Coast Range Association
Comments on the BLM's
Resource Management Plans (RMPs)
&
Draft Environmental Impact Statement (DEIS)

Part 2.

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36. The RMP/DEIS failed to incorporate the best available science identified by the National Marine Fisheries Service Final Recovery Plan for the Southern Oregon/Northern California Coast Evolutionarily Significant Unit of Coho Salmon (Oncorhynchus kisutch). (NMFS 2014). Similarly, the RMP/DEIS failed to coordinate with ODFW and NMFS concerning the Oregon Coast Coho Conservation Plan. .http://www.dfw.state.or.us/fish/crp/coastal_coho_conservation_plan.asp

Text of the CRA's submitted comments begins on the following page.

29.5 Grazing Activity: Livestock Grazing in Critical Habitat of ESA Listed Fishes

The RMP/DEIS: 379-388 failed to identify each stream critical habitat reach for federally listed fishes (e.g. coho salmon, shortnose sucker) in grazing allotment pastures (Tables K-1 and K-2 DEIS 1227-1235). The RMP/DEIS Alternatives A, B, C fail to identify how the current specified grazing seasons, current grazing system or current exclosures (DEIS: 942-943 Table B8) would be changed to protect and improve critical habitat stream reaches of listed fishes.

The RMP/DEIS Alternatives A, B, C, D fail to provide baseline conditions for each (named) stream critical habitat for federally listed fishes within each allotment/pasture. BLM and ODFW stream surveys and proper functioning condition surveys are available for critical habitat of listed fishes (e.g. Barnes Valley Creek, Long Branch Creek, Pitch Log Creek, Spencer Creek. Stream surveys can be found on ODFW website (http://oregonstate.edu/dept/ODFW/freshwater/inventory/basinwid.html) or contacting ODFW directly. These surveys constitute “best available science”. The BLM has had 7 years since the illegal and withdrawn 2008 RMP/FEIS to collect stream data for 2015 RMP/DEIS but apparently failed to do so. The DEIS/RMP failed to use best available science to systematically assess current condition of critical habitat (baseline condition/trend) and use accepted science to predict impacts relevant to proposed grazing (Tables K-1 and K-2 DEIS 1227-1235). Failure to provide science based baseline conditions makes it impossible to make credible science based impact analysis of proposed grazing effects to critical habitat.

The RMP/DEIS failed to describe how Alternative D (no grazing) would differ from Action Alternatives with respect to condition and trend of critical stream habitat for listed fishes. For example, there is no analysis in Hydrology (DEIS:286-320) of how woody riparian vegetation (willows, aspen, cottonwood, shrubs) would likely increase and stream temperatures decrease for critical habitat in each allotment with Alternative D no grazing as compared to grazing periods and systems identified in DEIS 1227-1235. Similarly, there is no analysis in Hydrology of how streambank trampling, streambank erosion, and stream sediment would decrease for critical stream habitat within each allotment with Alternative D no grazing as compared to grazing periods and grazing systems identified in DEIS 1227-1235. There is no analysis in Fisheries (DEIS 217-235) of expected improvement to critical stream habitat for listed fishes with Alternative D as compared to Alternatives A,B,C. There is no analysis in Fisheries (DEIS 217-235) of current poor condition and downward trend of critical stream habitat for listed fishes with Alternative D (no grazing) as compared to Alternatives A,B,C.

The DEIS:941 states for Alternative A:

> Prevent livestock from causing trampling disturbance to spawning beds where Federally-listed salmonid fish species occur.
>
> ***Management Direction (all Districts)***
> For streams with salmonid species listed under the Endangered Species Act, livestock will not be released into riparian areas until 30 days following emergence of salmonids from spawning beds.

While this protection of ESA fish from direct mortality from livestock trampling is certainly necessary, it is not sufficient to prevent livestock damage to riparian vegetation needed to prevent loss of shade, prevent loss of streambank stability, reduce erosion, and prevent increased nutrient loading. Furthermore, the DEIS/RMP is defective because none of the season-of-use-periods for allotments (DEIS 1227-1235) identify a specific turn out date that would demonstrate that "livestock will not be released into riparian areas until 30 days following emergence of salmonids from spawning beds." The DEIS has no analysis of spawning periods of listed fishes and dates of emergence for each critical stream reach within allotments. The DEIS fails to identify a biologically determined turn out date for individual allotments/pastures that could differ from those in (DEIS 1227-1335).

The Rangeland Health Standards Assessments posted to district websites do not identify critical habitat stream reaches for listed fishes, nor do they specify the grazing season or grazing system for each critical habitat stream reach. Rangeland Health Standards Assessments are inadequate for RMP decisions concerning protection and management of critical stream habitat for listed fishes because most are from prior to 2008 and they do not provide condition and trend information for critical stream habitat miles. The DEIS:386 (Table 3-96) identifies 19 allotments that are not meeting rangeland health standards due to livestock grazing. The DEIS :386 states that "In those allotments, the BLM adjusted livestock grazing management to ensure significant progress toward meeting the standards and to eliminate livestock grazing as the causal factor for not meeting the health standard." The alleged adjustments have not occurred. There is no documentation in the DEIS/RMP or district websites that there has been any adjustments to grazing management on any streams or critical stream habitat of listed fishes. There is no documentation in the DEIS/RMP or district websites that there has been any recent improvement to any streams or any critical stream habitat of listed fishes.

Table K-1 Klamath Falls (DEIS:1227-1233) identifies seven allotments not meeting rangeland health standards due to grazing: Dixie (2002), Adams (2005), Harpold Chaining (2007), Short Lake (2005),Bumpheads (2003), Pankey Basin (2003), and Willow Valley (2000/2003). Table K-2 Medford (DEIS 1233) identifies five allotments not meeting rangeland health standards due to grazing: Cove Creek (2011), Conde Creek (2009), Brownsboro (2003), Yankee Reservoir (2003), and Canal (2003). The Dixie Allotment, Bumpheads Allotment, Willow Valley Allotment, Cove Creek Allotment, Yankee and Reservoir Allotment with failing rangeland health standards are identified "I" for "Improve" and "would be managed to resolve a high level of resource conflicts and concerns and receive the highest priority for funding and management actions". (DEIS 12227-12335). The DEIS:387 "assumed that for the 12 grazing allotments in **Table 3-96** where grazing was a casual factor within one year of the Rangeland Health Assessment, the BLM would make, or has made, a change in livestock grazing that will result in significant progress toward fulfillment of the standards." There is no documentation that alleged changes have been made. The RMP/DEIS is defective because none of the action alternatives except alternative D identifies any specific changes in the failing Allotments since the Rangeland Health Assessments were completed 4-15 years ago.

The DEIS: 387: states "Only Alternative D would make these 12 allotments unavailable to livestock grazing. In Alternative D, some allotments not meeting rangeland health standards would recover at a faster rate with fewer disturbances when compared to other alternatives." This single sweeping and generalized statement cannot substitute for a hard look at each and every allotment that is failing Rangeland Health Assessments or is failing to adequately protect and improve critical habitat for listed fishes. Furthermore it is disingenuous of BLM to assume improvements when there is no information provided that there has been any change or any improvement in the failing allotments.

The RMP/DEIs failed to describe how the No Action alternative Standards and Guidelines for Grazing Management and Key Watersheds (USDA FS and USDI BLM 1994a) may have greater protection and improvement for critical stream habitat of listed fishes than Action Alternatives A, B,C (which do not have GM-1, GM-2 and GM-3 or Key Watersheds). For analysis purposes it would be assumed that the No Action alternative would be consistent with both the ACS Standards and Guidelines and the Rangeland Health Standards. Whereas alternative A,B, and C would be consistent with Rangeland Health Standards only and would not have key watersheds.

The USDA FS and USDI BLM 1994a:C33 states the following:

> **Grazing Management**
> GM-1. Adjust grazing practices to eliminate impacts that retard or prevent attainment of Aquatic Conservation Strategy objectives. If adjusting practices is not effective, eliminate grazing.
> GM-2. Locate new livestock handling and/or management facilities outside Riparian Reserves. For existing livestock handling facilities inside the Riparian Reserve, ensure that Aquatic Conservation Strategy objectives are met. Where these objectives cannot be met, require relocation or removal of such facilities.
> GM-3. Limit livestock trailing, bedding, watering, loading, and other handling efforts to those areas and times that will ensure Aquatic Conservation Strategy objectives are met.

The DEIS/RMP grazing analysis of critical habitat failed to take a hard look at 20 years of monitoring data that indicates the No Action alternative (NW Forest Plan ACS) has been found to be effective at maintaining and improving aquatic conditions (Miller et al. 2015). The DEIS/RMP alternatives A,B, and C that eliminate the ACS are not supported with comprehensive monitoring data over a 20 year period. Piecemeal rangeland health assessments are useful for "rangeland health" but cannot substitute for aquatic (stream) trend data over a 20 year period. We assert that Miller et al. 2015 is the best available science for comparing the No Action alternative with Action Alternatives A,B, and C that do not include the ACS. The DEIS/RMP failed to disclose that future condition and trend of critical habitat for ESA listed fishes with Action Alternatives A, B, and C is largely unknown or would result in declines as compared to No Action ACS requirements for grazing and key watersheds.

29.6 OHV Activity (Trails and Travel Management): Impacts to Critical Fish Habitat and Listed Fishes from OHV Use, User-Created Routes and Destruction of Riparian Vegetation not Assessed, Disclosed or Restricted.

"The BLM estimates that there are approximately 1,000 miles of non-designated user created routes within the decision area." DEIS: 636. "The BLM is currently working on an inventory of all user-created motorized and non-motorized routes within the decision area." DEIS:1377. Even though the BLM admits there are thousands of miles of unauthorized user created routes and have an inventory of these unauthorized routes, the DEIS makes the unsupported assumption that

“OHV users would operate vehicles consistent with BLM decisions about OHV use.” (DEIS 637). The DEIS analysis assumptions are wrong by a significant amount such that they vastly underestimates impacts to critical habitat from OHV. Even if the BLM claim they cannot “predict the location or effects of any widespread or systematic illegal OHV use” the OHV activity is “significant” within the context of NEPA. The DEIS did not adequately describe the nature and likely significant effects of widespread unauthorized OHV use.

The DEIS:637 makes false statements about the availability of site specific data of OHV use that damages critical habitat: “Although the BLM has some site-specific and anecdotal information about illegal OHV use, the BLM does not have a basis for predicting the location or effects of any widespread or systematic illegal OHV use”. The Medford District has large amounts of geo-spatial data about OHV damage that could have been mapped to identify coho salmon watersheds with critical habitat and high probability for significant impacts. The Medford District is well aware of locations where significant OHV impacts are occurring. For example, the Medford District enacted an emergency OHV closure in the Bunny Meadows area along Forrest Creek to “protect soils, water, and fisheries resources that are being adversely impacted by OHV use and to protect public health and safety.” (USDI BLM 2007) The DEIS/RMP failed to identify known and suspected watersheds/ critical habitat with a history of damage (i.e. baseline conditions impaired by OHV). We ask the BLM to be forthcoming with geo-spatial OHV damage data existing in any BLM District that could have been mapped to identify coho salmon critical habitat at risk for significant OHV impacts.

The DEIS/RMP failed to adequately disclose that forest management (resource) roads, temporary logging routes and skid trails are a major contributing factor for the proliferation of unauthorized motorized (OHV) activity that damages listed fishes watersheds and critical habitat. The DEIS/RMP failed to adequately disclose that OHV routes that damage critical habitat and coho watersheds are “connected” (as defined in NEPA) with timber resource roads and skid trails. The DEIS:1377 describes how timber management is connected to OHV damage but fails to recognize the significance of OHV damage to critical habitat and upland erosion.

> Recreation routes (authorized and unauthorized) have been created in response to demand for trail-based recreation. As demand for trail-based recreation (especially OHV riding) increased, the number of routes increased. The routes developed for administrative and resource uses provide primary access routes throughout most of the decision area. These primary access routes were created for administrative and resource uses, not for recreation. As a result, the routes are not always providing the recreation experience users are looking for. Over time, recreation use extended, connected, or pioneered new routes from the administrative and resource use routes. This pattern of route development has resulted in high route densities where the administrative and resource use routes provided access for recreation use.

