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APPEAL TO THE REGIONAL FORESTER OF THE UNITED STATES
FOREST SERVICE REGION 6

APPELLANT'S NOTICE OF APPEAL, REQUESTED RELIEF, AND
STATEMENT OF REASONS

Dated this April 29, 2013

NOTICE OF APPEAL

To: Regional Forester
Appeal Deciding Officer
USDA Forest Service
PO Box 3623
Portland, OR 97208
Email: appeals-pacificnorthwest-regional-office@fs.fed.us

RE: Jazz Timber Sale Appeal

In accordance with 36 CFR 215, Bark hereby appeals the Environmental Assessment ("EA") and Decision Notice ("DN" or "Decision") for the Jazz Timber Sale.

Decision Document: Jazz Thinning Decision Notice and Finding of No Significant Impact

Date Decision published: March 15, 2013

Responsible Official: Lisa Northrup, Deputy Forest Supervisor, Mt. Hood National Forest ("MHNH")

Appeal Period End Date: April 29, 2013

Description of the Project: This project would log approximately 2,000 acres of recovering forests, including re-construction of 11.5¹ miles of decommissioned roads, and building .4 miles of new road.

¹ This number is actually unclear. The EA states that the project will rebuild 11.5 miles of road (EA at 22) and the DN states that it will rebuild 12 miles of road (DN at 5). It is important that the road mileage not exceed that which

Location: Collawash Watershed, Clackamas River Ranger District, Mt. Hood National Forest

Appellant's Interests:

Bark has a specific interest in this decision, which we have expressed through providing comments during scoping, on the Preliminary Assessment, and in an appeal to the previous Jazz Decision, as well as leading public hikes, clocking well over 600 hours in the timber sale area, and engaging extensively in public education about the timber sale.

Bark is a non-profit organization based in Portland, Oregon and has worked to protect the MHNH since 1999. Staff, members, volunteers, supporters, and board members of Bark live in the communities surrounding the MHNH and use and enjoy the Forest extensively for recreation, drinking water, hunting, fishing, general aesthetic enjoyment, family gatherings, viewing flora and fauna, gathering forest products, and other purposes.

Specifically, Bark members regularly visit many of the affected area for hiking, camping, relaxing, bird watching, mushroom harvesting, photography, and family gatherings. The value of the activities engaged in by Bark members and staff will be damaged by the implementation of this project.

Request for Stay

Although an automatic stay is in effect for this decision as per 36 CFR §215.10(b), we formally request a stay of all action on this project, and that the Forest Service not enter into any contractual agreements with private companies to implement any portion of this sale.

Requested Relief

In recognition that this project has not followed the prescribed agency process, fails to meet the Northwest Forest Plan and Mt. Hood Forest Plan, and faces overwhelming public opposition, Bark requests that the Forest Service withdraw the decision and prepare adequate NEPA documentation for a project that will actually lead to the short and long term restoration of the Collawash Watershed.

Introduction to Bark's Second Appeal

This is Bark's second appeal of the Jazz Timber Sale. In response to our first appeal, in December 2012, the Decision Notice was withdrawn without formal reasons given. In informal conversation, then-Forest Supervisor Chris Worth explained that the appeal "made him think" and that he wanted the staff to take a closer look at the project. When the Forest Service released a new Environmental Assessment (EA2) and Decision Notice for the Jazz Sale, Bark was surprised that the proposed action was *exactly the same* as in the first Decision Notice.

There are differences, however, in EA2. There are several sections where the Forest Service responded to Bark's appeal concerns about a lack of information with more

is analyzed in the EA, thus Bark will assume the correct amount is 11.5 miles and that the DN will be amended to reflect the correct amount.

specifics regarding project design, such as details about the number of landings in the project, as well as more information about the water quality data used to make the determinations of impact. Bark appreciates these changes. Indeed, they represent exactly how NEPA is supposed to work: the agency is responsive to the public's concerns and provides more high quality information to better inform both the public and the decisionmaker.

However, there are other changes in EA2 that are antithetical to the point of NEPA; changes that edit out important information about project specifics and the extent of adverse environmental impact. For example, the Unit Table in EA1 (at 25) contains much useful information, such as the unit number, size, whether it is in Late Successional Reserve, and yarding system. In contrast, the Unit Table of EA2 (at 27) only has unit number and size. Why the removal of useful information? This type of regression seems pointless, unless the Forest Service's objective is to obscure information about what types of land designations and logging systems are to be used. We should not have to flip back and forth between EAs to get this information – because EA2 should necessarily be of higher quality.

Similarly, in Section 3.6.4 regarding Erosion (at 144), EA2 omits a very useful chart that described the erosion hazard for downhill skyline yarding on earthflow soils (found in EA1 at 109). This chart shows that there is a severe erosion hazard for the surface, and a high erosion hazard for subsoil, of five units. Providing less information in EA2 does not help the Forest Service or public take a hard look at environmental consequences – especially when the information omitted shows that there is a possibility of significant impact.

Further, in the same section, the sentence that read “[s]kyline units with down hill yarding are proposed on steep, highly erosive soils (units 30, 34, 44, 80, 82)” has become “[d]ownhill skyline yarding is proposed on a portion of (units 34, 44, 80 and 82)”. Omitting the words “steep, highly erosive soils” in EA2 is irresponsible. Is the Forest Service trying to mask the extent of impact? Do you think removing the language removes the impact? This type of change to the EA does not increase Bark's trust that the Forest Service is interested in fully disclosing the extent of impacts from the sale and casts doubt over the entire NEPA process.

Bark submits this appeal for the following reasons:

1) Best Management Practices

Use of Best Management Practices traces its origins to the Clean Water Act as an approach to minimize impacts from nonpoint sources of water pollution. As defined by the CWA: *Best Management Practices (BMPs)*, are methods, measures or practices selected by an agency to help minimize its nonpoint source control needs. BMPs include but are not limited to structural and nonstructural controls and operation and maintenance procedures. BMPs can be applied before, during and after pollution-producing activities to reduce or eliminate the introduction of pollutants into receiving waters. 40 CFR §130.2(m).

It appears that the Forest Service has gradually expanded the use of “Best Management Practices” beyond limiting nonpoint water pollution, and now uses the

term to refer generally to mitigation measures and/or project design that minimizes environmental impact. While expanding the definition of BMPs, the Forest Service has also lost focus of the very explicit Forest Plan guidelines for describing, implementing and monitoring BMPs. The Forest Service tries to sidestep this issue in EA2 by referring to these guidelines as “Project Design Criteria” not BMPs – even though the very same section of EA1 was titled “Best Management Practices and Design Criteria”.² See EA1 at 27, EA2 at 28. The Forest Service cannot avoid its duty to follow Forest Plan guidelines by renaming the BMPs “design criteria”

a. Failure to Follow MHFP direction on BMPs

In Bark’s comments on the Preliminary Assessment (“PA”), and again in EA1, Bark acknowledged that there have been systematic failures in the Forest Service that result in Best Management Practices (“BMPs”) and other mitigation measures not being implemented, and/or monitored on sales throughout the Clackamas River Ranger District. Bark requested that the Forest Service create a more robust approach to tracking implementation of BMPs and monitoring for their effectiveness. Not only has the Forest Service failed to do so in the second Jazz EA, it appears that it continues to ignore its own Forest Plan in regards the description, implementation and monitoring of BMPs.

Appendix H of the Mt. Hood Forest Plan discusses the reason for, and format of, BMPs in detail. It notes that, “BMPs are incorporated into the design of the alternatives to avoid or minimize potential adverse water quality problems. . . . Appropriate BMPs are selected for each project by the interdisciplinary team The selected BMPs, an estimate of their effectiveness, and a plan for monitoring them is included in the project EA or EIS.” *RMP at H-3*.

The Forest Plan further instructs that each BMP should consist of Title, Objectives, Explanations, Implementation and Responsibility, Ability to Implement, Effectiveness and Monitoring. *RMP at App. H-5*. Instead of following the very specific direction of the Forest Plan for describing the BMPs, and including such necessary information as implementation & responsibility, ability to implement, and effectiveness, the Jazz EA merely lists BMPs very generally.

Of special note is the Forest Plan’s commitment to monitoring the implementation and effectiveness of the BMPs. “When the resource activity begins, timber sale administrators, engineering representatives, resource specialists, and others, ensure that the BMPs are implemented according to plan. . . . BMP monitoring is done before, during and after resource activity implementation. This monitoring answers the question: Did we do what we said we were going to do?” *RMP at App. H-3*.

