

Department of Natural Resources

Forest Practices Division

Compliance Monitoring  
2006 Field Season Interim Report

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## Summary

Compliance monitoring is an important and major component of the Forests and Fish Report. The Department of Natural Resources (DNR) Forest Practices (FP) Division envisions that Compliance Monitoring will be conducted for many years. This interim report summarizes data collected during the 2006 field season. Study design and field methods were developed the first half of 2006 incorporating information from a 2004 DNR Preliminary Project on Type F streams and a comprehensive literature review of Compliance Monitoring projects in the Western States. Field reviews were conducted from May to November. Direction for this program is presented in WAC 222-08-160 (4).

*“The department shall conduct compliance monitoring that addresses the following key question: “Are forest practices being conducted in compliance with the rules?” The department shall provide statistically sound, biennial compliance audits and monitoring reports to the board for consideration and support of rule and guidance analysis.”*

The (DNR) in consultation with the Washington Departments of Ecology (DOE) and Fish and Wildlife (DFW) completed year one of the compliance monitoring study using protocols described in *Department of Natural Resources Forest Practices Compliance Monitoring Program (DNR-FP-CMP)* (Lingley and others, 2006).

### What is an activity?

Forest Practice Applications (FPAs) can contain numerous harvest options or multiple road activities such as construction or maintenance operations. For example, a single FPA may contain a No-Inner Zone Harvest, harvest on a Type N stream, and a Wetland Management Zone. There may also be new or temporary roads to be built and a road abandonment project. Each one of these forest practices are grouped into specific “activities” for the purposes of the Compliance Monitoring program.

### Results

For 2006 (year 1), we selected forest practice activities relating to Timber Harvest and Road Construction and Maintenance Rule groups for review. These two major rule groups were chosen because they include approximately 60% of forest practice rules, and govern those forest practice activities having the greatest potential to cause adverse impacts to public resources. Ninety-seven forest practice applications (FPA’s) were selected with a total of 278 individual site specific forest practices ‘activities’. The descriptive statistics presented in this report give a snapshot of the status of compliance. We will need several years of monitoring to build up a sufficient number of representative samples for each activity to gain desired statistical precision for all types of activities reviewed.

We developed three categories for the status of compliance for each activity reviewed: 1) Exceeds rule requirements, 2) Compliant with the rules, and 3) Out of Compliance with the rules. The field teams were not always consistent in noting whether a reviewed activity exceeded the rule requirements, however, there were circumstances when we wanted to use our professional

expertise to note when activities exceeded the rule requirements. The number of activities determined as exceeding the rules was added to those meeting compliance for the total number of activities in compliance. The following is a summary of the status of compliance for the activities reviewed:

1. Compliant with the rules for 278 activities reviewed:
  - a. 224 of the 278 site specific activities (81%) are at compliance. This number includes 30 activities the field teams determined exceeded the rules.
    - i. 93 of the 126 Riparian activities statewide (74%) are at compliance
    - ii. 131 of the 152 Road activities statewide (86%) are at compliance.
2. Out of compliance for 278 activities reviewed
  - a. 54 of the 278 activities (19%) were out of compliance
    - i. 33 of the 126 Riparian activities (26%) were out of compliance
    - ii. 21 of the 152 Road activities (14%) were out of compliance

In addition to assessing regulatory compliance, field crews were asked if the information included in the FPA was sufficient to evaluate activities on the ground. While a lack of information does not mean that work was out of compliance in regards to the regulations, this information is helpful to regulatory agencies for review and approval of FPAs. The team observations on this aspect of the survey have been included in Appendix A.

## **Introduction**

While DNR has applied effort in establishing a compliance-monitoring program in the past; limited resources, conflicting responsibilities, and a tendency to expand the scope of the program among those involved in planning have delayed actual implementation of a full scale program. The DNR is focused on determining if the rules are being implemented properly on the ground, reporting to the Forest Practice Board for consideration and support of rule and guidance analysis, and providing statistically sound information. Therefore Compliance Monitoring cannot:

1. Provide the framework for effectiveness monitoring, direct water quality monitoring, or validation monitoring,
2. Be considered a scientifically exhaustive investigation,
3. Cover all types of operations,
4. Serve as an enforcement program,
5. Serve as an audit of the DNR's regulatory staff, or
6. Be considered a Cooperative Monitoring, Evaluation, and Research Committee project.

For 2006 (year 1) DNR selected forest practice activities relating to WAC 222-24, Road Construction and Maintenance, and WAC 222-30 Timber Harvest for review. These two major rule classes include about 60% of the rules with the greatest potential to adversely impact the environment and public safety. Seven Road-Rule forms, nine Riparian-Rule forms, and two Post-Survey Forms resulted in 234 possible questions for the Compliance Monitoring. Each form question was derived from. A total of 3,979 site-specific questions were answered for the

278 activities. Responses to the questions along with all reported field observations were entered into an excel spreadsheet. Data was compiled and interpreted by DNR forest practices staff in collaboration with DOE and DFW. The field forms are available at <http://www.dnr.wa.gov/forestpracticess/compliancemonitoring>.

## **Brief Details of the Study Design and Methods**

### *Structure of the Program*

The Compliance Monitoring Program is administered by the FP Division and consists of a Program Manager and Field Coordinator. The Compliance Monitoring Program (*DNR-FP-CMP*) (Lingley et. al., 2006) was submitted to the Forests and Fish policy caucus representatives for review, and implemented in May 2006. Region forest practice foresters (FPFs) are in charge of field reviews, with the FPF who approved the FPA providing logistical support but no decision making. These FPFs, working together with representatives of DOE, DFW, and participating tribal representatives attended mandatory training in field methods and protocols. These teams performed detailed field reviews of 97 completed Forest Practices Applications (FPAs) during the summer and fall of 2006. FPAs that were complicated or those with multiple activities sometimes required extra trained field personnel which resulted in the three agencies collectively committing about 1.5 full time equivalent (FTEs) positions to complete the fieldwork.

DNR was budgeted for Compliance Monitoring and pass through funds were distributed to DOE and DFW to work with on this project, while participating tribes volunteered their time. Landowners were invited to attend and observe the reviews. Table 1 shows the number of FPAs reviewed by each participant group and the total number of person days contributed to the project.

**Table 1. Summary of DNR, DOE, DFW, Tribal, and landowner personnel that participated in the 2006 Compliance Monitoring field reviews by month and agency.**

Participants	2006 Compliance Monitoring Field Season						Totals
	January to June	July	August	September	October	November	
FPA's reviewed by DNR	34	28	12	4	17	2	97
DNR Person-days Involved	78	46	22	7	33	11	197
FPA's reviewed by DOE	23	23	8	3	9	1	67
DOE Person-days Involved	23	23	10	3	9	1	69
FPA's reviewed by DFW	33	25	10	4	14	2	88
DFW Person-days Involved	35	25	13	4	16	3	96
FPA's reviewed by Tribes*	6	11	4	0	1	1	23
Tribal Person-days Involved	8	12	4	0	1	4	29
FPA's observed by Landowners*	6	6	5	1	3	0	21
Landowners attending	6	9	5	2	5	0	27

*Random Sampling and FPA Selection Criteria*

The department is not targeting particular landowners, DNR Regions or any geographic areas. A random sample allows all landowners the same likelihood for being reviewed. We assigned a randomly generated number for FPAs from all class II renewals, class III, and class IV-S applications (~5400 applications) from the Department's Application Review (FPARS) database. In order to assure that harvest activities were complete while allowing DNR access to the subject area within the two year FPA jurisdiction window, only FPAs with approval dates from August 1, 2004 to July 31, 2005 were considered.

The sample size required to provide a statistically sound representation of the statewide population of FPAs is 95 FPAs. This sample size reflects a 95% confidence level with a 10% margin of error. Specifics on the statistical basis for this work are included in the DNR-FP-CMP. The first 254 of the 600 randomly selected FPAs satisfied our selection criteria and from

this group we had 97 FPAs with all activities completed. These 97 final FPAs were field assessed.

A stratified sample population to target specific subgroups, such as landowner type or geographic area was considered. It was determined that a DNR Region stratified statistically valid sample would increase the number of FPAs to 515, which would not be possible within current budget and time constraints. It is expected that within the next five years, the non-stratified sample size will be adequate to apply stratification statistics for specific activities or regional analyses.

We did not review riparian activities that are managed by State Trust Lands or other industrial landowners that follow Habitat Conservation Plans (HCPs) except in certain instances when the HCP did not address riparian rules on parts of their ownership. For example, some FPAs on DNR State Trust Lands in Eastern Washington fall into this category. We did review HCP road related activities. Reporting compliance for both Small Forest Landowners (SFLs) and industrial landowners was in response to stakeholder requests. The SFLs can follow the general forest practice rules or follow specific SFL 20-acre exempt rules. The number of 20-acre exempt FPAs occurs so rarely that we will be reviewing this activity in the 2007/08 biennium Compliance Monitoring. Other rule activities that will be reviewed may be alternate plans and unstable slopes.

#### *FPA Distribution*

Table 2 shows the comparison of the average percent of FPAs submitted by Region for a 19 year period and, the distribution and percentage of the of 97 Random Sample. We envision that over time the number of FPAs per Region will mimic the average percentage of FPAs submitted each year. Table 3 shows these FPAs by landowner type. Figure 1 shows the statewide distribution of the 2006 Compliance Monitoring FPAs.

