes or streams.

One of the check boxes indicates the presence of a Class I stream. IDL provided copies of the notification forms for each of these sales. The Class I determination is made by the landowner and the IDL administrative staff upon submission of the notification form. To ensure the audit focused on timber harvesting activities, only forms that indicated “harvesting of forest tree species” were considered (other possible notification activities included “use of chemicals” or “conversion in use”).

The size of the cutting units is not recorded on the notification form. However, one of the slash management options is “The contractor attests that he will not cut an amount of timber sufficient to cause a fire risk.” According to the IDL fire manager, this choice loosely correlates to 5–10 acres of cutting area. Therefore, we discarded all forms with this slash management option, leaving only the larger sales.

The audit team was left with 718 eligible state and private sales that met the above criteria.

For federal sales, DEQ contacted the regional foresters for the US Forest Service Intermountain and Northern Regions and the Bureau of Land Management state director. In collaboration with the individual forests and districts, they provided a list of 51 sales that met the above criteria.

From these 769 candidates, 43 individual sales were randomly selected for auditing using the following guidelines:

- At least 10 sites in each of four ownership categories: federal, private industrial, private nonindustrial, and state
- At least one operation in each of the IDL and federal administrative areas

- At least one operation in each geographic area of the state (north, central, southwest, east)

In addition, 20 sites from the 2016 audit were revisited with the purpose of assessing compliance with replanting and maintenance rules not apparent in recent sales. These sites were selected based on proximity to primary audit sites. All sites are displayed in Figure 1.

Finally, three ‘special’ sites were selected for audit because they exhibited something that the auditors wanted to investigate. These included site-specific riparian management plans and a ‘heavy equipment fire task force’. These sites were not selected randomly, and were therefore not included in the overall assessment.

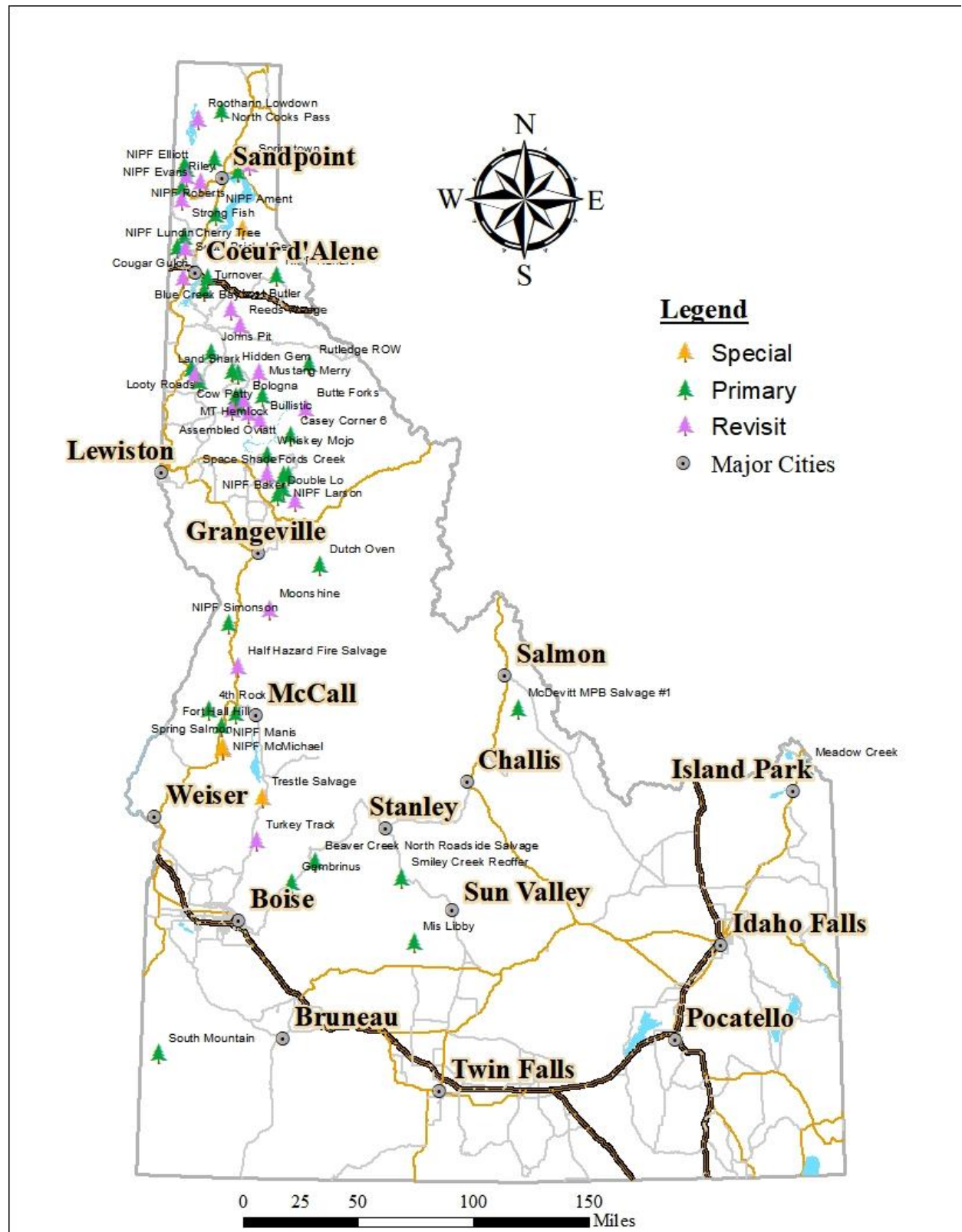


Figure 1. Locations of audited timber sales

### **2.2.3 Audit Process**

The audit team, along with any observers (foresters, sale administrators, and other interested parties), toured most of the cutting units within the timber sale boundaries to inspect skid trails, roads, culverts, stream crossings, slash distribution, and any erosion-control practices present. Following the inspection, the audit team convened and evaluated the sale in terms of compliance with applicable forest practices rules. In every case, both auditors were unanimous in their rating, although this sometimes required long discussion and debate.

### **2.2.4 Data Assessment**

Once all of the timber sale visits were completed, findings were compiled for each of the 145 individual rules audited (Appendix A). Compliance percentages for individual rules across all timber sales were calculated by dividing the number of times a rule was complied with by the total number of instances the rule was applicable. Compliance rates were also assessed across rule groups and landownership categories.

### **2.2.5 Quality Assurance**

The audit followed a rigorous quality assurance plan, which included the following items:

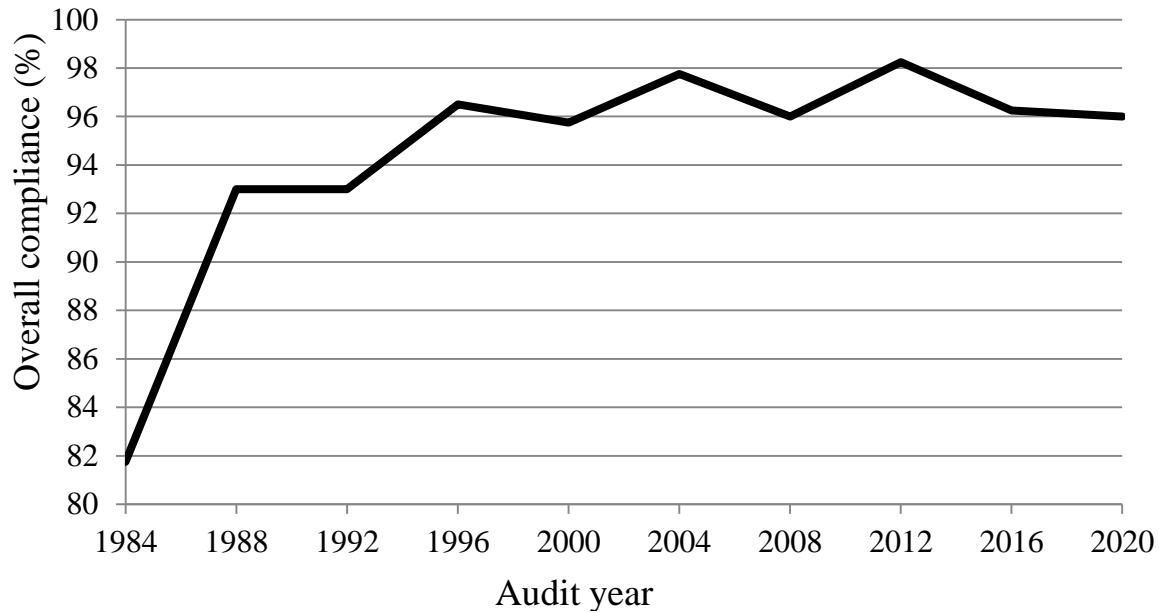
1. Electronic field forms, which eliminated data transcription errors (Appendix B).
2. Duplicate audits. At two sales, the project's quality assurance officer conducted a duplicate, parallel audit. The results were compared and found to be in agreement on 94% of questions, exceeding the goal of 80% agreement. All disagreements were on questions of applicability, rather than substance.
3. Use of seasoned staff. Both the DEQ and IDL auditors were familiar with the process, having completed the same program four years prior.

## **2.3 Assessment Results**

This section presents the audit results. The overall compliance results are reported first and are then broken down by rule group, landownership, and by individual rule. The section concludes with discussion of these results.

### **2.3.1 Overall Rule Compliance**

The audit team observed 2,070 instances in which the Idaho FPA rules were applicable within the 63 timber sales audited. Of these, 1,989 instances exhibited compliance, resulting in an overall compliance rate of 96%. This is the same compliance rate observed in the previous (2016) audit. Since 1984, rule compliance improved over the initial four audits and since 1996, has generally plateaued at a level of 96%  $\pm$  2% (Figure 2) (Bauer et al. 1985; Harvey et al. 1989; Hoelscher et al. 1993; Zaroban et al. 1997; Hoelscher et al. 2001; McIntyre et al. 2007; Zaroban and Prisock 2009; Zaroban 2012; Stone 2016).



**Figure 2. Average compliance rates since 1984.**

The similarity with the previous audit is not surprising, given that the rules, auditors, and auditing method were largely unchanged.

