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IN THE UNITED STATES DISTRICT COURT

FOR THE DISTRICT OF OREGON

OREGON NATURAL DESERT ASS'N, **CENTER FOR BIOLOGICAL DIVERSITY**, and **WESTERN WATERSHEDS PROJECT**,	Case No. 07-1871-HA [Related Case No. 08-151-HA]
Plaintiffs,	
v.	
ABIGAIL KIMBELL, *et al.*,	
Defendants,	**FIFTH DECLARATION OF JONATHAN J. RHODES**
v.	
HARLEY & SHERRIE ALLEN, *et al.*,	
Defendants-Intervenors.	

I, JONATHAN J. RHODES, state and declare as follows:

1. My name is Jonathan J. Rhodes. I am the same Jonathan J. Rhodes who submitted a first, second, third, and fourth declaration in this case. My qualifications are described in my first declaration.

Information Reviewed

2. In my previous four declarations I listed and described the material that I had reviewed at that time. Since then, I have reviewed the following: the Roper Declaration and Attachments, dated May 11, 2009; the First Shinn Declaration and Attachments, dated May 11, 2009; the Second Shinn Declaration, dated May 18, 2009, the Namitz Declaration, dated May 18, 2009; the Elmore Declaration, dated May 11, 2009; and, the Third Stout Declaration, dated April 13, 2009.

3. I also reviewed other pertinent scientific literature. The list of this scientific literature is too lengthy to list here, so I have listed it at the end of this declaration. In my review, I also drew on my professional judgment and experience, including my extensive experience evaluating conditions on grazing allotments on the MNF and many other national forests for about two decades.

Scope of Review

4. I submit this declaration to clarify related several issues that are not properly characterized in the Roper declaration in the context of conditions on the allotments and the streams that drain them.

5. I also evaluate the likely efficacy of some the potential changes in grazing and grazing management in some of the allotments as discussed in the Shinn Declarations and the Namitz Declaration. I explain why it is likely that these changes have a significant likelihood of

allowing continued grazing damage to affected riparian areas, streams, and steelhead populations and habitats.

6. I also discuss why the "Proper Functioning Condition" method is inadequate to determine actual trends in stream and riparian conditions and the level of grazing impacts upon them.

7. I also discuss why the bank alteration monitoring method used to collect bank alteration data discussed in the Third Stout Declaration is unlikely to produce results that are comparable to and as accurate as those used by Christie to monitor bank alteration.

The Discussion of Changes in Some Stream Attributes in the Roper Declaration Ignores Their Relationship to PACFISH Riparian Management Objectives and Required Rates of Improvement.

7. The Roper Declaration discusses some monitored trends in attributes set as RMOs under PACFISH and INFISH. Notably, much of this information is not relevant to the allotments at issue on the MNF, because the data was collected in areas that are well outside of these allotments (Roper Declaration, ¶¶ 15-18).

8. However, more importantly the Roper Declaration only looks at trends in some of the data for attributes set as RMOs. It does not look at the data for these attributes in these allotments as related to the PACFISH RMOs and requirements.

9. Although the Roper declaration discusses in trends some attributes set as RMOs, it sidesteps a core issue: PACFISH requires that management activities do "not retard or prevent attainment of RMOs," where retard is defined as "slowing the rate of recovery below the natural rate of recovery."

10. Although the Roper Declaration does not address whether trends in some attributes set as RMOs are being slowed by grazing on the allotments, the information in the

Roper Declaration indicates that attainment of the bank stability RMO is being retarded by grazing within DMAs on the MNF. The Roper Declaration indicates that there has been no statistically significant improvement in bank stability[1] over multi-year intervals in monitored DMAs on the MNF in the John Day Basin (Roper Declaration, ¶ 26, Figure 2). This is significant because bank stability recovers quite quickly in the absence of grazing, as the Roper Declaration acknowledges (¶ 46). Therefore, the lack of a statistically-significant improving trend in bank stability indicates that livestock grazing is retarding the rate of recovery in bank stability, contrary to PACFISH requirements.