This sets up the Forest Service to “Evaluate and Adjust” the BMPs – validation monitoring. The section concerning Implementation of the Forest Plan makes very clear that monitoring and evaluation is an important part of implementing the Forest Plan and adaptive management. The Forest Plan instructs the Forest Service to an Annual BMP Report that tracks implementation and effectiveness of BMPs. See *LRMP at Five-11, 12*. To the best of Bark’s knowledge, this does not occur.

² This change is echoed throughout EA2, as several sections that used to refer to BMPs now only refer to design criteria.

In discussing the first iteration of Bark's appeal of the Jazz Timber Sale with then-Forest Supervisor Chris Worth, he thanked us for raising the issue of the Forest Service's failure to comply with Appendix H because, up 'til then, he did not know Appendix H existed. It appears this ignorance is widespread in the Forest Service, because neither the new Jazz EA nor Decision Notice mention Appendix H *at all*. Failure to follow, or even acknowledge, the entire section of the Forest Plan that directs BMP implementation & monitoring is a major defect of the EA and Decision Notice.

Bark understands that the Forest Service operates with a different budget now than it did in 1990, and that this affects its management choices. However, this does not mean that the Forest Service can pick and choose the parts of the Forest Plan that it wishes to comply with. Too often, Mt. Hood Forest staff has continued to plan timber sale after timber sale, without complying with Appendix H and doing the evaluation or monitoring required to answer the basic question: "Did we do what we said we were going to do?"

b. Monitoring shows BMPs are not consistently implemented or effective

Time and again in the EA2 and DN2, the Forest Service lists the adverse environmental impacts of the timber sale, but concludes that they will not harm the environment "because of the BMPs". As one of Bark's primary concerns about the Jazz timber sale is the Forest Service's over-reliance on unproven BMPs, it seems that the Forest Service would substantively engaged with this concern in EA2 and DN2. Instead, the Forest Service generally asserts that it sufficiently monitors for BMP implementation and effectiveness by stating, "[s]ometimes monitoring is formally documented or is found in sale administrators' inspection reports, but often monitoring is informal with little documentation unless a problem is encountered that needs to be addressed further." *EA2 at 52*. This approach to "monitoring" is seriously deficient in substance.

First, as laid out in Appendix H, one of the key reasons to monitor is to "Evaluate and Adjust" the BMPs, also known as validation monitoring. Documented monitoring that shows BMPs are implemented and effective as planned is equally important as monitoring that uncovers a "problem that needs to be addressed further". Both should be undertaken formally, with written records accessible to both Forest Service staff and the public.

Second, in contrast to Mt. Hood National Forest, there are National Forests that take BMP monitoring seriously and have compiled extensive monitoring protocol for their programs. For example, Region 5 of the Forest Service has a 128-page handbook that outlines the process for monitoring and evaluating the implementation and success of the BMPs. *See Investigating Water Quality in the Pacific Southwest Region Best Management Practices Evaluation Program (BMPEP) User's Guide*, incorporated herein by reference. Using this as a guide, each year the Klamath National Forest provides a BMP Monitoring Report. The introduction of the 2009 Report summarizes their program:

This program is designed to evaluate how well the Forest and the Region implement BMPs and how effectively the BMPs control water pollution from National Forest lands. Onsite evaluations have been divided into 29 possible “activity groups” (categories) that look at related management practices. In the 2009 fiscal year, Klamath National Forest staff evaluated timber, engineering, range, recreation, minerals, and restoration projects to determine whether BMPs were implemented and effective. Nineteen different protocols were used to evaluate a total of sixty-five sites. Each protocol is designed to measure implementation and effectiveness of an activity category that includes from one to six related BMPs.

- Klamath National Forest, Best Management Practices (BMP) Evaluation Program Water Quality Monitoring Report, 2009

We include this to provide an example of functional and effective BMP monitoring – and to highlight the resources available to assist the Mt. Hood National Forest in setting up a reliable monitoring program that informs both its staff and the public about the state of BMP implementation.

Third, Bark’s own program of monitoring for compliance with BMPs throughout the Clackamas River Ranger District has led us to conclude that there *are* “problems that need to be addressed further,” which are neither sufficiently monitored nor addressed by the Forest Service. In our first appeal we listed multiple violations of BMPs observed in the field, both by the Forest Service and by Bark volunteers.

As disclosed in the first appeal, in April 2012, Bark submitted a Freedom of Information Act (FOIA) request for the results of the last five years of Forest Service BMP monitoring. We received survey results for four units in two timber sales.

The monitoring done by a Forest Service soils scientist in January 2012 was to field test draft National BMP monitoring templates -- not because Mt. Hood National Forest has a regular program of BMP monitoring. In three of sale units surveyed, BMPs to protect soil and limit erosion were incompletely implemented. These include:

Rotor, unit 5: Landing not fully seeded and mulched, closure to area not effective resulting in area being used for target shooting and garbage dumping.

Swag, unit 24: Detrimental soil conditions existed before this entry and this entry added to it; bare ground on skid trails with slopes over 20% was not mulched; sheet erosion noted;

Swag unit 23: Processor operating on slopes greater than 40% and not on a mat of slash as prescribed in the EA; detrimental soil conditions existed before this entry; greater number of skid trails created than needed.

The lack of monitoring data, combined with the fact that what little monitoring had been done raised questions about the implementation and effectiveness of the BMPs, led Bark to begin a program of post-logging monitoring. Bark entered into a partnership with Drew University to create protocols for monitoring BMPs, and to train Bark volunteers in these protocols.

Over the past year, 65 volunteers spent over 750 hours monitoring timber sale units logged one and two years prior. Thus far, Bark has surveyed 24 units in the following sales in the Clackamas River Ranger District (listed with NEPA document name):

Swag, Day & Roman: combine the Upper Clack and ReThin EAs

Boya: ReThin EA

Wolf, Wall: Upper Clack EA

Pink, Hot, Rotor: 2007 Thin EA

Bark has created & refined protocols for monitoring invasive species, skid trails, landings, and general stand conditions in recently thinned stands. We are continuing to improve our trainings and protocols to ensure accurate results, and while the data has not yet been validated or certified by an expert, preliminary results point to both localized and systemic problems with BMP/PDC implementation.



For example, in the course of Bark's BMP monitoring, we recently observed a skid trail or temporary road (it can be hard to distinguish between the two) placed directly through an intermittent stream in Rotor Unit 101. Approximately 80% of the stream flow is traveling down the surface of the skid trail for about 100 yards before reentering its original channel. There is clear evidence that sediment is accruing in the skid trail and entering the stream. Obviously, this does not comply with the BMP/design criteria, but corrective action has not been taken months after completion of the sale.

Where this temporary road/skid trail reconnects with road 4620-130, the flow is gouging out the surface of the road and has created a two-foot trench on the surface of the road, which is a persistent source of sediment (pictured at right).

These are stark examples of BMPs either not being followed or being wholly ineffective at protecting riparian areas from the sediment impacts of temporary roads and skid trails. With examples like this currently going unchecked in the Clackamas Ranger District, it is hard to trust that either the BMPs, or the Forest Service's monitoring, is working.



Many localized examples, such as those described above and within the body of this appeal³, lead to Bark's the following systemic concerns:

- 1) There is a pattern and practice of unreliable implementation of BMP/PDCs by timber sale contractors.
 - a. This leads to impacts on the ground that are greater than anticipated in environmental analyses and consultation; and
 - b. Future determinations of significance cannot rely on BMP's to effectively mitigate impacts because field data shows that projects are not being implemented as planned.
- 2) The action agency does not perform regular post-project monitoring on timber sales to ensure that the BMP/PDCs are implemented and/or effective.

As a response to Bark's concerns about the lack of BMP effectiveness, EA2 asserts that the "team evaluated the PDCs and rated their "ability to implement" and "effectiveness". This analysis found that PDCs had a moderate to high level of expected effectiveness, meaning that all practices would be implemented and effective at least 75% of the time. *EA2 at 106*. Though not disclosed in EA2, the project file contains the monitoring information referred to, which shows that the Forest Service did undertake serious BMP monitoring five different years between 1999 and 2004.

While it is nice to know there is some historical precedent, this does not make up for the lack of monitoring over the past nine years especially as BMPS have evolved in some significant ways since 2004. Also, how can implementation 75% of the time be considered a "high level"? Assuming this is true, this means the Forest Service acknowledges that 25% of the time BMPs are either not implemented or not effective. It does not appear that the analyses of environmental impacts took this margin of error into consideration when determining extent of adverse environmental impact.

Also, the EA refers the public to the BMP monitoring included in the Annual Monitoring Reports. The last monitoring report is for fiscal year 2010, as the Forest Service has defunded its annual monitoring report. In the 2010 report, the FS states that "Forest Plan standards and guidelines for water quality including BMPs, cumulative effects, lakes and wetlands are monitored for implementation and effectiveness." *Annual Report at 74*. The report then discusses implementation monitoring for BMPs on road decommissioning projects, and how BMPs were being adequately implemented but from time to time minor recommendations for improving BMP implementation were made. *Annual Report at 75*. While this is a good example of substantive BMP monitoring, it is also the only example.