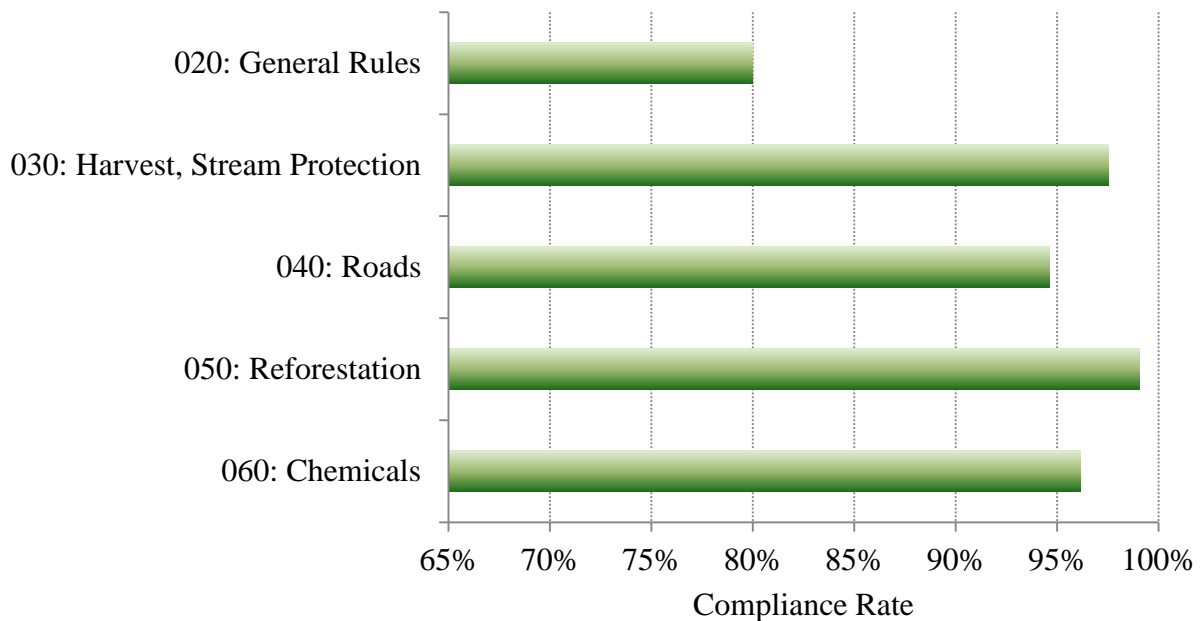
### **2.3.2 Compliance by Rule Group**

The rules are organized into five groupings: general (IDAPA subsection 020), harvest and stream protection (030), roads (040), reforestation (050), and chemicals (060). Compliance percentages ranged between 80% and 99% across rule groups (Table 1; Figure 3). All rule groups, except for the ‘general’ group, exceeded 95% compliance. The number of ‘general’ rules assessed was much lower than the other rule groups – only 20 total assessments. This meant that the 4 observed failures (3 of which were caused by variances not offering equal resource protection) led to a high failure rate.

The ‘chemical’ rule group attained 95% compliance, a large increase from the 86% in the 2016 audit. This can be attributed to sites being left cleaner, with the operators removing grease tubes and oil buckets.

**Table 1. Compliance rates by rule group.**

<b>IDAPA 20.02.01 Rule Group</b>	<b>Description</b>	<b>Applicable Instances</b>	<b>Complied</b>	<b>Percent</b>
General rules (020)	Variances, permits, registrations	20	16	80%
Harvest and stream protection rules (030)	Skid trails, landings, slash, debris, shade, stream disturbance	847	826	98%
Road rules (040)	Construction, maintenance, culverts, berms, drainage	834	789	95%
Stocking rules (050)	Reforestation	108	107	98%
Chemical rules (060)	Chemicals and petroleum products	261	251	96%

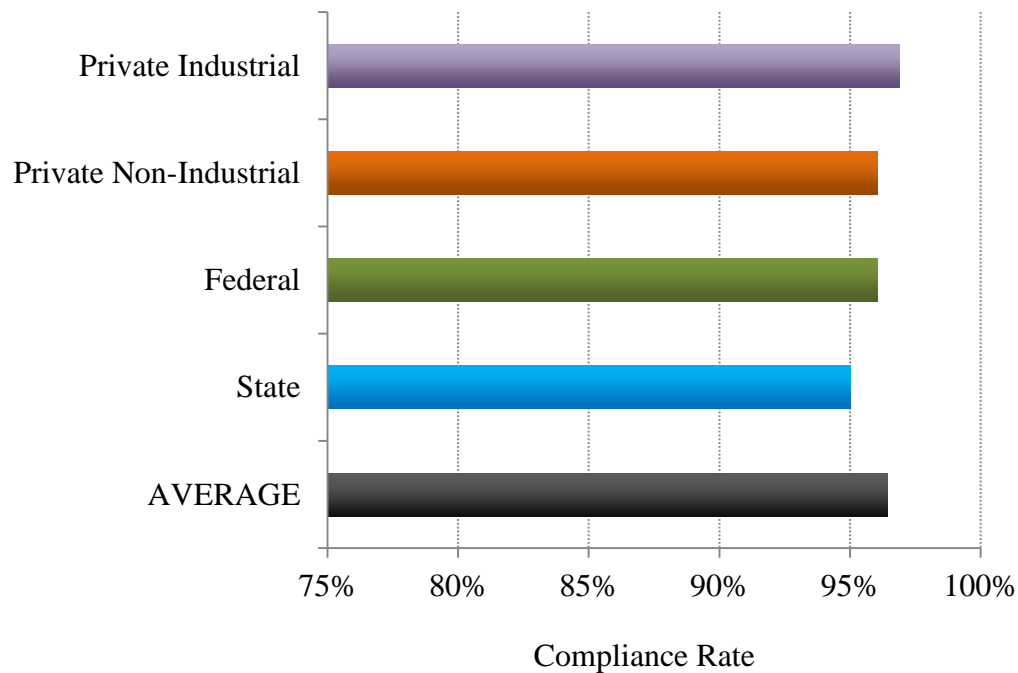
**Figure 3. Compliance by rule group.**

### 2.3.3 Compliance by Ownership

The compliance rates within each of the four land ownership categories were above 94% (Table 2; Figure 4). The highest rate of compliance was in the private industrial category at 97%. The private non-industrial and federal categories both complied with 96% of rules, and state sales had a 95% compliance rate. These levels of compliance were broadly the same as in the previous audit. (Table 3; Figure 5). Over time, the compliance levels have coalesced into a remarkably stable and consistent level.

**Table 2. Summary of 2016 overall rule compliance by landownership category.**

<b>Ownership</b>	<b>Applicable Instances</b>	<b>Complied</b>	<b>Compliance Rate</b>
Private industrial	708	686	97%
Private nonindustrial	279	268	96%
Federal	560	538	96%
State	523	497	95%
<b>Overall</b>	<b>2,724</b>	<b>2,615</b>	<b>96%</b>

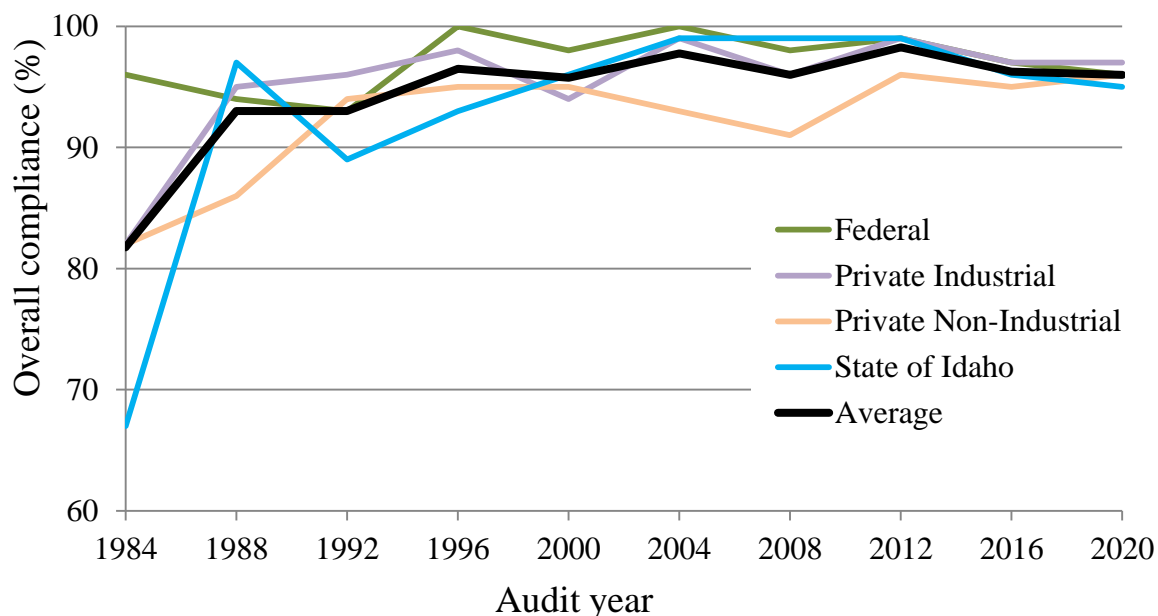


**Figure 4. Compliance by ownership.**



**Table 3. Overall rule compliance rates by landownership category across audit years.**

Year	Compliance Rate (%)				Average
	Federal	Private Industrial	Private Nonindustrial	State	
1984	96	82	82	67	<b>82</b>
1988	94	95	86	97	<b>93</b>
1992	93	96	94	89	<b>93</b>
1996	100	98	95	93	<b>97</b>
2000	98	94	95	96	<b>96</b>
2004	100	99	93	99	<b>98</b>
2008	98	96	91	99	<b>96</b>
2012	99	99	96	99	<b>98</b>
2016	96	97	94	96	<b>96</b>
2020	96	97	96	95	<b>96</b>



**Figure 5. Overall compliance rates by landownership category across audit years.**

### 2.3.4 Compliance by Individual Rule

For convenience, the rules are divided into the five groups mentioned above. Each summary table in this section is ordered by rule number. A chart follows each rule group showing the relative compliance for each rule.

#### **General Rules (IDAPA 20.02.01.020.01)**

The audit team assessed compliance with 8 general rules. Out of 20 instances, 16 were in compliance (Table 4; Figure 6). The most serious problem was that half of the 6 variances

examined did not provide equal resource protection. The rule (020.01aiii) states that the practices “shall provide for equivalent or better results over the long term *than the rules which are superseded...*” The guidance issued to IDL inspectors (IDL 2018) clarifies that this means “...meeting or exceeding the results of complying with *the stated rule*” and that “Meeting the intent of *a rule* will be the overriding goal” (emphases added). This means that, even if a variance is granted, mitigating conditions must be placed upon the practice that directly address the resource disturbance caused by varying the rule.

**Table 4. Summary of compliance with general rules.**

IDAPA 20.02.01	Description	Instances	Complied	Not	Percent
020 01aiii	Variance provides equal protection?	6	3	3	50%
020 01b	Was IDWR permit obtained, if required?	3	3	0	100%
020 01b	Was the pesticide registered for use in Idaho?	10	10	0	100%
020 01cii	Water diversions screened appropriately?	1	0	1	0%
020 01c	Diversions <25% and <65,170 gallons per day?	0	0	0	n/a
020 01ci	No diversions from canals and reservoirs?	0	0	0	n/a
020 01cii	Water district notified about diversion?	0	0	0	n/a
020 02	Conversion or reforestation completed within 3 years?	0	0	0	n/a

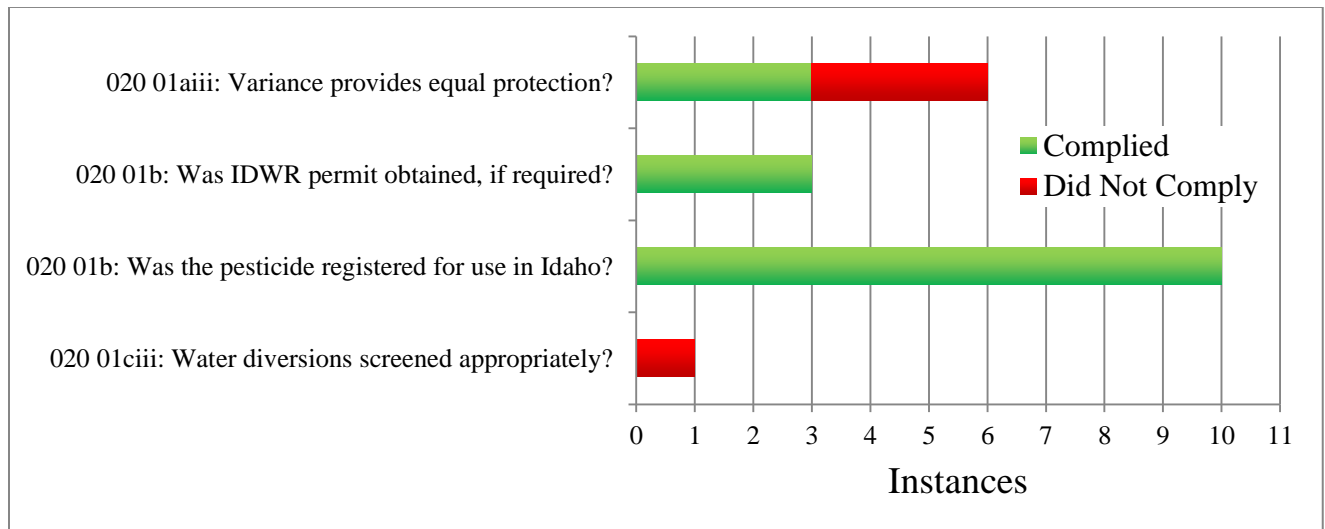
Note: Idaho Department of Water Resources (IDWR)

In two of these cases, a variance was granted for reconstruction/reuse of a skid trail within the SPZ. In each, the justification was that overall resource disturbance would be less than building a new skid trail. This was probably true, but it is not the proper application of the variance process.