11. There is ample statistical evidence that when livestock use is eliminated for several years, bank stability damaged by grazing in eastern Oregon streams recovers relatively quickly and at a much faster rate than that monitored in the MNF DMAs as shown in Figure 2 of the Roper Declaration (¶ 26). For instance, as part of federally-funded monitoring of bank conditions in grazed reaches immediately adjacent to reaches that had been ungrazed for several years in steelhead streams on USFS lands in eastern Oregon, we documented that a stream reach in the John Day that had not been grazed in seven years had bank stability that was more than 35% higher than in grazed reach immediately upstream of the ungrazed reach—this difference in bank stability was quite statistically significant. We documented that a stream reach in northeastern Oregon that had not been grazed in eleven years had bank stability that was more

[1] The Roper Declaration (p. 12, ¶ 26) states "Even though there has been grazing within the Malheur National Forest there is no statistical evidence for declining streambank conditions over the last seven years." However, the Roper Declaration fails to note that these data clearly indicate that there is no statistical evidence for any sort of improving trend in bank stability.

than 38% higher than in grazed reach immediately upstream—this difference in bank stability was quite statistically significant. In contrast, there is no statistically significant evidence of any improvement in bank stability under continued grazing in the data from the MNF DMAs, as the Roper Declaration concedes. In aggregate, this plainly demonstrates that livestock grazing is greatly retarding the rate of recovery of bank stability and the attainment of the PACFISH bank stability RMO in DMAs on the MNF.

12. There is also good evidence within Murderers Creek that livestock grazing is significantly retarding the rate of recovery of bank stability. As discussed and shown in my First Declaration (¶¶ 17-22), bank instability/stability data on Murderers Creek in the Oregon Mine Unit demonstrate that this reach of Murderers Creek had been significantly degraded by grazing in 1999 with high levels of bank instability. Significant rest from grazing (at least of two years of four years from 2003 to 2006 and at least three of five years from 2003 to 2007) allowed bank stability in this stream reach to rapidly recover. After significant rest, bank stability in 2007 in this reach was about 96%, while in 1999, bank stability was only about 33%. Therefore, over a seven year period with at least five years of rest, bank stability was more than 65% higher in 2007 than in 1999. Unstable banks in 2007 were less than 1/15th of what it had been in 1999 and less than 1/7th of what it had been in 2006. Bank stability was much lower in all grazed reaches where bank stability and instability were measured in the Murderers Creek Allotment (hereafter: MCA) in the fall of 2007. In contrast to the rested reach in the Oregon Mine Unit, mean improvement in bank stability over seven years in DMAs on the MNF was only 5% and statistically negligible (Roper Declaration, ¶ 26), indicated that there has been no statistically-significant improvement in bank stability within these DMAs. Therefore, these aggregate data indicate that the rate of bank stability recovery is far greater with rest than it is under continued

grazing. This, in turn, strongly indicates that grazing is significantly retarding the rate of recovery in bank stability in DMAs on the MNF subject to livestock grazing, contrary to PACFISH requirements.

13. There is also strong evidence that grazing is also significantly retarding the rate of recovery in overhanging banks in Murderers Creek and other areas of the MNF, as presented and discussed in my First Declaration (¶ 25). This is significant because overhanging banks are an essential aspect of steelhead habitat and also serve as a PACFISH RMO. Overhanging banks are non-existent to rare on streams subjected to livestock grazing on the MNF, as I have repeatedly observed and measured in my work on the MNF.

14. For these reasons, the lack of statistical evidence of improvement in bank stability in MNF DMAs in the Roper Declaration together with other bank stability data from grazed and ungrazed reaches amply indicate that livestock grazing is retarding recovery in bank stability, contrary to PACFISH requirements.

The Assertions in the Roper Declaration Regarding the Christie Photos Are Without a Sound Basis

15. The Roper Declaration (p. 19) asserts, without a sound basis, that "The way the picture are taken [*sic*] it is likely they misrepresent the overall conditions within these allotments and across the Forest overall." No sound support for this statement is given in the Roper Declaration other the assertion that it was not apparent to Roper why the photos in the Third Christie declaration were taken (Roper Declaration, ¶ 42). Even taken at face-value, this does not provide sound support for the notion that the photos misrepresent overall conditions. However, this assertion in the Roper Declaration cannot be taken at face-value. It is quite obvious in the Third Christie Declaration that many of the photos included in that declaration were taken in areas where Christie conducted his bank and vegetation monitoring, including

areas that MNF has designated as DMAs for monitoring the effects of livestock grazing (Third Christie Declaration, e.g., ¶ 11). Notably, this is the exact basis that the Roper Declaration uses to justify the inclusion of photos from monitored areas (¶ 43), although several of the photos in Attachment 7 to the Roper Declaration are not within streams that are within the allotments at issue.

