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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-SU [Related Case No. 08-151-SU]
Plaintiffs,	
v.	
ABIGAIL KIMBELL, *et al.*,	
Defendants,	**THIRD 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 and second declaration in this case. My qualifications are described in my first declaration.

2. In my previous two declarations I listed and described the material that I had reviewed at that time. Since then, I have also reviewed the Second Stout Declaration and Attachment, the Third Larson Declaration and Exhibits, and the Intervenors' Memorandum In Support Of Motion To Vacate Preliminary Injunction (Memo).

Scope of Review

3. I submit this declaration to clarify issues related to the conditions of streams in the Murderers Creek Allotment (MCA) and the Lower Middle Fork Allotment (LMFA). I explain how the Memo and Second Stout Declaration mischaracterize my previous work in the MCA. I also explain why the fine sediment and bank data in the Larson Declaration and Exhibits do not meet professional standards and are unreliable.

4. My review of the additional material does not, in any way, alter my conclusions in my previous declarations about bank alteration and the negative effects of the grazing on bank conditions and fish habitat in these allotments. I stand by all of the findings and conclusions in my previous declaration regarding the levels of bank alteration and effects of grazing on riparian areas and stream conditions in these watersheds.

The fine sediment data in the Second Larson Declaration and Exhibits are fundamentally flawed do not provide any reliable information on fine sediment conditions or the effects of bank conditions on sediment impacts in streams in the MCA and LMFA.

5. There sediment-related data in the Larson declaration are unreliable for several reasons. First, the fine sediment data in the Second Larson Declaration Exhibit A (p. 12, Table

2) and Exhibit B (p. 9, Table 1) are simply not credible. These data indicate there were no fine sediments in stream substrates in all sampled areas, which is not credible. Available data consistently indicate that there is always some measurable level of fine sediment in stream substrate, even in areas where there has been no management-induced contributions to fine sediment levels in streams. For instance, Spence et al (1996) noted studies have documented that fine sediment levels ranged from 6.4% to 14.5% in western Washington streams that had not subjected to management-caused increases in fine sediment levels. This is significant because streams in western Washington are less prone to fine sediment accumulations and tend to have lower levels of fine sediment than streams in Central Oregon, such as those in the John Day basin.

6. In our federally-funded multi-year study of stream substrate conditions in Northeast and Central Oregon (Rhodes et al., 2001) there were no areas where the amount of fine sediment in streams was 0%. Notably, this study (Rhodes et al., 2001) examined stream reaches that have been less affected by management-induced increases in fine sediment than in the streams in the MCA and LMFA. Similarly, an extensive study of habitat conditions in streams with relatively low levels of management-induced increases in fine sediment levels, including those in Central Oregon, found that fine sediment levels in streams averaged 25.5% in stream riffles and 26.1% in stream pools (Kershner et al., 2004).

7. These data plainly indicate that it is not credible that there is zero percent fine sediment in all stream areas sampled in MCA and LMFA as indicated in the Second Larson Declaration and Exhibits. The fine sediment data in the Second Larson Declaration and Exhibits does not reflect reality, and is, instead, an artifice of significant problems with data collection and/or analysis. Therefore, the data do not meet professional standards are unreliable.

8. There is plainly considerable fine sediment in streams in MCA and LFMA, as is easily observable. I have consistently noted this readily-apparent condition in my evaluations of these streams. In fact, there are significant areas in Murderers Creek where the surface of the streambed is comprised almost solely of fine sediment.

9. Sediment loading and sediment levels are factors that limit steelhead survival and production in Murderers Creek and the South Fork John Day River, into which Murderers Creek drains (Columbia-Blue Mountain Resource Conservation & Development Area, 2005[1]). This would not be the case if there were no fine sediment in stream substrate.

10. The Second Larson Declaration and Exhibits fail to report the sediment size considered to constitute "fine sediment" in the Second Larson Declaration and Exhibits. This is a serious concern that undermines the reliability of the fine sediment data in the Second Larson Declaration and Exhibits. Clear identification of the particle size criteria for what constitutes fine sediment is a critical aspect in the reporting of fine sediment data. Such reporting of measurement criteria is a common in fine sediment studies and discussions of their results and implications for fish survival (e.g., Spence et al., 1996; Rhodes et al., 2001). This is critical because, as in most monitoring, measurement criteria significantly influence results and their validity. Therefore, because the Second Larson Declaration and Exhibits fail to report the sediment size considered to constitute fine sediment, it does not meet professional standards and the fine sediment data are unreliable.

