YUROK TRIBE

190 Klamath Boulevard • Post Office Box 1027 • Klamath, CA 95548
Phone: (707) 482-1350 • Fax: (707) 482-1377

August 12, 2010

Attn: Stephanie McMorris
Happy Camp/Oak Noll Ranger District
Klamath National Forest
PO BOX 377/63872
Highway 96
Happy Camp, CA 96039

Subject: Comments on the Draft *Oak Knoll Range Project Environmental Assessment*

Dear Ms. McMorris,

The Yurok Tribe has had our consultant review the Draft *Oak Knoll Range Project Environmental Assessment (Draft EA)* (Klamath National Forest 2010) and provide the following comments on behalf of the Klamath Basin Tribal Water Quality Work Group. The Work Group provides coordination among the water quality and environmental departments of five federally-recognized Tribes living within the California portion of the Klamath River basin.

The Yurok Tribe views State and Federal Clean Water Act compliance as a key means for assuring the waters of the Klamath basin are of a quality sufficient to allow the Yurok Tribe to continue to practice its lifeways in perpetuity. The Yurok Tribe have staff that are on the stakeholder's committee that is working with staff from the State Water Resources Control Board and the US Forest Service Southwest Region to develop a water quality regulatory program on USFS lands in California. We will continue to work with staff to address our concerns with the Draft Water Quality Management Plan (WQMP) that is under development and feel our comments are relevant to the WQMP development process. Please accept our comments on the Draft Oak Knoll Range Project Environmental Assessment. We look forward to working with your staff to address our concerns on this Draft EA. Please contact me if you have any questions or concerns at 707-954-1523 or at kfetcho@yuroktribe.nsn.us.

Sincerely,

Ken Fetcho
Assistant Director – Water Division
Yurok Tribe Environmental Program
PO BOX 1027
Klamath, CA 95548

SUMMARY OF COMMENTS

The *Draft EA* does not meet National Environmental Policy Act (NEPA) requirements for use of "best available science" in decision making. There are no data presented to support any of the conclusions drawn in the document and the methods that were used to assess prior trends in rangeland health and those to be used for future "adaptive management" are vague and inadequate. Consequently, the *Draft EA* falls short of any scientific standard (Walters 1997, NRC 2004) for the use of adaptive management.

The bank erosion, riparian vegetation decrease, and deposit of cattle waste into streams are inconsistent with the State of California's *Klamath River TMDL* (NCRWQCB 2010a) and do not comply with the North Coast Regional Water Quality Control Board's *Basin Plan* (NCRWQCB 2007).

When all relevant monitoring data and information in the EA and BMP monitoring reports, as well as the relevant available information not included in the EA, are considered, it is reasonable to conclude that – unless there are substantive changes in the manner in which the allotment is managed and in the manner in which the permittees meet their responsibilities – re-authorization of grazing in the Allotments will constitute violation of the Clean Water Act.

In addition, the National Forest Management Act (NFMA) and the Klamath National Forest (KNF) *Land and Resource Management Plan* (LRMP) conservation objectives would be violated if grazing were to continue as described in the Preferred Alternative. Furthermore, if grazing were continued as proposed, the objectives of the Aquatic Conservation Strategy, part of the Record of Decision and the Northwest Forest Plan (FEMAT 1993), would not be met.

A finding of no significant impact in the final Decision Notice would be arbitrary and capricious if it allows continued grazing in the allotments despite the recognized associated degradation and absent a clear plan to prevent the pattern of continued environmental damage.

The *Draft EA* appears to be arguing that although riparian conditions within areas of the allotment actually used by grazing cattle are impaired, the USFS is acting legally to reauthorize the grazing permit because these impacts occur in only a small portion of the Klamath National Forest. This logic is unacceptable to the Yurok Tribe and appears to be challengeable.

If such reasoning were applied to every KNF decision the cumulative effect would be even greater large-scale degradation of KNF land and water resources. Further, the applicable laws, including the CWA and the NFMA, require that standards for the maintenance of resources in good condition do not simply apply in general, but apply to each and every area of the Forest and to special habitats, even if such habitats are rare or occupy only a small percent of the landscape.