16. All of the photos submitted as part of the Third Christie Declaration were clearly taken within the grazing allotments at issue. In contrast, many of the photos in Attachment 7 to the Roper Declaration are not within streams that are within the allotments at issue. It is rather obvious that photos taken within a stream on an allotment are far more germane to stream conditions on that allotment than photos of conditions on streams outside of that allotment.

17. The Third Christie Declaration and Attachments included photos of areas that are discussed in the Third Christie Declaration. Including such photographic evidence helps convey and corroborate qualitative and quantitative observations, including scientific ones. Photos are commonly included in scientific papers in scholarly journals to illustrate observations. This is because photos capture and convey actual conditions and photos are a type of data.[2] For these reasons, photos are a sound form of evidence.

18. Measurements are one way of collecting information systematically in order to determine and convey conditions. Photos are certainly another way. Photos also augment data and provide a "reality check" for the results of measurements.

19. The Roper Declaration does not provide any indication that he is directly familiar with any of the allotments that were photographed or the overall conditions on the MNF.

[2] Merriam Webster 3rd International Unabridged Dictionary defines "datum" (singular form of the plural "data") as: "something that experiently encountered…a fact or principle…something upon which an inference or argument is based." Photos clearly fit within this definition.

Therefore, in addition to the foregoing, it is clear that the Roper Declaration provides no sound information that actually indicates that the photos of Christie misrepresent "…overall conditions within these allotments and across the Forest overall" as the Roper Declaration asserts (p. 19). Instead, the Roper Declaration relies on mere surmise and the comparison of relatively few photos from some isolated areas on the MNF, several of which are not even on the allotments at issue. In contrast, Christie has spent a considerable amount of time over many years on many of the allotments (Third Christie Declaration, ¶ 11).

The Assertions in the Roper Declaration Regarding the Significance of Contributions to Sediment Loads from Livestock Grazing Are Not Sound and Very Likely Incorrect

20. The Roper Declaration (¶ 48) posits that stream sedimentation caused by livestock grazing in these allotments is negligible in comparison to roads and background sediment rates. However, there is no sound basis for this contention.

21. There is a considerable body of scientific information indicating that livestock grazing significantly elevates the delivery of sediment to streams in ways that adversely affect water quality and salmon and trout habitats. For instance, the USFS's Interior Columbia Basin Ecosystem Project: Scientific Assessment, Vol. 3, Chapter 4, Broadscale Assessment of Aquatic Species and Habitat (Lee et al., p. 1009, 1997) states:

> "Grazing is a major nonpoint source of channel sedimentation (Dunne and Leopold 1978; MacDonald and others 1991; Meehan 1991; Platts 1991). Grazed watersheds typically have higher stream sediment levels than ungrazed watersheds (Lusby 1970; Platts 1991; Rich and others 1992; Scully and Petrosky 1991). Increased sedimentation is the result of grazing effects on soils (compaction), vegetation (elimination), hydrology (channel incision, overland flow), and bank erosion (sloughing) (Kauffman and others 1983; MacDonald and others 1991; Parsons 1965 Platts 1981a, 1981b; Rhodes and others 1994). Sediment loads that exceed natural background levels can fill pools, silt spawning gravels, decrease channel stability, modify channel morphology, and reduce survival of emerging salmon fry (Burton and others 1993; Everest and others 1987; MacDonald and others 1991; Meehan 1991; Rhodes and others

> 1994)...Compared to ungrazed sites, aquatic insect communities in stream reaches associated with grazing activities often are composed of organisms more tolerant of increased silt levels, increased levels of total alkalinity and mean conductivity, and elevated water temperatures (Rinne 1988).