The next Annual Report section, on water quality trend monitoring, specifically states that it is "not designed to determine whether BMPs are effective for a specific project". *Annual Report at 76*. Despite this clear limitation, the EA tries to use the over-all water quality trend data to show that BMPs are implemented and effective. *EA2 at 105-6*. However, there is no direct correlation between the two – and there are several other reasons that water quality could be

³ This appeal will highlight specific substantive examples of BMP violations throughout in the relevant section.

steadily improving, including a decrease in logging and an increase in road decommissioning throughout the forest.

EA2 also mentions Project Level Monitoring as a “multi-stage process” used on the Forest to ensure that a project is implemented as planned. *EA2 at 107*. However, as Bark’s field data reveals, multiple BMP violations are occurring in every timber sale we have monitored. Clearly, there are problems with the Project Level Monitoring that need to be addressed before the Forest Service can rely on its status quo.

These findings point to both the inability of the Forest Service timber sale administrators to ensure BMPs and timber contract specifications are fully complied with, and the insufficiencies of BMPs in preventing environmental harm. Thus, when the Forest Service asserts that the project will not have significant environmental impacts because of the BMPs, it can offer no assurance that these BMPs will be fully implemented, or will be effective at minimizing or mitigating the known environmental impacts.

c. Cannot base a FONSI on unreliable BMPs

In instances such as this, where the Jazz DN2 relies on “Best Management Practices and design criteria” to make its Finding of No Significant Impact (*see DN at 14*), the mitigation measures must be assured to occur and must “completely compensate for any possible adverse environmental impacts.” *Cabinet Mountains Wilderness/Scotchman’s Peak Grizzly Bears v. Peterson*, 685 F.2d 678, 682 (D.C. Cir. 1982). If the effectiveness of such mitigation is not assured, then the Forest Service cannot sign a FONSI and must prepare an EIS. *Foundation for North American Wild Sheep v. U.S. Dep’t of Agric.*, 681 F.2d 1172, 1178 (1982). In *Northwest Indian Cemetery Protective Assn. v. Peterson*, the court determined that NEPA requires agencies to “analyze the mitigation measures in detail [and] explain how effective the measures would be . . . A mere listing of mitigation measures is insufficient to qualify as the reasoned discussion required by NEPA.” 764 F.2d 581 (9th Cir. 1985).

The courts have held that the USFS is obligated to detail in an EA the mitigation measures that it relied on to obtain a FONSI. *Robertson v. Methow Valley Citizen’s Council*, 490 U.S. 332, 353 (1989); *Carmel-By-the-Sea v. United States Dep’t of Transp.*, 123 F.3d 1142, 1154 (9th Cir. 1997) (holding that “mitigation must be discussed in sufficient detail to ensure that environmental consequences have been fairly evaluated”). The Ninth Circuit has explained that “a mere listing of mitigation measures is insufficient to qualify as the reasoned discussion required by NEPA.” *Northwest Indian Cemetery Protective Ass’n. v. Peterson*, 795 F.2d 688, 697 (9th Cir. 1986), *rev’d on other grounds*, 485 U.S. 439 (1988); *see also Neighbors of Cuddy Mountain v. United States Forest Serv.*, 137 F.3d 1372 (9th Cir. 1998).

The “mitigated FONSI” is only upheld when the mitigation measures significantly compensate for a proposed action’s adverse environmental impacts. *Friends of Endangered Species, Inc. v. Jantzen*, 760 F.2d 976, 987 (9th Cir. 1985). The court will not accept conclusory statements that mitigation measures are effective: the agency must be able to support its conclusions with information in the administrative record. *Sierra Club v. Peterson*, 717 F.2d 1409 (D.C. Cir. 1985). In particular, the agency must

also “disclose the history of success and failure of similar projects.” *Sierra Club v. Morton*, 510 F.2d 813, 824 (5th Cir. 1975).

Not only is the Forest Service unable to assure that the BMPs will, in fact, be followed and/or mitigate the adverse impacts, recent studies disclose that *even if followed*, BMPs do not consistently reduce adverse environmental effects. In the context of road construction BMPs, there is reliable data indicating that BMPs cannot always reduce the adverse impacts of road building on aquatic resources to ecologically negligible levels, especially within the context of currently pervasive watershed and aquatic degradation (Ziemer and Lisle, 1993; Espinosa et al., 1997; USFS and USBLM, 1997; Beschta et al., 2004; GLEC, 2008). The nationwide assessment of BMP effectiveness commissioned by the USEPA performed by the Great Lakes Environmental Center (GLEC) specifically noted that BMPs aimed at reducing road impacts are not 100% effective, and, in particular, that efforts to prevent road drainage to streams have considerable potential for failure, especially in the Pacific Northwest. (GLEC, 2008).

In its report, GLEC found that in the Pacific Northwest, “conventional BMPs for road construction may not be sufficient to prevent adverse effects on stream channels and fish habitat.” (GLEC, 2008). Activities implemented with somewhat effective BMPs still often contribute to negative cumulative effects on aquatic systems (Ziemer et al., 1993; Rhodes et al., 1994; Espinosa et al. 1997; Beschta et al., 2004; GLEC, 2008). Espinosa et al. (1997) documented that aquatic habitats were severely damaged by roads and logging in several watersheds despite BMP application, and that blind reliance on BMPs in lieu of limiting or avoiding activities that cause aquatic damage serves to increase aquatic damage.

Not only is the effectiveness of the BMPs included unsupported by field data, the Rhodes Comment²⁴ details how the Jazz Timber Sale fails to include the most effective BMPs, which are:

- avoidance of implementing damaging logging, landing, and road activities in high hazard, sensitive, or degraded areas, such as stream crossings, RR, and unstable terrain, such as earthflows; and
- full protection of an adequate width of riparian areas to prevent or reduce the transmission of upslope impacts to streams. .

The management practice of avoiding high impact activities in sensitive terrain has long been recognized to be far more effective than attempting to reduce such impacts via other BMPs with limited effectiveness. Avoidance of sensitive areas is critical, because as GLEC (2008) noted with respect to road impacts, “in some cases, however, control of the problem may not be feasible: location ‘trumps’ management practice.” It has long been recognized that *full* protection of the area of vegetation within 200 to >300 ft of the edge of *all* stream types is one of the most important and effective ways to limit the impacts from upslope logging-related disturbances, as numerous independent scientific assessments have repeatedly concluded. However, despite this

⁴ Bark herein incorporates the attached comments of expert hydrologist Jon Rhodes, who offers his comments to explain how the EA failed to reasonably assess the Jazz Timber Sale’s effects consistency with the NFP ACS and ACSOs the many ways that EA failed to properly analyze and disclose the environmental impacts of the Jazz Sale. This Comment is referred to as the “Rhodes Comment2” and “Attachment A”.

information, the EA fails to incorporate these effective BMPs or design an alternative that would avoid such adverse environmental impacts. *Rhodes Comment2 at 27-28.*

EA2 elaborates on the utility of BMPs in reducing erosion associated with roads. *EA2 at 86-7.* While Bark agrees that undisturbed vegetation buffers along streams and erosion control mechanisms do reduce the amount of sediment reaching streams, EA2 emphasizes the effectiveness of erosion blankets, which are a technology not included in the erosion control BMPs, and fails to address Bark's main concern – increased erosion from stream crossings and hydrologically connected roads. If the Forest Service wants to rely on the 80-90% effectiveness of erosion blankets, it must include them as mandatory erosion control measures in BMP 4E4 – which currently does not even list erosion blankets in its laundry list of possible measures.

2) Inadequate Range of Alternatives

Of the 2,052 acres in the Jazz Timber Sale area, there are several overlapping land allocations: 734 acres are in Riparian Reserves; 726 ac. in Late Successional Reserves; 1,068 ac. in Earthflow; 74 ac. in Wild & Scenic Rivers, 1,800 ac. in Special Emphasis Watershed; and only nine ac. in Timber Emphasis. *EA2 at 13.*

These land allocations have the following management directions:

Riparian Reserve: Management must maintain or restore the existing condition, and not prevent attainment of Aquatic Conservation Strategy (ACS) Objectives. *NFP ROD at B-10.* Timber harvest can occur only if needed to attain ACS objectives. *Id. at C-32.*

Late Successional Reserve: Management objective is to “protect and enhance conditions of late-successional and old-growth forest ecosystems.” *NFP ROD at C-9.*

Special Emphasis Watershed: Primary goal is to “maintain or improve watershed, riparian and aquatic habitat conditions and water quality.” Secondary goal is to “maintain a healthy forest condition through a variety of timber management practices.” *LRMP at 4-246.*

Earthflow: Maintain hydrologic and physical balances to prevent reactivation or acceleration of large, slow moving earthflows. *LRMP at 4-261.*

Timber Emphasis: Provide lumber, wood fiber and other forest products on a fully regulated basis, based on the capability and suitability of the land. *LRMP at 4-289.*

Given that these land allocations focus almost exclusively on protecting and improving the conditions of water, soil stability and late-successional habitat, it was unreasonable for the Forest Service not to consider alternative actions that have less adverse impacts on these resource values.