We assert that the DEIS/RMP has failed to take a hard look at unauthorized OHV damage to critical habitat and failed to restrict OHV use in Riparian Reserves or Critical Habitat via OHV area designation as “closed” or “limited to designated routes”. All action alternatives vastly increase areas where OHV use of “existing routes” will be authorized (DEIS:1376 Table P-2).

The DEIS:637 states: “In most of the interior/south, the ability to track numerous different routes across the open spaces can lead to degradation and erosion in a greater proportion than most of the coastal/north." We assert that the DEIS/RMP failed to take a hard look at erosion from OHV routes that would affect critical habitat. For example, user created routes do not implement BMPs (DEIS 1140-1154) and would be expected to have high erosion rates affecting critical habitat. The DEIS/RMP failed to take a hard look at destruction of riparian vegetation/stream habitat at numerous stream crossings from OHV and the common practice of "creekin" where OHV are operated within the stream channels (i.e. stream channels are uses as motorized "routes")

The DEIS:637 falsely states: "The BLM analyzed the effects that off-highway vehicle allocations would have on other affected resources within the planning area." The action alternatives would allow OHV use on 2.3 million acres that are known to contain thousands of miles of user created (existing) routes. Therefore, it would seem reasonable to expect significant impacts to critical habitat (e.g. coho streams) and listed fish species from ongoing use and the proposed allocations. However, the DEIS:286-320 Hydrology has no discussion of sediment or other impacts from OHV use or OHV allocations. Similarly, the DEIS:217-235 Fisheries has no discussion about impacts from OHV use or OHV allocations.

29.7 The DEIS fails to adequately disclose that existing roads in the decision area and planning area have significantly increased sediment in critical habitat streams.

The DEIS fails to adequately disclose that logging roads are a major chronic and episodic contributing factor causing critical stream habitat to be outside the "range of natural variability" with regard to sediment. The DEIS relies on the flawed sediment analysis identified by EPA 2008.

The DEIS:313 states:

> "The analysis compares surface erosion from roads for existing roads and the projected new roads under each alternative. Sediment delivery from roads can result from surface erosion, gullying, and mass wasting. However, due to limitations of model capability and geospatial processing across the large planning area, this discussion is restricted to surface erosion from roads."

The DEIS/RMP is in error because it lumps road surface sediment (DEIS:314 Table 3-72) for the entire decision area/planning area and fails to make geo-spatial comparisons of road surface sediment from HUC 10 and HUC 12 watersheds that would affect critical habitat for listed fishes (e.g. SONCC coho salmon). Similarly, the DEIS/RMP failed to develop analysis that could direct road decommissioning in HUC 12 watersheds where coho salmon and other listed fishes are known to spawn.

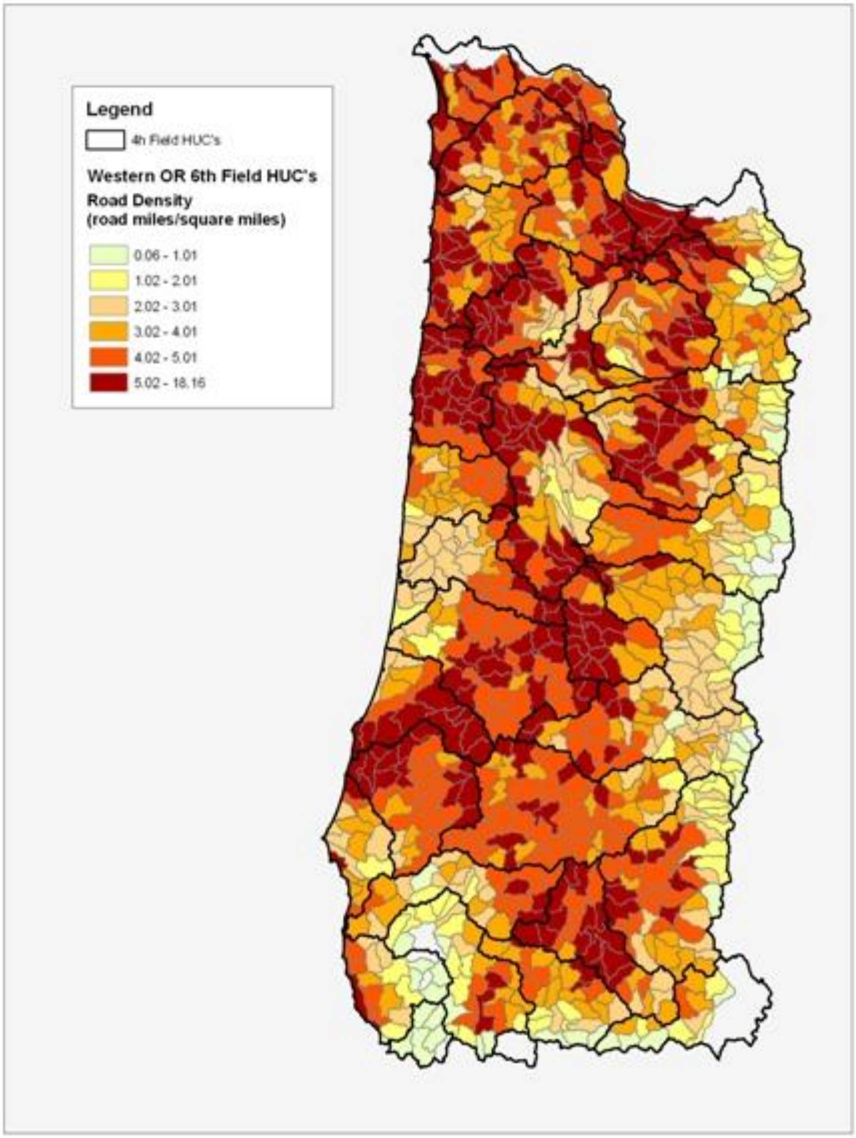
We assert that the DEIS/RMP fails to identify specific conservation actions for existing roads in specific coho salmon HUC 10 and HUC 12 watersheds that will "contribute to the conservation and recovery of threatened and endangered species". There needs to be hierarchical roads watershed analysis to properly direct limited resources towards watersheds where the "purpose and need" for ESA listed fished can best be accomplished.

The BLM is in procession of detailed GIS spatial data for non-highway roads in the planning area. We quote from the GIS metadata as follows:

Originator: OR/WA BLM
Publication_Date: Unknown
Title: Ground Transportation Roads Publication Arc
Geospatial_Data_Presentation_Form: vector digital data
Publication_Information:
Publication_Place: Portland, OR
Publisher: OR BLM
Other_Citation_Details: Known locally as gtrn_pub_roads_arc
Abstract: Publication transportation dataset showing both BLM inventoried and non-inventoried roads in Oregon & Washington. This data does not include highways. For highway data see the citation in the Cross Reference Section.
Purpose: Resource Management Planning

Such a layer will allow for analysis at HUC 10 or HUC 12 level to determine where road density places aquatic resources at risk. The map below was produced by the Coast Range Association from the BLM's road data and is an example of road density analysis the DEIS failed to conduct.

Road Density Analysis for HUC 6th Field Watersheds.
Coast Range Association 2007.



Firman et al. (2011) provides a strong scientific basis for reducing existing road miles to increase/maintain coho salmon numbers in small HUC 12 catchments. When roads cannot be decommissioned with hydrologic obliteration, the road surface connectivity to stream channels would be reduced (BMP 26 DEIS:1144) and all stream crossings would have critical dips to prevent the road from capturing stream flow during floods (BMP R19 and R20 DEIS:1143).

The DEIS erred by not including gullying and mass wasting from roads that have serious sediment related impacts to critical habitat. This erosion generally occurs episodically during high rainfall events and the amount of sediment is often much greater than annual surface erosion. Techniques area available to make comparison estimates among coho salmon HUC 10 and HUC 12 watersheds that contain critical habitat. For example, the number of mid-slope road crossings would indicate the imminent risk and provide a basis warranting protective Standards for these watersheds.

The DEIS fails to disclose the consequences to coho salmon and critical habitat of excessive road density and not decommissioning high risk roads and not storm proofing high risk stream crossings.

A February 2015 flood in the Rogue River watershed caused numerous road failures on the Grants Pass Resource Area (USDI BLM 2015b). The sediment impact of these road failures to coho critical habitat was likely severe. The point is that the RMP has failed to direct implementation of BMPs towards coho watersheds that need them the most based on high risk mid-slope roads that lack storm proofing. These kinds of spatially explicit analyses must be made during the RMP process since all Districts have bad roads, however, analysis could show which watershed areas need the road related sediment abatement the most based on risk to critical habitat. The RMP would provide spatially explicit direction and management objectives for high priority coho watersheds with critical habitat at high risk from bad roads.

30. The DEIS/RMP failed to compile and analyze percent fine sediment in specific planning area streams or decision area stream segments (i.e. spatially explicit analysis).

Data to conduct stream-specific sediment analysis is available from several sources but the DEIS failed to use them to develop planning area/decision area stream specific base line conditions and failed to identify HUC watershed priorities for critical stream habitat sediment reduction (e.g. coho streams). In other words, the DEIS/RMP failed to establish baseline stream conditions for sediment from known data sets. Baseline sediment condition is needed to ensure that acceptable sediment levels are maintained and deleterious sediment levels are reduced during the life of the RMP. Many of these data are relevant for the RMP as <u>best available science</u> to demonstrate maintenance and to actively improve critical habitat for listed fishes as required by the ESA.

<u>ODEQ 2009</u>

The DEIS:231 cites ODEQ 2009:12-13 which sampled streams in the planning area and decision area to rate sediment effects in Oregon streams (i.e. baseline conditions) but the BLM failed to coordinate with ODEQ to obtain the sediment related data from the specific stream sample sites in the decision area/planning area streams for use in spatially explicit analysis. The DEIS/RMP failed to establish baseline conditions for sediment from known data sets.

<u>Miller et al. 2015 (New Information from 20 year monitoring of NW Forest Plan)</u>

The DEIS:231 provides a summary of Lanigan et al. 2012 but fails to obtain monitoring data used in Lanigan et al 2012 (planning area stream name data and decision area stream name data) to establishing baseline sediment conditions. New information about sediment in streams and perhaps even trend data for stream sediment is now available from Miller et al. 2015. While Miller et al. 2015 draft analysis tends to lump federal streams in broad areas, we note that Stephanie Miller, the principal author, is an employee of BLM and certainly could provide the BLM with planning area stream specific sediment data and decision area data about baseline sediment condition and trend for planning area streams, decision area stream segments, and sediment data for critical stream habitat. The DEIS/RMP failed to establish baseline stream conditions for sediment from known data sets. Baseline sediment condition is needed to ensure that acceptable sediment levels are maintained and deleterious sediment levels are reduced during the life of the RMP.

Anlauf et al. 2009; Anlauf et al. 2011. (New information from ODFW)

Anlauf et al. 2009 and Anlauf et al. 2011 provide sophisticated analysis of fine sediment and other parameters in the planning area that is based in part from sampling in decision areas streams. The DEIS: 230 fails to adequately describe cumulative sediment effects from logging and greatly altered stream channels from historic conditions (i.e. context). Anlauf et al. 2011:53 provides a more accurate summary of cumulative effects (most related to logging) that have vastly altered stream channels causing streams to have significantly departed from the range of natural variability with respect to sediment and other parameters.