11. With respect to assessing fine sediment impacts on fish, including steelhead, it is

[1] Columbia-Blue Mountain Resource Conservation & Development Area, 2005. John Day Subbasin Revised Draft Plan. Northwest Power and Conservation Council, Portland, OR. This plan provides a background to guide efforts to protect and restore anadromous fish, including steelhead. As part of this background, the plan identified factors limiting steelhead populations in various watersheds with the John Day Subbasin, including Murderers Creek.

also critical to ensure that the particle size criteria for what constitutes fine sediment comports with available scientific information on the fine sediment sizes that negatively affect fish species. However, there is no clear criteria given in the Second Larson Declaration and Exhibits for sediment classified as "fine sediment." Therefore, is not clear that fine sediment data in the Second Larson Declaration and Exhibits comports available scientific information on fine sediment sizes that negatively affect fish survival and production. Therefore, the data are unreliable because they do not meet professional standards.

12. It does not appear that fine sediment data in the Second Larson Declaration and Exhibits is based on the assessment and measurement of all fine sediment sizes that adversely affect fish. It appears that only fine silt and clay sized soil particles are reported as "fine sediment" in the Second Larson Declaration (p. 3, ¶ 3) and Exhibits (Exhibit A, pp. 7, 8, Exhibit B., pp. 7, 8). This is a significant problem because fine sediment that is significantly larger in diameter than fine silt and clay has a variety of negative impacts on anadromous fish and their habitats. For instance, Spence et al. (1996),[2] , states: "Rhodes et al. (1994) concluded that survival to emergence for chinook salmon in the Snake River Basin is probably substantially reduced when fine sediment concentrations **(< 6.4 mm in size)** in spawning gravel exceed 20 %" (emphasis added). Notably, the Second Larson Declaration and Exhibits fail to note this aspect of Spence et al., (1996). In contrast, the Second Larson Declaration's Exhibits (Exhibit A, p. 7, Exhibit B, p. 7) arbitrarily assert that "fine sediments" that harm fish are "…silt and clay sized particles." This does not comport with the discussion of fine sediment levels discussed in Spence et al. (1996) or other salient scientific information, because fine silt and clay are less than

[2] Spence (1996) is cited as evidence that fine sediment in excess of 20% is harmful to fish in the Exhibits for the Second Larson Declaration (Exhibit A, p. 7, Exhibit B, p. 7). However, the Second Larson Declaration fails to note that this level of fine sediment is based on fine sediments that are less than 6.4 millimeters in diameter.

about 0.06 millimeters (mm) in diameter. The assumption that fine sediment is only comprised of fine silt or smaller sediment particles intrinsically underestimates the amount of fine sediment in streams that adversely affects fish, because it omits fine sediments that are between 0.002 and 6.4 millimeters in size. Due to their adverse effects on fish, many studies of fine sediment assess the amount of fine sediment that is less than about 6.0 to 6.4 millimeters in size. It is not scientifically sound to focus only on silts and clays instead of all fine sediment sizes that adversely affect salmonids. This arbitrary focus is likely one of the factors that contribute to the implausible fine sediment results in the data in the Second Larson Declaration and Exhibits.

13. There are several reasons why the fine sediment data in the Second Larson Declaration and Exhibits do not provide a scientifically-sound basis for the conclusory contention that "…sedimentation is not occurring on these allotments" (Larson Declaration, p. 3, ¶ 3). First, as previously discussed, the fine sediment data in the Second Larson Declaration and Exhibits are plainly not sound, and, are instead, implausible and unreliable. Second, the approach lacks the resolution to determine if sedimentation is occurring. Collecting stream substrate samples, alone, in a few areas is not adequate to ascertain if sedimentation is occurring. Further, when sampling for sedimentation, it is important to do so in stream settings that are the most prone to sedimentation (Spence et al., 1996). There is no indication in the Second Larson Declaration and Exhibits that there was any attempt to sample such areas. Therefore, the fine sediment data in the Second Larson Declaration and Exhibits do not reasonably support the contention that sedimentation is not occurring in streams in the LMFA and MCA.

The bank monitoring in the Second Larson Declaration and Exhibits is inadequate to determine if bank alteration effects have persistent ecological effects.

14. There are several reasons why the bank monitoring data in the Second Larson Declaration and Exhibits do not support the assumption that bank alteration does not have

persistent effects. First, bank alteration is typically measured along the greenline of streams during lower flow periods. A considerable amount of the greenline is subsequently exposed stream erosion and submergence during subsequent higher flows (see Attachment 1 of this Declaration). Bank alteration increases the vulnerability of banks to bank erosion.[3] Therefore, during subsequent high flows, altered banks are eroded, washing away the direct evidence of bank alteration in the form of hoof prints.