Monitoring Methods

In is clear from reading through the 2001-2009 Forest Monitoring and BMP Reports from the Klamath National Forest that the effects of grazing on riparian vegetation and streambank stability is not being adequately monitored. For example, the 2008 BMP report (KNF 2008)

notes that:

> The 2006 report mentioned that the Forest lacks site specific water quality and riparian standard and guidelines. The G24 [grazing] evaluation protocol is structured as if such a standard is already in place on each Forest. This makes the implementation rating "not applicable" by default. In 2002, Forest range staff began formulating objectives for streambank disturbance and woody plant utilization on allotments that have vulnerable stream channels. This has been gradually occurring as permits come due for renewal. It is unknown whether these objectives are consistent with what is being formulated on other forests, or even from permit to permit on this forest. In September 2005, a proposal was made by Forest fisheries, soils, and hydrology staff to revise the Forest Plan to include a grazing standard and guideline for streambank disturbance that is a consistent and effective practice. The proposal is being reviewed by range management and Forest planning staff and could be incorporated in the upcoming Forest Plan Revision. As a next step, in August 2007 the Forest Hydrologist, Fisheries and Endangered Species Program Manager, Goosenest Range Conservationist, Region 5 Hydrologist and R5 Acting Range Program Manager conducted a field trip to a Goosenest range allotment to look at various options for measuring streambank alteration using more meaningful metrics than the current BMPEP criterion. Use of stubble height and rooting depth of herbaceous riparian vegetation were two options they discussed. At the present time, the G24 protocol is being redesigned at the Regional and National level by interdisciplinary teams grappling with the same issues. It is recommended that these broader monitoring design processes be tracked by Forest planning, range, fisheries and watershed staff with the goal of coming up with a standard and guideline for the Forest Plan revision. The standard and guide should be meaningful for assessing water quality protection in KNF rangeland settings, and measurable in a way that is simple and repeatable." (page 16)

The *Draft EA* states that "Permanent plots on key areas have been established in the East Beaver allotment to provide long-term monitoring of range condition." (page 15) and "Long-term rangeland vegetation monitoring of key areas indicates a continued stable or improving trend." (page 17); however, it is important to note that these permanent plots presumably represent site vegetation as a whole, not the riparian and streambank areas.

The Multiple Indicator Monitoring (MIM) proposed in section 2.1.2.4 would provide some useful information regarding how grazing is affecting riparian areas, but the proposed monitoring needs to be expanded. Grazing impacts are often unevenly distributed across the landscape, with little to no impact in some areas but major impacts in other areas. For this reason, monitoring that focuses on only two Designated Monitoring Areas (DMAs) may miss the areas with the most acute impacts.

An informative, simple, and cost-effective way to monitor a larger geographic area would be to walk along streams with a GPS-enabled camera and take hundreds of photos. This geo-located photographic record would be an extremely valuable monitoring tool for tracking changes in the

landscape over time, and identifying potential problem areas. Given that the primary range areas in the allotments are only 998 acres, it should be possible to photo-monitor a substantial portion of the streams in the primary range areas where the majority of the grazing occurs. Such photo monitoring should be conducted annually. These photos should be archived in the project files and also made available on the Internet.

The Draft EA also states that "Vegetation Community Type are meeting or moving toward desired conditions as described in Table 2-7" but does not present any data to support this claim, nor does it describe the methods used to determine the improving trend. The *Draft EA*'s descriptions of the methods used in the permanent plot monitoring and utilization monitoring suggest that such methods would not be sufficient to support such a claim.

There are no quantitative baseline data provided with which to interpret trends in aquatic or riparian health, nor in populations of sensitive species that could be disturbed by grazing, such as neotropical song birds or amphibians like the Cascade frog. Valid scientific methods of stream condition assessment need to be employed, such as cross sections, longitudinal profiles, fine sediment in spawning gravels, median particle size or other metrics from the USFS Aquatic and Riparian Ecosystem Monitoring Protocols (Gallo et al. 2002), if adaptive management is to succeed (see Adaptive Management discussion, below).