> "Coastal streams in Oregon continue to manifest the legacies of in-channel and riparian disturbances of the past 150 years (Beschta 1979; Montgomery 2003). While some disturbances are natural (e.g., fire, flooding), influencing the diversity and complexity of habitat for salmonids through wood and coarse sediment inputs, anthropogenic disturbances often alter the natural state of in-stream habitats. These alterations not only hinder the ability of streams to support salmonids, but also lengthen the recovery time for all ecosystem components (Reeves et al. 1995). Streams have been dredged, blasted, channelized, and splash-dammed (1870–1956) to facilitate log drives, creating immediate and lasting effects on fisheries and stream channels (Miller 2010). Widespread removal of logging slash and natural debris occurred in the 1960s and early 1970s to compensate for the heavy debris load, resulting in additional simplified channels and habitats. These anthropogenic activities, coupled with natural climatic, hydrologic, and fire events, left streams simplified and in a continual state of disturbance. "

Anlauf 2009:13-15; provide analysis results for sediment conditions and trends in federal streams, some of which are BLM decision area streams. For example, 23% of federal streams sampled had relatively high measurements for fine sediment (Anlauf 2009:15). The DEIS/RMP failed to obtain and analyze planning area stream specific data and decision area stream specific data about fine sediment (available from ODFW) that was used in Anlauf et al. (2009) and Anlauf et al. (2011). The DEIS/RMP failed to establish baseline stream conditions for sediment from known data sets. Baseline sediment condition is needed to ensure that acceptable sediment levels are maintained and deleterious sediment levels are reduced during the life of the RMP.

ODFW and BLM stream surveys through 2014

The RMP/DEIS failed to compile and analyze data about fine sediment in planning area and decision area streams available from ODFW and BLM stream surveys. Data is available from ODFW Aquatic Inventories Website
http://oregonstate.edu/dept/ODFW/freshwater/inventory/index.htm or by directly contacting ODFW research persons.

A priority for DEIS/RMP stream sediment analysis are coho salmon streams such as Cheney Creek, a tributary to the Applegate River with typical mixed BLM/private ownership. The 2008 ODFW stream survey found 22% fine sediment in BLM reach 5 where coho salmon are known to spawn (ODFW 2008). The BLM/RMP did not use critical stream habitat sediment data to prioritize HUCs for roads sediment abatement (e.g. Cheney Creek). The ODFW and BLM have collected fine sediment data from hundreds of streams and stream reaches from planning area and decision area streams. Many of these data are relevant for the RMP as best available science to demonstrate maintenance and to actively improve critical habitat for listed fishes.

31. The DEIS/RMP failed to analyze migration barriers to fishes in specific planning area or decision area stream segments (i.e. spatially explicit analysis). There is no schedule to remove priority passage barriers in critical habitat.

The DEIS:659 states: "Implementation of any of the alternatives would not affect fish passages administered by the BLM within the decision area because 97 percent of the large culverts that serve as fish passage are in good condition. The majority of fish barriers within the planning area are on private lands." The RMP/DEIS fails to provide an up-to-date spatial analysis of migration barriers of all culverts in the decision area and large culvert barriers in the planning area. The RMP/DEIS failed to provide policy direction and commitments of funding for coordinated removal of fish passage barriers on private lands (e.g. seek "partners"). Apparently the BLM routinely seeks "partners" to replace flood damaged stream crossings on mixed ownership log haul roads (USDI BLM 2015b). The DEIS/RMP fails to explicitly specify that all post-flood culvert repair/replacement on mixed ownership log haul roads will provide fish passage regardless of ownership.

The DEIS: 907 states: "Remove or modify constructed fish passage barriers to restore access to stream channels for all life stages of fish species." The DEIS/RMP has not identified priority sites for fish passage barrier removal or a schedule for removal of priority fish passage barriers. The DEIS/RMP failed to provide a schedule for removal of priority fish passage barriers in critical habitat. A schedule for removal of barriers is important for coho salmon because they have a 3 year life cycle. Failure to schedule barrier removal in a timely manner means that some coho salmon will not be able to benefit from passage barrier removal because they have completed their life cycle or they no longer persist in the streams with passage barriers.

The DEIS/RMP fails to identify a specific BMP that requires fish passage for culverts. Best Management Practices for Roads and Landings (DEIS 1140-1154:Table I-1) do not list a BMP to specifically require fish passage. BMP R-18 (DEIS 1142) provides minor engineering constraints about grade. Ironically, a Recreation BMP (REC 8) does address fish passage: "Stream crossings would be designed to accommodate active channel width, bed load, and fish passage and exceeding capacity for the 100-year flood event." A similar BMP is needed for Roads and Landings.

32. The DEIS/RMP failed to compile and analyze stream temperature data from all critical habitat planning area streams and decision area stream segments (i.e. spatially explicit analysis).

The DEIS failed to discuss stream temperatures for listed fishes in the context of climate change. Temporal baseline stream temperature maximums have not been identified for critical habitat streams.

Stream temperature data to compile baseline stream temperature data is available from several sources (ODEQ, BLM, Miller et al. 2015), but the DEIS failed to use stream specific temperature data to develop planning area/decision area stream specific base line conditions. The DEIS/RMP failed to identify priorities for maintaining or improving stream temperatures in critical habitat (e.g. coho streams). In other words, the DEIS/RMP failed to establish baseline stream temperature conditions from known data sets. Baseline stream temperature and trend is needed to ensure that acceptable stream temperature maximums meeting DEQ standards (DEIS:232) are maintained and unacceptable stream temperatures above DEQ standards are reduced during the life of the RMP. Stream temperature data is relevant for the RMP because it is best available science to demonstrate stream temperature maintenance for listed fishes and to actively reduce stream temperatures in critical habitat as required by the ESA.

The Hydrology section (DEIS:286-297) and Fisheries section (DEIS:232-233) are inadequate because they focused almost entirely on shade models with respect to impacts of timber harvest and failed to consider stream temperature change in the context of climate change. The Hydrology and Fisheries sections discussions of stream temperature seems to have ignored that "Northwest, warming air temperatures and declining summer base flows are strongly associated with warming stream temperatures (Kaushal *et al.* 2010, Isaak *et al.* 2012), with additional warming expected through the 21st century. If past trends continue, then some streams would be 1.6 to 2.0 ºF warmer by mid-century than the 1980-2009 baseline (Isaak *et al.* 2012, Wu *et al.* 2012)." (DEIS:157) The DEIS:159 further states that "The ability of active management to mitigate projected changes in stream temperature appear to be limited since changing air temperatures account for much of the expected changes in stream temperature (Holsinger *et al.* 2014). Equally important, however, is that wildfires and fuels management appear to have limited ability to adversely affect stream temperatures much beyond the immediate affected area." The Hydrology and Fisheries sections appear to have been written in ignorance of what the Climate Change section was reporting about stream temperature.

The DEIS:293 boasts of declining stream temperatures due to forest recovery from past clear cutting but fails to put these stream temperature decreases in the context of climate change. Yet, an examination of Vincent Creek stream temperature data (DEIS 293 Figure 3-86) illustrates increasing stream temperatures for 2011,2012,2013, and 2014 which are opposite to DEIS statements about decreasing stream temperature trend.

The DEIS/RMP fails to explicitly state how it will coordinate with DEQ to ensure that an adequate number of decision area and planning area streams will be effectively monitored for stream temperature. The DEIS/RMP must identify stream temperature monitoring sites for decision area stream segments and planning area streams. A schedule for systematic stream temperature monitoring must be included in the RMP to ensure that stream temperatures do not increase.

The DEIS/RMP failed to adequately consider and quantify cumulative effects of private land logging on stream shade and stream temperatures in the planning area (e.g. mixed private/BLM ownership of streams). Groom et al. 2011 reports that private land logging under the Oregon Forests Practices Act resulted in significant stream warming of 0.9 to 2.5 degrees C. This is important because any shade reduction on BLM lands would be exacerbated by shade reductions on private lands. The DEIS/RMP has failed to coordinate with ODF and ODEQ to ensure that adequate shade is maintained on intermingled private lands.

The DEIS/RMP failed to consider blowdown of residual shade trees due to thinning and clearcutting activities that would reduce long-term shade. The EPA (2007) states that "Research has found that in the 1 to 3 years after harvest, windthrow affects, on average, 33% of buffer trees with blowdown exceeding 90% at the high end of the range (Grizzel and Wolff 1998). Other analysis from the west Cascades of Oregon indicates that about 75% of riparian buffers less than 80 feet wide experience greater than 20% blowdown (Pollock et. al. 1998)."

The DEIS/RMP failed to consider new information in Miller et al. 2015:66,40 which reports continued decreases of stream temperatures with the NW Forest Plan ACS. The DEIS fails to acknowledge that there is no similar empirical data demonstrating stream temperature decreases for any of the action alternatives. The effectiveness of all action alternatives for maintaining or decreasing stream temperatures is based on computer modeling that failed to consider reduced shade on adjacent private lands, climate change, road construction, and blowdown. No monitoring or empirical data has been provided in the DEIS demonstrating that the shade modeling is accurate during the next 10- 100 years. Groom et al. 2011 found that shade modeling is often inaccurate when subjected to field monitoring. The DEIS fails to acknowledge that the NW Forest Plan/ACS has a proven 20 year monitoring record of reduced stream temperatures (i.e. certainty for reducing stream temps). The DEIS assertions of no increases of stream temperature lack certainty because there is no monitoring data for DEIS action alternative logging schemes in the former NW Forest plan riparian reserves.

33. The DEIS/RMP failed to compile and analyze data about excessive nutrient loading, poor dissolved oxygen, high pH, total solids, excessive ammonia, nitrate/nitrite, toxic metal ions, mercury, and excessive total phosphate in specific planning area streams and decision area stream segments (i.e. spatially explicit water quality analysis for BLM decision streams).

Water quality data needed to compile baseline water quality condition (dissolved oxygen, dissolved oxygen percent saturation, biochemical oxygen demand, pH, total solids, ammonia, nitrate/nitrite and total phosphate) is available from ODEQ and ODEQ 2009. The DEIS/RMP failed to compile and analyze stream specific water quality data to develop planning area/decision area stream specific base line conditions. In other words, the DEIS/RMP failed to establish temporal baseline water quality conditions from known data sets .The DEIS/RMP failed to identify priorities for maintaining or improving water quality in critical habitat (e.g. coho streams). Baseline water quality and trend is needed to ensure that acceptable water quality conditions that are currently meeting DEQ standards are maintained and unacceptable water quality conditions (exceeding DEQ standards) are reduced during the life of the RMP.

Water quality data is relevant for the DEIS/RMP because it is best available science to demonstrate that water quality is maintained for listed fishes and to implement needed conservation actions to make measurable progress towards attaining water quality standards in critical habitat as required by the ESA and Clean Water Act.

The DEIS:920 provides a one sentence management objectives and management direction for water quality:

"Management Objective

Maintain water quality within the range of natural variability that meets ODEQ water quality standards for drinking water, contact recreation, and aquatic biodiversity.

Management Direction

Select and implement site-level BMPs to maintain water quality, for BLM activities and discretionary actions of others crossing BLM lands."

Adequate Standards and Guidelines are necessary for site-level maintenance of water quality, however, only a list of BMP's are offered in Appendix I and they are not adequate for an RMPs covering 2.5 millions of acres and thousands of stream miles. The DEIS/RMP requires coordination with DEQ to establish monitoring sites, monitoring parameters, and a monitoring schedule to obtain water quality data needed to assure that all water quality standards are being maintained or improved on decision area stream segments and relevant planning area streams. The DEIS/RMP must require coordination with DEQ such that collected water quality data can be used to assess progress of the RMP similar to analysis in ODEQ 2009. This means that data collection and analysis would focus on relevant planning area mixed ownership streams and decision area segments.

The RMP failed to identify specific planning area streams and decision area stream segments that are failing water quality standards. The RMP has not provided a schedule for implementing specific actions in watersheds that are not achieving water quality standards (i.e. certainty). The RMP has not indicated the expected rate of improvement for streams and watersheds not meeting water quality standards.

We are particularly concerned about cumulative impacts of logging, grazing and mining that are often the principal cause for poor water quality. BLM watershed analyses have identified many of the worst streams for water quality, probable causes, and needed corrective actions but the RMP/DEIS has failed to prioritize watersheds and identify needed actions. The DEIS/RMP failed to identify specific critical habitat reaches for listed fishes as a top priority for improved water quality. The RMP/DEIS has not demonstrated a substantive, science based contribution towards landscape level improved water quality that would help recover listed fish species. The RMP/DEIS is not meeting its purpose and need with respect to water quality.