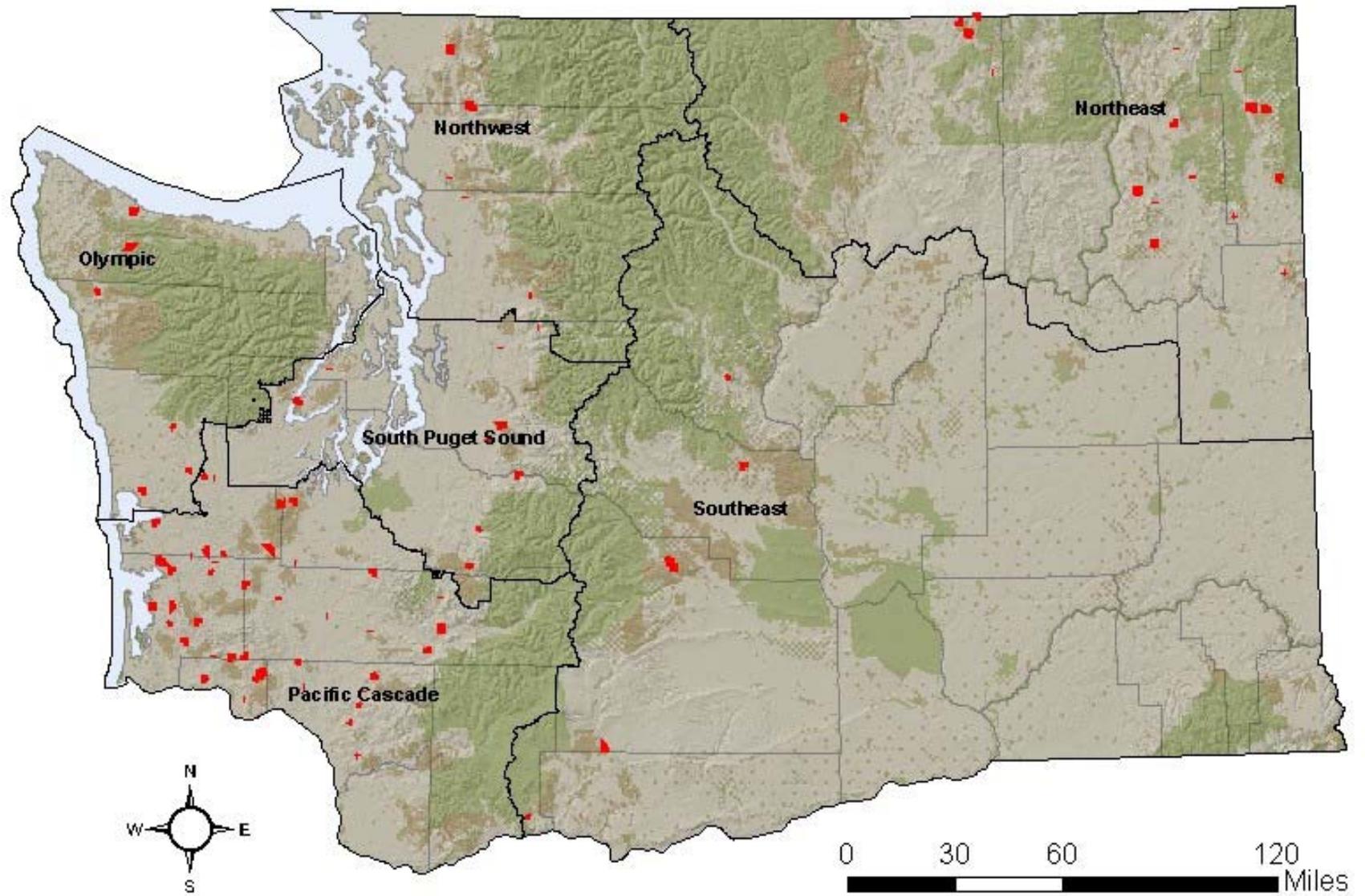
**Table 2. Distribution of FPAs by DNR Region.**

DNR Region	Average Percent of FPAs by Region Submitted from 1985 to 2004	Distribution of the 97 FPAs Chosen by Random Sample	Percentage of FPAs in the Random Sample
Pacific Cascade	36%	49	52%
South Puget Sound	14%	11	11%
Olympic	12%	10	10%
Southeast	6%	7	7%
Northwest	14%	5	5%
Northeast	18%	15	15%

**Table 3. Random sample FPAs by DNR Region and landowner type.**

DNR Region	Landowner Types		Totals
	Small Forest Landowners	Industrial Landowners	
Pacific Cascade	13	36	49
South Puget Sound	6	5	11
Olympic	1	9	10
Southeast	2	5	7
Northwest	1	4	5
Northeast	9	6	15
Totals	32	64	97

**Figure 1 Statewide Distribution of 2006 Compliance Monitoring FPAs. (FPAs in red)**



### *Field Review Decisions*

Procedures, Standards and Guidelines, and Field forms were presented in training sessions to provide specific field methods for assessment of each rule activity. A Post-Survey Form summarizing the status of compliance for each activity was completed in the field and signed by all participants, except the attending landowner. The decisions made on Compliance Monitoring is the result of all of the team members working together to determine if the rules are being implemented properly in the field. Therefore, it is important that all DNR, DOE, and DFW representatives, along with tribal participants make final decisions “in the field” and “at the sites” of individual activities. We are not taking data back to the office for processing. A lack of consensus among monitoring personnel was noted, occurring only 3 times for the 278 activities. In these instances, we deferred to the interpretation of the DNR FPFs; the rule-implementing agency. Oversight to assure statewide consistency and quality control was provided by DNR Division staff as follows: the Compliance Monitoring Program Manager participated on 23 field reviews; the Compliance Monitoring Field Coordinator attended 45 field reviews, and DFW’s main designated representative attended 48 FPAs. These three individuals contributed to maintaining consistency in the field

### *Measurement Uncertainty*

Riparian Management Zone requirements require precise buffers along streams and an exact number of leave trees. For example, the Inner Zone width for one FPA might be exactly 63-feet and require exactly 29 Outer Zone leave trees be left as per the rule. However, we recognize the inherent real world ability to measure an exact point on the ground with varied and steep terrain, natural stream variability, impenetrable brush, and a variety of field instruments. The protocol allows for the use of industry-standard measurement tools that fit site conditions and allows for appropriate uncertainty in measurement of 5%. For example, a tree harvested at a 96-foot measurement is considered in compliance for a 100-foot buffer. As stated in the Standards and Guidelines:

“When answering the questions on the field forms:

1. Trees cut inconsistently within the 5% measurement uncertainty puts the activity **in compliance, so be sure to differentiate these from trees outside of the 5% measurement uncertainty.**
2. Trees cut consistently within the 5% measurement uncertainty puts the activity out of **compliance.**”

Understanding that tree spacing for most of the stands being harvested is greater than 5 to 10 feet, the instances when we actually had to make these 5% measurement uncertainty decisions were infrequent in relation to the number of RMZ stations measured. The following photos represent a small sample of some of the measurement challenges in the field.

Taking several additive measurements due to impenetrable brush contributes to the need for a 5% measurement uncertainty



Bankfull width locations may be obscured or difficult to determine exactly due to the natural variability within stream channels.

A blow-down section of an Option 1 harvest illustrates the inability to determine an exact measurement for RMZs.



Difficult terrain and brush combinations also influence measurements.



### *Status of Compliance*

The categories listed below were used to describe the status of compliance and were suggested by representatives of Forests and Fish Policy. The examples have been modified as the program developed. Direct field observations in conjunction with answering the field form questions for each activity contributed to determining the status of compliance.

- *Exceeds Rule requirements:* Landowners conducted their forest practice activities above the minimum requirements of the rule. Examples include:
  - No harvest zones are preserved in areas the applicant originally had planned to harvest.
  - No harvest zones that otherwise could have been harvested under the rules.
  - Road improvements beyond those required by rule were employed.
  - Road abandonment that included more than required such as mulching, distribution of trees and woody debris along the road prism to deter off road vehicle travel.
  - Swales, erroneously defined as typed channels that were protected.
- *Compliant with the rule:* Meets protection identified in the FPA and rules.
- *Out of Compliance with the rules:* Non-compliance with the Rules. Examples include:
  - Harvest in Riparian Management Zones (RMZs) beyond the pre-determined 5% measurement uncertainty protocol.
  - Leave tree requirements not met.
  - Water-crossing structures inadequate for stream protection standards.
  - Stream size or stated length as reported on the Desired Future Condition (DFC) worksheet that deviated more than 10% of the distance measured in the field.

### *Professional Judgment and “Out-of-Compliance” Levels*

Not all infractions of forest practice regulations have the same effect on public resources. For instance, cutting down half the trees in the Core Zone of a riparian management area generally has a higher probability of causing significantly more environmental damage than removing one or two of the required trees from the Outer Zone. It is beyond the scope of the compliance monitoring program to quantify resource damage or assume we are conducting effectiveness monitoring. However, the Compliance Monitoring program wants to have some indication of the relative seriousness of non-compliance activities. This could help focus the agency's future day-to-day compliance work. The field teams comprised of experienced professional foresters, geologists, and biologists demonstrated that our professional judgment used in everyday evaluations of natural variability and our management of forests can be useful in putting out-of-compliance decisions in perspective. We are committed to utilizing our professional expertise and judgment to make these evaluations on the relative level of non-compliance for each out-of-compliance determination.

It is important to note that these out-of-compliance levels do not have statistical validity nor should they be used to excuse forest practice activities that violate the rules or the approved application. Although the process was not rigorous in its entirety in evaluating these out-of-compliance determinations due to some inconsistencies among field teams, the information for year 1 suggests that the out-of-compliance determinations reflect only one “major” out of compliance level.