We recommend the following additions to monitoring:

1) Measure cross sections and long profiles of stream channels impacted by grazing.
2) Place automated water temperature probes in key locations throughout each grazing allotment. Data should be collected from May 15 to October 15 with sensors located in grazed and ungrazed riparian zones within or near the allotment.
3) Measure aquatic invertebrate diversity (EPT/Richness) above and below grazed areas as well as in an ungrazed control stream.
4) Collect bulk gravel samples (fines <0.85 mm) in grazed streams and in controls.
5) Compare the volume of sediment in pools (V*) in grazed streams and in controls.
6) Measure bird abundance, richness and trends in grazed and ungrazed riparian zones.
7) Measure and compare Cascade frog abundance and distribution in grazed and ungrazed meadows and riparian zones.
8) Measure soil compaction in meadows and riparian zones.
9) Measure water table depth in meadows and track changes over time.
10) Measure *E. coli* levels in streams above and below grazed meadows.
11) Use electrofishing to measure standing crops of fish species in meadow streams and repeat for trend monitoring over time.

The KNF must employ standard monitoring methods and recognize specific targets or population levels as surrogates for properly functioning ecological conditions. Data collection should be annual or scheduled when needed, if some conditions only change in repose to periodic meteorological events. Water quality reference values should be similar to those employed in the *Scott River TMDL* (NCRWQCB, 2006). The data resulting from monitoring could then be used for construction of a model that would be useful in predicting ecosystem response to grazing.

Adaptive Management Criteria Not Met

Adaptive Management is a concept advanced, in particular, by Professor Carl Walters of the University of British Columbia. Walters (1997) noted that of 25 riparian and coastal ecosystem restoration projects that he participated in over 20 years, "only seven of these have resulted in relatively large-scale management experiments, and only two of these experiments would be considered well planned in terms of statistical design……Various reasons have been offered for low success rates in implementing adaptive management, mainly having to do with cost and institutional barriers."

The National Research Council (2004), in recommending that adaptive management be used to recover the endangered fishes of the Klamath basin, described it as follows:

> "Adaptive management is a formal, systematic, and rigorous program of learning from the outcomes of management actions, accommodating change, and improving management (Holling 1978). Its primary purpose is to establish a continuous, iterative process for increasing the probability that a plan for environmental restoration will be successful. In practice, adaptive management uses conceptual and numerical models and the scientific method to develop and test management options."

NRC (2004) also points out that the first step in carrying out an adaptive management project is to determine baseline conditions:

> "The ecosystem baseline includes all relevant information, past and present, such as physical, chemical, and biological features and benchmark indicators of the abundance of critical species. The baseline is the reference condition against which progress toward management goals is measured."

As noted in our "Monitoring Methods" discussion above, there are no quantitative baseline data provided on stream habitat or riparian condition, water quality or on the sensitive species likely affected by grazing. NRC (2004) also explained how models are used in successful adaptive management projects.

> "The analytical basis of adaptive management typically is a set of conceptual and numerical models..... The conceptual model can be used to identify a small number of representative biological, chemical, and physical indicators of system-wide responses to restoration on various spatial and temporal scales. The indicators then can be used in developing models or protocols for monitoring and testing the efficiency of the restoration efforts. Performance measures are developed for each of the elements (ideally for both stressors and indicators) and are used as the standards for evaluating the restoration program."

In other words, the KNF should be devising models based on physical and biological measurements from its grazing allotments with specific targets for restoration of ecosystem function (e.g., fine sediment particles less than 0.85 mm in diameter should make up less than 14% in spawning gravels, there should be successful recruitment of Cascade frogs, etc.). However, no field data are presented in the *Draft EA* and the only models referred to are those

for upland cumulative effects.