The DEIS:234 provides a biased and optimistic view of how increased nutrients would be beneficial to fish due to increased primary productivity from reduced riparian canopy. Frissell et al. 2014:17 provides a summary of best available science on the issue of nutrient loading/impaired water quality with reference to variable width logging in riparian reserves:

> The question of what role Riparian Reserves play in nutrient retention has received insufficient consideration in the Pacific Northwest. Research on the nutrient retention efficiency of various forested buffer widths from the Upper Midwest and other regions (Nieber et al. 2011, Sweeney and Newbold 2014) suggests that average phosphorus and nitrogen retention is around 80% for undisturbed buffer zones of 30 m (100 feet) wide. Extrapolation suggests that buffers of 45 m (150 feet) or greater might be necessary to attain 90-99 percent retention of nutrients mobilized by upslope disturbance. These distances are likely too small for Pacific Northwest forests, where slopes are steeper, soils tend to be more porous, and macropores or channeled flow from uplands are more common than in the Midwest (all factors

identified in Nieber et al. [2011] as reducing retention efficiency).

The best available science suggests that even 100 ft buffers allow for significant amounts of phosphorus and nitrogen to enter streams. The DEIS fails to report that the no action alternative (NW Forest Plan ACS) would trap the greatest amount of mobilized nutrients and reduce the potential for excessive nitrogen and phosphorus entering streams. Many logged over streams in Oregon exceed standards for phosphorus (e.g. Sucker Creek trib to East Fork Illinois River).

34. The DEIS/RMP fails to adequately describe how the cumulative effects of logging, roads, and other disturbances caused by timber operations have depleted large wood in streams and depleted future sources of large wood for 100 years or more.

The DEIS fails to provide baseline amounts of wood in planning area streams and decision area stream segments (i.e. spatially explicit quantitative analysis). The DEIS/RMP fails to provide a schedule for increasing large wood towards meeting ODFW salmon stream standards and NMFS large wood standards for critical habitat in the SONCC recovery plan.

The DEIS:222-223 provides only partial context and background for why critical habitat streams have been depleted of large wood and the expected lack of dependable large wood inputs from many critical habitat riparian reserves. The cumulative effects of past and ongoing logging are largely responsible for depleted large wood and relatively low ESA listed coho salmon productivity in planning area streams and decision area stream segments.

Anlauf et al. 2011:53 provides historical context for large wood in coastal streams:

> "Coastal streams in Oregon continue to manifest the legacies of in-channel and riparian disturbances of the past 150 years (Beschta 1979; Montgomery 2003). While some disturbances are natural (e.g., fire, flooding), influencing the diversity and complexity of habitat for salmonids through wood and coarse sediment inputs, anthropogenic disturbances often alter the natural state of in-stream habitats. These alterations not only hinder the ability of streams to support salmonids, but also lengthen the recovery time for all ecosystem components (Reeves et al. 1995). Streams have been dredged, blasted, channelized, and splash-dammed (1870–1956) to facilitate log drives, creating immediate and lasting effects on fisheries and stream channels (Miller 2010). Widespread removal of logging slash and natural debris occurred in the 1960s and early 1970s to compensate for the heavy debris load, resulting in additional simplified channels and habitats. These anthropogenic activities, coupled with natural climatic, hydrologic, and fire events, left streams simplified and in a continual state of disturbance."

The DEIS/RMP did not establish quantitative or even qualitative baseline large wood conditions for planning area streams relevant to the RMP and decision area stream segments. The DEIS:220 states that "[t]he BLM conducted this analysis at the watershed scale, because at finer scales (e.g., individual stream reaches), the BLM would not be able to interpret how changes in the amount of wood available for delivery to streams would affect fish habitat or populations" and further states that "[t]he BLM analyzed the potential contribution of wood to streams over time, but did not attempt to model actual wood delivery to streams over time under each alternative."   We first want to make clear that modeled riparian stand structure in 2133 (DEIS 224-228) is promising but largely irrelevant to the recovery of listed coho salmon and their critical habitat. Coho salmon have a 3-year life cycle. Benefits of riparian forest recovery in 2113 are moot since the coho living now and immediate future generations will not benefit from them and coho salmon may not persist for 100 years in the modeled streams to realize the modeled benefits.

We assert that to make a science based and substantive contribution to the recovery of coho salmon the DEIS/RMP must first establish baseline conditions for large wood and then identify priority planning area streams and decision area stream segments as priorities for increasing large wood according to a schedule over the next ten years.

Data to conduct stream-specific large wood analysis are available from several sources but the DEIS failed to use them to develop planning area/decision area stream specific base line conditions for large wood and failed to identify HUC watershed priorities for increasing wood in critical (stream) habitat for coho salmon. In other words, the DEIS/RMP failed to establish baseline stream conditions for large wood from known data sets. Baseline large wood condition is needed to ensure that acceptable large wood levels are maintained and critical habitat streams have increased large wood during the life of the RMP (especially the first ten years). Many of these data are relevant for the RMP as <u>best available science</u> to demonstrate large wood maintenance and to actively improve critical habitat for listed fishes as required by the ESA. The best available science for levels of large wood are found in NMFS 2014.

<u>Miller et al. 2015 (New Information from 20 year monitoring of NW Forest Plan)</u>
The DEIS:231 provides a summary of Lanigan et al. 2012 but fails to obtain monitoring data used in Miller et al 2015 (planning area stream name data and decision area stream name data) to establish baseline large wood densities. New information about wood densities in streams and perhaps even trend data for individual streams is now available from Miller et al. 2015. While Miller et al. 2015 draft analysis tends to lump federal streams in broad areas, we note that Stephanie Miller, the principal author, is an employee of BLM and certainly could provide the BLM with relevant planning area stream specific large wood data and decision area data about baseline large wood densities. The stream monitoring data collected for Miller et al. 2015 could be used by BLM to establish large wood trend for some planning area streams, decision area stream segments, and critical habitat. The DEIS/RMP failed to establish baseline stream densities for large wood from known data sets. Baseline large wood density is needed to ensure that desirable large wood densities are maintained or increased during the first five years of the RMP and every 5 years thereafter.

<u>Anlauf et al. 2009; Anlauf et al. 2011. (New information from ODFW)</u>
Anlauf et al. 2009 and Anlauf et al. 2011 provide sophisticated analysis of large wood and other parameters in the planning area that is based in part from sampling data in decision area and planning area streams.   Anlauf et al. 2011 provides compelling literature reviews of how logging has caused streams to have large wood levels much lower than the range of natural variability, fortunately some streams have shown improvement with implementation of NW Forest Plan ACS. The DEIS/RMP failed to obtain and analyze planning area stream specific wood data and decision area stream data about large wood levels (available from ODFW) that was used in Anlauf et al. 2009 and Anlauf et al. 2011. The DEIS/RMP failed to establish baseline stream conditions for large wood from known data sets. Baseline large wood levels is needed to ensure that acceptable

large wood levels are maintained or increased in critical habitat during the first 5 years of the years of the RMP and every 5 years thereafter.

ODFW and BLM stream surveys through 2014

The RMP/DEIS failed to compile and analyze data about large wood levels in planning area and decision area streams available from ODFW and BLM stream surveys. Data is available from ODFW Aquatic Inventories Website http://oregonstate.edu/dept/ODFW/freshwater/inventory/index.htm or by directly contacting ODFW research persons.

The 2015vDEIS/RMP has failed to develop a schedule for maintaining and increasing large wood in specific critical habitat stream reaches with artificial placement of large wood. The DEIS:222 states : "[a]ctive restoration to offset the loss of habitat has involved the placement of logs and whole trees in addition to boulders into these bedrock channels. These restorative efforts persist for several decades as riparian stands develop that are capable of supplying long-term sources of wood to streams." The DEIS:219 states: However, "The remaining large pieces of instream wood are depleted at an average rate of 1.5 percent per year (Murphy and Koski 1989)." (DEIS:221). This means that artificial placement of large wood will be needed for the next 50-100 years while trees grow to sufficient size to support coho salmon and critical habitat.

The DEIS:219 states that "[t]he BLM has implemented in-stream fish habitat restoration projects on about 230 miles of fish-bearing streams on BLM-administered lands and on adjacent private lands. This accounts for about 7 percent of fish-bearing streams in the decision area and about one percent of all fish-bearing streams in the planning area." Nevertheless, there is no schedule in the RMP for fish habitat restoration with large wood in critical coho habitat that would provide certainty that large wood would be maintained or increased for the first 5-10 years of the RMP. The DEIS/RMP is not contributing to recovery of listed coho salmon because there is no certainty that critical stream habitat would be maintained or improved with large wood placement commensurate with the number of stream miles needing improvement.

The DEIS:219-228 modeling of stand characteristics within one site potential tree of streams is not based on the best available science. This is important because anticipated section 7 consultation (unlike NEPA) must be based on the best available science. The technical studies produced by the Regional Executive Team are the best available science about thinning in riparian reserves (Spies et al. 2013, Anthony 2013, Leinenbach et al.2013). (DEIS State Director Jerome E. Perez and other agency heads signed a June 6, 2013 memo agreeing that the scientific reports produced by the Regional Executive Team are the best available science for consultation purposes (BLM/FS/FWS/NOAA Fisheries-Memorandum). The DEIS fails to make a scientifically valid comparison of action alternatives with regard to riparian thinning because it does not explicitly provide key findings of Spies et al. 2013 to inform the decision maker and the public about important consequences of thinning in riparian reserves. The DEIS:222 acknowledges Spies et al. 2013 but then fails to report its key findings that do not support the conclusions of the DEIS riparian modeling exercise and more importantly do not support the riparian reserve thinning directives in DEIS Appendix B (905-985).

Action alternative riparian thinning during the first decade would reduce large wood potential recruitment because the riparian thinning would not be consistent with ACS objectives. For example, commercial thinning of riparian reserves in alternative C (DEIS:972) has no diameter limits. Spies et al. 2013:21 states: "[w]hen production of larger instream wood such as key pieces (Abbe et al. 1996, Montgomery et al. 1996, Fox and Bolton 2007) is targeted, thinning stands with larger trees will be consistent with that goal, provided that the size of the trees in the stand is smaller than the target size of the key pieces. " (emphasis added) Thus, alternative C is inconsistent with Spies et al. 2013 because it would allow the commercial removal of >20" dbh trees that could contribute large wood to the stream. Alternative C provides for the directional felling of trees towards the stream channel. Unfortunately, merely felling will not ensure that the large wood actually enter the stream channel. The DEIS/RMP fails to provide that cable yarding is likely necessary to ensure that felled trees towards the stream channel are actually functional within the stream. Spies et al. 2013:22 states "[a]s we identified in the thinning section above, it is possible to increasing dead wood delivery to streams when thinning. This is accomplished by actively dropping tree boles into the stream during thinning operations. Such dead wood restoration thinning would immediately increase the amount of wood in the channel, which should provide benefits to fishes and other aquatic organisms." (emphasis added) Spies et al. 2013:23 further states: "[w] hen less [more?] than or 15% of the thinned trees were tipped at each entry, the total amount of dead wood in the channel exceeded the unthinned scenario. This analysis of tree-felling into streams during thinning is very preliminary and needs further examination." (emphasis added)

Spies et al. 2013 does not recommend routine tree felling into streams as is written in the action alternatives because the technique "needs further examination". An ongoing practice by Medford District BLM is the felling of large trees from at least 175 ft distant from the stream (the "no action" outer fish bearing stream riparian reserve) and then cable yarding the large boles with small equipment into the stream at functional locations. This technique has no negative effects because the trees used would not fall into the stream naturally because they are more than 1 tree height distant. We assert that tree tipping "towards the stream" as described in DEIS is not based on best available science and must be further tested with field studies before being included as a management directive for BLM lands statewide. We further assert that tree tipping associated with commercial removal is mitigation for the commercial removal. If tree tipping mitigation is needed to offset adverse impacts of commercial tree removal in riparian reserves, then commercial tree removal should not be allowed in the first place as is the policy direction with the ACS (no action).

35. The RMP/DEIS includes no schedule for monitoring important stream habitat parameters in planning area streams and decision area stream segments. The BLM has not coordinated with ODFW and ODEQ to monitor stream fish habitat, water quality and densities of spawning or juvenile listed fish species (e.g. coho salmon).