Exploring alternative actions is not simply a trivial NEPA process requirement – indeed, the Council on Environmental Quality (CEQ), which promulgated the regulations implementing NEPA, characterizes the discussion of alternatives as “the heart of the environmental impact statement.” 40 C.F.R. § 1502.14. The purpose of NEPA's alternatives requirement is to “sharply defin[e] the issues and provid[e] a clear

basis for choice among options by the decisionmaker and the public.” *Id.* All reasonable alternatives must receive a “rigorous exploration and objective evaluation..., particularly those that might *enhance environmental quality or avoid some or all of the adverse environmental effects.*” *Id.* § 1500.8(a)(4) (emphasis added).

Recent CEQ regulations have clarified that for projects with no unresolved conflicts concerning alternative uses of available resources, the EA need only analyze the proposed action and no action and proceed without consideration of additional alternatives. 36 CFR § 220.7(b)(2)(i). However, the Forest Service cannot simply will this condition to be true, when there continue to exist many unresolved conflicts about resource impacts and use.

Following the CEQ clarification, the Ninth Circuit thoroughly addressed the question of quantity of alternatives in *Native Ecosystems Council v. U.S. Forest Serv.*, 428 F.3d 1233 (9th Cir. 2005). The court found that NEPA and its implementing regulations require the following with respect to the number of alternatives that must be considered by an agency: 1) the agency must consider “appropriate” alternatives to recommended courses of action; 2) a NEPA document must “rigorously explore and objectively evaluate all reasonable alternatives” and must explain why it has eliminated an alternative from detailed study; 3) the agency must consider a “no action” alternative; and 4) the agency must designate a “preferred” alternative. *NEC* at 1246.

So long as “all reasonable alternatives” have been considered and an appropriate explanation is provided as to why an alternative was eliminated, the regulatory requirement is satisfied. In short, the regulation does not impose a numerical floor on alternatives to be considered. *NEC* at 1245-1246. *NEC* boils down alternatives analysis to the question: are there reasonable alternatives that exists and were not adequately dealt with?

A recent case very similar to the Jazz Timber Sale applied this question and found that the Forest Service had indeed failed to consider a “reasonable alternative.” See *Env'tl. Prot. Info. Ctr. v. United States Forest Serv.*, 234 Fed. Appx. 440, 442-443 (9th Cir. 2007) (“EPIC”).

In this case, which involved a commercial thinning project in the Shasta-Trinity National Forest, EPIC proposed an action alternative during the public comment period that would not remove trees greater than twelve inches in diameter, would not involve a commercial timber sale, and would not result in any road construction or reconstruction. The Forest Service rejected EPIC's proposal at this preliminary stage of the decision-making process, stating briefly that EPIC's proposal was “not consistent with Purpose & Need.”

The Ninth Circuit found Forest Service’s response unpersuasive. It held that the Forest Service did not adequately consider reasonable alternative courses of action because it defined the objectives of the project so narrowly that the proposed project was the only alternative that would serve those objectives.

The Court found that the Forest Service improperly narrowed the range of possible agency action to commercial logging projects, which precluded the agency from

considering alternatives that might better serve the goals of the Northwest Forest Plan by striking a closer balance between timber and environmental interests. The Court concluded that the Forest Service violated NEPA by defining the goals of its project so narrowly that only a commercial timber sale would serve those goals. *EPIC*, 234 Fed. Appx. at 444.

Similarly, in Bark's scoping comments, and again in comments on the PA, we made clear that there are several unresolved conflicts concerning alternative uses of resources in the Collawash Watershed. In PA comments, Bark raised the question of scientific uncertainty surrounding the impacts of commercial thinning, noting both the questions raised by the Pacific Northwest Forest Restoration Learning Network, and the results from a scientific team that recently considered large scale thinning and identified many concerns about the practice. They found that even when confined to previously harvested stands, thinning treatments must be evaluated carefully and implemented in such a way as to avoid negative impacts. (Carroll, 2009). Ground based methods and associated machine piling, burning of activity fuels, construction and increased use of roads and landings can increase soil erosion, compact soils, and elevate surface runoff. (Carroll, 2009).

Concluding that no evidence exists to support the contention that an extensive thinning program will hasten restoration of historic patterns of forest heterogeneity on a landscape scale, the researchers recommended that thinning treatments be applied cautiously and only where ecologically warranted, not be considered a cure-all for forests degraded by fire exclusion or other human activities. (Carroll, 2009). This directly contravenes the Forest Service's assertions that commercial thinning is necessary to meet the purpose and need of forest restoration, and points to a very clear disagreement concerning the use of resources in the project area.

Because of these unresolved conflicts, in its comments, Bark proposed specific alternative actions, including a project that had one or all of the following changes: no commercial logging in Riparian Reserves and Late Successional Reserves; no ground-based yarding in High-risk Earthflow areas; and/or no timber sale units that require rebuilding previously decommissioned roads.

Rather than substantively engaging with Bark's request to fully analyze these alternatives, the Forest Service summarily dismissed them, saying "[w]hile Bark has asked for full development of additional alternatives it is clear that they advocate for No Action. The No Action Alternative was fully developed." *EA2 at 50*.

Bark disagrees with this assessment of our suggested alternatives. It is true that Bark's proposed alternative actions decrease the amount of commercial logging in the project area by protecting the most ecologically sensitive areas of the forest and avoiding adverse impacts. However, they do not, singly or in combination, inevitably lead to "No Action". In the context of land allocations that specifically focus on protecting water quality, soil stability and wildlife habitat, these are reasonable alternatives that would have allowed the Forest Service to move forward with some commercial logging *without* having to exempt itself from multiple Forest Plan standards and compromising resource values.

Instead, like the Forest Service in EPIC, the Mt. Hood Forest Service insists that the only way to meet the purpose and need is to have a 2,000 commercial timber sale, with all the accompanying adverse environmental impacts – primarily caused by the infrastructure (roads, skid trails, skyline yarding corridors, etc) needed to remove commercial products from the forest. There are two major flaws with this argument.

First, it is not at all clear that an action alternative with less acreage, or the No Action alternative, would not meet the first two facets of the purpose and need: 1) to increase health and growth of stands; and 2) create greater variability of vertical and horizontal stand structure, just on a different timeline. *EA2 at 18-19.*

The Decision Notice says that the stands in this forest are “overstocked” and “do not contain the mix of tree species that were present in the original stand.” *DN2 at 3.* The Forest Service fails to recognize that dense, heterogeneous Douglas Fir dominated forests are very typical in natural succession, as Doug Fir is a sun-tolerant, early successional tree species. It is well known that in early seral forest stands “a very common occurrence is the development of dense, nearly pure, essentially even-aged stands of *Pseudotsuga menziesii*.” (Franklin & Dryness, 1973). These stands are often dense enough to eliminate most of the understory vegetation, with reestablishment of the characteristic understory species and invasion of western hemlock taking place as mortality begins to open up the stand at 100 to 150 years of age. *Id.* This is basic forest ecology. The Jazz-area plantation stands are not unlike similarly aged naturally regenerating stands, but for their legacy of soil compaction and loss of soil nutrients from clearcutting.

DN2 asserts that if thinning does not happen now, diameter growth would “drastically slow”. *DN2 at 3.* While thinning has been shown to increase tree diameter by a few inches over multiple decades, this is not a “drastic” amount – nor are large trees the only mark of a healthy forest.⁵ Key elements of healthy forest stands also include abundant dead wood and healthy soil micro-organisms. As detailed below, removal of most of the trees that would die naturally in the stem exclusion phase, coupled with increased soil compaction and erosion, may irretrievably degrade the soil that is the most important building block for future forest health.

We include this information on forest ecology to dispute the Forest Service’s claims that the only way to achieve its restoration goals is a large commercial logging project. However, the entire bias of the EA points in that direction. The Forest Service does a strange thing in its comparison of the action and No Action alternative which obscures the role of natural succession: it analyzes the action alternative as if time exists, but the no action alternative as if time doesn’t. This bias towards action renders the No Action analysis far from “fully developed”.