22. In watersheds that are extensively grazed, soil erosion and sediment delivery to streams from grazing is a major source of sediment that is of comparable concern as that from roads. This is partially because although roads erode at rates that are greater than grazed areas on a per unit area basis, grazing typically affects a much greater proportion of a watershed's area. For instance, under the road density of 2.75 miles per square mile in Murderers Creek mentioned in the Roper Declaration (¶ 48), roads occupy about 1% of the watershed area, based on a conservative assumption of an average road width of 20 feet. In contrast, livestock grazing likely affects well over 60% of the watershed, or at least 60 times the area affected by roads.

23. This difference in the area affected is significant to the likely amount of elevated soil erosion and sediment delivery from roads and grazing. Based on the information in Menning et al. (1996)[3], the likely level of sedimentation to streams from livestock grazing 60% of a watershed area would be roughly about 80% that from the high level from a high road density of 2.75 miles per square mile. This indicates that it is likely that in the Murderers Creek system that livestock grazing is a significant source of stream sedimentation that is of comparable of concern as that from roads.

[3] USFS and USBLM, 1997: Chapter 3, Effects of proposed alternatives on aquatic habitats and native fishes, *in* Evaluation of EIS Alternatives by the Science Integration Team. Vol. I PNW-GTR-406, USFS and USBLM, Portland, OR notes that the approach in Menning et al. (1996) regarding the risks to watersheds from sedimentation from roads, logging, and grazing, were consistent with the authors' assessments of the risks from these activities.

Fencing, Together With Continued Summer and Fall Grazing, Has a High Likelihood of Failing to Prevent Continued Damage to Bank and Stream Conditions.

24. Studies and available data have repeatedly found that complete rest from livestock grazing is the only grazing management option that is completely consistent with the avoidance of additional livestock damage to degraded streams (e.g., Platts, 1991; Rhodes et al., 1994; Spence et al., 1996). Other approaches have a considerable risk of failure.

25. As previously discussed in my Fourth Declaration, (¶¶ 16, 25), grazing management that does not eliminate livestock grazing during the fall and the hot summer season is highly unlikely to effectively prevent significant bank damage by livestock. This is because cattle have a well-documented tendency to concentrate in riparian areas during the summer and fall, which results in significant impacts to riparian areas, banks and streams, as described in work by the USFS (Platts et al., 1991; Murray et al., 2004). For these reasons, publications on grazing management have repeatedly noted that grazing during the summer and fall seasons is not compatible with the recovery of stream banks, riparian and stream conditions amenable to fish survival (e.g., Platts, 1991; Kovalchik and Elmore, 1991; Leonard et al., 1997). Notably, the proposed changes in grazing in the allotments at issue do not eliminate summer and fall grazing, but instead continue it (First Shinn Declaration, Attachment 3, p. 2; Attachment 7, p. 5; Attachment 9, p. 8; Attachment 11, p. 3; Second Shinn Declaration, ¶¶ 4, 12).

26. Seasonal electrical fencing is not usually effective at excluding livestock from riparian areas and preventing attendant riparian area and streambank damage. As part of federally-funded monitoring conducted in 1999, we examined the effectiveness of 48 cattle exclosures in preventing cattle use in riparian areas. We found that seasonal electrical fencing had the highest rate of failure. We documented that seasonal electrical fencing did not

effectively exclude cattle from riparian areas in six of the seven areas monitored, or about of 86% of the areas with such fencing. Notably, all of these sites where electrical fencing failed to exclude cattle were in eastern Oregon in areas with livestock grazing occurring during the summer and fall. This data indicates that the proposed electrical fencing described in the Second Shinn Declaration (¶¶ 4-5, 9) and assessed in the Namitz Declaration is not likely to effectively exclude livestock from riparian areas in many cases.

27. Other types of fencing also often fail to completely exclude livestock from riparian areas and streams. For instance, in our federally-funded monitoring conducted in 1999, we documented that seven of 28 monitored exclosures, or 25%, fenced with multiple strands of barbed wire failed to completely exclude livestock from riparian areas and streams.