The DEIS:223 states that "[m]onitoring results conclude that the ecological condition of approximately two-thirds of the watersheds in the Northwest Forest Plan area have improved in condition in the past two decades." The RMP/DEIS fails to identify stream locations within the decision area that would be monitored to provide statistical data that habitat and populations of listed fishes are being maintained or improved. Since all action alternatives abandon the NW Forest Plan ACS, the BLM will have to provide a similar monitoring program for stream habitat (as implemented in Miller et al. 2015) and water quality (ODEQ 2009) with sufficient BLM stream sites to demonstrate that critical habitat parameters and water quality parameters are being maintained or improved. The BLM cannot piggyback on NW Forest Plan monitoring since they are no longer implementing the ACS as intended.

The RMP fails to provide a ten year (decadal) time table for spatially explicit mandatory actions at the HUC 10 level or HUC 12 level to demonstrate reasonable and measurable progress towards attaining water quality and stream habitat standards over the next ten years by reducing road related sediment, increasing artificial wood with a variety of techniques, and increasing shade with plantings. Similarly, the RMP failed to require that episodic and chronic existing road related sediment will be reduced at the HUC 10 or HUC 12 level with techniques that disconnect the road runoff from the stream network, implement critical dips at all stream crossings with diversion potential, and obliterate or reroute roads that are a major sediment threat to coho salmon spawning/rearing critical habitat. The RMP failed to provide for explicit coordination with ODFW, NMFS and private land owners to remove or modify the most serious fish migration blockages. The RMP/DEIS fails to provide for a statewide priority list for ESA listed fish relevant to planning area and decision area streams. The RMP failed to require that each year the BLM report quantifiable and substantial progress for each ESA listed fish.

The DEIS:219 fails to report the best available science from the 5-Year Review: Summary and Evaluation of Southern Oregon/Northern California Coast Coho Salmon ESU (NMFS 2011)

36. The RMP/DEIS failed to incorporate the best available science identified by the National Marine Fisheries Service Final Recovery Plan for the Southern Oregon/Northern California Coast Evolutionarily Significant Unit of Coho Salmon (Oncorhynchus kisutch). (NMFS 2014). Similarly, the RMP/DEIS failed to coordinate with ODFW and NMFS concerning the Oregon Coast Coho Conservation Plan
http://www.dfw.state.or.us/fish/crp/coastal_coho_conservation_plan.asp

Federal recovery plans delineate such reasonable actions as may be necessary, based upon the best scientific and commercial data available, for the conservation and survival of listed species (NMFS 2014:i). We assert that any combination of the action alternatives would receive a "jeopardy " determination based on the following reasons:

- The action alternatives fail to meet even the minimum standards for a HCP.
- The action alternatives would allow harmful clear cutting in areas currently protected by no action (e.g. two tree riparian reserve)
- The action alternatives increase road related sediment and fail to provide a schedule for road related sediment reduction in productive coho salmon watersheds.
- The action alternatives fail to require geotechnical field review of projects for identification of landslide prone areas and inclusion within riparian reserves.
- The action alternatives fail to provide for required monitoring of water quality and coho salmon populations. See NMFS 2104 Chapter 5;Table 5-18. Monitoring-related recovery actions for Illinois River; Table 5-30. Monitoring-related recovery actions for Middle Rogue/Applegate Rivers; Table 5-46. Monitoring-related recovery actions for Upper Rogue River.
- The action alternatives fail to provide for required implementation monitoring of mitigations (aka project design features) and BMPs.
- The action alternatives fail to provide for critical habitat protection from harmful mining activities (e.g. suction dredging, placer mining).

- The action alternatives fail to provide for protection of critical habitat from harmful grazing activities.
- The action alternatives fail to provide a schedule for removal of priority coho salmon road related migration barriers.
- The RMP/DEIS failed to incorporate new information and recovery actions for the Illinois River [coho] Population Chapter 30. For example: "SONCC-IllR.2.1.9.1 Assess the impacts of suction dredging and develop suction dredging regulations that minimize or prevent impacts to coho salmon. Consider special closed areas, closed seasons, and restrictions on methods and operations"
- The RMP/DEIS failed to incorporate new information and recovery actions for the Upper Rogue River [coho]Population Chapter 32.NMFS 2014:ES1 provides background and relevance of Recovery Plan to purpose and need of RMP:

The ESA envisions recovery plans as the central organizing tool for guiding each species' recovery process. The recovery plan is a road map to recovery – it lays out where we need to go and how best to get there. The SONCC Coho Salmon ESU recovery plan (Plan) was developed to provide a roadmap to recovery of this species which conservation partners can follow together. Specifically, the Plan is designed to guide implementation of prioritized actions needed to conserve and recover the species by providing an informed, strategic, and voluntary approach to recovery that is based on the best available science. Use of a recovery plan ensures that recovery efforts target limited resources effectively and efficiently. The Plan also provides recovery targets to work toward, as well as criteria by which progress toward recovery will be tracked.

"The recovery priority number for the SONCC coho salmon ESU is 1, as reported in the 2011-2012 Biennial Report to Congress on the Recovery Program for Threatened and Endangered Species (NMFS 2013)". The RMP/DEIS has no analysis or recovery actions specific to the SONCC coho salmon even though this ESU is number 1 (high priority) for recovery.

Currently, over three quarters of SONCC coho salmon independent populations are at high risk of extinction (NMFS 2014 FigureES-2). Based on the above discussion of the population viability parameters, and qualitative viability criteria presented in Williams et al. (2008), NMFS concludes that the SONCC coho salmon ESU is currently not viable and is at high risk of extinction. (NMFS 2014: 2-34) The RMP/DEIS has no analysis or recovery actions specific to the SONCC coho salmon even though this ESU is "*currently not viable and is at high risk of extinction".*

"Monitoring is necessary to assess the recovery of SONCC coho salmon by determining if specific recovery criteria are met, and to evaluate whether changes in the recovery strategy are necessary. The economy will also be stimulated through the employment of workers needed to implement recovery projects. The status of the species has continued to worsen since listing (Good et al.2005, Williams et al. 2011), despite fishing prohibitions and habitat improvements." (NMFS 2014 ES-11) The RMP/DEIS has no requirements for monitoring recovery criteria. Discretionary

BLM BMPs or piggybacking on other agency monitoring will not adequate for the SONCC ESU due to the expected magnitude of logging, grazing and mining impacts.

"Recovery plans are guidance documents. No agency or entity is required by the ESA to implement a recovery plan. However, recovery plans describe how Federal agencies can best meet their responsibilities under the ESA. Specifically, section 7(a)(1) of the ESA calls on all Federal agencies to "utilize their authorities in furtherance of the purposes of this Act by carrying out programs for the conservation of endangered species and threatened species…" In addition to outlining strictly proactive measures to achieve the species' recovery, plans provide context and a framework for implementation of other provisions of the ESA with respect to a particular species, such as section (7)(a)(2) consultations on Federal agency activities… Implementation of the CWA was found to have not been effective in adequately protecting fishery resources, especially with respect to non-point sources of pollution (62 FR 24588, May 6,1997)." (NMFS 2014 1-2,6)
The RMP/DEIS has not met its specific ESA requirements for conservation of SONCC coho salmon ESU.

"In the critical habitat designation, NMFS identified five essential habitat types for SONCC coho salmon: (1) spawning areas; (2) adult migration corridors; (3) juvenile summer and winter rearing areas; (4) juvenile migration corridors; and (5) areas for growth and development to adulthood. Spawning and rearing are often located in small headwater streams and side channels. Adult and juvenile migration corridors include these tributaries as well as mainstem reaches and estuarine zones. Growth and development to adulthood occurs primarily in near-and off-shore marine waters, although final maturation takes place in freshwater tributaries when the adults return to spawn (64 FR 24049, May 5, 1999). Within these areas, essential features of coho salmon critical habitat include adequate substrate, water quality, water quantity, water temperature, water velocity, cover/shelter, food, riparian vegetation, space, and safe passage conditions. In addition, designated freshwater and estuarine critical habitat includes riparian areas that provide the following functions: shade, sediment, nutrient or chemical regulation, stream bank stability, and input of large woody debris or organic matter (64 FR 24049, May 5, 1999)." (NMFS 2014 1-8)

The RMP/DEIS failed to demonstrate that the five essential habitat types would be adequately protected from logging, roads, grazing and mining. The RMP/DEIS fails to adequately address the stated essential features in critical habitat.

"The declining abundance trends and low spawner abundance for most populations in the ESU underscore the importance of addressing freshwater habitat conditions across the ESU so that all populations are sufficiently resilient to withstand fluctuations in marine survival." (NMFS 2014:1-10) The RMP/DEIS fails to adequately address "*freshwater habitat conditions."* For example, there are no requirements to reduce existing road related sediment in specific HUC 10 SONCC coho watersheds.

Coho salmon are particularly vulnerable to climate change due to their need for year-round cool water temperatures (Welsh et al. 2001). SONCC coho salmon spend an

> *extended period rearing in freshwater and, being near the southern end of their distribution, often reside in streams already near the upper limits of their thermal tolerance. Through effects on air temperatures and stream flows, climate change is expected to increase water temperatures to the detriment of coho salmon. (NMFS 2014:3-43)*
>
> *Although it is unclear whether significant habitat changes are occurring from climate change, the authors expect a wide range of future detrimental changes to coho salmon habitat.* (NMFS 1-10)

The RMP/DEIS failed to analyze cumulative stream temperature (climate change) increases which are due in part to logging. Past logging on O&C lands has measurably contributed to CO2 pollution, thus triggering the required NEPA cumulative impacts of increased stream temperature. The DEIS/RMP failed to disclose the feedback loop of logging/increased CO2 and resulting ongoing/ future increased stream temps.

"The percentage of eggs and alevins that survive to emergence is dependent on stream and riverbed conditions. Winter flooding, with its associated scour and gravel movement, accounts for a high proportion of losses". (NMFS 2014 1-12). The DEIS/RMP fails to adequately assess impacts to important coho critical habitat from increased winter stream flows that would decrease coho survival to emergence (DEIS :302-303; Figure 3-94; Nawa and Frissell 1992). The DEIS/RMP fails require streambed stability monitoring, even though it is known that logging, logging roads, suction dredging (Harvey and Lisle 1999) destabilize streambeds used by spawning coho salmon and techniques are available to monitor streambed stability (Nawa and Frissell 1992). We also assert that BLM streambed monitoring would not be necessary for critical coho habitat if BLM had not heavily polluted streams with logging, road, mining and grazing related sediment over the past 60 years that is now elevated to well outside historic range of variability. Streambeds are now extremely susceptible to increased peak flows.

Colombaroli and Gavin (2010:4) state:

> <u>In contrast to the fire-history record, the sedimentary record from USL indicates that the recent erosion rate falls well outside the historical range of variability.</u> For most of the past 2,000 y, the pollen record shows forests to be naturally resilient, with shade tolerant species maintaining their abundance even through periods of drought, severe fire, and moderate erosion events. This resiliency was reduced by road building, logging, and major floods. These events resulted in unprecedented dominance by early-successional taxa and a fourfold increase of erosion rates compared with the most severe pre-settlement fire. The above interpretation suggests that the vegetation and hillslope stability of areas with a legacy of logging and severe erosion will remain sensitive to subsequent severe fire events for the foreseeable future. (emphasis added)

"When rootwads, large woody debris, or other types of cover are present, growth is bolstered (Nielsen 1992). Increased growth is essential for juveniles because larger size confers higher over-wintering survival (Quinn and Peterson 1996)." (NMFS 2014:1-12) The DEIS/RMP fails to meet BLM ESA responsibility to require large wood placement in priority coho critical habitat. The DEIS/RMP lacks a schedule for wood placement or a system of monitoring large wood in decision area critical habitat.