There were several suggestions as to how to rate practices that were out-of-compliance. We could have used levels with descriptors of 1, 2, or 3; Low, Medium or High; or any other similar labels. We decided to attach the following “categories” for the level of non-compliance. The following dictionary definitions for these categories along with examples to characterize these determinations are provided as guidelines only.

- *Trivial: Unimportant, insignificant, trifling, commonplace.* Minor impacts of short duration over a small area. Examples include:
  - Evidence of slight sediment delivery that does not appear to be persistent.
  - A few trees cut in the inner or outer zone of the RMZ of the same or lesser ecological significance as the remaining RMZ trees.
- *Apparent: Readily understood, evident, obvious.* Potential impacts to resources, but generally of moderate effect. Examples include:
  - Required leave trees for the Outer Zone trees not attained.
  - Culvert sizing is questionable, but potential impact to resources is not readily apparent.
  - Soil stabilization has not occurred and there may be a potential for future impacts.
- *Major: Greater in size, amount, number or extent.* Damage to public resources is evident or the potential for damage is high. Examples:

- Harvest in the Core Zone. These include situations normally referred to the Region for additional review.
- Harvest in areas not delineated on the FPA.
- Roads built without an FPA.
- Evidence of direct sediment delivery to typed water that appears to have been persistent.

There were nine instances out of 54 out-of-compliance activities that field teams could not agree or did not feel comfortable assigning an “out-of-compliance” level. The department is committed to continuation of this aspect of the Compliance Monitoring Program. As monitoring progresses; we hope these out-of-compliance levels can be compared with real field observations to provide greater credibility to our collective team professional judgment.

## Field Review Results

### *General Overview of Statewide FPA Compliance*

In response to questions relating to the number of FPAs in compliance with the rules we calculated the percent of activities in compliance for each FPA. Landowners may have had three out of four activities in compliance on their FPA, hence a percentage of 75% compliant, or they were out of compliance on the one and only activity on their FPA, 0% compliant. Figure 2 shows the percent of FPAs that were in compliance for all activities on their FPAs. Fifty eight (60%) of the 97 FPAs reviewed were 100% in compliance with all the activities on their application. The other 39 FPAs had varying percentages of compliance for all activities assessed.

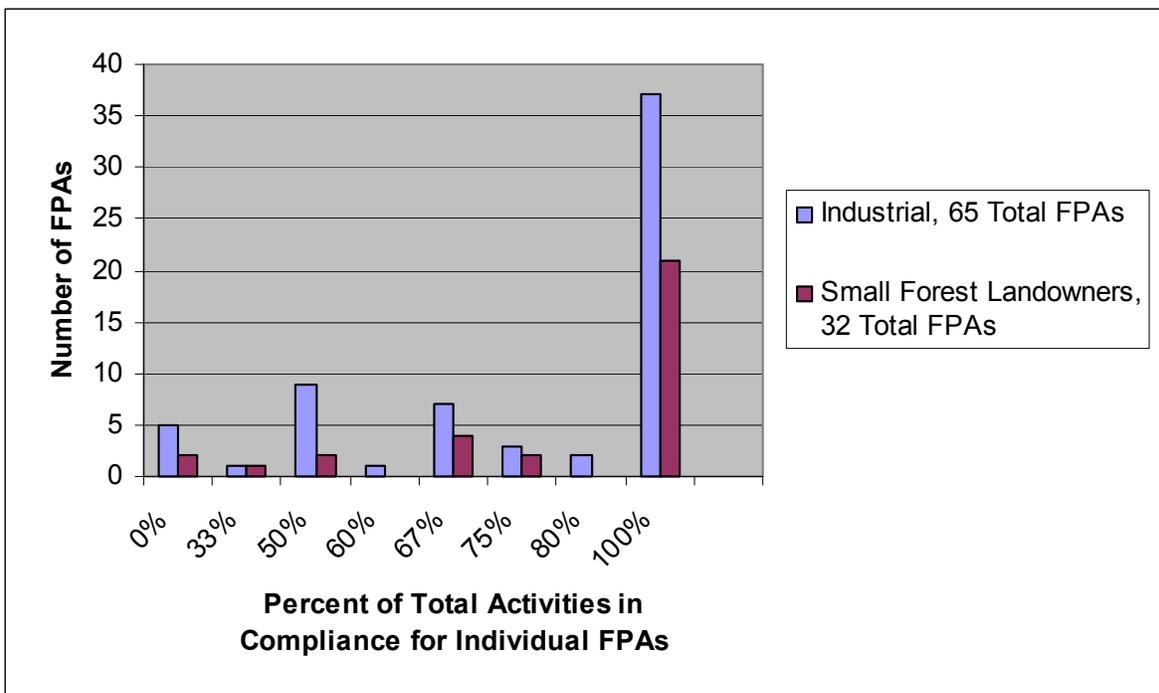


Figure 2. The percentage of activities in compliance with the rules on individual FPAs.

The above analysis only shows if FPAs are in compliance with the rules, but does not address the direction in WAC 222-08-160(4) to see if the forest practices (activities in this study) are being conducted in compliance with the rules. For this reason, we chose to show how the various activities contained within FPAs were being implemented on the ground.

### *Specifics of Compliance for activities reviewed*

We chose to convey our data from field assessments graphically with details presented in a comments section. The results for both the Riparian and Road rules sections, respectively, are presented as follows:

1. Figures characterizing the status of compliance.
2. Tables showing status of compliance by SFLs and Industrial landowners.
3. Figures characterizing the levels of out-of-compliance determinations based on professional judgment.
4. Field observations for Riparian activities that exceeded the rule requirements.
5. Data to support out-of-compliance decisions with representative field observations.

### Riparian Activities Reviewed (WAC 222-30)

Riparian activities are grouped geographically as follows:

#### Western Washington

No Inner Zone Harvest,  
DFC Option 1-Thinning from Below,  
DFC Option 2- Leaving Trees Closest to the Water,  
Wetlands, and  
Type Np and Ns Waters

#### Eastern Washington

Ponderosa Pine Habitat Type,  
Mixed Conifer Habitat Type,  
High Elevation Habitat Type,  
Wetlands, and  
Type Np and Ns waters

Forest Practices rule language designates Np and Ns for non-fish bearing perennial and seasonal streams, respectively.

Figure 3 shows the percent compliance for both Western and Eastern Riparian rules. The error bars reflect the margin of error for each category presented at a 95% confidence level. As we gather more data and our sample sizes increase for each activity reviewed, the margin of error will decrease. Tables 4 and 5 show details of Riparian compliance for Western and Eastern Washington with landowner type included. The total number of activities in compliance with each specific activity is shown along with the number in parentheses that the field teams determined exceeded the rules. For example, a total of 21 activities were in compliance with the “No Inner Zone Harvest” activity and of that total, 5 exceeded the rule requirements

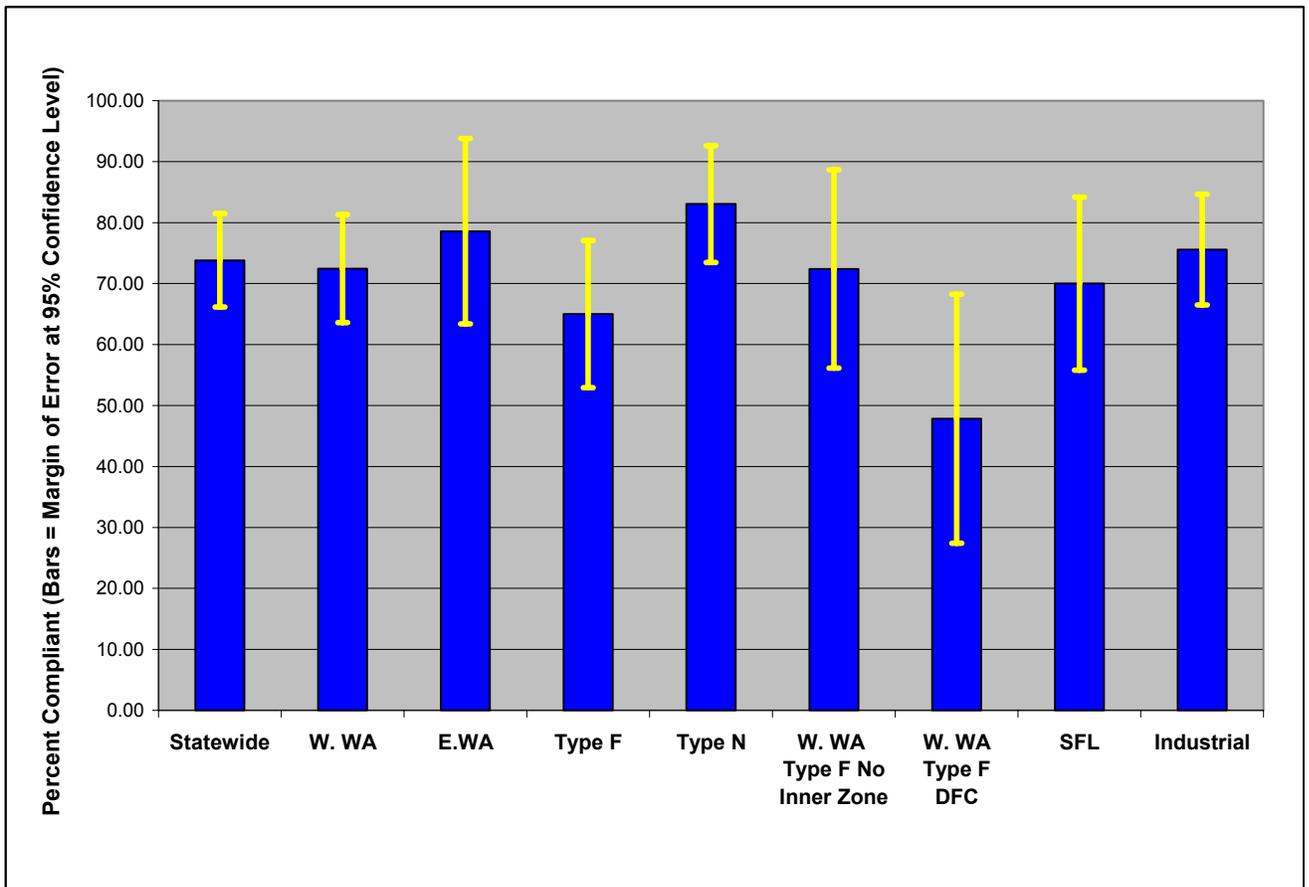


Figure 3 Percent of Riparian activities in compliance with the rules for the 2006 Field season.