28. Stream damage from livestock grazing may not be curtailed even if electrical fencing is effective. This is because fencing often merely redistributes grazing damage to streams. The USFS has conceded this in other allotments. For instance, the Environmental Assessment for the Grazing Allotment, Gifford Pinchot National Forest, dated September 2007, noted that effective fencing is likely to increase stream damage in unfenced areas, due to redistribution of livestock use (See Attachment 1). I concur with this assessment.

29. Off-stream water developments also do not ensure that livestock impacts to streams and riparian areas are reduced. This is because access to water is not the sole reason that livestock use is concentrated in riparian zones during the summer and fall. Livestock also congregate in riparian areas during hot weather for thermal reasons and in both summer and early fall due to the quantity and quality of forage.

30. Although decreases in the number of livestock and duration of use, alone, are often not enough to allow degraded stream and riparian areas to recover, as the USFS has

acknowledged (See Attachment 1), there is very little potential for improvement in these conditions without a very significant reduction in these factors. However, based information in the First Shinn Declaration and Attachments it appears that under the grazing management proposed in the allotments at issue, the animal unit months (AUMs), which is a measure of the number of livestock and duration of use, will increase in several of the allotments at issue, including: the Hamilton-King, Slide, and Upper Middle Fork Allotments (First Shinn Declaration, ¶¶ 4, 17, 21; Attachment 3, p. 2; Attachment 9, p. 8; Attachment 11, p. 3). Together with the season of use, this increase in livestock use of the allotments is very likely to increase livestock damage to streams and very unlikely to fully prevent continued damage to stream attributes.

31. In the Fox allotment it appears that there is no proposed reduction in AUMs and a negligible reduction in AUMs (6%) in the Mt Vernon/John Day/Beech Creek Allotment, based on the information in the First Shinn Declaration and Attachments (¶ 13, Attachment 5, p. 1; Attachment 7, p. 5). Notably, overall for all of the allotments at issue, there will be a slight increase in total AUMs based on the information on the proposed number of livestock and duration of use on these allotments in the First Shinn Declaration and Attachments and Second Shinn Declaration. Together with the season of use, this is very unlikely to result in significant recovery of damaged stream attributes.

32. Notably, the USFS has acknowledged that even with reductions in AUMs, damaged to already damaged riparian areas and streams is unlikely to be prevented (See Attachment 1). Many stream reaches within the allotments at issue are both damaged and fragile. Therefore, absent complete exclusion of livestock grazing, it is highly unlikely that additional grazing damage will be prevented.

33. For these reasons, electrical fencing, together with continued summer and fall grazing is not likely to prevent continued damage by livestock grazing to already damaged riparian areas and streams.

The Bank Alteration Monitoring Described in the Third Stout Declaration is Not Likely to Produce Results as Accurate or Comparable to the Bank Alteration Monitoring Described in the First Christie Declaration.

34. The Third Stout Declaration (¶ 6) indicates that the bank alteration data discussed in the Third Stout Declaration was collected using a paced transect approximately 170 feet long, with 25 point measurements taken on each side of a monitored stream reach. In contrast, the First Christie Declaration (¶ 14) notes that the bank alteration data discussed in the First Christie Declaration was collected using a paced transect approximately 300 feet long, with 50 point measurements taken on each side of stream. Therefore, it is clear that for each transect, the bank alteration results discussed in the First Christie Declaration were from twice the number of point measurements as those in the Third Stout Declaration. It is also clear that the bank alteration results discussed in the First Christie Declaration were taken from measurements on transects that were almost twice (1.8 times) the length of the transects described in the Third Stout Declaration.

35. It is well-established that the reliability and accuracy of the results of measurements increase with the number of measurements and the extent of the measurements. Because the monitoring described in the First Christie Declaration was more extensive due to much longer transects and involved double the measurements per transect than that described in the Third Stout Declaration, the two methods are unlikely to yield completely comparable results. For these same reasons, the bank alteration monitoring described in the Third Stout Declaration is quite unlikely to produce results that are as accurate as that from the bank

alteration monitoring described in the First Christie Declaration.

The Proper Functioning Condition Assessment Method is Subjective and Inadequate to Characterize the Impacts of Grazing on Riparian Areas and Streams.