For example, reusing an existing SPZ skid trail means that a new trail does not need to be built elsewhere. In the aggregate, this may indeed cause less resource disturbance, but this justification alone is not sufficient, because it does not address the superseded rule. The use of the existing skid trail may increase sediment contributions to the stream, even though total disturbance would be reduced. In this example (observed on the audit), the proper procedure would be to specify some additional practices that would provide equivalent or better results *than the rule being varied*. For example, more frequently spaced water bars on the skid trail, or immediate seeding upon completion of operations. Said another way, the variance should only be granted if the mitigation measures proposed exceed the protection of the original rule.

The third improperly granted variance was for use of an existing landing within the SPZ. The landing had been used for many years, and likely contributed sediment to the stream whenever it was used. However, there was adequate flat land to have re-located the landing. Allowing use of the landing did not “provide better results over the long term”, and so the variance should not

have been granted. A new landing should have been created and the old one allowed to revegetate. Instead, the variance became entrenched, and was reused for each successive harvest<sup>1</sup>.



**Figure 6. Summary of compliance with general rules.**

<sup>1</sup> The auditors recognize this was a problematic case, because the property in question was on the border of an agricultural area, which was not subject to forest practice rules. The annual harvest operations were typically small and the land was primarily used for grazing. In any such cases, the auditors chose to apply the FPA rules rigidly, and did not allow any of the leeway or discretion that local inspectors may extend.

### ***Timber Harvesting and Stream Protection Rules (IDAPA 20.02.01.030)***

We assessed compliance with 40 harvest and stream protection rules and observed 21 instances of noncompliance involving 12 of these rules (Table 5; Figure 7); 5 of these violations were for piling slash inside the SPZ and 3 were for using ground-equipment in the SPZ (030.07c). We observed two instances where too many trees were cut in the SPZ (030.07eii), indicating some difficulty in understanding or complying with the current version of the shade rule. We found two skid trails inside the SPZ (030.04a) and two instances of steep slopes that were not identified on the notification form (030.03a).

We found a single instance of noncompliance with each of 7 other rules.

**Table 5. Summary of compliance with harvest and stream protection rules.**

<b>IDAPA 20.02.01</b>	<b>Description</b>	<b>Instances</b>	<b>Complied</b>	<b>Not</b>	<b>Percent</b>
030 03a	No ground-based equipment on slopes >45% near streams?	17	17	0	100%
030 03a	Did log skidding avoid causing rutting or erosion?	39	38	1	97%
030 03a	Notification identifies slopes >45%?	6	4	2	67%
030 03b	Constructed skid trail <30% on unstable soils?	11	10	1	91%
030 03c	Skidding tractor sizes appropriate?	35	35	0	100%
030 03c	Skid trails kept to minimum width and number	38	37	1	97%
030 03d	Erosion minimized during downhill cable yarding?	1	1	0	100%
030 04a	Skid and fire trails located to minimize sidecasting?	28	28	0	100%
030 04a	Landings and trails in stable areas outside of SPZ?	40	38	2	95%
030 04b	Size of landings minimized?	37	37	0	100%
030 04c	No loose stumps nor excessive slash in landing filler?	7	7	0	100%
030 04c	Sidecasted landings properly stabilized?	8	8	0	100%
030 05a	Trail drainage and stabilization adequate and current?	42	41	1	98%
030 05b	Are landing drainage and stabilization adequate?	56	56	0	100%
030 06a	Trees felled away from Class I stream?	17	17	0	100%
030 06a	Slash continuously moved 5' above OHWM in Class I?	31	31	0	100%
030 06b	Slash moved above OHWM in Class II?	34	34	0	100%
030 06c	Trail waste deposited only outside of SPZ?	23	22	1	96%
030 07b	Avoid skidding logs through streams?	35	35	0	100%
030 07b	Temporary stream crossings adequate?	5	5	0	100%
030 07b	Stream crossings at right angles?	23	23	0	100%
030 07b	Temporary stream crossings removed immediately?	8	8	0	100%
030 07b	Ends of stream-crossing skid trails water barred?	5	5	0	100%
030 07c	Avoid ground-based equipment use in SPZ?	39	36	3	92%
030 07d	Stream disturbance minimized during cable yarding?	11	11	0	100%
030 07ei	Streamside shrubs, grasses and rocks remaining?	35	34	1	97%
030 07eii	Only one Shade Rule option implemented?	12	11	1	92%
030 07eii	Adequate shade retained in Class I streams?	23	21	2	91%
030 07eiii	Adequate stocking in Class II SPZs?	19	19	0	100%
030 07fi	Were hand piles >5' from OHWM?	7	7	0	100%

<b>IDAPA 20.02.01</b>	<b>Description</b>	<b>Instances</b>	<b>Complied</b>	<b>Not</b>	<b>Percent</b>
030 07fii	Mechanical piling of slash in SPZ avoided?	39	34	5	87%
030 07iv	LOD, shade and filtering maintained in SPZ?	31	31	0	100%
030 07iv	Felled trees left as LOD in Class I?	5	5	0	100%
030 07v	Naturally down LOD remaining over Class I stream?	19	19	0	100%
030 08a	Prompt cleanup and regeneration in scenic areas?	5	5	0	100%
030 08c	Did operations avoid wet areas?	38	38	0	100%
030 08d	Wildlife cover available within 1/4 mile of clearcuts?	18	18	0	100%
030 07a	Lake site-specific plan for SPZ activities?	0	0	0	n/a
030 07evii	Was riparian management variance followed?	0	0	0	n/a

*Notes:* Stream protection zone (SPZ); large organic debris (LOD), ordinary high-water mark (OHWM)

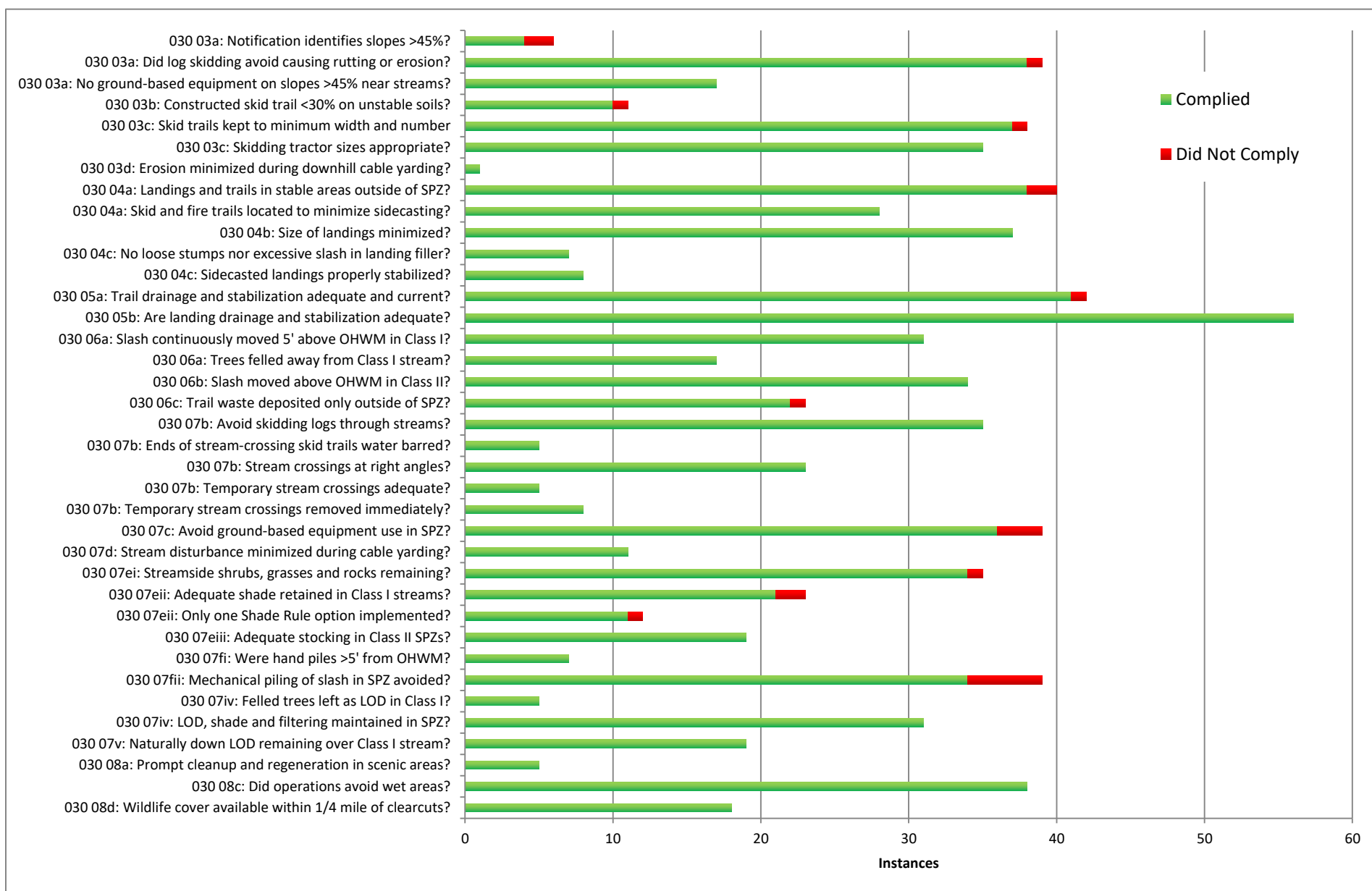


Figure 7. Summary of compliance with harvest and stream protection rules.

## Road Rules (IDAPA 20.02.01.040)

We assessed compliance with 49 road rules (Table 6; Figure 8) and observed 45 instances of noncompliance. These were neatly divided into three categories: one third of the violations were related to maintenance of forest roads (040.04ci, 040.04ei, 040.04b, 040.04fi). One third were related to placement and stabilization of road debris (040.03b, 040.03c, 040.04a, 040 02b, and 040 04vi), and the final third were related to road construction.

The most frequently violated single rule was failure to maintain culverts and ditches (040.04ci).