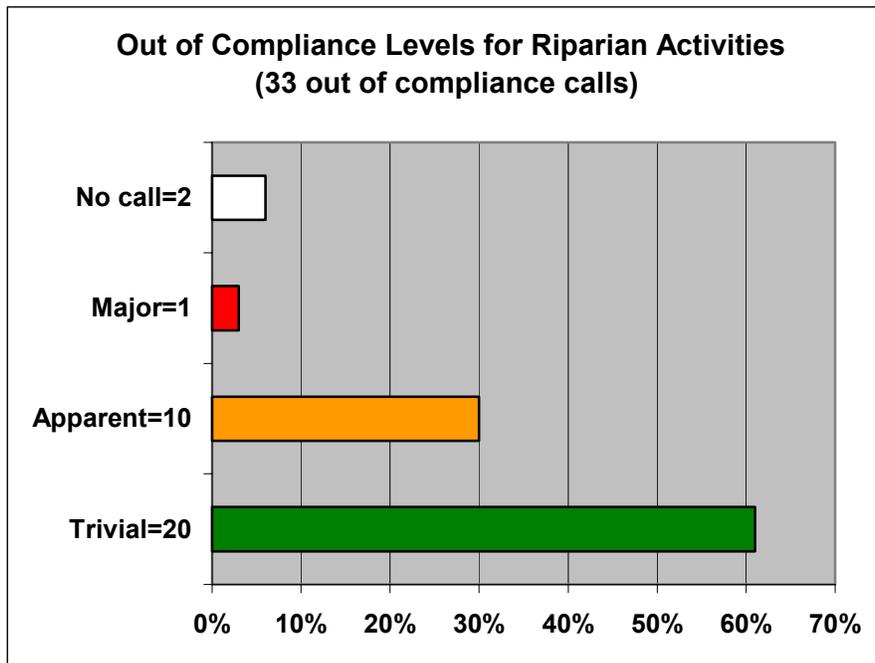
**Table 4. Details of the Status of Compliance for Riparian Activities in Western Washington. The numbers in parentheses are the activities that exceeded rule requirements out of the total number of activities found to be compliant.**

<b>Western Washington Riparian Activities</b>							
	<b>Status of Compliance</b>	<i>No Inner Zone Harvest</i>	<i>DFC Option 1</i>	<i>DFC Option 2</i>	<i>W. WA Type N Water</i>	<i>W. WA Wetlands</i>	<b>Totals</b>
<b>All Landowner Types</b>	Compliant	21 (5)	1 (0)	10 (4)	36 (12)	3 (2)	<b>71 (23)</b>
	Out of compliance	8	6	6	6	1	<b>27</b>
	<b>Percent Compliant</b>	72%	12%	58%	86%	75%	<b>72%</b>
	<b>Totals</b>	<b>29</b>	<b>8</b>	<b>17</b>	<b>42</b>	<b>4</b>	<b>98</b>
<b>Small Forest Landowners</b>	Compliant	6 (3)	0	1 (0)	10 (4)	2 (2)	<b>19 (9)</b>
	Out of compliance	3	1	2	1	1	<b>8</b>
	<b>Percent Compliant</b>						<b>70%</b>
	<b>Totals</b>	<b>9</b>	<b>1</b>	<b>3</b>	<b>11</b>	<b>3</b>	<b>27</b>
<b>Industrial Landowners</b>	Compliant	15 (2)	1 (0)	9 (4)	26 (8)	1 (0)	<b>52 (14)</b>
	Out of compliance	5	5	4	5	0	<b>19</b>
	<b>Percent Compliant</b>						<b>71%</b>
	<b>Totals</b>	<b>20</b>	<b>6</b>	<b>13</b>	<b>31</b>	<b>1</b>	<b>73</b>
<b>Grand Totals</b>		<b>29</b>	<b>7</b>	<b>16</b>	<b>42</b>	<b>4</b>	<b>98</b>

**Table 5. Details of the Status of Compliance for Riparian Activities in Eastern Washington. The numbers in parentheses are the activities that exceeded rule requirements out of the total number of activities found to be compliant.**

<b>Eastern Washington Riparian Activities</b>							
	<b>Status of Compliance</b>	<i>E. WA Ponderosa Pine</i>	<i>E. WA Mixed Conifer</i>	<i>E. WA High Elevation</i>	<i>E. WA Type N</i>	<i>E. WA Wetlands</i>	<b>Totals</b>
<b>All Landowner Types</b>	Compliant	4 (0)	3 (0)	0	13 (1)	2 (0)	<b>22 (1)</b>
	Out of compliance	0	1	0	4	1	<b>6</b>
	<b>Percent Compliant</b>						<b>79%</b>
	<b>Totals</b>	<b>4</b>	<b>4</b>	<b>0</b>	<b>17</b>	<b>3</b>	<b>28</b>
<b>Small Forest Landowners</b>	Compliant	1 (0)	2 (0)	0	6 (0)	0	<b>9</b>
	Out of compliance	0	0	0	3	1	<b>4</b>
	<b>Percent Compliant</b>						<b>69%</b>
	<b>Totals</b>	<b>1</b>	<b>2</b>	<b>0</b>	<b>9</b>	<b>1</b>	<b>13</b>
<b>Industrial Landowners</b>	Compliant	3 (0)	1 (0)	0	7 (1)	2 (0)	<b>13 (1)</b>
	Out of compliance	0	1	0	1	0	<b>2</b>
	<b>Percent Compliant</b>						<b>87%</b>
	<b>Totals</b>	<b>3</b>	<b>2</b>	<b>0</b>	<b>8</b>	<b>2</b>	<b>15</b>
<b>Grand Totals</b>		<b>4</b>	<b>4</b>	<b>0</b>	<b>17</b>	<b>3</b>	<b>28</b>

Figure 5 illustrates the results of the levels of non compliance based on the professional judgment of the field teams for all of the out-of-compliance Riparian activities. Consensus by experienced field personnel was attained on all but two of the out-of-compliance activities. The “no call” category was used when the field team didn’t feel comfortable with making a determination of non-compliance level.



**Figure 5 Non-compliance levels for statewide Riparian activities based of the field team’s professional judgment.**

## Field observations on Riparian Activities that Exceeded the Rule Requirements

We have included a representative sample of the field observations that were documented to describe an activity that exceeded the rule requirements. There were a total of 24 riparian activities that the field teams decided exceeded rule requirements. The field teams were not always consistent when determining whether a reviewed activity exceeded the rule requirements, but they did usually agree that the activities exceeded rule requirements. We wanted to note this when it occurred. The following field observations are grouped by activity with landowner type in parentheses.

### Western Washington, No Inner Zone Harvest

- Steep slopes (85 degrees) prevented accurate measurement, but the buffer generally far exceeded 128 feet. (SFL)
- RMZ buffer was greater than 200 feet at all points measured. No harvest in the RMZ. (Industrial)
- Landowner left 25 more than the required 13 trees in the Outer Zone. (Industrial)
- Landowner RMZ exceeded the 93-foot requirement for no Inner Zone harvest. (SFL)
- Landowner left more trees than required. (Industrial)

### Western Washington, DFC Option 2

- Inner Zone no harvest boundary was greater than 80 feet, it averaged 88 feet. (Industrial)
- Landowner left 53 trees more than the required 27 trees in the Inner Zone and 25 trees over the required 65 trees in the Outer Zone. (Industrial)
- Landowner left greater than two times the required Inner and Outer Zone leave trees. (Industrial)
- The RMZ width and leave trees on both the Inner and Outer zones exceeded what was required. (Industrial)

### Western and Eastern Washington, Type Np and Ns Streams,

- Type Np RMZ averaged 55 feet. (Industrial)
- Np RMZ was greater than 50 feet at all points measured. (Industrial)
- No equipment entered ELZ, and a no cut buffer of > 80 feet existed on the ground (SFL)
- Landowner left RMZs on 2 Ns streams. (Industrial)
- 50 foot “no cut” was generally larger than necessary and leave trees were clumped next to channel in clear cut portion of RMZ. (Industrial)
- Measured all RMZs and they were greater than 50 feet and up to 80 feet. (Industrial)
- Type Ns stream was buffered as an Np, exceeded requirements. (SFL)
- Buffered more stream length than was required. The RMZ was wider than it needed to be. (Industrial)