"Coho salmon also use non-natal streams for rearing, and redistribute into riverine ponds following fall rains (Peterson 1982, Ackerman and Cramer 2006, Soto et al. 2008, Hillemeier et al. 2009). For juvenile coho salmon that rear for at least a year in freshwater streams, this habitat offers the opportunity to grow prior to migration to larger rivers and the ocean. While rearing in such environments, coho salmon may grow slowly but experience a relatively low predation risk compared with downstream habitats (Quinn 2005)." (emphasis added) (NMFS 2014:1-13) The DEIS/RMP fails to acknowledge the existence and need to manage for riverine ponds with 2 tree riparian reserves. These riverine ponds and side channels are often far more than one tree height distant from the mainstem and are critical habitat.

"Coho salmon fry may move upstream or downstream to rear after emergence. Coho salmon rearing areas include lakes, sloughs, side channels, estuaries, beaver ponds, low-gradient tributaries to large rivers, and large areas of slack water (PFMC 1999)." (NMFS 2014:1-17) The DEIS/RMP fails to consider that intermittent or ephemeral stream channels assumed to be "fishless" in the DEIS/RMP actually provide important critical habitat.

"During summer, juvenile coho salmon move into deep pools and areas with dense shade and large woody debris (LWD) for refuge from high water temperatures (Nickelson et al. 1992; Brown et al. 1994). A study of coho salmon occurrence in tributaries of the Mattole River suggested that a MWMT (maximum weekly maximum temperature) greater than 18.1 °C or a MWAT (highest average of mean daily temperature over any seven-day period) greater than 16.8 °C would preclude the occurrence of coho salmon. Lethal temperatures range from 24 to 30 ºC (McCullough 1999), but coho salmon can survive at high daily maximum temperatures if (1) high quality food is abundant, (2) thermal refugia are available, and (3) competitors or predators are few (NRC 2004)." NMFS 2014:1-14 The DEIS/RMP failed to identify critical habitat in the decision area/planning area where stream temperatures are limiting or borderline for coho salmon and failed to identify conservation actions to improve/increase thermal refugia. For example, beaver ponds are known thermal refugia, but the DEIS/RMP fails to provide objectives or management direction for beaver and/or beaver ponds accessible to coho salmon. New information in Pollock et al. 2015 provides a basis for beaver ponds as a conservation measure to ameliorate high stream temperatures caused by logging and climate change.

> *Ebersole et al. (2006 and 2009) found that coho salmon in an ~~Washington~~ Oregon stream moved into seasonally dry areas shortly after fall rains, and that these fish as well as those that moved into tributaries had higher survival than those that remained in the mainstem. In the Oregon stream, off-channel ponds, large woody debris, and other floodplain habitat were scarce due to past land-use and geology, conditions shared across much of the SONCC coho salmon ESU. Ebersole et al. (2009) found that much of the variation in overwinter survival in this system was associated with winter discharge and the effects of high winter streamflows, emphasizing the need for high flow refugia. Large woody debris and other instream cover are heavily used by coho salmon in systems where these habitat features are more abundant (Nielsen 1992, Hardy et al. 2006), indicating the importance of access to cover while rearing." (emphasis and geographic correction added)* (NMFS 2014:1-14).

The DEIS/RMP fails to consider that intermittent or ephemeral stream channels assumed to be "fishless" in the DEIS/RMP actually provide important critical habitat. The RMP/DEIS fails to identify the need to map these critical habitats as "fish' streams and be provided 2 tree riparian reserves as well as instream habitat enhancement.

"The most common life-history strategy for coho salmon in the SONCC coho salmon ESU is a fairly strict 3-year life cycle, with most coho salmon spending approximately 18 months at sea before returning to their natal rearing grounds to spawn (Gilbert 1912, Briggs 1953, Shapovalov and Taft 1954, Loeffel and Wendler 1968, Weitkamp et al. 1995)." (NMFS 2014:1-17) The RMP/DEIS fails to adequately consider the trade- offs of short-term riparian/stream degradation for alleged long term benefits. Since the coho life cycle is only 3 years there will be only adverse impacts to the initial coho salmon cohorts. The RMP/DEIS fails to disclose that coho salmon may not be in existence in decision area streams to enjoy the alleged long term benefits in 2113.

> *Because of degraded current freshwater habitat conditions, which often differ from historical conditions, recovery planners need a method that estimates the extent and capacity of watersheds to support coho salmon prior to the major anthropogenic impacts to habitat which began in the mid-1800s. Williams et al. (2006) characterized the historical extent and carrying capacity of SONCC coho salmon streams by using a GIS-based model. This "IP" model "...predicts the potential for a stream reach to exhibit habitat characteristics suitable for rearing juvenile coho salmon, as a function of the underlying geomorphic and hydrologic characteristics of the landscape (Williams et al. 2006)." The IP model provides recovery planners with a framework to develop a recovery strategy for the SONCC coho salmon ESU.* (NMFS 2014:2-1)…*IP habitat should not be confused or associated with modeled critical habitat. IP habitat is identified using a coarse-scale model which is one of many tools one can use to estimate the current or historical extent of anadromy."* (NMFS 2014:2-6)

The DEIS/RMP failed to use the NMFS "IP" model to guide management objectives and management direction for recovery of coho salmon (e.g. identify spatially explicit priority critical habitat and high priority watersheds for recovery actions)

> *Extinction is theorized to occur in stages. In the first phase of extinction, population instability occurs with population abundance fluctuating with a higher than normal amplitude.* (NMFS 2014:2-16)
>
> *The decline in abundance from historical levels, and the poor status of population viability metrics in general, are the main factors behind the extinction risk faced by SONCC coho salmon. The primary causes of the decline are likely long-standing human-caused conditions (e.g., harvest and habitat degradation), which exacerbated the impacts of adverse environmental conditions (e.g., drought and poor ocean conditions) (60 FR 38011; July 25, 1995). The demographic response to impaired habitat has been a reduction in the number of fish and their range, which has made them less resilient to environmental stresses such as poor ocean conditions.* (NMFS 2014:2-34)
>
> Table 2-6. SONCC coho salmon ESU core and non-core 1 populations and their current risk of extinction. (NMFS 2014:2-35)

Stratum	Population	Extinction Risk	Depensation Threshold (1*IP-km)	Extinction Risk Criteria Used[1]
Northern Coastal Basin	Elk River	High	63	Spawner density
	Lower Rogue River	High	81	Population decline
	Chetco River	High	135	Spawner density
	Winchuck River	High	57	Spawner density
Interior Rogue River	Illinois River	High	590	Population decline
	Middle Rogue/Applegate Rivers	High	603	Population decline
	Upper Rogue River	Moderate	689	Spawner density

> *The timeframe for assessment of stresses and threats is over the next ten years under current circumstances and management (Appendix B).* (NMFS 2014:3-1)

The RMP/DEIS failed to stratify coho recovery units based on risk of extinction. Risk of extinction would be helpful in making spatially explicit management objectives and management direction. For example, where does BLM need to implement timely recovery actions based on extinction risk? Similarly, building new roads and cutting down riparian trees would hasten extinction for coho units currently at high risk whereas some coastal populations of coho could absorb more impacts from logging. The recovery plan identifies a recovery over the next ten years . The DEIS/RMP fails to require spatially explicit recovery actions over the next ten years.

"Roads, timber harvest, mining and grazing identified as listing factors, stresses and threats for SONCC coho salmon. These stresses and threats impair water quality, degrade riparian forests, alter sediment supply, result in lack of floodplain /channel structure, alter hydrology, cause barriers, and impair mainstem function" (NMFS 2014:3-2,3,4) The DEIS/RMP fails to acknowledge the severity of past actions and fails to provide timely recovery actions to mitigate for past and ongoing critical habitat damage from roads, timber harvest, mining and grazing. High priority critical habitat is not identified for immediate recovery actions in first 5-10 years of implementation.

> *One of the most important ecological requirements of coho salmon is cold, clean, well oxygenated water. Impaired water quality parameters in the SONCC coho salmon ESU include increased water temperature, changes in pH above or below optimum levels, reduced dissolved oxygen, increased nutrient loading, and increased extent or duration of turbidity*." (NMFS2014:3-13) *….Nutrient contributions from sources such as fertilizer run-off, livestock, and septic systems may foster algae blooms that can contribute to elevated pH levels, increased ammonia toxicity, and depressed dissolved oxygen levels."* (NMFS 2014:3-13)*…Federal and state programs exist to maintain and improve water quality conditions throughout the SONCC coho salmon ESU.* (NMFS 2014:3-15)

The RMP/DEIS fails to require coordinated monitoring for water temperature, pH, dissolved oxygen, nutrients, and turbidity. The DEIS/RMP fails to identify programs or required actions to improve these water quality parameters that are "important ecological requirements of coho salmon".

Since the initial listing of SONCC coho salmon many TMDLs have been completed (Table 3-6),and California and Oregon are working to manage excessive pollutants and other water quality impediments. TMDLs in California are developed by RWQCBs. These TMDLs are designed as Basin Plan amendments and include implementation provisions. The beneficial use of salmonid fishes is most often affected by non-point source sediment and temperature impairments, so development of non-point source TMDLs is important. The ability of these TMDLs to protect coho salmon in Oregon and California is expected to be significant in the long term. Ultimately their efficacy in protecting coho salmon habitat will depend on how well the protective measures are implemented, monitored, and enforced. (NMFS 2014:3-16)

TMDLs for planning area streams have been established based on NW Forest plan ACS. The RMP/DEIS does not explain how TMDLs will be met without ACS requirements of the NW Forest Plan. The RMP/DEIS fails to explain how *"protective measures are implemented, monitored, and enforced".*

Thinning riparian conifer forests generally reduces the production of ecologically functional riparian dead wood (e.g., >30 cm or > 50 cm diameter) in both the short and long term, in correlation with the intensity of the thin (Pollock et al. 2012, Pollock and Beechie 2014). Optimal thinning conditions in moist Douglas-fir forests are in young (<40 years), densely planted (>300 trees per acre) stands where the primary management goal is to produce very large diameter live trees or very large diameter dead wood (Beechie et al. 2000, Pollock and Beechie 2014). For example, in Beechie et al. (2000), moderate thinning adjacent to large (15 m wide) streams increased "pool forming" wood production, whereas such thinning next to smaller streams reduced pool-forming wood production (See table 2 and figure 6 of Beechie et al. 2000). (NMFS 2014:3-18)

The RMP/DEIS does not consider incorporating the best available science about thinning in riparian forests. The RMP/DEIS fails to establish a young age standard for thinning or provide science based standards for different sized streams.

Historic timber practices often significantly altered riparian forest composition to favor early successional stages dominated by deciduous species such as red alder and willow (Sedell et al. 1988, Russell 2009, Villarin et al. 2009). As a consequence, many stream banks have smaller trees of fewer species resulting in smaller, shorter-lived instream large wood (Sedell et al. 1988), even 100 years after harvest (Russell 2009)….. The effects of degraded riparian conditions on fish habitat include reduction of streamside shade and cover, decreased large wood recruitment, increases in stream temperature, changes in water quality and stream morphology, and the addition of sediment through bank degradation and off-site soil erosion (Forest Ecosystem Management Team [FEMAT] 1993,Spence et al. 1996, Cohen 1997, Mellina and Hinch 2009). (NMFS 2104:3-18,19)

When thinning, stands should be thinned from below (i.e., the largest trees should be left standing), and post-thinning densities of canopy conifers should generally not be less than 200 trees per acre, unless it can be demonstrated, using properly calibrated

> *forest growth models (e.g., Forest Vegetation Simulator) that more intensive thinning is likely to increase long-term production rates of large dead wood. Trees > 50 cm diameter should not be cut for thinning purposes. Thinned trees should be felled on site and placed in streams and other water bodies, if possible, unless they would greatly increase fire hazard (dry forests only)…* (emphasis added) (NMFS 2014:3-52)

The RMP/DEIS fails to adequately disclose that current degraded stream and riparian conditions are largely the result of past timber harvest. The RMP/DEIS fails to disclose how badly stream and riparian conditions have diverged from the range of natural variability. The DEIS/RMP fails to prohibit logging trees >50cm dbh in riparian reserves as specified in recovery plan.