**Table 6. Summary of compliance with road rules.**

IDAPA 20.02.01	Description	Instances	Complied	Not	Percent
040 02a	Retain vegetation between roads and streams?	22	20	2	91%
040 02a	Avoid road construction in SPZ?	37	37	0	100%
040 02b	Road material placed in stable location?	21	18	3	86%
040 02b	Road width appropriate?	31	31	0	100%
040 02b	Cut and fill volumes minimized?	23	23	0	100%
040 02c	Roads drained naturally where possible?	23	23	0	100%
040 02d	Are culverts planned to minimize discharge of sediment	17	15	2	88%
040 02d	Are culverts properly bedded and compacted?	19	18	1	95%
040 02d	Culverts and ditches included where necessary?	18	18	0	100%
040 02ei	Do new culverts provide fish passage on C1 streams?	6	4	2	67%
040 02eii	Are stream-crossing culverts appropriately sized?	15	15	0	100%
040 02eii	Were culverts >120" engineered	1	1	0	100%
040 02eiii	Are all relief culverts >12" in diameter?	19	19	0	100%
040 02g	Avoid fords with gradient >4%?	6	6	0	100%
040 02g	Fords cross streams at right angles?	2	2	0	100%
040 02g	Are ford approaches cross-drained and rocked for 75'?	2	2	0	100%
040 02g	Fording limited to low water during salmonid spawning?	1	1	0	100%
040 02h	Avoid landing or skidding logs in existing SPZ roads?	38	37	1	97%
040 02h	Avoid reconstruction of roads in SPZ?	37	37	0	100%
040 03b	Road debris deposited only outside SPZ?	32	28	4	88%
040 03c	Were erodible materials near streams stabilized?	19	15	4	79%
040 03d	Has road fill material been properly compacted?	20	20	0	100%
040 03d	Were embankments built without wood or excessive ice?	12	12	0	100%
040 03e	Has outslope drainage been retained and berms removed?	22	22	0	100%
040 03f	Are quarries properly drained?	13	13	0	100%
040 03g	Was embankment erosion minimized?	12	12	0	100%
040 03g	Were relief culverts installed?	17	17	0	100%
040 03i	Were cut-slopes constructed to minimize sloughing?	13	13	0	100%
040 03j	Are roads on erodible slopes >60% full benched?	1	1	0	100%
040 03j	Fills at crossings on erodible slopes>60% minimized?	1	1	0	100%
040 04a	Is debris placed to avoid stream entry?	34	31	3	91%

<b>IDAPA 20.02.01</b>	<b>Description</b>	<b>Instances</b>	<b>Complied</b>	<b>Not</b>	<b>Percent</b>
040 04b	Have erosion sources to streams been repaired?	17	14	3	82%
040 04ci	Active roads: culverts and ditches functional?	40	35	5	88%
040 04cii	Active roads: shaped to minimize erosion?	45	43	2	96%
040 04ciii	Active roads: surfaces maintained?	46	46	0	100%
040 04civ	Was sediment-causing hauling suspended during rain?	6	6	0	100%
040 04cv	Were surface-stabilizing materials kept out of stream?	10	9	1	90%
040 04ei	Are inactive road surfaces controlling erosion?	21	17	4	81%
040 04ei	Are inactive bridges and culverts maintained?	17	15	2	88%
040 04fi	Are long-term inactive roads controlling erosion?	23	21	2	91%
040 04fiii	Are long-term inactive bridges and culverts maintained?	14	14	0	100%
040 04gi	Are abandoned crossings restored to original gradient?	6	5	1	83%
040 04gi	Are abandoned drainage structures removed?	9	8	1	89%
040 04gii	Are abandoned road prisms uncompacted?	9	8	1	89%
040 04giii	Do abandoned fill slopes have long-term stability?	8	8	0	100%
040 04giv	Are abandoned sidehill fills stable?	5	5	0	100%
040 04gv	Has ditch-line erosion been controlled?	9	9	0	100%
040 04gvi	Has bare earth been stabilized?	15	14	1	93%
040 03h	Was erosion-causing construction suspended during rain	0	0	0	n/a

Notes: stream protection zone (SPZ)



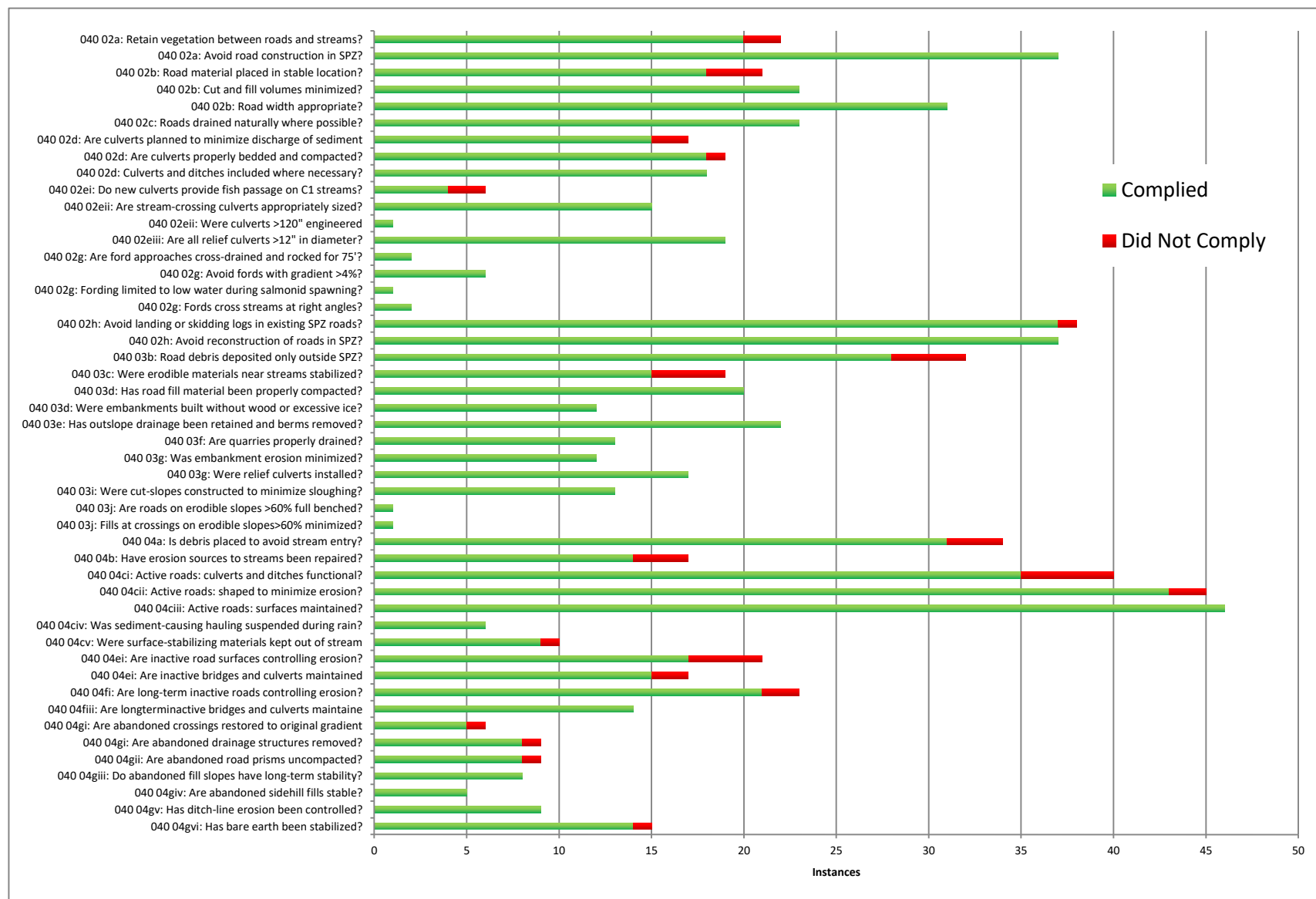


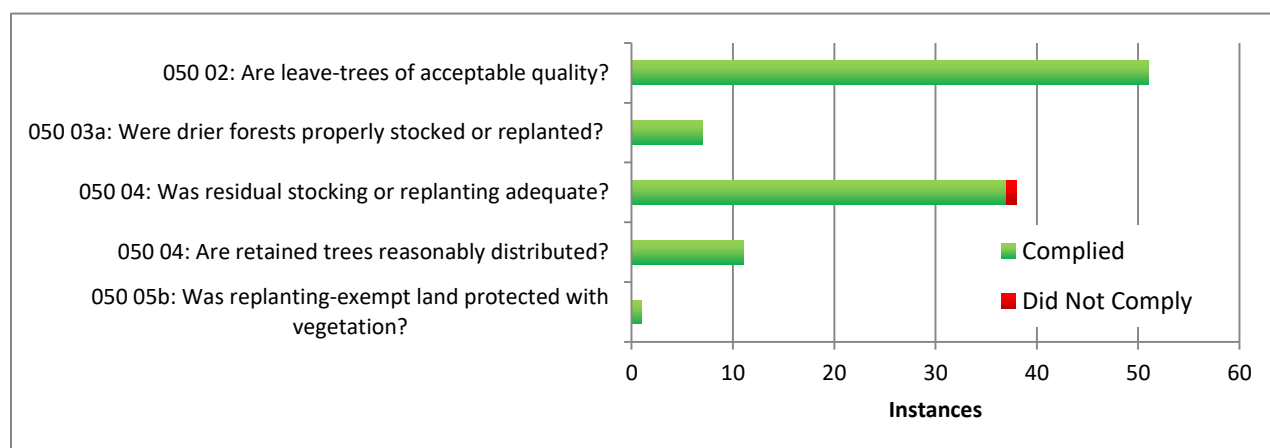
Figure 8. Summary of compliance with road rules.

### ***Restocking and Replanting Rules (IDAPA 20.02.01.050)***

We assessed compliance with five restocking and replanting rules (Table 7; Figure 9) and observed a single instance of noncompliance, in which replanting was inadequate. In general, this rule group received the highest level of compliance.

**Table 7. Summary of compliance with restocking rules.**

<b>IDAPA 20.02.01</b>	<b>Description</b>	<b>Instances</b>	<b>Complied</b>	<b>Not</b>	<b>Percent</b>
050 02	Are leave-trees of acceptable quality?	51	51	0	100%
050 03a	Were drier forests properly stocked or replanted?	7	7	0	100%
050 04	Was residual stocking or replanting adequate?	38	37	1	97%
050 04	Are retained trees reasonably distributed?	11	11	0	100%
050 05b	Was replanting-exempt land protected with vegetation?	1	1	0	100%



**Figure 9. Summary of compliance with restocking rules.**

### ***Chemical and Petroleum Product Rules (IDAPA 20.02.01.060)***

We assessed compliance with 43 chemical and petroleum rules (Table 8; Figure 10). We observed 10 instances of noncompliance, which is a marked improvement from the 38 violations observed in 2016. All of those involved failure to remove petroleum containers or nonbiodegradable waste (060.11 and 060.02c); those rules were only violated twice this year. Landowners have truly cleaned up their operations. Fuel storage is rare on most operations, but in the single case we observed, the tank was not properly contained (060.02). Luckily it was parked far from the stream, and no resource damage had occurred. At the same sale, we found leaking equipment without adequate spillage cleanup (060.12b).

In a couple of instances, operators had failed to record all the necessary environmental information required by 060.10a when applying herbicides (air temperature, wind speed etc.)