15. This situation does not support the erroneous conclusion that the effects of bank alteration do not "carry over" as concluded in the Larson Declaration (p. 3, ¶ 3). Instead, it is evidence of the persistence of bank alteration. Because bank alteration consistently increases bank erosion, it is to be expected that hoof prints or alteration scars will not be obvious on banks after a season of high flows, because the affected area will have been eroded during subsequent high flows due to elevated bank erosion caused by bank alteration. Therefore, the absence of evidence of hoof prints and bank alteration discussed in the Second Larson Declaration and Exhibits cannot be construed as evidence of the absence of persistent impacts from bank alteration. Instead, bank alteration has persistent negative effects on banks, including instability, elevated bank erosion, and the loss of overhanging banks. These impacts of bank alteration degrade streams by increasing sediment loads, contributing to fine sediment levels, degrading

[3] As I noted in my First Declaration (pp. 8-9, ¶ 17-18, pp. 12-13 , ¶ ¶ 23, 24, 25), numerous peer-reviewed science publications have repeatedly noted that bank alteration contributes to bank instability, elevated bank erosion, and resulting aquatic degradation. As noted in my First Declaration (p. 13, ¶ 25), a BLM publication (Cowley, 2002) on bank alteration by livestock grazing noted that "It is well documented that large herbivores such as cattle, horses, sheep, bison, elk, and moose can alter the physical dimensions (e.g., increasing the bankfull width) of stream channels by bank trampling and shearing…Increasing the bankfull width makes the stream shallower, increases sediment, decreases the floodplain, increases temperature, and increases the adverse affects the physical functioning of a stream, its associated riparian area, and aquatic habitat…"

pool quality, and increasing stream width/depth ratios, which also increase water temperatures.

16. In my First Declaration, I presented data from streams in Malheur National Forest that show bank alteration by livestock persistently increases bank instability. I also presented data that shows that bank stability recovers over time with the cessation of bank alteration by livestock. I reprise that evidence below in Figures 1 and 2:

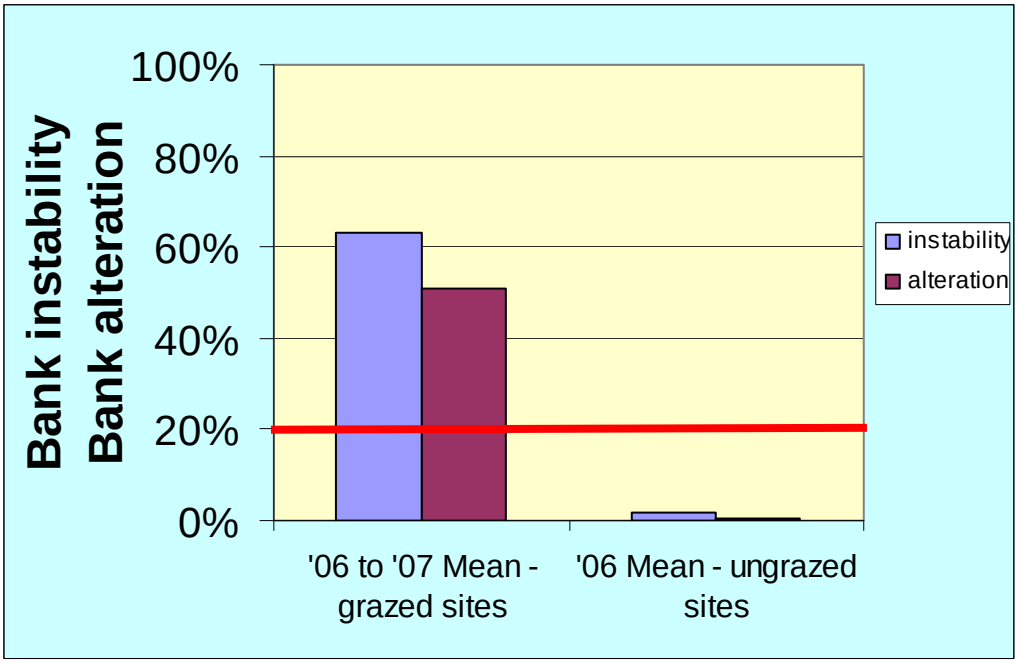

Figure 1. The results of my measurements of bank instability and bank alteration on streams in the Middle Fork John Day, North Fork Malheur River, and Malheur River watersheds. The data is expressed as the mean (average) of the results from measurements in 10 grazed reaches from 2006 to 2007 and in three reaches in exclosures that have not been grazed by livestock[4] for more than a decade. These results demonstrate that bank alteration contributes significantly to bank instability. They also demonstrate that bank alteration and bank instability are far lower in areas where streams have been protected from livestock grazing for more than a decade. The horizontal red line in the chart highlights the threshold of 20% bank alteration.