For example, in the Comparison of Alternatives, the EA asserts that with No Action that “plantations would remain uniformly dense and overcrowded” and many of the impacts of No Action are listed simply as “No change”. *EA2 at 58-62.* This fails to acknowledge that the forest changes naturally over time, even without human

⁵ It is also not clear why bigger trees faster is so important. Both the EA and DN emphasize that No Action would lead to slower tree growth, as if this is *very bad*. It is unclear why the speed of tree growth is the single greatest indicator of forest health, or attainment of late successional characteristics.

interference, and the “no action” forest would experience increased tree mortality, which would open gaps, create more structural diversity, lead to the introduction of other species, increase snags and CWD, etc, all of which achieve the purpose and need. Indeed, the EA forgot what the PA acknowledged – the forest naturally self-thins!⁶ All the Jazz timber sale is doing is accelerating a natural process, but with many damaging environmental side effects.

The EA’s second flaw is that it is reasonable to believe a timber sale with a smaller environmental footprint could still meet all *three* aspects of the purpose and need, without compromising the resource values in this Special Emphasis watershed. Yet, the Forest Service never explains why a 1,160 acre project (the amount of unit acres remaining if the Forest Service did not re-open any decommissioned roads) is too small to meet the purpose and need, or why an alternative that avoids ground-based yarding in high earthflows areas (and thus avoids multiple Forest Plan exemptions) is unreasonable.

The EA purports to address the proposed alternative of not building new roads or reopening previously closed roads, however a close look at this analysis shows that it never directly addresses the feasibility of this alternative. *See EA2 at 54-5*. The Forest Service put forth two main reasons it did not further develop this alternative: 1) in its initial analysis, the FS considered opening even more roads than proposed in the action alternatives; and 2) helicopter logging the units accessed by re-built roads is infeasible. *EA2 at 54*. The first reason, that the FS could have rebuilt even more roads but didn’t, does not lead directly to the infeasibility of a smaller project. The second reason, that increased helicopter logging won’t work, does not address the actual alternative that Bark suggested: to remove the affected units from the project altogether.

Indeed, the Forest Service avoided the question of dropping these units: “Some comments suggest deleting all harvest that is not accessible from the existing while other comments suggested deleting the road construction with no comment about the option to helicopter log the units that have no existing road access”. It continues “Either way, changing this many units to helicopter would result in a project that is not economically viable” *EA2 at 54*. The Forest Service’s response here makes no sense – what the two proposed alternatives have in common is asking the Forest Service to not re-build 11.5 miles of new road, not to switch to helicopter logging. Thus, the response should have read something like “Either way, not rebuilding the roads and logging these units is infeasible because of X”. But it didn’t, it dodged the issue by focusing on increasing helicopter logging – which no party actually suggested. It appears that there are no concrete reasons that decreasing the size of the sale is actually infeasible.

The Forest Service didn’t meaningfully address the alternative of decreasing the amount of logging on high earthflow areas – though it is likely that their response would have similarly stated that a smaller sale would not meet the purpose and need, with no clear reasons why such a large project is necessary.

⁶ The PA disclosed that, “[w]ith no action, at 200 years of age these stands would function in a similar fashion to a treated stand but may have a larger amount of snags and down wood.” *PA at 104*.

An alternative that decreases the extent of adverse environmental impact from the sale, either by limiting road rebuilding or ground-based yarding on highly unstable soils, would not necessarily prohibit meeting the purpose and need. It may prevent unnecessary environmental impacts in sensitive areas (which will achieve the desired structural diversity over time), while accelerating tree growth in others. Because of the land designations at play in this sale, it is absolutely reasonable to consider a project that protects water quality and soil productivity by removing the most high risk elements from the Jazz sale. By failing to consider all reasonable alternatives, and/or failing to provide a reasoned explanation as to why these alternatives were eliminated, the Forest Service does not meet its requirements under NEPA.

3) Failure to Take a Hard Look at Environmental Consequences

NEPA creates procedural requirements for federal actions "(1) to ensure the agency will have detailed information on significant environmental impacts when it makes its decisions; and (2) to guarantee that this information will be available to a larger audience." *Inland Empire Pub. Lands Council v. U.S. Forest Serv.*, 88 F.3d 754, 758 (9th Cir. 1996). The NEPA process is intended to help public officials make decisions that are based on understanding the environmental consequences, and take actions that protect, restore, and enhance the environment. 40 C.F.R. § 1500.1(c). Additionally, the purpose of NEPA is to require disclosure of relevant environmental considerations that were given a 'hard look' by the agency, and thereby to permit informed public comment on proposed action and any choices or alternatives that might be pursued with less environmental harm. *Lands Council v. Powell*, 395 F.3d 1019, 1027 (9th Cir. 2005).

In order to ensure this level of detailed analysis, an Environmental Assessment must provide sufficient information for determining whether to prepare an environmental impact statement or a finding of no significant impact. 40 C.F.R. § 1508.9(a). The information presented in the EA must be of "high quality," and include "accurate scientific analysis." 40 C.F.R. 1500.1(b). The agency must adequately explain its decision not to prepare an EIS by supplying a "convincing statement of reasons why potential effects are insignificant." *Steamboaters v. Fed. Energy Regulatory Com.*, 759 F.2d 1382, 1393 (9th Cir. 1985). The statement of reasons is crucial to determining whether the agency took a hard look at the potential environmental impacts of the project. *Oregon Natural Desert Ass'n v. Singleton*, 47 F. Supp. 2d 1182, 1193 (9th Cir. 1998).

To comply with NEPA's "hard look" mandate, courts have held that agencies are obligated to maintain a current inventory of resources so that an adequate baseline exists to evaluate the environmental impacts of a proposed action. *Ctr. for Biol. Diversity v. Bureau of Land Mgmt.*, 422 F.Supp.2d 1115, 1163 (N.D. Cal. 2006); see also *Or. Natural Desert Ass'n v. Rasmussen*, 451 F.Supp.2d 1202, 1212-13 (D. Or. 2006). The environmental baseline is an integral part of an EA, because it is against this information that environmental impacts are measured and evaluated; therefore, it is critical that the baseline be accurate and complete. *Am. Rivers v. Fed. Energy Regulatory Comm'n*, 201 F.3d 1186, 1195 & n. 15 (9th Cir. 2000); *Ctr. for Biol. Diversity*, 422 F.Supp.2d at 1163.

As detailed below, and supported by the Rhodes Comment², the Jazz EA failed to take a “hard look” at several relevant environmental factors, by failing to provide complete information and conclusions, by relying on unreliable BMPs, and/or by failing to evaluate impacts altogether.

a. Soil Productivity

Soil conditions strongly influence long-term forest productivity, the composition and condition of vegetation, rates of vegetative recovery after disturbance, sediment flux, and the quantity, timing, and quality of water produced by watersheds, which, in turn, affect aquatic populations and habitats (Beschta et al., 2004). Because soil conditions strongly influence future forest vegetation conditions, soils profoundly affect the functionality of forest vegetation with respect to ecosystem processes.

The Decision Notice approves four exceptions to the Forest Plan’s soil protection standards, while stating that the project is consistent with Forest Plan objectives for long-term soil productivity and earthflow stability. *DN at 17*. For a variety of reasons detailed below, this is an unsupportable conclusion based on both the information provided in the EA, and available information that the Forest Service should have considered in its analysis.

i) Soil Compaction

A. Ground Based Yarding

The majority of observable ground disturbances in the Jazz sale area are heavily compacted old skid trails, landings and temporary roads from the logging 40-60 years ago. *EA2 at 146*. All ground based units still show signs of skid trail compaction, without substantial recovery – even on gentle slopes. *Id.* The soil remains detrimentally compacted far in excess of Forest Plan standards. Yet, despite the heavy compaction already present on these unstable and degraded soils, the Jazz timber sale would increase compaction across the landscape in excess of Forest Plan standards.

In particular, the Forest Plan says that on low-risk earthflows possibilities of reactivating or accelerating movement shall be minimized.⁷ FW-017. Under this standard are three subheadings which, presumably, limit the activities that would reactivate or accelerate the earthflows. The Forest Service proposes to exempt itself from two of the three standards: 1) combined, cumulative detrimental soil impact should not exceed 8%; and 2) ground machine yarding of logs should not occur. FW-018, 019. These two standards are framed as “should” standards, which the Forest Plan identifies as required, though it allows for case by case exceptions to the standard.⁸ *LRMP at 4-45*.

While these are “should” standards, it is important to recognize that they are but subsections of a “shall” standard – wherein the action is mandatory. The Forest Service does not address how exempting itself from two of the three standards that

⁷ Note that the Forest Plan Standard only mentions low-risk earthflows. This is not meant to exclude the same protections for medium or high risk areas. I assume that the Forest Service did not anticipate substantial timber harvest activities on medium to high risk earthflows.