**Table 8. Summary of compliance with chemical and petroleum product rules.**

<b>IDAPA 20.02.01</b>	<b>Description</b>	<b>Instances</b>	<b>Complied</b>	<b>Not</b>	<b>Percent</b>
060 02	Does impervious catchment > 110% storage volume?	1	0	1	0%
060 02	Are large petroleum containers stored >100' from water?	1	1	0	100%
060 02a	Were fuel transfers attended at all times?	3	3	0	100%
060 02a	Were fuel transfers done away from water?	4	4	0	100%
060 02b	Do tanks avoid petroleum leaks?	1	1	0	100%
060 02c	Was all non-biodegradable waste properly disposed of?	42	40	2	95%
060 03	Did pesticide applicator have current Idaho license?	11	11	0	100%
060 04a	Was all chemical equipment leak-proof?	2	2	0	100%
060 05bi	Was the risk of chemical spills to water avoided	10	10	0	100%
060 05bii	Were landings located to avoid spills to water?	29	29	0	100%
060 06a	Aerial pest: 100' untreated from water?	4	4	0	100%
060 06a	Aerial fert: 50' untreated from water?	1	1	0	100%
060 06b	Aerial: was the device capable of immediate shut-off?	4	4	0	100%
060 07a	Ground pest: 25' untreated from water?	4	4	0	100%
060 07b	Ground fert: 10' untreated from water?	1	1	0	100%
060 08a	Hand: were chemicals applied only to specific targets?	4	4	0	100%
060 08b	Hand: were chemicals kept out of all water sources?	2	2	0	100%
060 09a	Were chemicals applied in accordance with the label?	5	5	0	100%
060 09b	Were chemicals applied at allowable rates?	9	9	0	100%
060 09c	Were chemicals kept out of water?	7	7	0	100%
060 10ai	Daily pesticide record - date and time?	12	11	1	92%
060 10aaii	Daily pesticide record - owner name and address?	12	12	0	100%
060 10aiiii	Daily pesticide record - purpose?	11	10	1	91%
060 10aiv	Daily pesticide record - contractor or pilot name?	12	12	0	100%
060 10av	Daily pesticide record - project location?	12	12	0	100%
060 10avi	Daily pesticide record - hourly air temperature?	12	10	2	83%
060 10avii	Daily pesticide record - hourly wind information?	12	10	2	83%
060 10aviii	Daily pesticide record - details and quantities?	12	12	0	100%
060 10bi	Daily fertilizer record - date and time?	1	1	0	100%
060 10bii	Daily fertilizer record - owner name and address?	1	1	0	100%
060 10biii	Daily fertilizer record - purpose?	1	1	0	100%
060 10biv	Daily fertilizer record - contractor or pilot name?	1	1	0	100%
060 10bv	Daily fertilizer record - project location?	1	1	0	100%
060 10bvi	Daily fertilizer record - hourly air temperature?	1	1	0	100%
060 10bvii	Daily fertilizer record - hourly wind information?	1	1	0	100%
060 10bviii	Daily fertilizer record - details and quantities?	1	1	0	100%
060 11	Were all pesticide and fertilizer containers removed?	12	12	0	100%
060 12b	Were spills controlled and contained immediately?	1	0	1	0%
060 02	If there was a spill, was IDL notified immediately?	0	0	0	n/a
060 05bi	Did equipment washout avoid risk of spills to water?	0	0	0	n/a
060 11	Were chemical containers removed from the forest?	0	0	0	n/a

<b>IDAPA 20.02.01</b>	<b>Description</b>	<b>Instances</b>	<b>Complied</b>	<b>Not</b>	<b>Percent</b>
060 12a	Were spills reported to IDL immediately?	0	0	0	n/a
060 12c	Were spills appropriately removed?	0	0	0	n/a

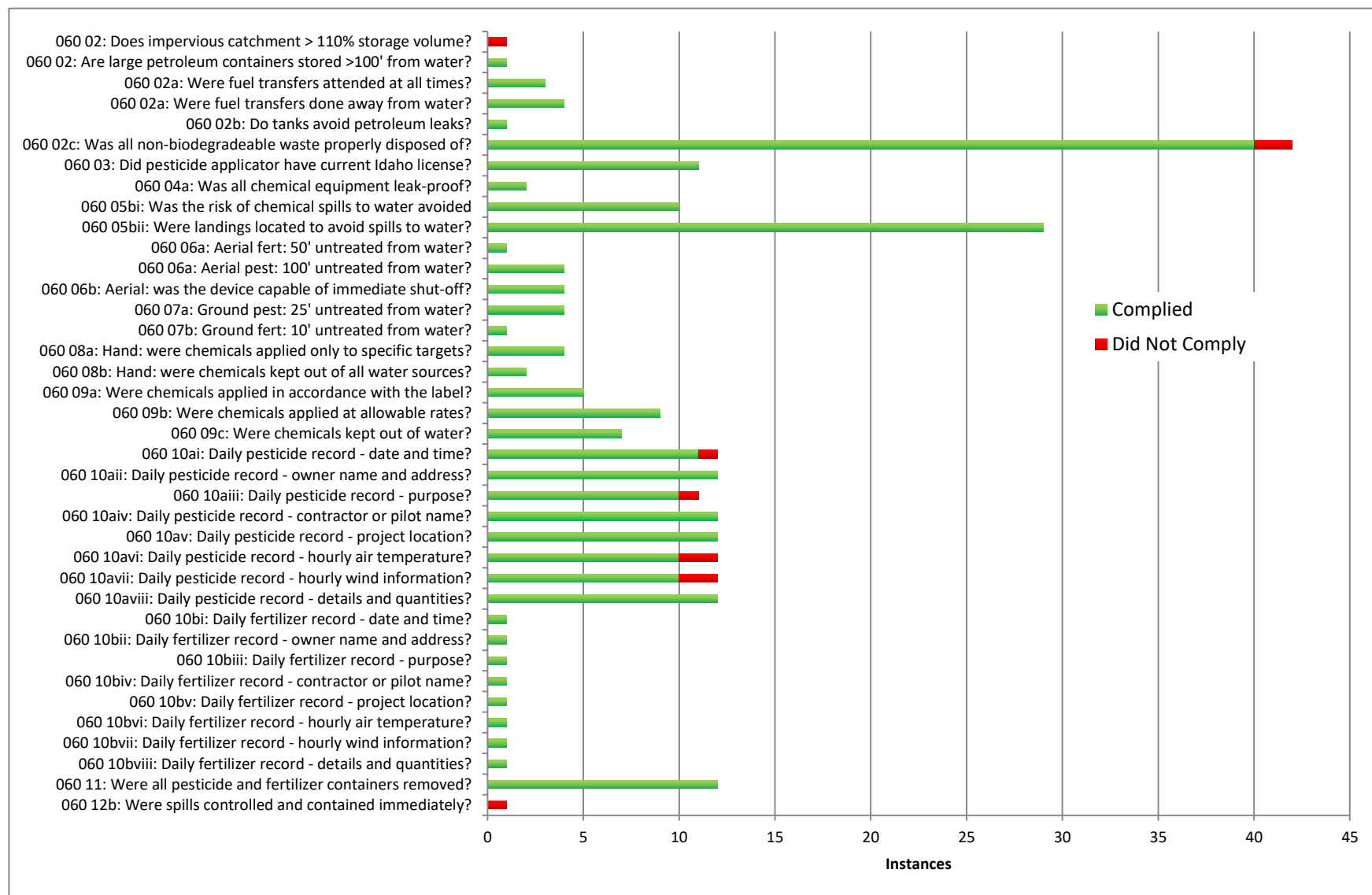


Figure 10. Summary of compliance with chemical and petroleum product rules.

### 2.3.5 Compliance Distribution

Instances of noncompliance with FPA rules were not spread evenly across the sites. For example, the overall compliance rate of 96% does *not* imply that most sites have a 4% noncompliance rate. In fact, most (54%) of the 63 sites visited had no violations at all.

Fully half of the violations occurred at about only 10% of the sites (the “bad apples”). One site was responsible for 16% of the season’s violations (13 out of a total of 81).

Figure 11 shows how the violations were distributed across the 63 audit sites.

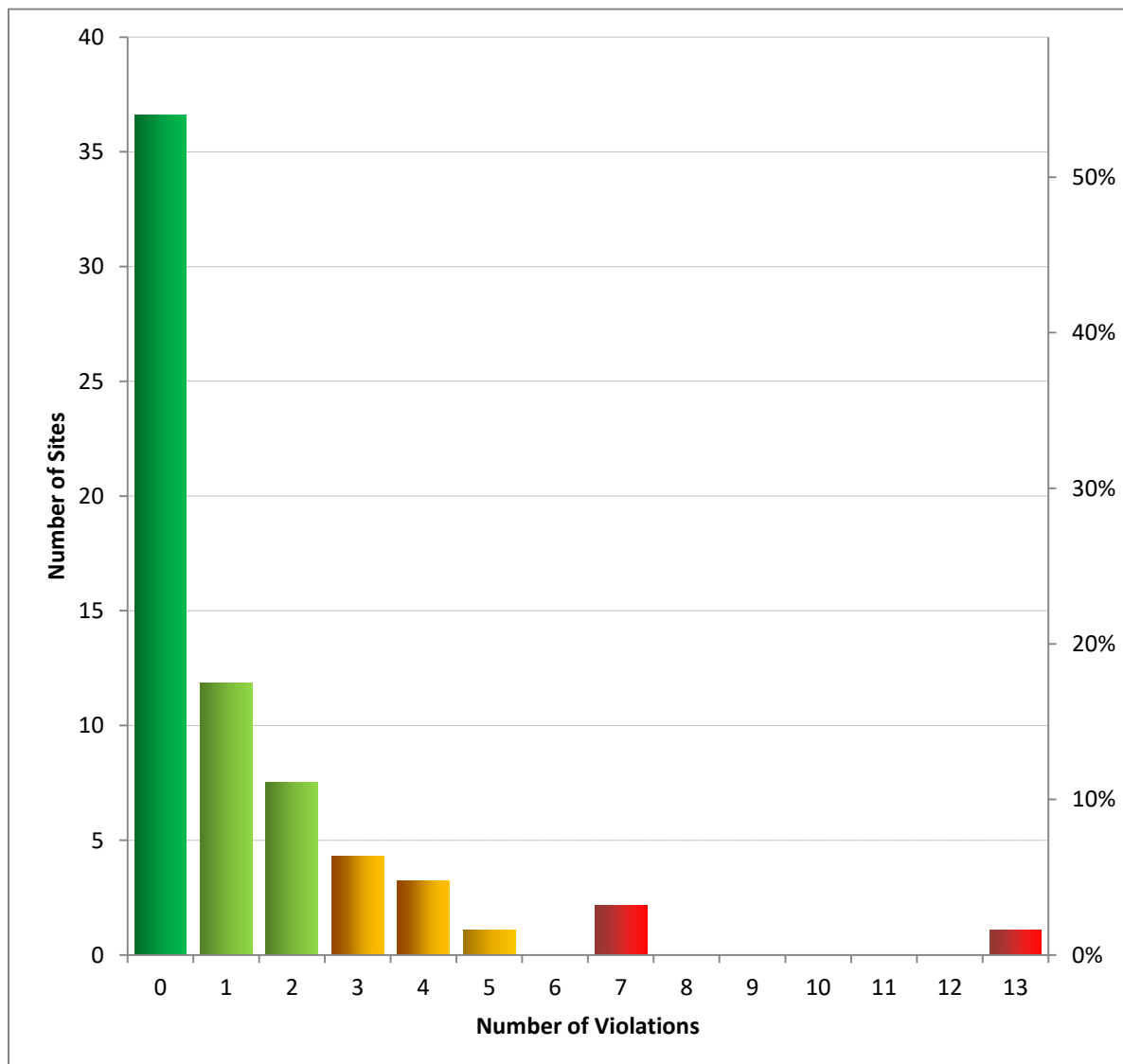


Figure 11. Distribution of compliance.