There is no indication in the *Draft EA* that KNF will be implementing adaptive management in fact. Rather, Forest staff appears to be using the adaptive management rubric to defer management decision for some indefinite period pending the collection of additional data. NRC (2004) characterized such an approach as follows:

> "In the deferred-action approach, management methods are not changed until ecosystems are fully understood (Walters and Hillborn 1978, Walters and Holling 1990, Wilhere 2002). This approach is cautious but has two notable drawbacks: deferral of management changes may magnify losses, and knowledge acquired by deferred action may reveal little about the response of ecosystems to changes in management. Stakeholder groups or agencies that are opposed to changes in management often are strong proponents of deferred action."

The *Draft EA* continually downplays damage from grazing because of the small number of cows in the Allotments and the small area being grazed. This ignores the fact that meadows are rare habitats and their riparian zones provide habitat for dozens of specialized wildlife species. Patterns of grazing in these habitats across the landscape of Middle Klamath tributaries could be contributing to decline in species like the Cascade frog or song bird species that might subsequently require ESA protection because of the failure of KNF to be proactive in its grazing policy. The absence of data concerning soil compaction, water table depth and other physical factors may well be masking the risk of potential catastrophic change, such as gully formation or channel straightening through meadows during flood events.

Finding of No Significant Impact (FONSI) is Unsupported

The *Draft EA* section on Affected Environment and Environmental Consequences discusses potential problems that could result from grazing in the allotments and concludes that none of these are significant - but no data are supplied to support these conclusions. Each subject broached is discussed below with quotes from the *Draft EA* followed by a discussion of the validity of arguments offered.

Water Quality: "Current grazing practices may have minor water quality impacts where cattle access streams, resulting in elevated nutrient and sediment inputs to streams. Given the limited time period of cattle grazing and the low number of cattle, water quality impacts from grazing use are likely to be short-term in duration. There are no known areas (documented through BMPEP monitoring) of streambank erosion caused by cattle grazing activities. Use patterns on streams are expected to be similar under Alternative 2, though more dispersed throughout the allotment as a result of use of corrals for redistributing cattle." (page 29)

There are no data presented to support these assertions. As noted above, the BMP monitoring report acknowledge that the current monitoring protocols for assessing stream bank stability and riparian vegetation are inadequate. There is no assessment in the EA of the amount of nutrients added by cattle to allotment streams. Cattle excrete up to 500 times more bodily waste per day than humans (Derlet et al. 2010) and thus there is potential for substantial pollution.

Stream Temperature: "Minor localized increases in stream temperature due to reductions in the density of riparian vegetation and loss of canopy cover is another potential indirect effect on water quality from grazing activities proposed under the Proposed Action." Again, no data are presented to support the claim that the increased in temperature would be "minor." As noted below, the Klamath TMDL (NCRWQCB 2010) requires full site-potential vegetative shade for streams.

As part of adaptive management, the KNF should place automated temperature sensors above and below meadows to demonstrate that there is no thermal loading resulting from cattle grazing on streamside vegetation.

Wildlife: "The action alternatives are not likely to have a negative effect on migratory bird populations." (page 47). "Alternatives 2 and 3 could have minor direct and indirect effects on willow flycatchers through damage to individual willows, creation of 'cow trails' through the willow community, or knocking down willow flycatcher nests. The headwaters of Cow Creek, which contain the largest expanses of willow flycatcher habitat, will continue to exhibit some evidence of grazing to individual willows, cow trails, and potential loss of individual nests. Since grazing stocking rates have declined significantly from historic periods, it is presumed that under Alternatives 2 and 3 there will be no measurable loss of willow habitat from the current conditions. Under Alternative 2, AMS measures will ensure that the area continues to improve. Historical photos suggest that willow complexes are expanding in recent decades; this trend would likely continue or stabilize under both Alternatives 2 and 3." (pages 44-45).

The Draft EA incorrectly takes the position that because grazing has damaged riparian vegetation, and that riparian vegetation has partially recovered in recent decades due to reduced grazing pressure, that continuation of grazing will not have negative impacts. In fact, grazing is inhibiting the recovery of riparian vegetation, and that is, in itself, a negative impact.