**Data to Support Out-of-compliance Decisions for some of the Western Washington Riparian Activities**

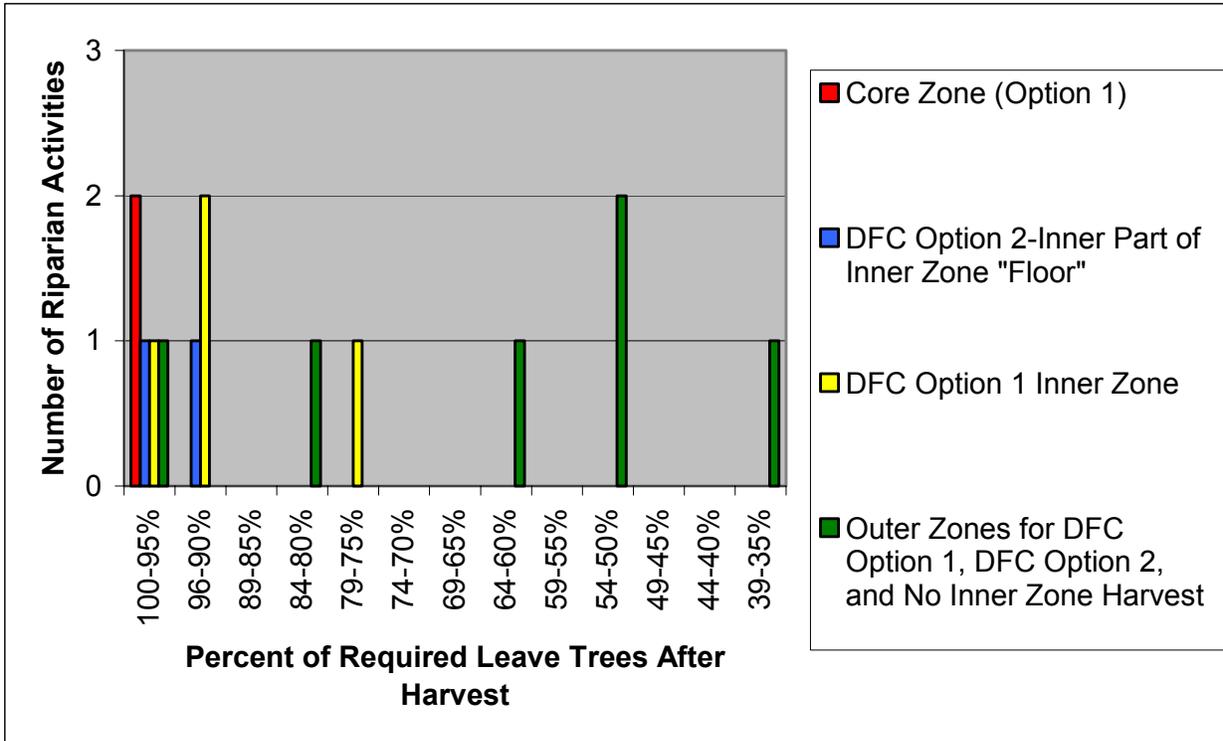
Stand data from DNR’s Desired Future Condition (DFC) worksheets for Core and Inner Zone harvest requirements provide specific numbers of trees to be retained in each zone. Sometimes the Outer Zone leave tree requirements are stated in the DFC worksheet or these requirements are calculated from the acreage of the Outer Zone multiplied by 20 trees per acre. We evaluated the percentage of required leave trees that remained in the Core, Inner and Outer Zones after harvest for activities found to be out of compliance. This analysis was only completed for the following harvest activities:

- No Inner Zone Harvest
- DFC Option 1, (thinning from below), and
- DFC Option 2 (leaving trees closest to the water)

A calculation table was developed to quantify the percent of leave trees remaining after harvest for each RMZ found to be out of compliance. Table 6 is an example of a DFC Option 1 RMZ that is out of compliance for both the Inner and Outer Zones. Figure 6 shows the percent of the required trees for the various RMZ leave trees after harvest.

**Table 6. Sample calculation table for determining the percent of leave trees remaining after harvest. This type of calculation was used to generate Figure 6.**

Sample Calculation Table					
Inner Zone			Outer Zone		
Number of leave trees remaining	Post Harvest Leave Tree Requirement	Percent leave trees remaining	Number of leave trees remaining.	Post Harvest Leave Tree Requirement	Percent leave trees remaining
78	85	78/85=92%	11	18	11/18=61%



**Figure 6. Percent of required leave trees after harvest activities for those activities that were determined to be out of compliance.**

## Field form answers that determined out of compliance for Riparian activities

All Compliance Monitoring decisions are made in the field with all participants. Field forms for each riparian activity contain questions derived from WAC 222-30. Forms can be reviewed at <http://www.dnr.wa.gov/forestpracticess/compliancemonitoring/>. Answers to these form questions along with the field observations and measurements are used to determine the status of compliance. A table showing the number of times a field form question contributed to an out-of-compliance decision is presented. For example, in Table 7, there were eight activities out of compliance. Eight of the activities had harvest in the Inner Zone; only two of the activities had a CMZ that was not reported on the FPA. Over time we will be able to pin down which individual rule sections are not being conducted in compliance with the rules.

A “yes” or a “no” answer may indicate an out-of-compliance status depending on the particular WAC language. Representative actual field observations are provided to show how the field teams arrived at their decisions.

### Western Washington: No-Inner-Zone-Harvest Activity

There were 29 activities assessed and 8 were out of compliance. Table 7 summarizes the out-of-compliance determinations in reference to the field questions that supported these results.

**Table 7. Out-of-compliance responses to No Inner Zone Harvest questions.**

<b>No-Inner-Zone-Harvest Field Form Questions contributing to out-of-compliance calls</b>	<b>Number of times we found out of compliance</b>
Was there a CMZ not reported on FPA? (yes)	1
Was the stream size reported on the FPA consistent with the field observation? (no)	2
Did the stream discrepancy (width) influence the Inner Zone buffer width? (yes)	2
Were 20 conifer trees per acre $\geq 12$ " diameter at breast height (dbh) or next size available left in the Outer Zone? (no)	2
Was there harvest in the Inner Zone? (yes)	8

Representative field observations for No-Inner-Zone-Harvest out-of-compliance determinations:

- “Applicant had both greater than and less than 10 feet on application for stream width.”
- “Not enough trees in Outer Zone; needed 26 outer zone trees and the tally were 7 hardwoods.”

### Western Washington: DFC Option 1 (Thinning From Below) Activities

There were eight activities assessed and six were out of compliance. Table 8 summarizes these out-of-compliance determinations in reference to the field questions that supported these results.

**Table 8. Out of compliance responses to DFC Option 1 questions**

<b>DFC Option 1 Field Form Questions contributing to out-of-compliance calls</b>	<b>Number of times we found out of compliance</b>
Was the stream length reported on the FPA's DFC worksheet within 10% of the measured value in the field? (no)	3
Was there harvest in the Core Zone? (yes)	2
Was there harvest in the Inner Zone of any trees larger than the thinning strategy allows? (yes)	3
Were 20 conifer trees per acre $\geq$ 12 inches dbh or next size available (Outer Zone)? (no)	4
If conifer wasn't present, are trees clumped around sensitive features and at least 8 inches dbh, mixed conifer and/or deciduous, and representative of the trees around the sensitive feature? (no)	2

Representative field observations for DFC Option 1 out-of-compliance determinations:

- “For 18-inch trees they were 5 short, for 20-inch trees they were 5 short, for 22-inch trees they were 3 over.”
- “6 trees found harvested greater than thinning strategy allowed (stumps 20"). 69 of 90 required Inner Zone leave trees were found.”
- “The Inner and Outer zone were blown down and determining whether the trees were in which zone was difficult. At the end of the field review the Landowner was 29 trees over in the Inner Zone and 9 trees shy of the Outer Zone requirements. We all agreed that they should be called in compliance for the OZ trees, but they are out of compliance due to the stream length.

### Western Washington: DFC Option 2 (Leaving Trees Closet to Water) Activities

There were 17 activities assessed and six were out of compliance. Table 9 summarizes these out-of-compliance determinations in reference to the field questions that supported these results.

**Table 9 Out-of-compliance responses for DFC Option 2 questions**

<b>DFC Option 2 Field Form Questions contributing to out-of-compliance calls</b>	<b>Number of times we found out of compliance</b>
Was the stream length reported on the FPA’s DFC worksheet within 10% of the measured value in the field? (no)	2
Was the stream size on FPA consistent with field observations? (no) AND if no see next question	3
Did the discrepancy influence the Inner Zone width? (yes)	3
Was there any harvest in the Floor Zone? (yes)	3
Were 20 conifer trees per acre $\geq$ 12 inches dbh or next size available in the Outer Zone? (no)	2
If conifer wasn't present, are trees clumped around sensitive features and at least 8 inches dbh, mixed conifer and/or deciduous, and representative of the trees around the sensitive feature? (no)	1

Representative field observations for DFC Option 2 out-of-compliance determinations:

- Question #9- 18 total harvested in floor zone
- Creek was 500 feet longer than FPA stated.

Western Washington: Type N Harvest Activities

There were 41 activities assessed and six were out of compliance. Table 10 summarizes these out-of-compliance determinations in reference to the field questions that supported these results.

**Table 10 Out-of-compliance responses for Type N Harvest questions.**

<b>Type N Harvest Field Form Questions contributing to out-of-compliance calls</b>	<b>Number of times we found out of compliance</b>
Was less than 10 % of the soil exposed due to activities? (yes and see next question)	1
Was all harvest greater than 56 feet from the uppermost extent of Np water or the confluence of two Np streams? (no)	3
Was the reported stream length within 10% of that measured in the field? (no)	2
Was the appropriate length of 50 ft no harvest buffer left on the stream? (no)	4

Representative field observations for Type N harvest out-of-compliance determinations:

- “2 measurements out of 20 were closer than 50 feet (40 feet and 46 feet)”.
- “Stream length not reported on FPA, missed one Ns stream.”
- “Ribbon line was consistently at 50 feet. Harvest occurred within the 50 foot buffer, 23 stumps over 1090 feet of RMZ.”