### 2.3.6 Results Summary

The 2020 audit data indicate that overall compliance rates remain high (>95%) across ownerships. In a change from previous audits, the lowest rate of compliance was found on State-owned land. This was largely due to a single site that demonstrated 13 instances of non-compliance with a broad suite of FPA rules. As with the previous audit, private industrial forests showed the highest level of compliance.

This year, there was no single rule that accounted for a large percentage of the violations; no one rule was broken more than five times. This is in stark contrast to 2016, when the rule regulating disposal of grease tubes and oil buckets accounted for almost one third of the violations. The auditors were happy to see 95% compliance with this rule in 2020.

The most common problem in 2020 was road maintenance. In combination, rules 040.04ci, 040.04ei, 040.04b, 040.04fi, 040.04gi, 040.04gii, all of which regulate road maintenance, were violated a total of nineteen times, accounting for 23% of the total violations. The goal of all of these rules is that roads must continue to function properly even after active use is complete. Roads require ongoing maintenance to avoid becoming sediment sources. Although all ownership categories had violations of these rules, they occurred about twice as often on federal and state owned land.

The second most common problem was incorrect disposal of maintenance and construction debris within the SPZ. In combination, rules 040.03b, 040.03c, 040.02b, 040.04a, 030.06c and 040.04gvi were violated 16 times, almost 20% of the total. Each of these rules requires mineral soil created during road maintenance and construction, such as grader piles, ditch cleanings, and culvert debris, be left in a manner such that it will not enter streams during high water or heavy rain. This problem was concentrated on private industrial forests, although was also found on both State and Federal land.

The third most common problem was relating to equipment use in the SPZ. In combination, rules 030.07fii (piling of slash), 030.07c (ground-based equipment), 030.04a (landings and trails), 040.02h (landing and skidding) were violated a total of 11 times, accounting for 14% of the total. Each ownership category had similar numbers of violations, which in general were not serious, because they typically only encroached on the outermost fringes of the SPZ.

Of the six new culverts we examined, two did not provide fish passage, as defined in the IDL guidance. The problem was typically an overly steep gradient.

The “shade rule” (030.07eii) was complied with on 21 out of 23 occasions: 91%.

## 2.4 Rule Effectiveness and Discussion

**Sediment:** Wherever the FPA rules were followed, we observed minimal or no mineral soil delivery to streams. Erosion-control practices were generally effective when properly installed and maintained. Slash mats were probably the most effective method of controlling erosion on skid trails. These mats also serve to limit recreational access, which can cause damage to the drainage control structures. In several instances, roadside ditches, which collect mineral soil

from the road surface, terminated into a stream. Wherever possible, these ditches should empty onto the forest floor, where their water and mineral soil can be dissipated without water quality impacts. FPAC has recently voted to add rule language that would offer this extra protection.

**Class II Streams:** There has been discussion in FPAC meetings about whether class II streams should have a tree retention requirement to protect water temperatures. There was previously such a requirement in the prior version of the shade rule, and IDL has made a commitment to investigate the issue. The definition of class II streams is those whose “...principal value lies in their influence on water quality... downstream in Class I streams”. It stands to reason that if removing all the trees along a class II stream causes its temperature to rise, then that will also increase the temperature of the receiving class I stream.

During the audits, we looked at a wide variety of class II streams and considered what sort of protection might be appropriate. It became clear that their wide variety would make a one-size-fits-all approach difficult. Class II streams span a range of sizes, from tiny perennial trickles to large intermittent washes. Most are so narrow that they can be well shaded with grasses and brush. Many are dry during times of hot weather and others are so small that their contributions to class I streams would be negligible. However, we did observe several class II streams whose size, aspect and flow would likely cause them to contribute elevated temperatures to their receiving class I stream, were they to be clear-felled. This would be particularly problematic for streams with existing temperature problems, or those covered by a temperature Total Maximum Daily Load (“TMDL”). We encourage FPAC and IDL to continue to formulate a practical, evidence-based class II tree retention policy.

**Herbicide Rules:** The FPA rules require herbicide applicators to maintain substantial records (060.10a-d). We audited all of these rules and found high (94%) levels of compliance. However, they are duplicates of the “Rules Governing Pesticide and Chemigation Use and Application” (IDAPA 02.02.03.150.01 and 02), administered by the Idaho State Department of Agriculture. Professional applicators follow the requirements of those rules, which are also cross-referenced in the FPA rules. In the interest of simplicity, FPAC could consider eliminating the redundant record-keeping requirements from the FPA rules, while still offering the same level of resource protection. The remainder of the FPA chemical rules may also contain redundancies, but should be retained because their simple language and central location is valuable for non-professional operators.

**Surface-Stabilizing Materials:** A source of confusion to the auditors was section 040.04cv (“If road surface stabilizing materials are used, apply them in such a manner as to prevent their entry into streams”). To clarify that this section is intended to apply to dust-abatement substances such as magnesium chloride, rather than to rock or gravel, FPAC should consider changing the word ‘materials’ to ‘chemicals’.

**Screening of Diversions:** The requirement to screen water diversions (020.ciii) was a rarely assessed rule, because the auditors were generally not present to observe the tanker trucks withdrawing water. In fact, the rule was only assessed once in each of the 2016 and 2020 audits. However, it was violated both times. In 2016 the screen mesh size was too large, and in 2020 there was no screen. Fish can be accidentally sucked into the tanker, a serious problem where



threatened and endangered species are present. IDL should contact water truck operators and ensure they are familiar with the screen requirements.

## 2.5 Special Investigations

**eDNA:** Over the summer, the auditors collected eDNA samples from twelve purported class II streams. In general, these were taken from sites that looked like plausible candidates for fish habitat. Their class-II status had usually been deduced by failure to find fish, either by sight or electrofishing, or by the presence of a downstream fish barrier. We found fish DNA in two of these sites (17%), indicating that they should have been classified as class-I (fish-bearing) streams. Most streams appear to be properly classified, but our results indicate that fish presence may be slightly more widespread than is currently estimated<sup>2</sup>. IDL and landowners should ensure that they are identifying the full range of fish presence. To address the two specific sites, IDL should immediately reclassify as fish-bearing, to a suitable point upstream:

- Stony Creek at 46.9418, -116.1467.
- The tributary to Riley Creek at 48.2459, -116.6677.

The eDNA samples were easy to collect, and each analysis was fairly inexpensive (\$200). Although not as immediate as electrofishing, eDNA is more sensitive, and could be a helpful tool for land managers to confirm their end-of-fish points. Sample collection takes about 15 minutes, and detection rates have been estimated at 84%. The US Forest Service publishes a useful guide, found at [www.fs.usda.gov/rmrs/ngc/eDNA](http://www.fs.usda.gov/rmrs/ngc/eDNA). This document addresses concerns about false positives and negatives (both very low), and provides detailed sampling instructions.

**Heavy Equipment Fire Task Force:** One of the federal timber sales was conducted by a ‘heavy equipment fire task force’. This means that trees removed during firefighting operations were decked and later sold. These types of cuts are rare, and have never been inspected by an FPA audit. The sales operate under an emergency authorization, and may not have the same level of public notice and specialist inspection as conventional federal timber sales.

On the sale we inspected, a fireline had been cut along the top of a ridge. The trees removed had been decked in convenient places along the road and later sold. The fireline had been completely revegetated, and all equipment tracks had been obscured. Being high on a ridge, there was no surface water nearby. We found that all FPA rules had been complied with, and that the level of resource protection was at least as high as a normal sale.

**Site-Specific Riparian Management Plans:** We inspected two sales that had site-specific riparian management plans. In each case, wildfire had burned through the SPZ, and the landowner wished to salvage the dead timber. The primary concern in this situation is the

---

<sup>2</sup> The 17% misidentification rate should *not* be interpreted as applying to stream classification in general, because our sample sites were not randomly selected. The auditors targeted any streams that they believed may have been misclassified, based on their size, slope, and location. Over the summer, scores of class II streams were encountered that *did* seem properly classified. To determine the true misidentification rate, these would all have needed to be sampled - a much larger undertaking than was done here.

erosion of vulnerable, unstable soils into the stream. Technically, the shade rule only prevents harvest of *live* trees below the minimum retained level, but it is common practice to use a site-specific plan to ensure resource protection. In both cases, replanting had occurred, and the mandated extra protections were sufficient to minimize erosion.

## 2.6 Recommendations

The audit team recommends the following:

1. IDL's inspectors should pay particular attention to the disposal of mineral soil from maintenance and construction activities. There should be no piles of bare dirt left in the SPZ. Bare roadside ditches should not terminate in a stream.
2. Federal land managers should ensure that road maintenance associated with a timber sale follows FPA requirements, especially in regards to grading debris entering the stream.
3. When variances are approved, they must stipulate enough extra safeguards so that streams receive an undiminished level of protection. State land managers should ensure that any rule variances they issue follow the usual process and scrutiny.
4. Water truck operators should be reminded to properly screen their diversions.
5. FPAC may consider removing the section 'daily records of chemical applications' (060.10)
6. FPAC should continue to work on establishing a minimum tree retention requirement for those class II streams that would contribute elevated temperatures to downstream waters.

### 3 References

- Bauer, S., D. Almas, M. Johnson, P. Stender, and D. Martin. 1988. *State of Idaho Forest Practices Water Quality Management Plan*. Boise, ID: Idaho Department of Health and Welfare, Division of Environment.
- Bauer, S., D. Jones, D. Almas, V. Moore, D. Obee, J. Griffith, D. McGreer, M. Cook, and P. Jahn. 1985. *Silvicultural Nonpoint Source Task Force Final Report*. Boise, ID: Idaho Department of Health and Welfare, Division of Environment.
- DEQ (Idaho Department of Environmental Quality). 2020. “Memorandum of Understanding Implementing the Nonpoint Source Water Quality Program in the State of Idaho.” Boise, ID: DEQ.
- DEQ (Idaho Department of Environmental Quality). 2015. *Idaho Nonpoint Source Management Plan*. Boise, ID: DEQ.
- Harvey, G., S. Hess, L. Jones, D. Krutina, D. McGreer, W. Reid, D. Stockton, and J. Thornton. 1989. *Final Report: Forest Practices Water Quality Audit – 1988*. Boise, ID: Idaho Department of Health and Welfare, Division of Environmental Quality.
- Hoelscher, B.G., J. Colla, M. Hanson, J. Heimer, D. McGreer, S. Poirier, and J. Rice. 1993. *Forest Practices Water Quality Audit – 1992*. Coeur d’Alene, ID: Idaho Department of Health and Welfare, Division of Environmental Quality.
- Hoelscher, B.G., J. DuPont, J. Hinson, D. McGreer, C. Robertson, and D. Schult. 2001. *Forest Practices Water Quality Audit – 2000*. Boise, ID: Idaho Department of Environmental Quality.
- Idaho Code. 2020. “Forest Practices Act.” Idaho Code §38-13.
- IDAPA. 2020. “Rules Pertaining to the Idaho Forest Practices Act.” Idaho Administrative Code. IDAPA 20.02.01.
- IDAPA. 2020. “Rules for the Control of Air Pollution in Idaho.” Idaho Administrative Code. IDAPA 58.01.01.
- IDL (Idaho Department of Lands), 2018. *Forest Practices Rules Guidance*. Boise, ID: IDL
- McIntyre, M.J., J. Colla, and A. Moody. 2007. *2004 Interagency Forest Practices Water Quality Audit Final Report*. Boise, ID: Idaho Department of Environmental Quality.
- Stone, H. 2016. *Idaho 2016 Interagency Forest Practices Water Quality Audit*. Boise, ID: Idaho Department of Environmental Quality
- Zaroban, D.W. and B. Prisock. 2009. *Idaho 2008 Interagency Forest Practices Water Quality Audit: Rule Compliance and Stream Crossing Assessments*. Boise, ID: Idaho Department of Environmental Quality.
- Zaroban, D.W., B. Love, J. Colla, G. Lesch, J. Heimer, J. Lehner, B. Lukens, S. Poirier, B. Lee, and K. David. 1997. *Forest Practices Water Quality Audit – 1996*. Boise, ID: Idaho Department of Health and Welfare, Division of Environmental Quality.