36. The Elmore Declaration (¶ 10) discusses the results of the assessments using the Proper Functioning Condition method (hereafter: PFC). However, the PFC lacks scientific rigor and is highly subjective, rendering it prone to error and abuse. The National Research Council[4] (2002, p. 336 in Riparian Areas: Functions and Strategies for Management, National Academy Press, Washington, D.C.) noted that because the PFC approach "…is qualitative, PFC is vulnerable to subjective application, which places a great burden on the consistency and skill of the local assessment teams." Aquatic experts from the USFS and USBLM concluded that PFC is poorly defined (USFS and USBLM[5], p. 448, 1997). The PFC method involves does not require measurement of any stream or riparian attribute.

37. The assessment that PFC is qualitative is not confined to external evaluations of it. The National Riparian Service Team (1999), (hereafter: NRST), which developed and provides training in PFC, states that "PFC is: A qualitative assessment based on quantitative science."

38. Further, the NRST (1999) notes that PFC is not "... A replacement for inventory or monitoring protocols designed to yield information on the 'biology' of the plants and animals dependent on the riparian-wetland area." NRST (1999) also states that riparian areas that are "properly functioning" do not represent the desired future condition of these areas. NRST

[4] National Research Council (2002) was authored by a blue ribbon panel of scientists with expertise in riparian areas and their restoration: M.M. Brinson, L.J. MacDonnell, D.J. Austen, R.L. Beschta, T.A. Dillaha, D.L. Donahue, S.V. Gregory, J.W. Harvey, M.C. Molles, Jr., E.I. Rogers, and J.A. Stanford. The panel was selected by the National Academy of Sciences.
[5] The aquatic scientists from the USFS and USBLM that authored this publication are: J. Sedell, D. Lee, B. Reiman, R. Thurow, and J. Williams.

(1999) also states that "PFC wasn't: Designed to be a long term monitoring tool but it may be an appropriate part of a well designed monitoring program" and "PFC isn't: Designed to provide monitoring answers about attainment of desired conditions."

39. Independent evaluations (Stevens et al., 2002) of the PFC method, which included field testing on several streams and riparian areas, have documented several deficiencies and flaws in the method. These defects include the failure to consider and incorporate water quality, fish and wildlife habitat, management impacts, and the inability of the method to provide a means to quantitatively assess trends or reliably compare conditions among locations, such as reference and study reaches (Stevens et al., 2002). For these and other reasons, one chapter of the Society for Conservation Biology formally expressed concern about the PFC method to the NRST and requested that it rectify some of the identified defects (Letter from the Colorado Plateau of the Society for Conservation Biology to the NRST, dated Nov. 2002).

40. For these combined reasons, PFC results do not provide reliable information on the actual condition of streams and riparian areas or the trend in those conditions.

Summary and Conclusions

41. The information in the Roper Declaration indicates that there has been no improvement in bank stability conditions in DMAs on the MNF. Together with other data, this amply demonstrates that livestock grazing is significantly retarding the recovery of bank stability in conflict with PACFISH requirements.

42. There is no sound basis for the assertion in the Roper Declaration that the photos in the Christie Declaration misrepresent conditions in the allotments. Photos are useful evidence and a form of data.

43. Sedimentation caused by livestock grazing is likely a very significant

management-induced source of sedimentation which adversely affects steelhead survival in a variety of ways.

44. It is unlikely that proposed changes in livestock grazing in the allotments at issue as described in the First Shinn Declaration and Attachments and Second Shinn Declaration and evaluated in the Namitz Declaration will completely prevent additional stream damage and, without fail, result in significant improvement of the damaged condition of streams on and draining the allotments at issue.

45. The bank alteration monitoring described in the Third Stout Declaration is not likely to produce results that are comparable to and as accurate as those from the bank alteration monitoring described in the First Christie Declaration.

46. The Proper Functioning Condition Assessment Method is not adequate to determine actual the conditions of streams and riparian areas or actual trends in those conditions.

Pursuant to 28 U.S.C. § 1746, I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge.

DATED this 2nd day of June 2009.

__s/ Jonathan J. Rhodes_____

Jonathan J. Rhodes

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