The *Draft EA* ignores available information concerning neotropical song bird use of Marble Mountain riparian zones (Alexander and Johnson, 2001) that demonstrates the effects of grazing on song birds. Alexander and Johnson (2001) found that there was a significant preference of song birds for riparian forests versus upland forests and that this was reflected in both species abundance and in the number of taxa present. Statements in the *Draft EA* that the limited extent of grazing somehow limits damage to sensitive bird species do not square with the available science. More importantly, the *Draft EA* ignores the finding of Alexander and Johnson (2001) that "that bird abundance, species richness and the abundance of species of concern is higher in basins where grazing had been reduced or eliminated." It is important to note that this study was conducted relatively recently and thus reflects the effect of current grazing practices in the Klamath National Forest, not the 19th and early 20th century when livestock numbers were much higher than present.

Alexander and Johnson (2001) specifically suggest monitoring bird presence and abundance as a tool for trend monitoring in conjunction with adaptive management of grazing allotments. No data on birds was provided in the *Draft EA*, nor is bird monitoring proposed.

Fish: Coho and chinook salmon and steelhead trout use lower Beaver Creek, but cannot access

headwater areas because of natural barriers. Any pollution generated by grazing would impact downstream water quality. Coho salmon are listed as Threatened under State and federal Endangered Species Acts. Steelhead are also recognized as Threatened under the federal ESA.

Although impacts from grazing allotments are less than those related to activities such as logging or road building, pollution from grazing should be abated to assist the recovery of the at-risk anadromous salmonids in Middle Klamath tributaries.

Steelhead trout may exhibit anadromous life histories or they may sometimes remain in fresh water as resident rainbow trout. It is unknown whether rainbow trout in the headwaters of Beaver Creek may become steelhead if flushed downstream by flood events. Regardless, the standing crop of trout within the grazing allotments is one measure of aquatic health.

No data were provided on the use by fish of the streams within the allotments. Fish populations should be estimated using electro-fishing as part of any adaptive management grazing program.

Management Indicator Species: The discussion of Management Indication Species (MIS) in the *Draft EA* says that a suite of species associated with streams within the allotments were chosen as indicators. No data are supplied for these species other than noting which species are known to be present within the allotments. These species include the Cascade frog (a California species of concern and Category 2 candidate for listing under the federal ESA), tailed frog, American dipper, northern water shrew, and long-tailed vole.

Cascade frogs may reside in wet meadows after breeding to rest and feed so that they can build up fat reserves to survive the winter (Dr. Hartwell Welsh, personal communication). Stubble height of 4 inches is not likely sufficient cover to protect this species from predation. The association of this species with the wet meadows of the Siskiyou Crest is not well studied; therefore impacts to this species from grazing are unknown. Grazing in wet meadows of the Lassen National Forest has lead to a substantial decline in this species (Dr. Hartwell Welsh, personal communication) and it is recognized as declining on USFS lands in the Sierra Nevada Mountains (Welsh et al., 1991).

E. coli and Pathogens: The *Draft EA* does not mention the affects of grazing on bacteria such as *E. coli*, or other human pathogens. Studies in the Sierra Nevada indicate that streams in grazed areas typically have far higher levels of E. coli than in ungrazed areas (Derlet et al. 2010). This is a potentially serious consequence of grazing and needs to be evaluated in the KNF grazing allotments EA.

Measuring for *E. coli* above and below meadows and at the KNF boundary downstream would be a suitable monitoring approach, if a more authentic adaptive management program is pursued.

Cumulative Effects

The basic assertion regarding cumulative watershed effects (CWE) in the *Draft EA* is that the effects generated by grazing are so small, when compared to those of logging and road building, that they are insignificant. In fact, the effects of grazing should be considered in conjunction

with these other sources of pollution, and recognize the basin's very degraded watershed condition. These conditions triggered the listing of the Klamath River and its tributaries under the CWA as impaired for sediment and water temperature and led to the pollution abatement measures prescribed by the TMDL process (NCRWQCB 2010a). The discussion of CWE in the *Draft EA* actually serves as a diversion from the real question: what are the effects of grazing at a watershed and landscape scale in Middle Klamath tributaries?