[4] Notably, in two of the three exclosures, elk are able to graze in the exclosures.

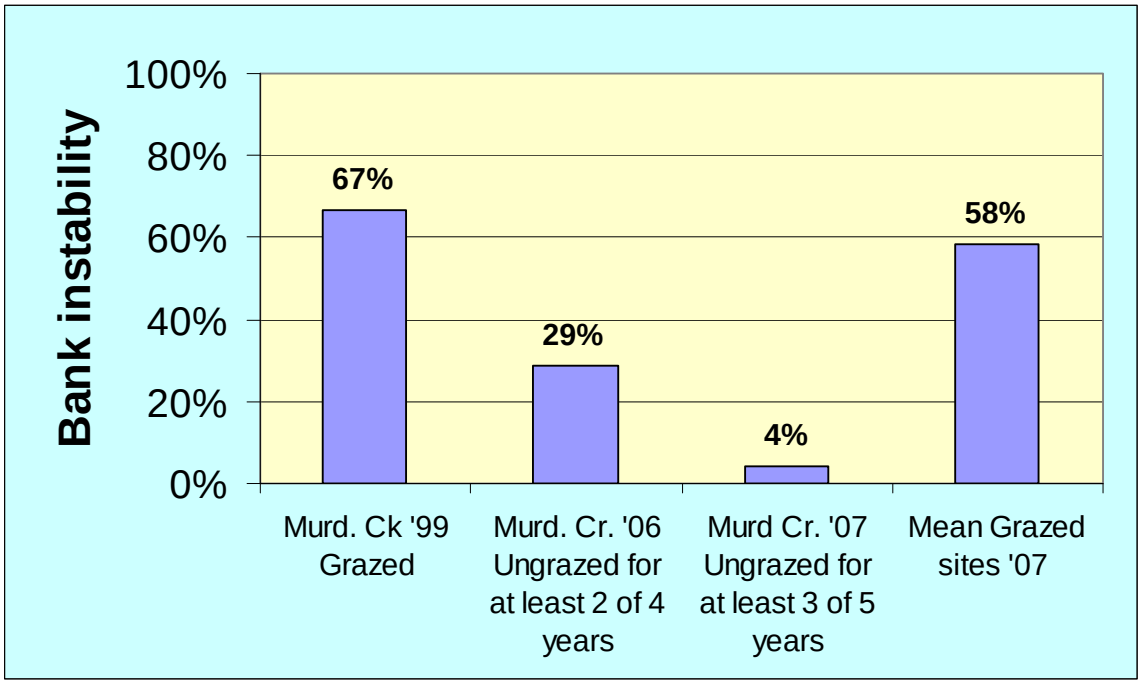

Figure 2. Measured bank instability from 1999 to 2007 on Murderers Creek in the Oregon Mine Unit in the MCA downstream of fenced state lands and mean bank instability in 17 grazed areas in the MCA in 2007. The data clearly show that in the absence of significant annual bank alteration from livestock grazing on this reach of Murderers Creek, there has been a significant reduction in bank instability due to natural recovery of vegetation and banks. This recovery in bank instability in the rested reach is in strong contrast to conditions in areas subjected to grazing in 2007 in the MCA where bank alteration was far greater than 20%. This clearly indicates that grazing and resulting bank alteration persistently prevents the recovery of bank stability. Note that even after several years of rest from livestock grazing and attendant bank alteration, bank instability on the rested reach of Murderers Creek in 2007 remains higher than in reaches that have not been grazed for decades, which have an average bank instability of about 1.9% (Figure 1). Notably, elk have unfettered access to the rested reach of Murderers Creek in the Oregon Mine Unit of the MCA, which counters the notion that elk are significantly altering stream banks or affecting bank instability.

This evidence countermands the incorrect notion that bank alteration does not persistently affect bank instability and bank erosion, all of which degrade steelhead habitats in an enduring manner.

17. The bank monitoring data in the Second Larson Declaration and Exhibits do not reliably indicate that bank alteration does not have persistent impacts that carry over to other years. This is because the monitoring failed to reasonably assess persistent effects of bank alteration on bank erosion and bank instability. It ignored that the bank instability and bank

erosion caused by bank alteration are persistent manifestations of the impacts of bank alteration. Available evidence I have presented, as well as other available scientific information, amply demonstrate that bank alteration persistently contributes to increased bank instability, bank erosion, and resulting enduring effects on channel conditions and water temperatures that adversely affect steelhead.