⁸ “Should” standards are not suggestions, as the EA seems to imply.

minimize the possibility of reactivating or accelerating earthflow movement meets FW-017. In fact, in its exemptions from FW-018 & 019, EA2 simply discussed the levels of increased compaction on soil productivity and does not assess the potential for reactivating earthflows. As it is well established that earthflow movement may be accelerated by management activities such as road construction and timber harvest, this is an unreasonable omission, and a violation of the Forest Plan.

These are not trivial considerations, as in the Jazz sale area detrimental soil conditions already far exceeds the allowable range, with compaction from 9-30%. The Jazz sale as planned – assuming every BMP were followed – would still increase compaction by 2-6% because of ground-based yarding, *which is not supposed to occur in earthflow areas!*

Not only is the Forest Service exempting itself from the standards that protect against reactivation of earthflows, it also exempts itself from the Forest Plan standards that combined cumulative detrimental impacts to soil productivity should not exceed 15% (FW-022), *and* that rehabilitation techniques should be used to restore soil if more than 15% of the activity area is impaired (FW-028). Thus, the Forest Service will be contributing to the compaction problem, without applying any rehabilitation, so at the end of the project **53 units will exceed 15% soil compaction.** EA2 at 147.

An additional concern is that the Forest Service is making a practice of exempting all sales in the area from these important soil protection standards. For example, other recent timber sales in the area have been similarly exempted from the standards, including 2007 Thin, Rethin, and Collawash. The 2007 Thin EA and the Rethin EA used the *exact same* boilerplate language for the exemptions. See Jazz EA2 at 152; 2007 Thin EA at 131; Rethin EA at 88. This clearly shows that the Forest Service is not making thorough site-specific determinations that exempting each timber sale from the standards will sufficiently protect the soil stability and productivity in Earthflow areas across the watershed. Bark is very concerned that the Forest Service will continue to exempt itself from Forest Plan standards in each and every timber sale, which leads to cumulative impacts to soil productivity across the watershed which the Forest Service has not adequately disclosed or analyzed.

The Forest Service's main explanation for allowing the exemptions from the Forest Plan standards is that the trees are still growing well, even with compacted soil. However, tree growth is not the only indicator of soil health. Decreased soil productivity from compaction, puddling, erosion and displacement can result in soils that have low levels of porosity, reduced root penetration, increased runoff, reduced infiltration, reduced soil water storage capacity & availability, reduced nutrient availability and reduced levels of mycorrhizae and other soil organisms. EA2 at 138. These result in an irretrievable loss of soil productivity. EA2 at 145.

Especially concerning is that the "cumulative effects" analysis for soil productivity has as its boundaries "the plantation units that are proposed for thinning". EA2 at 142. There is no way that this small of an analysis area can capture the impact of increasing the irretrievable loss of soil productivity, in excess of Forest Plan standards, in project after project in the Collawash watershed. EA2 also improperly characterized the intent of cumulative effects analysis – suggesting that decreased soil productivity in Jazz would have little to no affect to soil productivity elsewhere. EA2 at 142. A

proper cumulative effects analysis would have asked “in the context of the other past, present and reasonably foreseeable projects in the Collawash watershed, what are the watershed-level impacts of increasing the irretrievable loss of soil productivity in excess of Forest Plan Standards from the Jazz Timber sale?”

Despite all these known direct and cumulative impacts, EA2 and DN2 do not directly address the issue of ground-based yarding on Earthflows. Even though the impacted units have high compaction risks, the direct impacts to soil productivity are side-stepped in a short paragraph that has vague references to the design criteria minimizing impact. *See EA2 at 140, 142.* However, the Forest Service has never conclusively shown that the design criteria (BMPs) are sufficient to protect the soil resources, nor that they will – in fact – be followed.

A thorough review of the Jazz BMPs, in comparison to other recent sales in the area, shows that many of the Jazz BMPs are even less protective of the soil resources. In particular, the limitations on slope for ground based logging are much more permissive. Jazz BMP C4 says that the use of ground based yarding and felling equipment is prohibited on slopes exceeding 35%, within riparian reserves. *EA2 at 33.* Outside of Riparian Reserves, however, the BMPs state that “some ground-based logging is proposed for slopes **greater** than 35%”. *EA2 at 38.* This actually backslides from previous BMPs, such as Rethin BMP 6.1: Ground based tractors, skidders, or mechanical harvesters would not be used on slopes greater than 35% [throughout the entire sale]”. *Rethin EA at 16.*

Why are the Jazz BMPs less restrictive, especially in an area that is **more** geologically unstable than any of the previous timber sale areas?

Additionally, EA2 does not address or quantify compaction made from mechanical harvesters. All the estimates of extent of compaction only account for landings, roads and skid trails and not mechanical harvesters. However, in Bark’s post-logging monitoring, we have observed bare, rutted soil exposed by mechanical harvesters. For example, in Swag Unit 24, groundtruthers found numerous places where the harvester was moving within the unit upon bare soils. Many of these areas were on slopes of 40% and in close proximity to a mapped waterway (pictured at right).



Bark raised these concerns in the PA comments, and the first appeal, and the Forest Service has not yet adequately responded to show how the direct and cumulative impacts to soil productivity would not be significant. A “cut & paste” exemption from Forest Plan standards, on a baseline of already heavily compacted soils, in an area of high risk earthflows, with less protective BMPs, that may not be followed . . . does not give Bark much confidence that the Forest Service took a hard look at the irretrievable impacts to soil productivity and/or the possibility of increased soil compaction throughout the watershed reactivating earthflows.

ii) Large Woody Debris

The EA provides no reasonable estimate of the amount of large woody debris (LWD) that will be lost due to the Jazz Timber Sale, although the Jazz Timber Sale will clearly remove large amounts of trees on 2,053 acres within the Collawash watershed. While not disclosed in the EA, the National Marine Fisheries Service Letter of Concurrence (“LOC”) indicates that the Jazz Timber Sale will remove about 182 trees per acre logged. *LOC at 4*. This equates to the removal of 373,646 trees from the ecosystem. As detailed extensively in the Rhodes Comment, the loss of large woody debris (“LWD”) from the ecosystem is significant due to the persistence and magnitude of the LWD removed, and the importance of LWD to a variety of critical ecosystem functions, including soil productivity, aquatic conditions and the functionality of Riparian Reserves (“RR”) and Late Successional Reserves (“LSR”). *Rhodes Comment2 at 4-6*.

LWD provides important sources of organic matter and nutrients in soils, which are vital to the long-term maintenance and protection of soil productivity (USFS and USBLM, 1997a; Beschta et al., 2004; Karr et al., 2004). But, despite these acknowledgements of the well-known importance of LWD, associated nutrients and organic matter to soil productivity and the persistent impacts of its loss within the Jazz Timber Sale area due to past logging, EA2 fails to assess the magnitude and effect of the loss of LWD and organic matter and this effect soils because of the Jazz Timber Sale. EA2 also fails to disclose that scientific information has repeatedly noted that one of the most effective, efficient and important ways to restore degraded soil productivity is to retain all sources of LWD and organic matter and prevent additional soil disturbances in degraded areas such as a those affected by the sale (Kattlemann, 1996; USFS and USBLM, 1997a; Beschta et al., 2004). Therefore, the EA’s assessment does not assess the well-known persistent effects of tree-removal and reduced tree mortality on long-term soil productivity under the Jazz Timber Sale.

In addition, reduction of LWD levels in Late Successional Reserves decreases the long-term health of the soil in the reserves and prevents compliance with LSR requirements. While EA2 focuses all its discussions of forest health on growing bigger trees faster, healthy soil is perhaps the most important factor of growing and sustaining late successional forests over time. *Rhodes Comment2 at 7*.

The EA’s failure to properly analyze and disclose the Jazz Timber Sale’s effects on LWD and organic matter is a severe defect because soil and soil productivity are fundamental aspects of forested ecosystems that influence the composition and condition of vegetation, rates of vegetative recovery after disturbance, sediment flux, and the quantity, timing, and quality of water produced by watersheds, which, in turn, affect aquatic populations and habitats (Beschta et al., 2004). Loss of these present and future sources of soil productivity retard the Forest Service’s ability to meet the LSR and ACS objectives. *Rhodes Comment2 at 6-7*. The EA fails to disclose these impacts, and therefore fails to take a hard look at a relevant factor influencing the long term environmental impact of the sale.

iii) Mycorrhizal Fungi

In an improvement from EA1, EA2 included the words “mycorrhizal fungi” twice – noting that both soil compaction and non-native species adversely impact mycorrhizal fungi in the forest. *See EA2 at 148, 203*. However, this was the entire extent of the discussion – which is unfortunate, as Bark has raised the issue of impact to

mycorrhizal fungi prominently throughout our correspondence with the Forest Service regarding the impacts of the Jazz sale.