Sharing of Information

We recommend that KNF take steps to increase public access to its monitoring information and reports. For example, KNF staff (e.g. hydrologist, range, and fisheries scientists) prepared a series of "Specialist Reports" regarding the proposed project. These Specialist Reports were cited and briefly summarized in the *Draft EA*, but the full content of these reports were not included within the *Draft EA* or posted on the website for the project. Instead, they remain at KNF offices, accessible only through Freedom of Information Act (FOIA) requests. These reports should be compiled and included as an appendix to the final EA, and distributed along with the EA. In addition, all Specialist Reports produced by KNF staff regarding upcoming future projects should be included as appendices to the EA or EIS that they apply to.

Clean Water Act, Basin Plan and TMDL Compliance

The *Draft EA* acknowledges that the Klamath River and its tributaries are listed as impaired under the Clean Water Act, but unfortunately does not include any discussions of the Klamath River TMDL (NCRWQCB 2010a) nor the recently adopted Waiver of Waste Discharge Requirements for USFS activities (NCRWQWCB 2010b). The re-authorization of grazing allotments is one of the activities discussed in the waiver, so it seems odd that the waiver is not mentioned in the *Draft EA*. Is KNF intending to comply with conditions specified in the TMDL and waiver?

For example, the TMDL requirements for shade are "The shade provided by topography and full potential vegetation conditions at a site, with an allowance for natural disturbances such as floods, wind throw, disease, landslides, and fire." The continuation of grazing within the allotments would retard the recovery of shade-providing riparian vegetation, and thus will not comply with the TMDL.

The input of cattle manure into streams through runoff or direct discharge into streams would contribute nutrient load to streams and thus is also not in compliance with the TMDL.

***Draft EA* Compliance Issues with the NFMA, KNF LRMP, and the ACS**

The *Draft EA* fails to meet requirements governing the U.S. Forest Service, including the National Forest Management Act (NFMA), Klamath National Forest (KNF) Land and Resource Management Plan (LRMP), and the Aquatic Conservation Strategy (ACS).

NFMA: The National Forest Management Act requires that all Forests within the National Forest system:

- Maintain viable populations of native vertebrate species,
- Preserve biological diversity, and
- Protect lakes, streams, streambanks, wetlands, and riparian areas

The discussions above show clearly that grazing in the KNF allotments is retarding recovery of riparian vegetation and hence reducing use of the Forest by sensitive avian species. The status of other indicator species such as the Cascade frog remain unknown, as do potential grazing impacts. Clearly, the pattern of grazing on the allotments has been to concentrate cattle in sensitive riparian zones in violation of the third NFMA objective cited above.

KNF LRMP: Several KNF *Land and Resource Management Plan* objectives are not met under the allotments and would continue to be unmet if grazing were to continue without substantial changes in management.

Standards and Guidelines (6-1) in the LRMP require maintenance of "the structure, composition, and function of forest, rangeland, and aquatic ecosystems within the range of natural variability." The reduction in riparian vegetation structure (e.g. willow thickets) associated with grazing obviously runs counter to this objective.

"Grazing must be managed so as not to not retard or prevent attainment of the Aquatic Conservation Strategy objectives" (LRMP 4-9). See discussion below.

ACS: The Aquatic Conservation Strategy is tiered to the *Record of Decision/Standards and Guidelines for Management of Habitat for Late Successional and Old Growth Forest Related Species within the Range of the Northern Spotted Owl* (ROD) and the *Northwest Forest Plan* (FEMAT 1993). FEMAT (1993) states that:

> "Complying with the Aquatic Conservation Strategy objectives means that an agency must manage the riparian-dependent resources to maintain the existing condition or implement actions to restore conditions."