"Livestock grazing affects riparian zones by compacting soil, removing vegetation, preventing woody seedling growth and physically impacting stream morphology by breaking down banks, often resulting in wide, shallow channels (Belsky et al. 1999, Poff et al. 2011). Major bank erosion and mass wasting is much more prevalent on non-vegetated stream banks, resulting in increased sediment loads and channel widening (Naiman and Decamps 1997)" (NMFS 2014:3-19). The DEIS/RMP fails to adequately disclose livestock grazing impacts to specific segments of critical habitat , fails to provide protective measures from livestock grazing, and fails to provide a schedule for improvement.

> *Many of the historical and ongoing anthropogenic activities in the ESU have caused changes to the amount and timing of sediment delivery to streams, most often evident as an increased amount of fine sediment. Increased sedimentation has been shown to have direct negative effects on coho salmon by interfering with their physiological and biological processes, and indirect effects through degradation of their habitat (Cordone and Kelley 1961, Koski 1966,Kondolf 2000). Accelerated rates of erosion and increased sediment delivery to streams after timber harvest and road construction are common occurrences in the mountainous, forested watersheds that are common in the ESU (Sidle et al. 1985, Montgomery et al. 2000). Impacts may result directly from increased sediment in suspension or through the deposition of fine sediment on or within the stream bed (Collins et al. 2011). High concentrations of suspended sediment can increase turbidity, decrease water clarity, and impair foraging efficiency thereby reducing growth and feeding rates of fish (Newcombe and McDonald 1991, Arauho 2011, Collins et al. 2011). Turbidity can reduce the amount of light available for photosynthesis and hence decrease primary production by algae and plants (Ryan 1991); however, there is also some evidence that these biota can adapt to maintain productivity at elevated sediment levels (Parkhill and Gulliver 2002, Izagirre et al. 2009). High suspended sediment loads can also clog or abrade sensitive fish gills and other soft tissues (Newcombe and Jensen 1996). The most common behavioral alteration associated with increased turbidity is reduced juvenile salmonid feeding behavior. There is an inverse relationship between turbidity and feeding efficiency or prey ingestion (Berg 1982, Berg and Northcote 1985, Sweka and Hartman 2001). Salmonids are visual predators that feed largely on drifting invertebrates, and changes in efficiency can be correlated to a decrease in their reactive distance to prey as turbidity increases. Feeding efficiency of juvenile coho salmon may drop by 45 percent at a turbidity level of 100 Nephelometric Turbidity Units (NTU) (Berg 1982), and turbidity as low as 70 NTU reduced salmonid foraging effectiveness and delayed*

their response to food (Bisson and Bilby 1982). Increased sediment load can dramatically alter channel morphology. Pools may be filled, channels widened (Lisle 1982), riparian vegetation buried, streambank heights raised, and floodplain and flood prone areas disconnected (Kelsey 1980, Lisle 1982, Roberts and Churc 1986, Knighton 1991). In spawning gravels, deposited fine sediment fills interstitial spaces between particles, reducing intergravel flow and inhibiting alevin movement, thereby decreasing survival rates (Kondolf 2000, Sparkman 2003, Greig et al. 2005). Excess fine sediment smothers habitat used by benthic organisms, decreasing the production of algae and macroinvertebrates that are an important food source for fry, juveniles, and smolts (Suttle et al. 2004, Cover et al. 2008).

Unconstrained reaches of low gradient rivers provide complex slow water habitats, including side-channels, lakes, backwaters, alcoves, sloughs, and beaver ponds (Independent Multidisciplinary Science Team [IMST] 2002, Branton 2011), that are essential for juvenile salmonid survival and rearing success. However, these reaches are highly susceptible to anthropogenic land use changes and alterations in channel morphology. Activities such as agriculture, timber harvest, mining and gravel extraction, flood control, road building, and urbanization and development of riparian areas can result in changes to floodplain and channel structure including channel straightening and reduced hydrological connectivity to off-channel and side channel habitat (Burnett et al. 2007 (timber harvest), Brown et al 1998 (mining and gravel extraction), Branton 2011 (flood control)). The lack of floodplain and channel structure is ranked as a high or very high stress in 39 of 40 populations of SONCC coho salmon (Table 3-4). (NMFS 2014:3-24)

By altering hydrology and slope stability, timber harvest can increase the amount of fine sediment delivered to streams and impair water quality. There is a strong relationship between the percent of a watershed harvested in the past 15 years and the duration of stream turbidity that exceeds thresholds of salmonid feeding impairment (Klein 2012). (NMFS:2114:3-52)

One of the greatest continuing stresses from timber harvest is the residual effects of increased input of fine sediment into streams. This impact does not cease when timber harvest activities are complete, but instead continues a legacy of negative effects that begin anew during each winter storm event or high flow. Road building and other timber harvest activities have resulted in mass wasting and surface erosion that will continue to elevate the level of fine sediments in spawning gravels and fill the substrate interstices inhabited by invertebrates (Platts et al. 1989,Suttle et al. 2004). Changes in channel morphology will continue to alter the hydrology and timing of flows in areas affected by these chronic events. Bisson et al. (1997) estimated that, due to anthropogenic activities such as timber harvest, the frequency of major floods was 2 to10 times greater, debris flows and dam-break floods were 5 to 10 times more frequent, and slumps and earth flows were 2 to 10 times more frequent, compared to natural, background conditions. This increase in catastrophic events will likely continue to dramatically alter the conditions in which coho salmon spawn and rear and cause a reduction in food supply, reduced quality of spawning gravels, and an increased severity of peak flows during heavy precipitation. (NMFS 2014:3-52)

Roads are a pervasive feature throughout the ESU and reflect a legacy of land use activities. Nearly all populations that comprise the SONCC coho salmon ESU are affected by high road density, with some populations having greater than 10 miles of road per square mile. Roads are ranked as a high or very high threat in 35 of 40 populations in the ESU (Table 3-8, Chapters 7 to 46). Roads can affect salmon populations by blocking migration, through interrupting and disrupting natural drainage patterns, increasing peak flow (Ziemer 1998), and increasing stream bed and bank instability (Chamberlin et al. 1991, McIntosh et al. 1994). Roads have been shown to impact spawning habitat, channel form, sediment inputs, and prey production. Additionally ,roads placed immediately adjacent to watercourses can affect coho salmon through the removal of riparian vegetation, floodplain disconnection, and non-point source pollution inputs. Armentrout et al. (1998) used a reference of 2.5 mi/mi2 of roads as a watershed management objective to maintain hydrologic integrity in Lassen National Forest watersheds harboring anadromous fish. Cederholm et al. (1981) found that fine sediment in salmon spawning gravels increased between 260 to 430 percent over background levels in watersheds with more than 4.1 mi/mi2. Although some roads have been decommissioned, there are still many miles of existing roads and maintenance is often lacking, leading to chronic impacts on habitat. Road building for access to marijuana cultivation sites is common on many areas of the SONCC coho salmon recovery domain. Many of these roads are likely unpermitted and contribute excessive amounts of fine sediment to coho salmon streams. Across the ESU, sediment from roads has contributed to decreased emergence survival, and reduced carrying capacity for juvenile salmonids due to the filling of pools, channel simplification, and reduced feeding and growth due to high turbidity levels. Landslides triggered from road building-related activities are large sources of sediment (Spence et al. 1996) and may create large scale episodic mass wasting events that can severely impact a year class. Cederholm et al. (1981) reported that the percentage of fine sediments in spawning gravels increased above natural levels when more than two and a half percent of a basin area was covered by roads. In addition to contributing fine sediment, roads can also affect water quality through the addition of heavy metal, gas, oil and other pollutants deposited on roads and subsequently washed into streams (Sandahl et al. 2007). These pollution inputs are difficult to remedy since they come from a variety of sources and can be spread out along the entire road length. Many pollution inputs occur during the winter months, which may have an effect on embryo and alevin salmon life stages, further decreasing survival and altering reproductive success. Despite recent efforts to address impacts associated with roads, there still remains inadequate funding for road maintenance and rehabilitation projects, inadequate regulations for maintenance and building on private roads, and a large number of existing problems associated with private and public roads throughout the ESU. (NMFS 2014:3-46)

Overall road density changed only slightly across the area of the NWFP; however, dramatic changes were accomplished in targeted watersheds. For example, road density in Lower Fish Creek in the western cascades declined from 3.3 mi/mi2 in 1994 to 0.8 mi/mi2 in 2008 through the decommissioning of 118 miles of roads (Lanigan et al. 2012). Overall, Lanigan et al. (2012) stated that road decommissioning in landslide prone areas provided the most benefits. (NMFS 2014:3-54)

The DEIS/RMP fails to identify the serious consequences of logging, road, grazing, and mining related elevated fine sediment in critical habitat. A schedule for increasing sediment from timber harvest and roads is explicit while there is no schedule for reducing coho killing fine sediment. Coho watersheds with high road densities are not identified as a priority for decommissioning or sediment abatement. Baseline sediment levels in critical habitat reaches are not established and no systematic monitoring of sediment is provided. BLM is piggybacking on generic BMPs and other agencies to monitor sediment for them.

> *A significant contributor to lack of floodplain and channel structure in the SONCC coho salmon ESU is a paucity of instream large wood. Coho salmon juveniles favor pools that contain shelter provided by large wood (Reeves et al. 1989). Research from across the Pacific Northwest has shown that streams with more large wood have more pools because large wood provides scour forcing obstructions that create pools (Buffington et al. 2002, Montgomery et al. 2003, Rosenfeld and Huato 2003). Larger pieces of wood are more stable than smaller pieces of wood, and ratio of log length to channel width can be used as a gauge of stability (Montgomery et al. 2003). Past and current timber harvest practices have degraded riparian forests across the SONCC coho salmon ESU, decreasing the number of large conifers in riparian zones and reducing the potential for recruitment of long-lasting large wood (Sedell et al. 1988, Benda and Bigelow 2014).* (NMFS 2014:3-25)

The RMP/DEIS fails to adequately describe how timber harvest and road building has dramatically decreased the amount of large wood in critical coho habitat. Although baseline data is available from stream surveys and other source the DEIS fails to establish baseline levels of large wood. The RMP/DEIS fails to provide a schedule for increasing large wood levels in critical habitat and fails to identify stream segments or watersheds that would be a priority. The DEIs fails to explain the consequences of not increasing large wood levels for coho salmon with 3 year life cycles. Coho salmon may not be lost by the time riparian forests improve by 2113. Recovery actions for increasing artificial large wood are needed in the first ten years of plan implementation, commensurate with cumulative impacts of scheduled timber harvest. Linking large wood enhancement (i.e. tree tipping) with timber harvest is not likely to benefit high priority to coho critical habitat. Additionally it would be counterproductive to schedule timber harvest adjacent coho critical habitat to expedite tree tipping.

> *The historical decline in beaver (Castor canadensis) populations has also contributed to lack of floodplain and channel structure. Beaver ponds provide high quality winter and summer rearing habitat for coho salmon (Reeves et al. 1989, Pollock et al. 2004)… Using beaver as a salmon habitat restoration tool has proven to be effective and cost efficient (Pollock et al. 2007; DeVries 2012, Andonaegui 2000). In addition to creating off channel habitat for juvenile coho, beaver ponds can raise the water table, store spring runoff for late season release into streams (Parker 1986) and cool the water downstream of the beaver dams (Pollock et al 2003). Beaver ponds have been shown to expand riparian forests (Pollock et al 2007) and decrease erosive perturbation (Parker 1986). Beaver ponds slow high velocity stream flows and trap sediment behind their dams, which speeds up the recovery rate of down-cut stream channels and reduces turbidity downstream (Naiman et al 1988). Beavers are classified as a predatory species in Oregon and current regulations allow private*

*landowners to destroy beavers and their habitat without notification to state agencies. (NMFS 2014:3-25) Protecting beaver populations in watersheds vulnerable to climate change may help buffer some of the effects of climate change by reconnecting the floodplain, slowing and storing water in the basin, extending summer flows and restoring perennial flows to some streams. Beaver ponds help recharge groundwater tables and increase interaction between surface and groundwater flows, often cooling the water downstream of beaver dams. Beaver restoration can be an effective solution for many types of climate related issues in aquatic and riparian ecosystems, and it is generally far less expen*sive *than alternatives (Scheffer 1938, Fouty 2003, Müller Schwarze and Sun 2003)."* (NMFS 2014:3-45)

The RMP/DEIS fails to recognize the need to protect and restore beaver in critical coho stream habitat. Reducing riparian reserves to 1 tree height would be adverse to beaver since they often colonize off channel habitats >1 tree height from the main channel. We are not advocating beaver translocations since beaver occupy most HUC 10 coho watersheds. The RMP/DEIS fails to provide management objectives or management direction for beaver in critical coho habitat. The RMP/DEIS is defective because baseline data about beaver pond densities is not established or management goals stated to maintain and increase beaver ponds. The DEIS/RMP fails to use the best available science on beaver management found in Pollock et al. 2015.