## Appendix A. Idaho Forest Practices Rules Audited in 2020

IDAPA 20.02.01 Rule	Rule Group	Description
020 01a	General	Variance provides equal protection?
020 01b	General	Was IDWR permit obtained, if required?
020 01b	General	Was the pesticide registered for use in Idaho?
020 01c	General	Diversions <25% and <65,170 gallons per day?
020 01ci	General	No diversions from canals and reservoirs?
020 01cii	General	Water district notified about diversion?
020 01ciii	General	Water diversions screened appropriately?
020 02	General	Conversion or reforestation completed within 3 years?
030 03a	Harvest	Notification identifies slopes >45%?
030 03a	Harvest	Did log skidding avoid causing rutting or erosion?
030 03a	Harvest	No ground-based equipment on slopes >45% near streams?
030 03b	Harvest	Constructed skid trail <30% on unstable soils?
030 03c	Harvest	Skid trails kept to minimum width and number
030 03c	Harvest	Skidding tractor sizes appropriate?
030 03d	Harvest	Erosion minimized during downhill cable yarding?
030 04a	Harvest	Landings and trails in stable areas outside of SPZ?
030 04a	Harvest	Skid and fire trails located to minimize sidecasting?
030 04b	Harvest	Size of landings minimized?
030 04c	Harvest	No loose stumps nor excessive slash in landing filler?
030 04c	Harvest	Sidecasted landings properly stabilized?
030 05a	Harvest	Trail drainage and stabilization adequate and current?
030 05b	Harvest	Are landing drainage and stabilization adequate?
030 06a	Harvest	Slash continuously moved 5' above OHWM in Class I?
030 06a	Harvest	Trees felled away from Class I stream?
030 06b	Harvest	Slash moved above OHWM in Class II?
030 06c	Harvest	Trail waste deposited only outside of SPZ?
030 07a	Harvest	Lake site-specific plan for SPZ activities?
030 07b	Harvest	Avoid skidding logs through streams?
030 07b	Harvest	Ends of stream-crossing skid trails water barred?
030 07b	Harvest	Stream crossings at right angles?
030 07b	Harvest	Temporary stream crossings adequate?
030 07b	Harvest	Temporary stream crossings removed immediately?
030 07c	Harvest	Avoid ground-based equipment use in SPZ?
030 07d	Harvest	Stream disturbance minimized during cable yarding?
030 07ei	Harvest	Streamside shrubs, grasses and rocks remaining?
030 07eii	Harvest	Adequate shade retained in Class I streams?
030 07eii	Harvest	Only one Shade Rule option implemented?
030 07eiii	Harvest	Adequate stocking in Class II SPZs?
030 07evii	Harvest	Was riparian management variance followed?
030 07fi	Harvest	Were hand piles >5' from OHWM?
030 07fii	Harvest	Mechanical piling of slash in SPZ avoided?
030 07iv	Harvest	Felled trees left as LOD in Class I?
030 07iv	Harvest	LOD, shade and filtering maintained in SPZ?
030 07v	Harvest	Naturally down LOD remaining over Class I stream?
030 08a	Harvest	Prompt cleanup and regeneration in scenic areas?
030 08c	Harvest	Did operations avoid wet areas?
030 08d	Harvest	Wildlife cover available within 1/4 mile of clearcuts?
040 02a	Road	Retain vegetation between roads and streams?
040 02a	Road	Avoid road construction in SPZ?

<b>IDAPA 20.02.01 Rule</b>	<b>Rule Group</b>	<b>Description</b>
040 02b	Road	Road material placed in stable location?
040 02b	Road	Cut and fill volumes minimized?
040 02b	Road	Road width appropriate?
040 02c	Road	Roads drained naturally where possible?
040 02d	Road	Are culverts planned to minimize discharge of sediment
040 02d	Road	Are culverts properly bedded and compacted?
040 02d	Road	Culverts and ditches included where necessary?
040 02ei	Road	Do new culverts provide fish passage on C1 streams?
040 02eii	Road	Are stream-crossing culverts appropriately sized?
040 02eii	Road	Were culverts >120" engineered
040 02eiii	Road	Are all relief culverts >12" in diameter?
040 02g	Road	Are ford approaches cross-drained and rocked for 75'?
040 02g	Road	Avoid fords with gradient >4%?
040 02g	Road	Fording limited to low water during salmonid spawning?
040 02g	Road	Fords cross streams at right angles?
040 02h	Road	Avoid landing or skidding logs in existing SPZ roads?
040 02h	Road	Avoid reconstruction of roads in SPZ?
040 03b	Road	Road debris deposited only outside SPZ?
040 03c	Road	Were erodible materials near streams stabilized?
040 03d	Road	Has road fill material been properly compacted?
040 03d	Road	Were embankments built without wood or excessive ice?
040 03e	Road	Has outslope drainage been retained and berms removed?
040 03f	Road	Are quarries properly drained?
040 03g	Road	Was embankment erosion minimized?
040 03g	Road	Were relief culverts installed?
040 03h	Road	Was erosion-causing construction suspended during rain
040 03i	Road	Were cut-slopes constructed to minimize sloughing?
040 03j	Road	Are roads on erodible slopes >60% full benched?
040 03j	Road	Fills at crossings on erodible slopes >60% minimized?
040 04a	Road	Is debris placed to avoid stream entry?
040 04b	Road	Have erosion sources to streams been repaired?
040 04ci	Road	Active roads: culverts and ditches functional?
040 04cii	Road	Active roads: shaped to minimize erosion?
040 04ciii	Road	Active roads: surfaces maintained?
040 04civ	Road	Was sediment-causing hauling suspended during rain?
040 04cv	Road	Were surface-stabilizing materials kept out of stream
040 04ei	Road	Are inactive road surfaces controlling erosion?
040 04ei	Road	Are inactive bridges and culverts maintained
040 04fi	Road	Are long-term inactive roads controlling erosion?
040 04fiii	Road	Are longterminactive bridges and culverts maintaine
040 04gi	Road	Are abandoned crossings restored to original gradient
040 04gi	Road	Are abandoned drainage structures removed?
040 04gii	Road	Are abandoned road prisms uncompacted?
040 04giii	Road	Do abandoned fill slopes have long-term stability?
040 04giv	Road	Are abandoned sidehill fills stable?
040 04gv	Road	Has ditch-line erosion been controlled?
040 04gvi	Road	Has bare earth been stabilized?
050 02	Replanting	Are leave-trees of acceptable quality?
050 03a	Replanting	Were drier forests properly stocked or replanted?
050 04	Replanting	Was residual stocking or replanting adequate?
050 04	Replanting	Are retained trees reasonably distributed?
050 05b	Replanting	Was replanting-exempt land protected with vegetation?

IDAPA 20.02.01 Rule	Rule Group	Description
060 02	Chemicals	Does impervious catchment > 110% storage volume?
060 02	Chemicals	Are large petroleum containers stored >100' from water?
060 02	Chemicals	If there was a spill, was IDL notified immediately?
060 02a	Chemicals	Were fuel transfers attended at all times?
060 02a	Chemicals	Were fuel transfers done away from water?
060 02b	Chemicals	Do tanks avoid petroleum leaks?
060 02c	Chemicals	Was all non-biodegradable waste properly disposed of?
060 03	Chemicals	Did pesticide applicator have current Idaho license?
060 04a	Chemicals	Was all chemical equipment leak-proof?
060 05bi	Chemicals	Was the risk of chemical spills to water avoided
060 05bi	Chemicals	Did equipment washout avoid risk of spills to water?
060 05bii	Chemicals	Were landings located to avoid spills to water?
060 06a	Chemicals	Aerial fert: 50' untreated from water?
060 06a	Chemicals	Aerial pest: 100' untreated from water?
060 06b	Chemicals	Aerial: was the device capable of immediate shut-off?
060 07a	Chemicals	Ground pest: 25' untreated from water?
060 07b	Chemicals	Ground fert: 10' untreated from water?
060 08a	Chemicals	Hand: were chemicals applied only to specific targets?
060 08b	Chemicals	Hand: were chemicals kept out of all water sources?
060 09a	Chemicals	Were chemicals applied in accordance with the label?
060 09b	Chemicals	Were chemicals applied at allowable rates?
060 09c	Chemicals	Were chemicals kept out of water?
060 10ai	Chemicals	Daily pesticide record - date and time?
060 10aii	Chemicals	Daily pesticide record - owner name and address?
060 10aiii	Chemicals	Daily pesticide record - purpose?
060 10aiv	Chemicals	Daily pesticide record - contractor or pilot name?
060 10av	Chemicals	Daily pesticide record - project location?
060 10avi	Chemicals	Daily pesticide record - hourly air temperature?
060 10avii	Chemicals	Daily pesticide record - hourly wind information?
060 10aviii	Chemicals	Daily pesticide record - details and quantities?
060 10bi	Chemicals	Daily fertilizer record - date and time?
060 10bii	Chemicals	Daily fertilizer record - owner name and address?
060 10biii	Chemicals	Daily fertilizer record - purpose?
060 10biv	Chemicals	Daily fertilizer record - contractor or pilot name?
060 10bv	Chemicals	Daily fertilizer record - project location?
060 10bvi	Chemicals	Daily fertilizer record - hourly air temperature?
060 10bvii	Chemicals	Daily fertilizer record - hourly wind information?
060 10bviii	Chemicals	Daily fertilizer record - details and quantities?
060 11	Chemicals	Were all pesticide and fertilizer containers removed?
060 11	Chemicals	Were chemical containers removed from the forest?
060 12a	Chemicals	Were spills reported to IDL immediately?
060 12b	Chemicals	Were spills controlled and contained immediately?
060 12c	Chemicals	Were spills appropriately removed?

## Appendix B. Field Form

**AUDIT :**
Save and Exit

Site
Roads
Yarding
Streams
Stocking
Chemicals
General

Sale Name
Owner
Owner Type
Audit Type
Silvicultural
Felling
Yarding

Audit Number
Audit Date
Compliance Number
Harvest Area/Volume

☐ IDL Erodible Soils?
☐ SPZ Harvest?
☐ Operation in-progress?

☐ Was a variance issued? If so, give details:

☐ Does the site have mandatory site-specific BMPs? If so, give details:

☐ Was the operation inspected? If so, give details:

Auditors
Others Present

☐ Did the notification form identify slopes >45%, if present? (030 03a)
☐ Was a site-specific plan provided for lakeside SPZ activities? (030 07a)
☐ eDNA sample taken?