Specifically with regard to grazing, the *Northwest Forest Plan* (FEMAT 1993) makes the following recommendation:

> "Adjust grazing practices to eliminate impacts that retard or prevent attainment of Aquatic Conservation Strategy objectives. If adjusting practices is not effective, eliminate grazing."

To comply with the foregoing mandate, grazing would have to be eliminated on the allotments. The *Draft EA* and other sources provide evidence that the following ACS objectives are not being met and will remain unmet if grazing is continued on the allotments without substantial changes in management:

- Maintain and restore the physical integrity of the aquatic system, including shorelines, banks, and bottom configurations.

Although there has been only very limited monitoring of bank stability in the allotments, the

2008 BMP effectiveness monitoring report noted that in the West Long John area of the Beaver Allotment, "Several active headcuts exist in this unit. Cause of headcuts was not identified." In spite of the presence of headcuts, the "streambank alteration guidelines were met" because the cut-off for receiving the highest grade only requires that >80% of the streambanks be stable, a very low performance standard. The Draft EA states that "Based on monitoring data from KNF, there is no documented streambank erosion in the project area." (page 27); however this appears to be contradicted by the headcuts identified in the 2008 BMP report. Without requiring more supervision such as range riding, it is difficult to prevent cows from impacting sensitive riparian areas.

- Maintain and restore water quality necessary to support healthy riparian, aquatic, and wetland ecosystems. Water quality must remain within the range that maintains the biological, physical, and chemical integrity of the system and benefits survival, growth, reproduction, and migration of individuals composing aquatic and riparian communities.

This objective parallels those of the Clean Water Act described above. The *Draft EA* does not present information to document compliance. As noted above, the EA presents no data regarding how grazing in the allotments affects water quality parameters such as temperature, pathogens, or nutrients.

Conclusion

The *Draft EA* does not provide data to support its conclusions. It ignores the existing scientific literature concerning the resources potentially impacted by the proposed grazing. It therefore fails to comply with NEPA standards. We have explained in some detail above, that were the KNF to pursue the Preferred Alternative that allows grazing on the East Beaver, Hornbrook, and Ash Creek allotments, it will violate the Clean Water Act, NFMA, and KNF LRMP standards and those of the ACS. Given the clear damage from prior grazing and the failure of the KNF to supply data to support its proposed management actions, a finding in the final Decision Notice that approves grazing on the allotments would be considered arbitrary and capricious under the Administrative Procedures Act.

REFERENCES

Alexander, J.D. and G.E. Johnson. 2001. Landbird Distribution in Grazed and Ungrazed Montane Basins of the Marble Mountain Wilderness Area. Klamath Bird Observatory, Ashland, OR.

FEMAT [Forest Ecosystem Management Assessment Team]. 1993. Forest Ecosystem Management: an ecological, economic and social assessment. Report of the Forest Ecosystem Management Assessment Team. 1993-793-071. U.S. Govt. Printing Office.

Derlet, R.W., C.R. Goldman and M.J. Connon. 2010. Reducing the impact of summer cattle grazing on water quality in the Sierra Nevada Mountains of California: a proposal. Journal of Water and Health 8(2): 326-333.

Gallo, K. 2001. Field protocols: Aquatic and Riparian Effectiveness Monitoring Program for the Northwest Forest Plan: Version 1.0. U.S. Forest Service, Corvallis, OR. 54 pp.

Holling, C.S., ed. 1978. Adaptive Environmental Assessment and Management. New York: Wiley.

Klamath National Forest. 2001. Best Management Practices Water Quality Evaluation Program Monitoring Report 2001. Klamath National Forest Supervisors Office, Yreka, CA.

Klamath National Forest. 2002. Best Management Practices Water Quality Evaluation Program Monitoring Report 2002. Klamath National Forest Supervisors Office, Yreka, CA.

Klamath National Forest. 2003. Best Management Practices Water Quality Evaluation Program Monitoring Report 2003. Klamath National Forest Supervisors Office, Yreka, CA.