### Western Washington: Wetland Activities

There were four activities assessed and one was out of compliance. The only question that determined the out of compliance was: “Were wetlands typed and sized appropriately on the ground?” (no)

There was one field observation for wetlands: “Wetland approved as a Type B and initiation point of Type 4 stream. Buffer approved at 25 feet no-harvest. Protection adequate as approved. However, it should have been treated as a Type B wetland with associated Type F stream and Type F RMZ.”

### **Data to Support Out-of-compliance Decisions for Eastern Washington Riparian Activities**

#### Eastern Washington: Ponderosa Pine Habitat Type, Inner Zone Harvest Activities

There were four activities assessed and none of these were out of compliance.

#### Eastern Washington: Mixed Conifer Habitat Type Activities

There were four activities assessed and one of these was out of compliance. The only question that indicted out of compliance was “Was there harvest within the 75 foot bull trout overlay buffer?” (yes)

#### Eastern Washington: Type N Harvest Activities

There were 17 activities assessed and four were out of compliance. On one application, the stream was typed incorrectly, but this FPA was out of compliance for other reasons. Table 11 summarizes the out-of-compliance determinations in reference to the field questions that supported these results.

**Table 11. Out-of-compliance Responses for Type N Harvest questions.**

<b>Type N Harvest Field Form Questions contributing to out-of-compliance calls</b>	<b>Number of times we found out of compliance</b>
Is there evidence of equipment entry in the 30 ft ELZ? (AND see next column) (yes)	1
If greater than 10% exposed, were mitigation conditions employed and completed? (no)	1
Is the stream consistent with the type reported on the FPA? (no)	1
Was there a 50 foot no cut buffer? (yes) (AND see next questions)	2
Was there harvest within this buffer? (yes)	2
* Other reason: Operator skidded down stream channel and left slash in channel	1

Representative field observations for Type N Harvest out-of-compliance determinations:

- “Soil Exposure mitigation necessary for more than 10% exposed soil in equipment limitation zone”.

Eastern Washington: Wetland Activities

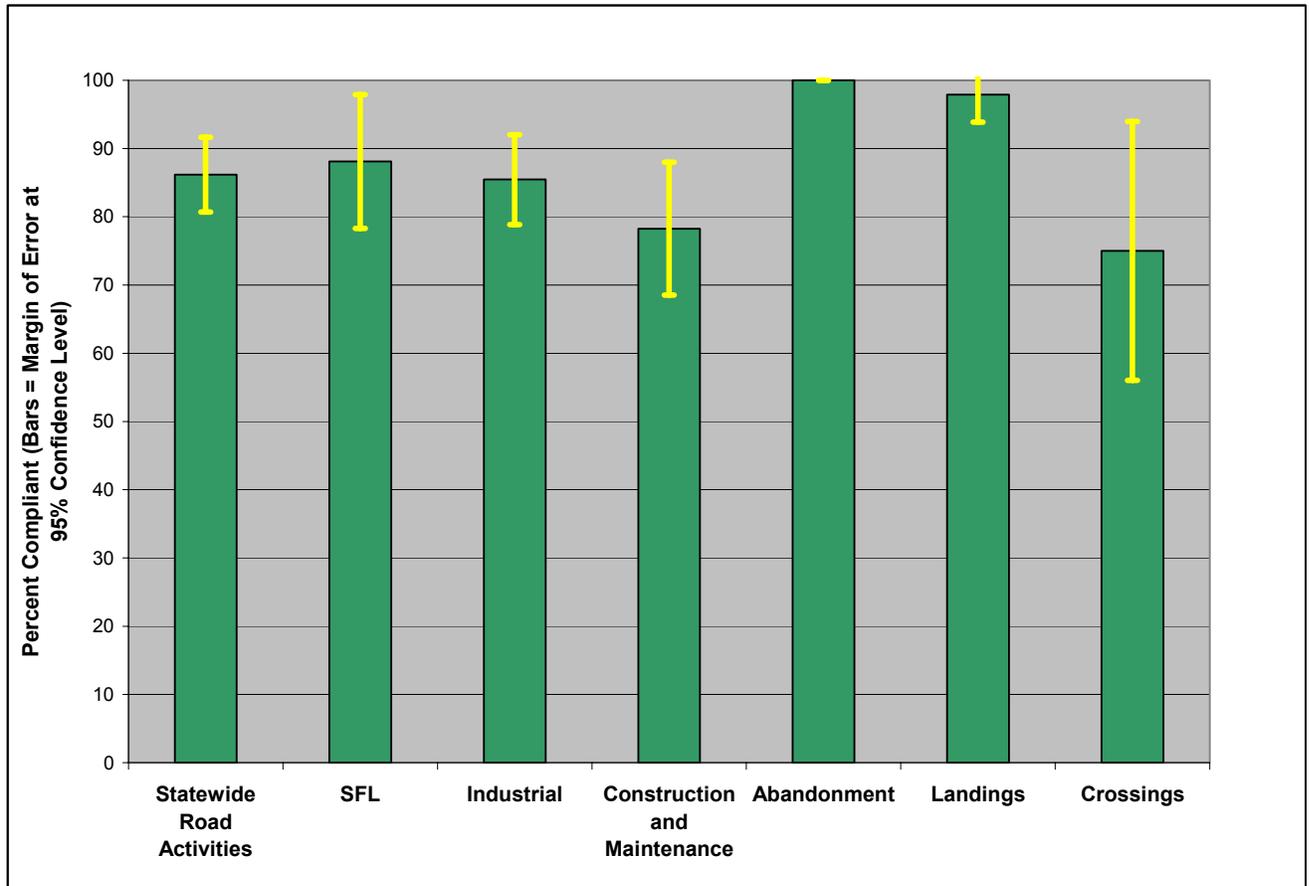
There were three activities assessed and one was out of compliance. The only question that determined the out of compliance was: “Were wetlands typed and sized appropriately on the ground?”(no) .

Road Rules (WAC 222-24)

The Road rules are identical statewide. These are the activities we reviewed:

Road Construction	Road Maintenance
Road Abandonment	Landings
Permanent Crossings on type N Water Fords	Temporary Crossings on Type N Water

The status of compliance for the statewide road activities on Figure 7 shows the percent compliance for both Western and Eastern Riparian rules. The error bars reflect the margin of error for each category presented at a 95% confidence level. As we gather more data and our sample sizes increase for each activity reviewed, the margin of error will decrease. We only reviewed road activities that had the potential to impact waters of the state. If road activities did not occur over or near water, we did not include those roads for review. The categories of “*compliant and exceeds*” were added together to show the total percent of activities in compliance with the rules. Table 12 is a compilation of the Status of Compliance for statewide Road activities with landowner type included. The total number of activities in compliance with each specific activity is shown along with the number in parentheses that the field teams determined exceeded the rules. For example, a total of 15 activities were in compliance with the “Road Abandonment” activity and of that total, 3 exceeded the rule requirements



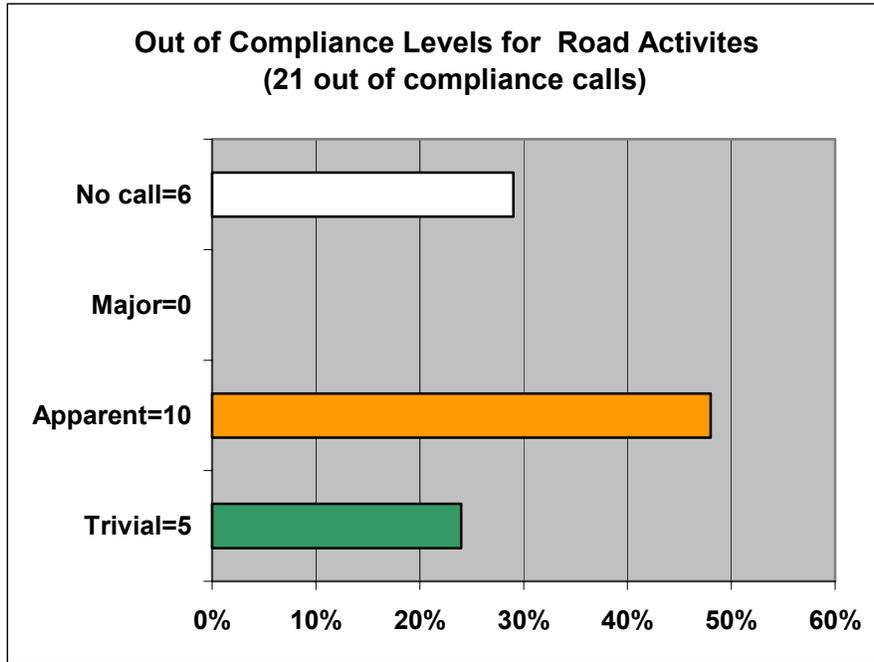
**Figure 7. Percent of Road activities in compliance with the rules for the 2006 field Season**

The “*percent compliant plus exceeds*” is the percent compliant for all landowner types, but for activities within the individual landowner types, only the totals are somewhat useful. As we collect more data in coming years, these percentages will become more significant.