As discussed extensively in Bark's comments and first appeal, soil compaction reduces long-term soil productivity by adversely affecting mycorrhizal fungi, which are essential for tree survival and productivity. These fungi mainly reside in surface layers of soil and organic matter and provide numerous benefits to their host plants, including: enhancing the uptake of essential nutrients and water; protecting against pathogens; binding soil particles to create favorable soil structure; and facilitating below-ground nutrient transfer among plants. (Wiensczyk, 2002). These miniscule fungi can determine the structure and dynamics of plant communities, and are major players of below ground plant interactions.

Logging and yarding impact the forest floor on a variety of levels. They decrease available organic matter, such as fallen trees, that can be colonized by mycorrhizae and utilized for their water-retention properties. Logging-related activities also compact soils, especially in places like the Collawash with easily compacted volcanic ash soils. Soil compaction degrades soil structure and restricts movement of oxygen and water through the soil, which prevent plants from forming feeder roots most closely associated with mycorrhizae colonization. Ground-based timber harvesting equipment compacts the soil limiting the movement of oxygen and water through the soil and destroying soil structure.

Removal of LWD adds to the adverse impacts of soil compaction. In heavily compacted areas, the number of ectomycorrhizal root tips was greatest in areas of highly decomposed woody debris. (Wiensczyk, 2002). Additionally, wood debris from current or future fallen snags act as an inoculum for mycorrhizal species and also as a water retention site in the soil. (Amaranthus et al 1996). In fact, exporting organic matter out of the forest limits the ability of mycorrhizae to respond to soil compaction as woody soil debris act as a refuge for certain species.

A relevant study found that ectomycorrhizal root tips were reduced over 60% in areas of high compaction by tractor yarding, coupled with organic material removal, and that effects of soil compaction on forest ectomycorrhizal networks can last up to 45 years. (Amaranthus, et. al 1996). This means that the soil in the Jazz Timber Sale area might be just on the cusp of recovery, and that this action will set it back for another 40 years.

The Forest Service completely failed to disclose and analyze these impacts when it discussed soil productivity and exempted itself from the soil compaction regulations. What does it mean to increase compaction far in excess of Forest Plan standards on these fungal associations and long term soil health? An answer to this question is necessary to show the Forest Service has taken a hard look at the short and long term impacts to soil productivity.

b. Erosion

In the EA, the Forest Service acknowledges the highly erosive nature of the soils, the overcompacted pre-existing condition, and the likelihood this this sale would contribute to more degraded soils. It then goes on to conclude that design criteria would result in little effect to erosion because sufficient ground cover would be applied

or retained on affected soils. *EA2 at 145*. However, based on all the information in the EA, and the relevant factors that the Forest Service failed to consider, it is clear that the Forest Service cannot support this conclusion.

The EA acknowledges that soil erosion *would* increase with the proposed action because bare soil would be exposed during implementation. *EA2 at 144*. It continues to share that: “Ground based yarding systems result in greater amount of ground exposure than skyline or helicopter systems, and as the slopes approach 40% the potential for erosion increases”; “A total of 83 acres would have potential increased erosion as a result of thinning activities”⁹; and “If left bare, disturbed areas, especially where slopes are greater than 25%, would be potential chronic sources of sediment.” *EA2 at 144*. As Bark noted in our earlier comments, these are all very disturbing (if unquantified) acknowledgements of impact, and lead to many more questions: How can the Forest Service ensure that these soils will not remain bare? What amount of erosion will occur while the area is revegetating? What is the impact of this erosion on an unstable landscape? The EA did not answer any of these questions. By not accounting for the inevitable time lag between project implementation and soil revegetation when it concludes that there will be “little effect to erosion” from the project, the EA does not capture the true impacts from soil erosion.

The EA also admits that skyline yarding on steep slopes with highly erosive soils (units 30, 34, 44, 80 and 82) have the potential to become chronic sources of erosion and sediment unless water is diverted to the side. *EA at 144*. What is the Forest Service doing to ensure that such waterbarring not only occurs but is successful at diverting water over the revegetation period?



As noted in the introduction to this appeal, in EA2 the Forest Service omitted a useful chart that showed the severe erosion risk to several units in this sale, as well as removing the words “steep, highly erosive soils” from the analysis of impact on page 144. Bark cannot understand why this information was removed from EA2 but for to mask the severity of the impact.

When the Forest Service concludes that “Utilizing the Design Criteria, all stands . . . are expected to have sufficient effective groundcover following ground disturbing events resulting to little effect to erosion.” *EA2 at 145*. As noted above, the Forest Service currently lacks a rigorous monitoring program to ensure that BMPs are implemented and effective. However, the limited monitoring done by the FS soils scientist in January 2012 found that BMPs to protect soil and limit erosion were not always implemented as anticipated.¹⁰

⁹ In EA1, there were 50 acres of bare skyline yarding corridors, and in EA2 that number decreased to 19 acres. Given that the amount of skyline yarded acres remained the same, I am curious as to how the amount of impacted acres decreased so significantly.

¹⁰ These BMP survey sheets were attached to Bark’s previous appeal, and are incorporated by reference.

Of the few sales that have been monitored, of specific interest is the Forest Service's finding for the Swag Timber Sale. In Swag unit 24, like many units of Jazz, detrimental soil conditions existed before the commercial thin. The Forest Service BMP monitoring found that ground-based logging was done on slopes greater than 40% and not on a mat of slash as prescribed by the BMPs, and that the timber company created a greater number of skid trails than needed. Similarly, Bark's BMP monitoring project found many skid trails left with bare soils – some on slopes greater than 30% like the skid trail pictured above at Pink Unit 218.

The Forest Service cannot simply trust on unreliable BMPs to mitigate all adverse environmental impacts from increased erosion. This is especially true when, as noted above, the BMPs controlling soil and slope often use the word “generally” and “may”, as in “downhill skidding would generally be on slopes less than 35%” (*EA at 37*), “mechanical harvesting would generally operate on slopes less than 40%” (*EA at 38*), “mulch may be used on slopes greater than 20%” (*EA at 39*). The inclusion of these wiggle words (which do not appear in the BMPs of similar previous sales) make the BMPs even less reliable and enforceable.¹¹ It is clear that the Jazz Timber Sale is going to result in increased erosion in the unstable and erosive Collawash Watershed. The Forest Service must make a more realistic analysis of the extent and impact of this erosion, rather than dismissing all concerns by relying on unapplied, or unenforceable, BMPs.

c. Invasive Species

Both the Jazz PA and EA acknowledged generally that: “invasive plants can reduce biological diversity, displace native plant communities, decrease and degrade wildlife habitat, alter fire regimes, change hydrology, disrupt mycorrhizal associations, alter nutrient dynamics, and increase soil erosion” but fail to apply any of these adverse impacts to the Jazz sale area. *EA2 at 203*.

EA2 acknowledges that the risk for spread of invasive plants and noxious weeds is high. *EA2 at 203*. However, rather than explaining why the risk is “high” and what this means for the affected environment, when assessing both the direct and cumulative effect the EA simply relies on the design criteria to mitigate spread of invasives. It states that the primary BMP to slow spread of invasive species, washing off-road vehicles and using gravel from weed free sources, are ranked as “moderately effective”. *EA2 at 206*.

In its comments and first appeal, Bark noted that similar design criteria has been applied to many other thinning projects in the Clackamas watershed and they have not been successful at curbing the spread of invasive species. As noted above, Bark volunteers have recently monitored 19 post-logging units for compliance with BMPs.

¹¹ In fact, the insertion of “generally” and “may” essentially negate the “Best” part of the BMPs, and turn them into SMPs, or “Suggested Management Practices”.



All sales monitored had similar, if not more restrictive, BMPs as the Jazz Timber sale in regards to invasive species management. Of the units surveyed – within two years of logging, 63% have presence of invasive species, which are especially prevalent in the landings and skid trails (such as the bull thistle and oxhide daisy filling the landing in the Slip sale, pictured at left). Clearly, the BMPs are – at best – moderately effective, and do not curb the spread of invasive species. The Forest Service has

given no assurance that this instance would be any different. This does not meet the “hard look” standard.

Again, the No Action alternative was insufficiently analyzed. While it is true that invasive species may “continue to spread” because vehicles travel open roads (EA2 at 206), with no action all the units accessed by the 12 miles of currently decommissioned roads would not be susceptible to spread of invasive species. This should be the comparison that the Forest Service is making: how many more acres of forest will be placed at high risk of spread in the proposed action because of opening the 12 miles of roads? This type of information is essential to understand the impacts of the action compared to no action.