Klamath National Forest. 2004. Best Management Practices Water Quality Evaluation Program Monitoring Report 2004. Klamath National Forest Supervisors Office, Yreka, CA.

Klamath National Forest. 2005. Best Management Practices Water Quality Evaluation Program Monitoring Report 2005. Klamath National Forest Supervisors Office, Yreka, CA.

Klamath National Forest. 2006. Best Management Practices Water Quality Evaluation Program Monitoring Report 2006. Klamath National Forest Supervisors Office, Yreka, CA.

Klamath National Forest. 2007. Best Management Practices Water Quality Evaluation Program Monitoring Report 2006. Klamath National Forest Supervisors Office, Yreka, CA.

Klamath National Forest. 2008. Best Management Practices Water Quality Evaluation Program Monitoring Report 2006. Klamath National Forest Supervisors Office, Yreka, CA.

Klamath National Forest. 2009. Best Management Practices Water Quality Evaluation Program Monitoring Report 2006. Klamath National Forest Supervisors Office, Yreka, CA.

National Research Council (NRC). 2004. Endangered and threatened fishes in the Klamath River basin: causes of decline and strategies for recovery. Committee on endangered and threatened fishes in the Klamath River Basin, Board of Environmental Toxicology, Division on Earth and Life Studies, Washington D.C. 424 pp.

North Coast Regional Water Quality Control Board (NCRWQCB). 2006. Action Plan for the Scott River Watershed Sediment and Temperature Total Maximum Daily Loads. North Coast Regional Water Quality Control Board, Santa Rosa, CA.

North Coast Regional Water Quality Control Board (NCRWQCB). 2007. Water Quality Control Plan for the North Coast Region. Staff report adopted by the North Coast Regional Water Quality Control Board in January 2007. Santa Rosa, CA. 124 p.

North Coast Regional Water Quality Control Board (NCRWQCB). 2010a. Final Staff Report for the Klamath River Total Maximum Daily Loads (Tmdls) Addressing Temperature, Dissolved Oxygen, Nutrient, And Microcystin Impairments in California, the Proposed Site Specific Dissolved Oxygen Objectives for The Klamath River In California, and the Klamath River And Lost River Implementation Plans. NCRWQCB, Santa Rosa, CA. http://www.waterboards.ca.gov/northcoast/water_issues/programs/tmdls/klamath_river/

North Coast Regional Water Quality Control Board (NCRWQCB). 2010b. Order No. R1-2010-0029 Waiver of Waste Discharge Requirements For Nonpoint Source Discharges Related to Certain Federal Land Management Activities on National Forest System Lands in the North Coast Region. NCRWQC, Santa Rosa, CA. 24pp. http://www.waterboards.ca.gov/northcoast/water_issues/programs/timber_operations/timber_waiver/100616/100617_10_0029_Waiver_USFS.pdf

Walters, C. 1997. Challenges in adaptive management of riparian and coastal ecosystems. Conservation Ecology [online] 1(2):1. Available from the Internet. URL: http://www.consecol.org/vol1/iss2/art1/

Walters, C.J., and R. Hilborn. 1978. Ecological optimization and adaptive management. Ann. Rev. Ecol. Syst. 8:157-188.

Walters, C.J., and C.S. Holling. 1990. Large-scale management experiments and learning by doing. Ecology 71(6):2060-2068. Warner, R.R. 1988. Traditionally of mating site preferences in a coral reef fish. Nature (Lond.) 335:719-721.

Welsh, H.H., A.J. Lind, and D.L. Waters. 1991. Monitoring Frogs and Toads on Region 5 National Forests. FHR Currents # 4. US Forest Service, Region 5. Eureka, CA. 12 pp.

Welsh, Dr. Hartwell. Personal Communication. Herpetologist, U.S.D.A. Forest Service, Pacific Southwest Forest and Research Station, Redwood Sciences Laboratory, Arcata, CA.

Wilhere, G.F. 2002. Adaptive management in habitat conservation plans. Conserv. Biol. 16(l):20-29.