**Table 12. Status of Compliance for statewide Road activities by landowner type. The numbers in parentheses are the activities that exceeded rule requirements out of the total number of activities found to be compliant.**

Statewide Road Activities									
	Status of Compliance	Road Construction	Road Maintenance	Road Abandonment	Landings	Permanent Crossings N Waters	Temporary Crossings N Waters	Fords	Totals
All Land-owner Types	Compliant	37 (2)	17 (0)	15 (3)	14 (1)	14 (0)	1(0)	0	<b>131 (6)</b>
	Out of Compliance	10	5	0	1	4	0	1	<b>21</b>
	<i>Percent Compliant</i>	<b>79%</b>	<b>77%</b>	<b>100%</b>	<b>98%</b>	<b>76%</b>	<b>100%</b>	<b>0%</b>	<b>86%</b>
	Sub Totals	47	22	15	48	18	1	1	152
Small Forest Land-owners	Compliant	8 (0)	7 (0)	5 (0)	16 (1)	1 (0)	0	0	<b>37 (1)</b>
	Out of Compliance	1	2	0	1	0	0	1	<b>5</b>
	<i>Percent Compliant</i>								<b>88%</b>
	Sub Totals	9	9	5	17	1	0	1	42
Industrial Land-owners	Compliant	29 (2)	10 (0)	10 (3)	31 (0)	13 (0)	1 (0)	0	<b>94 (5)</b>
	Out of Compliance	9	3	0	0	4	0	0	<b>16</b>
	<i>Percent Compliant</i>								<b>85%</b>
	Sub Totals	38	13	10	31	17	1	0	<b>110</b>
	<b>Grand Totals</b>	<b>47</b>	<b>22</b>	<b>15</b>	<b>48</b>	<b>18</b>	<b>1</b>	<b>1</b>	<b>152</b>

Figure 8 illustrates the results of the levels of non compliance based on the professional judgment of the field teams for all of the out-of-compliance Road activities. This figure represents the consensus by experienced field personnel on all but six of the out-of-compliance activities. The “no call” category was used when the field team didn’t feel comfortable with making a determination of the non-compliance level.



**Figure 8 Non-compliance levels for statewide Road activities based of the field team’s professional judgment.**

We have included a representative sample of field observations submitted to describe the six activities that exceeded the rule requirements. The field teams were not always consistent determining whether a reviewed activity exceeded the rule requirements, but they did want to note a job well done. The following observations are grouped by activity with landowner type in parentheses.

Road Construction

- Road Construction included repairing or abandoning grades that were problematic. (Industrial)

Road Abandonment

- Large amount of slash was placed on road prism. Exceeded requirements, no chance of erosion. (Industrial)
- Many abandonment sections were unrecognizable as roads, and they repaired a damaged road. Roads in general were better than before harvest. (Industrial)
- Landowner planted cedar and grass in the fill removal area. Additionally the landowner used erosion control fabric on the cut slopes of the fill. (Industrial)

## **Field form answers that determined out of compliance for Road activities**

All Compliance Monitoring decisions are made in the field with all participants. Field forms for each road activity selected for review in 2006 contain questions derived from WAC 222-30. Field forms can be reviewed at <http://www.dnr.wa.gov/forestpractices/compliance/monitoring/>. Answers to these form questions along with the field observations and measurements are used to determine the status of compliance. A table showing the number of times a field form question contributed to an out-of-compliance decision is presented. For example, in Table 13, there were 46 road activities and 10 of these were out of compliance. Four of the activities had “no” answers to the question “Were erodible soils disturbed during construction stabilized to prevent delivery to Typed waters?” while only one activity had a “no” answer to the question “Were structures installed at seeps and springs to route water under prism to the forest floor?” Over time we will be able to pin down which individuals rules are not being conducted in compliance with the rules.

A “yes” or a “no” answer may indicate an out-of-compliance status depending on the particular WAC language. Representative actual field observations are provided to show how the field teams arrived at their decisions.

### Road Construction

There were 46 activities assessed and 10 were out of compliance. Table 13 summarizes the out-of-compliance determinations in reference to the field questions that supported these results.

**Table 13. Out-of-compliance Responses to Road Construction questions**

<b>Road Construction Field Form Questions contributing to out-of-compliance calls</b>	<b>Number of times we found out of compliance</b>
Was water typed correctly on all waters using either physical criteria or a water type change? (no)	4
Was all diverted water returned to the basin from which it came? (no)	1
Were structures installed at seeps and springs to route water under the road prism to the forest floor? (no)	1
Does new road construction minimize the number of stream crossings? (no)	1
Was sediment delivery minimized? (no)	5
Were erodible soils disturbed during construction stabilized to prevent delivery to Typed waters? (no)	4
Were roads outsloped, insloped, crowned, ditched or bermed, to prevent sediment delivery? (no)	1
Were BMPs utilized to prevent sediment delivery? (no)	4
Were diversion structures close enough to the stream to divert sediment to the forest floor? (no)	4
Were relief culverts appropriately armored and/or vegetated to minimize scour? (no)	1
Were end haul materials placed in areas to prohibit entry of material to 100-year flood plain? (no)	1
Were rock armor headwalls ditchblocks installed on erodible soils for roads with a gradient > 6%? (no)	3

Representative field observations for Road Construction out of compliance determinations:

- “Relief structures/sediment traps not close enough to stream to catch/divert water before entering stream.”
- “Road construction opened seep/springs and no culvert installed to pass water under road. Water runs down ditch to ditch out 100 feet from culvert.”
- “Ditches connected to stream.”

### Road Maintenance

There were 22 activities assessed and five were out of compliance. Table 14 summarizes the out-of-compliance determinations in reference to the field questions that supported these results.

**Table 14. Out-of-compliance responses to Road maintenance questions.**

<b>Road Maintenance Field Form Questions contributing to out-of-compliance calls</b>	<b>Number of times we found out of compliance</b>
Is road surface maintained to direct groundwater onto stable portions of the forest floor? (no)	2
Is groundwater in the ditchline diverted onto stable portions of the forest floor? (no)	2
Is road grade maintained to minimize erosion of the surface and subgrade? (no)	1
During and on completion of road activities, has road surface been shaped or water barred? (no)	2
Were berms removed except those designed for fill protection?	1
Is the road surface maintained to minimize direct sediment entry to typed water? (no)	3

Representative field observations for Road Maintenance out-of-compliance determinations:

- “Not all streams or roads within road maintenance segment and harvest area are included in FPA map or application.”
- “Road location along stream B needs mitigation.”
- “The link of this to this FPA is difficult to determine as others have been using this withdrawal area for other activities and landowners
- “One culvert on typed water, culvert was undersized and road sloped at 10 to 20 % to crossing.”

#### Road Abandonment

There were 15 activities assessed and none were out of compliance.

#### Landings

There were 48 activities assessed, but only one landing was out of compliance. The only question that triggered the out-of-compliance determination was: “Was the location of the landing outside CMZs, RMZs, (both F and N), Type A or B, WMZs?”

One comment for landings was “Old road goes along stream B channel; Landings are adjacent to and along stream.”

#### Permanent Crossings on Type N Waters

There were 17 activities assessed and four out of compliance. Table 15 summarizes the out-of-compliance determinations in reference to the field questions that supported these results.

**Table 15. Out-of-compliance responses to Permanent Crossings on Type N waters questions.**

<b>Permanent Crossings on Type N Waters Field Form Questions contributing to out-of-compliance calls</b>	<b>Number of times we found out of compliance</b>
Do the culvert, its embankments and fills have erosion protection to withstand a 100-year flood? (no)	1
Was sediment delivery minimized? (no)	1
Do the entrances to all culverts have adequate catch basins and headwalls to minimize the possibility of erosion or fill failure? (no)	1
Were erodible soils disturbed during construction stabilized to prevent delivery to typed waters? (no)	3
Was slash that may be expected to plug the culvert cleared for 50 feet above the culvert? (no)	1

Representative field observations for Permanent Crossings on Type N Waters out of compliance determinations:

- “Crossing 10+60: no ditch relief culverts or sediment traps on either side of stream crossing.”
- “Pipe slightly elevated on the inlet.”
- “A portion of the fill has failed, most likely during the winter of 05-06.”
- “No ditch relief or sediment traps on either side of stream crossing.”

#### Temporary Crossings on Type N Waters

There was only one temporary crossing for review and this activity was in compliance with the rules.

#### Fords

There was only one FPA with fords and this activity was out of compliance. There were three fords evaluated for this particular FPA. Table 16 summarizes the out-of-compliance determinations in reference to the field questions that supported these results. The table reflects the review of all three fords, even though this is only one activity on one FPA.

**Table 16. Out-of-compliance responses for Fords questions**

<b>Ford Field Form Questions contributing to out-of-compliance calls</b>	<b>Number of times we found out of compliance</b>
Do the ford, its embankments and fills have erosion protection to withstand a 100-year flood? (no)	3
Is the alignment and slope of the ford on grade with the natural flow of the streambed? (no)	1
Was sediment delivery minimized?	3
Were disturbed erodible soils stabilized to prevent the potential to deliver to typed waters? (no)	1
Were BMPs implemented for construction, maintenance, or use as required by on the approved Application? (no)	3

Representative field observations For Fords out-of-compliance determinations:

- “Fords need maintenance to minimize sediment delivery.”
- “Road location along stream needs mitigation.”

## Conclusions

This interim report is provided to inform interested parties of the progress of the first field season of the current biennium. A final biennial report to the Forest Practices Board will be presented at their August or November meeting. We will not be making any final conclusions on the results of Compliance Monitoring until more information is available.