Site Notes



### Design

<input type="checkbox"/> Avoid road construction in SPZ? (040 02a)	<input type="checkbox"/> Avoid road reconstruction in SPZ? (040 02h)
<input type="checkbox"/> Road width appropriate? (040 02b)	<input type="checkbox"/> Road construction material placed in stable location? (040 02b)
<input type="checkbox"/> Road cut and fill volumes minimized? (040 02b)	<input type="checkbox"/> Retain vegetation between roads and streams? (040 02a)
<input type="checkbox"/> Roads drained naturally where possible? (040 02c)	<input type="checkbox"/> Culverts and ditches included where necessary? (040 02d)
<input type="checkbox"/> Is the number of stream crossings minimized? (040 02g)	<input type="checkbox"/> Are culverts planned to minimize discharge of sediment? (040 02d)
<input type="checkbox"/> Are stream culverts correctly sized? (040 02eii)	<input type="checkbox"/> Are all relief culverts >12" in diameter? (040 02eiii)
<input type="checkbox"/> Do new culverts provide fish passage on class 1 streams? (040 02ei)	<input type="checkbox"/> Avoid fords across streams with gradient >4%? (040 02g)
<input type="checkbox"/> Do fords cross streams at right angles? (040 02g)	<input type="checkbox"/> Are ford approaches cross-drained and rocked for 75'? (040 02g)
<input type="checkbox"/> Is fording limited to low water during salmonid spawning? (040 02g)	<input type="checkbox"/> Were culverts >120" engineered? (040 02eii)
<input type="checkbox"/> Was IDWR permit obtained, if required? (020 01b)	Culverts > 85" dia, or > 60' length. Bridges > 75' long or encroach on stream. Fords > 75' long or > 25' wide.

### Construction

<input type="checkbox"/> Has road fill material been properly compacted? (040 03d)	<input type="checkbox"/> Has outslope drainage been retained and berms removed? (040 03e)
<input type="checkbox"/> Were erodible materials near streams stabilized? (040 03c)	<input type="checkbox"/> Were relief culverts installed? (040 03g)
<input type="checkbox"/> Were embankments built without wood or excessive ice? (040 03d)	<input type="checkbox"/> Was embankment erosion minimized? (040 03g)
<input type="checkbox"/> Were cut-slopes constructed to minimize sloughing? (040 03i)	<input type="checkbox"/> Are culverts properly bedded and compacted? (040 02d)
<input type="checkbox"/> Are roads on >60% erodible slopes full-benched? (040 03j)	<input type="checkbox"/> Fills at streams and draws on >60% erodible slopes minimized? (040 03j)
<input type="checkbox"/> Are quarries properly drained? (040 03f)	<input type="checkbox"/> Was erosion-causing construction suspended during rain? (040 03h)

### Maintenance: Active Roads

<input type="checkbox"/> Is maintenance debris placed to avoid stream entry? (040 04a)	<input type="checkbox"/> Have erosion sources to streams been repaired? (040 04b)
<input type="checkbox"/> Active roads: culverts and ditches functional? (040 04ci)	<input type="checkbox"/> Active roads: surfaces adequately maintained? (040 04cii)
<input type="checkbox"/> Active roads: shaped to minimize erosion? (040 04cii)	<input type="checkbox"/> Active roads: Was sediment-causing hauling suspended during rain? (040 04civ)
<input type="checkbox"/> Were surface-stabilizing chemicals kept out of streams? (040 04cv)	Note: incidental haul roads are 'active' while in use

### Maintenance: Inactive Roads

<input type="checkbox"/> Are inactive road surfaces controlling erosion? (040 04ei)	<input type="checkbox"/> Are inactive bridges and culverts maintained? (040 04ei)
<input type="checkbox"/> Were long-term inactive road surfaces properly deactivated? (040 04fi)	<input type="checkbox"/> Are long-term inactive bridges and culverts maintained? (040 04fiii)

### Maintenance: Abandoned Roads

<input type="checkbox"/> Are abandoned crossings restored to original gradient? (040 04gi)	<input type="checkbox"/> Are abandoned drainage structures removed? (040 04gi)
<input type="checkbox"/> Are abandoned road prisms uncompacted? (040 04gii)	<input type="checkbox"/> Do abandoned fill slopes have long-term stability? (040 04giii)
<input type="checkbox"/> Are abandoned sidehill fills stable? (040 04giv)	<input type="checkbox"/> Has ditch-line erosion been controlled on abandoned roads? (040 04gv)
<input type="checkbox"/> Have regraded or ripped areas been stabilized? (040 04gvi)	

☐ N/A ☒ Yes ☐ No

### Equipment

☐ Are large petroleum containers stored >100' from water? (060 02)

☐ Were fuel transfers done away from water? (060 02a)

☐ Did tanks avoid petroleum leaks? (060 02b)

☐ Was aerial equipment capable of immediate shut-off? (060 06b)

☐ Does impervious catchment > 110% storage volume? (060 02)

☐ Were fuel transfers attended at all times? (060 02a)

☐ Did equipment washout avoid risk of spills to water? (060 05bi)

☐ Was all chemical equipment leak-proof? (060 04a)

### Spills and Misapplications

☐ Were chemical spills immediately reported to IDL? (060 12a)

☐ Were spills controlled and contained immediately? (060 12b)

☐ Did aerial applications of pesticide stay > 100' from open water? (060 06a)

☐ Did ground applications of pesticide stay > 25' from open water? (060 07a)

☐ Were hand-applied chemicals used only on specific targets? (060 08a)

☐ Was the risk of chemical spills to water avoided? (060 05bi)

☐ Were petroleum spills immediately reported to IDL? (060 02)

☐ Were spills appropriately removed? (060 12c)

☐ Did aerial applications of fertilizer stay > 50' from open water? (060 06a)

☐ Did ground applications of fertilizer stay > 10' from open water? (060 07b)

☐ Were hand-applied chemicals kept out of all water sources? (060 08b)

☐ Were chemicals kept out of water? (060 09c)

### Records (may be completed later)

☐ Did pesticide applicator have current Idaho license? (060 03)

☐ Were chemicals applied in accordance with the label? (060 09a)

☐ Were the pesticide(s) registered for use in Idaho? (020 01b)

☐ Were chemicals applied at allowable rates? (060 09b)

Were the proper records kept for:

- Pesticides?**  
(060 10a)
- ☐ Date and time?
  - ☐ Owner name and address?
  - ☐ Purpose?
  - ☐ Contractor or pilot name?
  - ☐ Project location?
  - ☐ Hourly air temperature?
  - ☐ Hourly wind information?
  - ☐ Details and quantities?

### Chemical Notes

**Fertilizers or Soil Amendments?**  
(060 10b)

Site	Roads	Yarding	Streams	Stocking	Chemicals	General
<div> <div> <input type="checkbox"/> N/A           <input checked="" type="checkbox"/> Yes           <input type="checkbox"/> No         </div> </div>						
<div> <div>Trails</div> <div> <div> <input type="checkbox"/> Skid trails kept to minimum width and number (030 03c)           </div> <div> <input type="checkbox"/> Constructed skid trail gradients &lt;30% on unstable soils? (030 03b))           </div> </div> <div> <div> <input type="checkbox"/> Are trail drainage and stabilization adequate and current? (030 05a)           </div> <div> <input type="checkbox"/> Did log skidding avoid causing rutting or erosion? (030 03a)           </div> </div> <div> <div> <input type="checkbox"/> Were skidding tractor sizes appropriate? (030 03c)           </div> <div> <input type="checkbox"/> Avoid landing or skidding logs in existing SPZ roads? (040 02h)           </div> </div> <div> <div> <input type="checkbox"/> Landings and trails in stable areas outside of SPZ? (030 04a)           </div> <div> <input type="checkbox"/> Was erosion minimized during downhill cable yarding? (030 03d)           </div> </div> </div>						
<div> <div>Landings</div> <div> <div> <input type="checkbox"/> Landings and trails located to minimize sidecasting? (030 04a)           </div> <div> <input type="checkbox"/> Sidecasted landings properly stabilized? (030 04c)           </div> </div> <div> <div> <input type="checkbox"/> Size of landings minimized? (030 04b)           </div> <div> <input type="checkbox"/> Landing drainage and stabilization adequate? (030 05b)           </div> </div> <div> <div> <input type="checkbox"/> No loose stumps nor excessive slash in landing filler? (030 04c)           </div> <div> <input type="checkbox"/> Were landings located to avoid chemical spills to water? (060 05hii)           </div> </div> </div>						
Site	Roads	Yarding	Streams	Stocking	Chemicals	General
<div> <div> <input type="checkbox"/> N/A           <input checked="" type="checkbox"/> Yes           <input type="checkbox"/> No         </div> </div>						
<div> <div>Upland Stocking</div> <div> <div> <input type="checkbox"/> Are leave-trees of acceptable quality? (050 02)           </div> <div> <input type="checkbox"/> Was stocking adequate across the entire harvested area? (50 04)           </div> </div> <div> <div> <input type="checkbox"/> Were drier forests properly stocked or replanted? (050 03a)           </div> <div> <input type="checkbox"/> Were sites impractical to reforest protected with vegetation? (050 05b)           </div> </div> <div> <div> <input type="checkbox"/> Vegetative cover after conversion? (020 02)           </div> <div> <input type="checkbox"/> Prompt cleanup and regeneration in scenic areas? (030 08a)           </div> </div> </div>						
<div> <div>SPZ Harvest</div> <div> <div> <input type="checkbox"/> Adequate stocking in class I SPZs? (030 07eii)           </div> <div> <input type="checkbox"/> Only one SPZ harvest option implemented? (030 07eii)           </div> </div> <div> <div> <input type="checkbox"/> Adequate stocking in Class II SPZs? (030 07eiii)           </div> <div> <input type="checkbox"/> Are class II leave-trees reasonably distributed? (030 07eiii)           </div> </div> </div>						
Site	Roads	Yarding	Streams	Stocking	Chemicals	General
<div> <div> <input type="checkbox"/> N/A           <input checked="" type="checkbox"/> Yes           <input type="checkbox"/> No         </div> </div>						
<div> <div>General Rules</div> <div> <div> <input type="checkbox"/> Did operations avoid wet areas? (030 08c)           </div> <div> <input type="checkbox"/> Was wildlife cover available within 1/4 mile of clearcuts? (030 08d)           </div> </div> <div> <div> <input type="checkbox"/> Was all non-biodegradable waste properly disposed of? (060 02c)           </div> <div> <input type="checkbox"/> Were all pesticide and fertilizer containers removed? (060 11)           </div> </div> <div> <div> <input type="checkbox"/> Were site-specific BMPs followed, if required? (031 04)           </div> <div> <input type="checkbox"/> Did any variances provide equal protection? (020 01aiii)           </div> </div> </div>						
<div> <div>General Notes</div> <div></div> </div>						

## Appendix C. Photographs



Figure 12. Revegetated skid trail in Heavy Equipment Fire Task Force sale





**Figure 13: Socially-distanced fieldwork**



**Figure 14 Large convoy of interested observers**





**Figure 15: Uncontained fuel storage tank**



**Figure 16 Pile of road maintenance debris left in SPZ, immediately adjacent to the stream**





**Figure 17 Long berm of grader debris being pushed into the stream**



**Figure 18 Pile of road maintenance material stored next to stream**