18. The "bank monitoring" data in the Second Larson Declaration and Exhibits does not conform to professional standards for monitoring bank alteration. The Exhibits to the Second Larson Declaration indicates that only hoof prints were monitored (e.g., Exhibit B, p. 7). Although bank alteration is caused by hooves, it is not solely comprised of monitoring individual hoof prints (See Attachment A to this declaration). The Second Larson Declaration and Exhibits do not indicate if the monitoring of hoof prints was conducted on the "greenline" consistent with U.S. Forest Service protocols (e.g, Burton et al., 2007). The Second Larson Declaration and Exhibits clearly note that the bank alteration data were <u>not</u> collected using methods comparable to U.S. Forest Service monitoring protocols (e.g., Exhibit B to Second Larson Declaration, p. 6). For these combined reasons, the bank monitoring data in the Second Larson Declaration and Exhibits are not reliable.

> <u>The photos of stream conditions upstream and adjacent to the fenceline in the John Young Meadows accurately convey stream conditions outside of the fenced area that had been subjected to livestock grazing prior to 2008</u>.

19. Regarding stream conditions in John Young Meadow on the MCA the Memo (p. 18) incorrectly asserts "…Christie and Rhodes may have intentionally misled the Court about this area…" Regarding a photo taken by me (Attachment 1, p. 2), the Memo (p.18) also incorrectly asserts that "…a photo at the same site looking the opposite direction would have revealed over a quarter-mile of dense willows in the pasture." These baseless assertions are

incorrect as shown in my photos in Attachment 1 (pp. 2-3) to this declaration. The second photo in my Attachment 1 (p. 2) shows damaged stream conditions lacking vegetation on South Fork Murderers Creek contrasted against the conditions in a fenced exclosure. The third photo in my Attachment 1 (p. 3) shows a view of the South Fork Murderers Creek looking in the opposite direction taken on the same date in the same general area as the previous photo in Attachment 1. This third photo in Attachment 1 clearly demonstrates that the Memo's (p. 18) assertions that there is "…a vast expanse of dense willows lining the South Fork of Murderers Creek…a photo at the same site looking the opposite direction would have revealed over a quarter-mile of dense willows in the pasture" are incorrect. The third photo in my Attachment 1 (p. 3) shows that dense willows do not line the South Fork of Murderers Creek in this area and that the very few willows nearest to, but not lining the stream have been greatly stunted by the combined impacts of livestock, as I previously noted. In the fall of 2007, I evaluated the same reach of the South Fork or Murderers Creek that is shown in my photos in Attachment 1. The conditions of the willow vegetation on the banks of this reach of the South Fork of Murderers Creek in the fall of 2007 were not significantly different from the conditions I observed 2003 and 2004. Notably, neither the Memo nor the Second Stout Declaration provide photos looking upstream of the fenceline on the South Fork of Murderers Creek to support the incorrect contention that "dense" willows line this reach of the stream.

20. My two photos of the South Fork Murderers Creek in Attachment 1 not only demonstrate that the Memo's assertions regarding my previous work are demonstrably false, but also show that the both the Memo and Second Stout Declaration mischaracterize stream and vegetation conditions in this reach of South Fork Murderers Creek. As the third photo in my Attachment shows, this reach of the South Fork of Murderers Creek is not densely lined with

willows. This photo also shows that vegetation in this area is not an impediment to animal movement across the meadow, contrary to the statements in Memo and Second Stout Declaration's Attachment 1 (p. 8 of 50). It also shows that the photos of John Young Meadow in the Second Stout Declaration's Attachment 1 do not show the actual vegetative conditions along the South Fork of Murderers Creek in this area.

Conclusions

21. The fine sediment data presented in the Larson Declaration and Exhibits are not plausible and do not meet professional standards. The data are, therefore, unreliable as an indication of actual fine sediment conditions that affect steelhead in the streams in the MCA and LMFA. These data are also unreliable as indicators of bank erosion and sedimentation in these streams.

22. The conclusions drawn in the Larson Declaration and Exhibit regarding the persistence of bank alteration are not sound.

23. The assertions in the Memo and Stout Declaration that the South Fork Murderers Creek in the MCA in John Young Meadow upstream of the fence line is lined with dense willows are incorrect, as is the assertion that my previously submitted photos misrepresent 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 16th day of March 2009.

s/ Jonathan J. Rhodes

Jonathan J. Rhodes

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