Water is the most essential component of fish habitat. The alteration of hydrology can create both environmental and physical changes that affect coho salmon. .. Long-term studies in Oregon experimental forests showed that clearcut or thinning treatments, which replaced mature or old (100 to 250-yr-old) forest with young (i.e., 30 to 50-yr-old) forest reduced summer stream flow by 20-80% (Perry 2007), consistent with other studies showing higher evapotranspiration by young compared to old tree stands (Moore et al. 2004, Jassal et al. 2009, Wharton el al. 2009). In the H. J. Andrews Experimental Forest in Oregon, water use by riparian trees in a 40-year old stand was estimated to be 3.27 times greater than in a 450-year old stand, due to a combination of greater sapwood area, species composition (more alder and less Douglas fir and western hemlock), and younger trees in the 40-year old stand (Moore et al. 2004). (NMFS 2014:3-28)

The RMP/DEIS did not assess cumulative impacts of "*clearcut or thinning treatments*" that would decrease summer flows in critical coho habitat (see Hicks et al. 1991). The RMP/DEIS fails to establish baseline flow conditions in critical habitat, provide for coordinated monitoring of summer low flow, or provide conservation actions to ameliorate low flow timber harvest impact to coho salmon(e.g. maintain and increase beaver ponds).

Fish passage barriers in some way restrict the amount of available stream habitat on virtually all SONCC coho salmon rivers and are listed as a high or very high threat in 13 out of 41 populations (Table 3-4). The most common types of barriers include road-stream crossings (e.g., culverts), dams, tide gates, and agricultural diversions (Chapters 7 to 46)…. While many road-stream crossing structures and diversions have been upgraded with structures that are designed to accommodate fish passage, several hundred road-related barriers and unscreened diversions still exist throughout the ESU, blocking access to hundreds of miles of freshwater habitat

(CalFish 2009, ODFW 2008a)…. Overall, coho salmon passage has improved over the last five years, but barriers remain a major threat because many are still unaddressed and continue to block passage. More information regarding the direct and indirect effects of barriers can be found in the description of the effects of dams and diversions (Section3.2.9) and the description of altered hydrologic function (3.1.7). Geographically specific information about barriers in need of remediation can be found in each population profile (Chapters 7 to 46) where applicable. (NMFS 2014:3-29)

The RMP/DEIS fails to identify priority coho passage barriers in the planning area and decision area. The RMP/DEIS fails to provide for a schedule for removing priority coho passage barriers on Decision Area lands and coordinated actions with "partners" to remove coho passage barriers in the planning area. Explicit direction in the RMP is lacking to coordinate passage removal on adjacent private lands since these barriers are often the first barriers for upstream migrating coho salmon before they reach BLM lands.

Substantial timber harvest has occurred throughout the SONCC coho salmon ESU. Timber harvest is ranked as a high or very high threat in 20 of 39 populations in the ESU (Table 3-8, Chapters 7 to 46). In many of these populations, while timber harvest activity has decreased since the peak over 50 years ago, and practices and management have improved, the effects of future timber harvest continues to be a potential threat to coho salmon. In many streams, timber harvest in the riparian areas has resulted in reduced inputs of leaf litter, terrestrial insects, and large wood (Reeves et al. 1993, Nakamoto 1998). Reduction of large wood from the harvest of streamside timber has resulted in the reduction of cover and shelter from turbulent high flows (Cederholm et al. 1997). Numerous studies have identified impacts including reduced large woody debris, increased water temperature, and increased erosion and sedimentation. These impacts have been shown to impair the reproductive success of salmon due to increased turbidity, loss of interstitial spaces for use by juveniles, the smothering of eggs by fine sediments, loss of deep pools, and blockage of spawning habitat by landslides (Beschta and Taylor 1988, Beschta 1978, Brown and Krygier 1971).<u>The threat from future timber harvest lies in the inability of already degraded landscapes to rebound from continued impacts.</u> If detrimental timber harvest (i.e., clear cutting, decreased age of trees removed) continues, cumulative effects and large scale, landscape-size issues may be perpetuated. (emphasis added) (NMFS 2014:3-31)

The RMP/DEIS failed to adequately disclose or analyze the cumulative effects of timber harvest on coho salmon and coho critical habitat. Reduction of large wood, increased sediment, increased stream temperature and decreased large pools has not been put in a historical context (i.e. all of these parameters are likely outside the natural range of variability.) The RMP/DEIS fails to identify coho watersheds that should have deferrals of timber harvest, grazing and mining due to past cumulative effects of these activities (e.g. West Fork Evans Creek).

As part of a conservation program within the AHCP, Green Diamond will remove 50 percent of the high and moderate priority road sites within the first 15 years of plan implementation. These measures, coupled with provisions for riparian protection, mass wasting avoidance, and adaptive management, ensure that adverse impacts to coho salmon rearing, migration, and spawning habitats are minimized, avoided or

> *mitigated. Effectiveness monitoring will track the success of the Conservation Program in relation to the AHCP's biological goals and objectives and provide the basis for the AHCP's Adaptive Management Measures. Four categories of monitoring will be implemented: 1) rapid response monitoring, 2) response monitoring, 3) long-term trend monitoring/research, and 4) experimental watersheds program. Monitoring thresholds will trigger management responses when exceeded."* (NMFS 2014:3-59)

The RMP/DEIS merits "jeopardy determination" because it fails to meet even minimum requirements for a private land AHMP as described above.

The RMP/DEIS fails to adequately disclose the cumulative impacts of mining to critical coho habitat based on the best available science. The RMP/DEIS fails to disclose and analyze the inadequacies of BLM surface mining regulations and inadequacies of state law to protect coho critical habitat. The DEIS/RMP fails to provide conservation measures that would Improve on NW forest plan S&Gs for mining that could be implemented on BLM lands in coordination with DEQ and NMFS. The DEIS/RMMP fails to describe the benefits of mineral withdrawal for coho critical habitat and fails to identify priority decision area critical habitat segments for mineral withdrawal (e.g. Cow Creek, Althouse Creek, Sucker Creek). The current and proposed policy of allowing unlimited suction dredging in coho critical habitat as "casual use" merits "jeopardy".

"Section 7(a)(1) makes it clear that Federal agencies must utilize their authorities in furtherance of the purposes of the ESA by carrying out programs for the conservation of endangered species and threatened species. Although Federal agencies have an affirmative obligation to conserve, an agency's 7(a)(1) actions are discretionary and priorities are often obligated to other management objectives." (NMFS 2014:3-78) The RMP/DEIS is failing to meet the purpose and need to recover the listed SONCC coho salmon ESU. The RMP/DEIS will contribute substantially to SONCC coho salmon extirpation during the first ten years of plan implementation. This is important because the coho salmon has a 3 year life cycle. Alleged benefits to coho salmon streams in 2113 from projected forest management have no relevance to existing coho salmon eking out an existence in degraded BLM streams.

"Section 7(a)(2) states, in part, "[e]ach Federal agency shall, in consultation with and with the assistance of the Secretary [of Interior or Commerce, as appropriate], insure that any action authorized, funded, or carried out by such agency…is not likely to jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of [critical] habitat of such species.." NMFS 2014: 3-78) The failure of the RMP/DEIS to require substantive conservation actions for coho critical habitat in a timely manner means the RMP must receive a jeopardy determination. The draft RMP does not even meet the minimum requirements for a private land AHMP.

37. The DEIS/RMP failed to evaluate effects to western pond turtle or provide for its special conservation needs.

The western pond turtle is a FWS Species of Concern and BLM Sensitive species because of the considerable degradation and loss of wetland habitats within the state, and the presumed unsustainably high level of nest and hatchling depredation.

The FWS is currently evaluating a petition To list the western pond turtle as an endangered or threatened species under the ESA. The FWS states that "based on our review of the petition and sources cited in the petition, we find that the petition presents substantial scientific or commercial information indicating that the petitioned action may be warranted for the western pond turtle *(Actinemys marmorata)* based on Factor A." (80FR16262)

Federal agencies such as the BLM are required to take actions to prevent the need to list species. Rosenburg (2009) identified loss of habitat, recreation disturbance, road mortality, and invasive riparian vegetation as some of the threats relevant to the RMP. Rosenburg 2009:40 states that "loss of deep pools from streams due to sedimentation and loss of large structure such as woody debris may have reduced aquatic habitat following timber harvest (Todd 1999:44)." Stream restoration can destroy or prevent the development of open habitats that provide turtle nesting habitat as well as sunny areas within the stream environment to allow for foraging and basking.

The western pond turtle requires aquatic habitat for feeding/basking and open upland habitat for nesting/overwintering. Rosenburg et al 2009: recommends the following:

- Maintain and increase deep pools in streams
- Provide shallow water habitats with abundant aquatic vegetation for hatchling
- rearing habitat
- On southern exposures, provide sparse vegetation structure adjacent to aquatic
- habitat for nesting within 200 m of aquatic habitat; remove all woody plants in
- designated nesting areas if appropriate
- Provide open fields or open woodlands within 200 m of stream and river habitats
- for over-wintering
- Consider juxtaposition of management actions in terrestrial and aquatic habitat in relation to roads and recreation uses to minimize negative effects

The RMP proposed and ongoing recreation activities do not consider restrictions to protect western pond turtles nor does the DEIS evaluate recreation effects to turtles. One area of concern are sandy open areas used by recreational rafters on the Rogue River that may be in conflict with successful nesting due to human disturbance and dog predation. Grazing and off-road vehicle use need to be seriously considered for elimination from riparian reserves that may be used by turtles for feeding, nesting, overwintering, and estivation.

The RMP fails to discuss the consequences of reducing riparian reserves from 2 tree width to 1 tree width along fish streams and reduced riparian reserves adjacent wetlands/ponds for wintering habitat (all action alternatives). The 2 tree riparian reserves would include most required nesting/over wintering habitat. Flexibility is needed in riparian reserve management to judiciously remove forest canopy to maintain and enhance known or suspected nesting habitat. The RMP/DEIS needs to recognize the special needs of western pond turtles for open sparsely vegetated nesting/wintering habitat adjacent streams and ponds. Creating dense canopy forests everywhere along streams is an anathema for turtles.

The RMP/DEIS fails to provide coordination with ODFW,FWS, US Forest Service and others to monitor western pond turtles to establish baseline populations and trends. Inventories are needed to locate nesting and overwintering areas such that they can be protected from predation or enhanced with vegetation management. A schedule for conservation actions is needed.

38. Lastly, the construction of the DEIS's narrative and alternatives is designed to obfuscate the intention and meaning of the material provided. We assess that the DEIS is impossible to be understood by the public in violation of NEPA regulations and Guidance.

One example will suffice to illustrate the above point. **Incorporation by reference** is described in **Part 7** of **CEQ** MEMORANDUM FOR HEADS OF FEDERAL DEPARTMENTS AND AGENCIES dated March 6, 2012. SUBJECT: Improving the Process for Preparing Efficient and Timely Environmental Reviews under the National Environmental Policy Act. The memorandum states as follows "An agency may not incorporate any material by reference in an EIS unless the material is reasonably available for inspection by potentially interested persons within the time allowed for comment.66 There are many techniques available to make the referenced material readily available such as: placing the relevant materials in an appendix; providing a hyperlink that provides internet access to the materials; and placing materials in local libraries or facilities accessible to the public." Even though the DEIS was distributed as an electronic pdf document, numerous instances of DEIS **incorporation by reference** were never accompanied by a hyper-link to the referenced document.