## Opportunities for Improving Rule Implementation

An important finding from the 2006 field season is that some rules are in need of clarification in order to assist regulators and/or landowners to implement the rules correctly the ground. This can be addressed by the DNR through training or information sharing at various forums, such as the Stakeholder or quarterly meetings held in every DNR Region. If Compliance Monitoring shows that training and rule clarification aren't improving compliance levels in future years, the DNR can propose rule changes to increase compliance. We believe there exists opportunities for training and clarification on the following topics:

### 1. Bankfull Width

- a. Identifying bankfull width (BFW) is a key factor in several compliance determinations. Exact BFW locations can be somewhat subjective and difficult to measure. Our field reviews have shown that groups of experienced scientists from multiple agencies working with optimum cooperation sometimes have difficulty in achieving consensus of locating BFW on difficult sites.
- b. Clarification and training topics:
  1. How to determine BFW in problem sites: heavy brush, blow down, or obscured banks that prevent exact BFW measurements.
  2. Clarification on identification of stream associated wetlands and intermittent side channels.
  3. How to average BFW for streams of varying widths.
    1. Bankfull width can vary tens of feet in short distances in multi-channel, highly sinuous, or low-gradient streams.

### 2. Type S or Type F Riparian Management

- a. Guidance for implementation of DFC requirements.
  1. How to account for required leave trees in areas of overlapping RMZs.
    1. Type S or F stream junctions with other Type S or F streams.
    2. Type S or F stream junctions with Type Np streams.
    3. Overlap due to sharp bends in stream segments.
  2. How to determine stream segments.
    1. Multiple, non-connecting streams were entered into the same DFC worksheet.

- a. Unclear if required leave trees were on one or both streams.
- 2. Two sided RMZs entered into same DFC worksheet.
  - a. Unclear if required leave trees were on one or both sides of the RMZs.
- 3. Differing stream lengths and widths affected leave tree requirements and RMZ widths.
- 4. Stream segment delineation difficult to find in the field due to lack of marking.
- 5. Locations of required leave trees difficult to find due to lack of information in FPA.
- 6. Entire DFC printouts not included with FPAs.

b. Clarification and training topics:

- 1. Double counting Outer Zone trees for overlapping RMZs.
- 2. What constitutes a stream segment?
- 3. Importance of accurate stream length and bankfull measurements.
- 4. Field marking should include ends of stream segments subject to DFC calculations where FPA mapping or description is insufficient.
- 5. Include detailed description and/or mapping of leave trees in FPA when they aren't evenly spaced throughout RMZs.
- 6. Include entire DFC printout with FPAs.

### 3. Road Maintenance Responsibilities

- a. There were numerous questions raised as to landowner responsibility for road maintenance on roads with multiple operators, different forest practices activities, and adjacent landowners. It is difficult to tie out-of-compliance calls to the FPA being reviewed for road maintenance. However, the review indicates road maintenance compliance levels, regardless of the operating status of the FPA. We are not doing compliance checks on RMAPs.

b. Clarification and training topics:

- 1. A review of landowner responsibility and road use.
- 2. DNR's responsibilities and enforcement on this issue.
- 3. Maintenance associated with an approved FPA that is not part of an RMAP scheduled maintenance needs clarification.

### 4. Stream Typing

a. Verification:

- 1. Landowner responsibilities to correctly type their streams.
- 2. There are issues of either presence or absence of streams in Eastern and Western Washington with the new stream typing maps.

b. Clarification and training topics:

- 1. Clarification on measuring BFW to establish stream type or submit water type modification form.

2. Clarification on when to submit a water type modification form and refer to the Regions for verification of stream typing.
3. DNR: update or correct water type model.

## **5. Type N Riparian Management Zones**

- a. The 50 foot no cut buffer is difficult to assess for compliance in the field.
  1. Difficult to verify percent of system length subject to the 50 foot no cut RMZ when only a portion is within FPA area being reviewed.
  2. It is difficult to verify the percent of Type N system length subject to the 50 foot no cut RMZ. This is due to variability of RMZ widths on the remainder of the system that isn't subject to a 50 foot no-cut RMZ.
  3. Difficult to verify upper most point of perennial flow when it changes from year to year or review does not occur during the dry season.
- b. Clarification and training topics:
  1. Include in FPA: copies of maps of adjacent units within same Np stream system.
  2. Provide more detail in FPA as to which segments are subject to a 50 foot no cut RMZ when there are also portions that have less than 50 foot no cut buffers.
  3. Clarification on how to review situations of a flagged location of the uppermost point of perennial flow for one year that changes the next year.
  4. DNR is currently looking at changes to the N rules.

## Appendix A: Comments Regarding FPA content, clarity, and information needs

In addition to assessing regulatory compliance, field teams were asked if the information included in the FPA was sufficient to evaluate activities on the ground. While a lack of information does not mean that work was not completed according to regulation, this information is essential for regulatory agencies to review and approve applications for timber harvest.

The comments below were in response to Question # 1 on the Post Survey Evaluation Form, “Did information on the FPA provide adequate means to evaluate the activities completed on the ground? (i.e. was all information included on FPARs or was additional documentation required? Were activities accurately described? Were all exchanges, management options and deviations outlined?)” The comments were generated by FPFs and the field review team before and during field reviews of 97 Forest Practice Applications.

Comments are provided only as an aid for Landowners, DNR Division, and Region staff to identify topics to improve FPA clarity and content. The comments are not to be construed as scientific observations, reflections on rule content, or criticism of landowners or regulators, but are presented as a learning opportunity for all involved in the Compliance Monitoring process.

1. Landings were not shown on activity maps, however we assessed 3 landings.
2. FPA identified 5,280 feet of maintenance but it is not clear which part of the 20 mile haul this maintenance is located.
3. Map was very confusing and left reviewers to question external boundaries of this FPA verses previous FPA nearby.
4. Breaks between DFC Options should have been shown on the application. Option 2 should have been split into 2 runs for separate sides of the creek.
5. General question section indicates no harvest in RMZ. Question 6 in riparian harvest section says they will harvest in the Outer Zone. Stream chart was not filled out. On the ground only about 100 linear feet was thinned in Outer Zone.
6. CMZ was not mapped well enough to identify its location north of Creek 5. Creek 4 did not identify which harvest option was used. FPARS did not include the Notice to Comply or Water Type Modification form for Creek 2, but it was on file.
7. Road distances states 8,550 feet, but the map measured out approximately 5,100 feet.
8. Little Type N west of Stream A was not identified on the FPA map, but was protected in the field with a 50 foot RMZ. Two streams (A&B), identified on the map were not present after field review. Stream C did have a channel.

9. Had difficulties finding the southern boundary of the harvest area. There was also a road not on the FPA that appears to be harvested/hailed on (although whether it was on this harvest is unclear).
10. Not all streams or roads within road maintenance segment and harvest area are included on FPA map or application.
11. Legend for road type activity should be included; may have used standard Forest Practice legend, but no copy included with FPA and we don't have it committed to memory. All stream typing not included with the FPA. (i.e. stream crossings included in road construction).
12. Timber cutting was conducted within the RMZ of Lake Creek. The road location was not accurately depicted. Road table indicated no road activity, but culvert/water crossings indicated in #14 of FPA. Approximately 800 feet of temporary road construction (see abandonment). Other water, an Np on the SE side of unit not identified on FPA. The FPA indicated no cutting within the total RMZ. On site review revealed that at least 18 trees were cut and removed from the RMZ.
13. Confusion on construction, abandonment dates as abandoned roads were definitely older than the life of this application. Alders in abandoned roadway were 6 to 8 inches dbh.
14. Landowner information was complete; however, not all info was scanned to FPARs because application was a renewal. Main file was consulted to complete review.
15. Only the Option 2 DFC printout was included w/ FPA. There was no cruise info so couldn't determine what the landowner checked for stand composition or stream length. Calculated stream length from Option 2 printout. #4-2 outer zone leave trees counted along F buffer (comments from Field Form 4: "Found 2 outer zone trees along that portion of the F stream that didn't have the Type Np confluence. We also counted the trees inside the Np buffer that were also within the zone widths of the F.")
16. No Type N worksheet was included with the application. Map difficult to read.
17. There appears to be an error on the Type 4 RMZ worksheet which creates some confusion. The leave tree strategy needs to be described a bit better.
18. A portion of the unit was not logged due to operational constraints; it will be logged when the adjacent landowner logs their timber.
19. The info in the FPA was not easy to decipher and we asked the Landowner for other information to determine the DFC segments. There was also no DFC input; so stream lengths etc. were hard to determine.

20. Could have used stream typing survey in FPA for main Np water that was found to be at 8 ft BFW. No information on seep protection. No information on determination of Ns stream and perennial initiation points.
21. Couldn't determine where Inner Zone or Outer Zone leave trees were supposed to be for segment 1 and 2 especially because these 2 stream numbers were combined into one DFC printout, but the streams area ridge apart. Also difficult to determine where segments begin and end on the ground because of stream junctions/overlapping RMZs. It appears that DFC wasn't run on ~500 feet of stream upstream of the beaver pond.
22. Map was difficult to decipher. Needed to blow it up to determine activities. Not clear in labeling. Labeling was inaccurate at the fish habitat change.
23. Didn't show road going all of the way through the unit. It isn't apparent that entire unit was covered with trees. It looked like part was agriculture, as part of ground was disked.
24. Maps were not accurate and roads did not match what was shown on the map. We also had to do research to find additional FPA in the same area by the same landowner. The additional FPA had a WMZ harvest in the same area (Wetland was outside this application).
25. BFW of stream exceeded 3 feet. Landowner had prior meeting with WDFW and DNR. A need to check for documentation.
26. Minimal amount of info. This was trivial due to not following BMPs, but compliant with the WACs.
27. Difficult to determine where Inner Zone harvest was going to occur until we walked stream reach.

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