The Jazz area is at high risk for increasing the presence of invasive species, which are well known to have an adverse environmental impact, and the BMPs the Forest Service relies on have not been effective in the majority of timber sales surveyed. An adequate “hard look” at environmental consequences would have recognized the very real possibility that the Jazz timber sale will further the spread of invasive species in the watershed, and analyzed what that means for short and long term ecological health.

d. Water Quality

i) *Lack of Baseline Conditions*

The EA clearly notes that disclosing existing conditions are key to assessing cumulative effects analysis:

“In order to understand the contribution of past actions to the cumulative effects of the proposed action and alternatives, this analysis relies on current environmental conditions as a proxy for the impacts of past actions. This is because existing conditions reflect the aggregate impact of all prior human actions and natural events that have affected the environment and might contribute to cumulative effects.” EA2 at 63.

However, the EA fails to divulge the existing condition of a host of watershed attributes that will be affected by the Jazz Timber Sale and affect compliance with Aquatic Conservation Strategy Objectives (ACSO). *See Rhodes Declaration2 at 17 for details.*

As discussed extensively below, the Jazz Timber Sale is likely to affect almost all of these conditions via effects on flows, sediment delivery, water temperature, RR, and LWD. However, the EA does not divulge the existing condition of many of these attributes except water temperature and sediment delivery. This does not provide enough information to make a supportable determination of impact, compare distinct alternatives, or determine compliance with the ACSOs. *Rhodes Comment2 at 17-18.*

There are internal inconsistencies in EA2 regarding the amount of Riparian Reserve logging that will occur in the Jazz sale. The introduction to the EA lists that 734 acres of Riparian Reserves will be treated (EA2 at 13), but in the analysis of impacts the EA states only 588 acres of Riparian Reserves will be thinned (EA2 at 77). Providing inconsistent numbers inhibits the public's understanding the reach of the project and extent of impacts. Also, if the Forest Service is internally relying on different numbers to assess the significance of impact, it is likely that there will be confusion and internal discrepancies.

ii) Sediment

EA2 provides no rational basis for its assertions that the Jazz Timber Sale will have insignificant and transient impacts on erosion and sediment delivery to streams. Available information on these impacts strongly countermands EA2's assertions in this regard. Road construction is by far the greatest contributor of sediment to aquatic habitats of any management activity (Meehan 1991, Robichaud et al. 2010). Even temporary road construction can cause resource damage including erosion and sedimentation, exotic species spread and disruption of wildlife (Trombulak and Frissell 2000). Unpaved roads and stream crossings are the major source of erosion from forest lands contributing up to 90% of the total sediment production from forestry operations.

While EA2 does provide substantially more information about the background sediment levels and increases in sediment from the reconstruction and redecommissioning of 12 miles of roads, it still fails to include estimates of increased sediment from other road maintenance, elevated road use, logging and landing (re)construction. *Rhodes Comment2 at 18.*

Although it is not adequately disclosed in the EA, in addition to construction and reconstruction impacts, elevated road use for log haul will also greatly elevate erosion and sediment delivery on unpaved roads. Research on logging roads has consistently documented that roads used by more than four logging trucks per day generated more than seven times the sediment generated from roads with less use and more than 100 times the sediment from abandoned roads (Reid et al., 1981). The USFS's own summary of scientific information on roads (Gucinski et al., 2001) concluded that "rates of sediment delivery from unpaved roads are . . . closely correlated to traffic volume." Even with a road surface of crushed rock aggregate, which is often used with the intent to reduce sediment production on road surfaces, Foltz (1996) documented that elevated truck traffic increased sediment production by 2 to 25 times that on

unused roads in western Oregon. Foltz (1996) noted that since the processes are the same across regions, a similar range of increases was likely. Primary mechanisms for increased erosion and sediment production from road use are the production of highly mobile fine sediment on road surfaces, road prism damage, disruption of gravel or aggregate surfaces, and rutting. *Rhodes Comment2 at 20.*

As with constructed and reconstructed roads, the highly elevated sediment production from roads used for haul is delivered to streams at stream crossings and other points of connectivity between streams and roads, such as gullies and relief drainage features that dump elevated road runoff laden with sediment to areas in relatively close proximity (e.g., less than 300 feet) to streams. Notably, the EA fails to disclose the total miles of unpaved roads that will be used by haul, the number of stream crossings, and the level of hydrologic connectivity between these roads. However, the LOC indicates that at least 61 miles of unpaved roads will be used for haul under the Jazz Timber Sale. *LOC at 6.* The Jazz Timber Sale maps (EA, App A), indicate that about 90 stream crossings will be affected by elevated road erosion and subsequent sediment delivery to the stream systems at these crossings caused by log haul. Using the MHN's (2011, p. 57) estimate that about 500 feet of graveled roads act as extensions of the stream network at crossings, delivering elevated runoff laden with sediment at these junctures, the 90 crossings by haul roads will deliver sediment elevated by log haul directly to streams from about 8.5 miles of road. This impact of log hauling at stream crossings, alone, will greatly elevate sediment delivery to the stream system, contrary to the EA's baseless assertions that sediment delivery from the Jazz Timber Sale will not be significant. *Rhodes Comment2 at 22.*

The EA states that there no native surface roads that have hydrologic connections to streams. However, paved and rock roads also contribute to sediment from hauling and in its comments, Bark identified several places on the landscape where there is a hydrologic connection between roads and streams that contribute to elevated sediment levels. Specifically:

- a) On 6310, between units 48 and 44 an inboard ditch dumps right into the headwaters of Paste Creek;
- b) An inboard ditch along 6340 dumps into a small seasonal stream about 100 yards up 6340 from the 63 juncture only a ¼ mile from the Collawash;
- c) On 6310 just south of unit 52 there is an inboard ditch running north and dumping into headwaters of Peat Creek;
- d) On 6380, just north of the 6380-120 juncture, an inboard ditch dumps directly into a creek.

The EA also fails to provide any estimate of the additional sediment generated by the construction and reconstruction of landings, particularly those near streams. Although not divulged in the EA, the LOC indicates that at least 20 new landings will be constructed. As previously discussed, many more landings will need to be reconstructed. The EA's failure to estimate erosion from landing activities is significant because on a per unit basis, landings typically generate as much sediment as roads (Menning et al., 1997; Beschta et al., 2004). Landings also have considerable potential to deliver sediment to streams. In their study of sediment travel distance from forest management activities, Ketcheson and Megahan (1996) found that the longest travel distance of sediment originated from a landing. Furthermore, the assumption that future decommissioning will offset the negative impacts of road and

landing construction and use is unsound since road construction has immediate negative impacts and benefits of obliteration accrue slowly. (Beschta, 2004). Therefore, the EA's failure to properly assess and make known erosion and sediment delivery impacts from landing & road activities is highly significant and renders the EA's assessment of sediment impacts inadequate. *Rhodes Comment2 at 23.*

iii) Cumulative Impacts

The EA's failure to properly assess these impacts is exacerbated by the EA's failure to assess the cumulative magnitude of the Jazz Timber Sale on sediment delivery, especially in the context of all the other sources of sediment in the watershed. Instead, the EA only provides qualitative and unsupported judgments about the effects of individual activities, such as road construction and log haul, without ever assessing the overall, combined magnitude of all of the impacts of the Jazz Timber Sale on sediment delivery to streams, including all logging and yarding, landing, and road activities in the context of high background levels. This is a major defect, because it has long been known that streams, water quality, and fish habitats are cumulatively affected by the total magnitude of sediment generated by all actions that generate additional sediment to stream systems (USFS et al., 1993; USFS and USBLM, 1997a; b; GLEC, 2008).

These cumulative impacts of road re-opening and log haul on sediment delivery are extremely significant. USFS et al. (1993) notes that the impacts of roads can change “ . . . streamflow regimes, sediment transport and storage, channel bank and bed configurations, substrate composition” in ways that “can have significant biological consequences that affect virtually all components of stream ecosystems . . .” and can have unavoidable effects on streams, “...no matter how well they are located, designed or maintained.” It is well-documented that increases in sediment delivery increase fine sediment levels in streams, reducing the survival and production of salmonids (Meehan, 1991; USFS et al., 1993). Elevated sediment delivery also degrades pool volume and quality (Lisle and Hilton, 1992; McIntosh et al., 2000). USFS et al. (1993) noted that elevated sediment delivery has been one of the primary causes of the loss of pool volume and frequency in streams within the aegis of the NFP. *Rhodes Comment at 23-24.*

Available information, including that from the USFS, amply indicates that upstream impacts of the Jazz Timber Sale on sediment delivery have cumulatively significant impacts on downstream fish habitats. This, in turn, indicates that the EA has failed to properly assess the total sediment impacts on water quality, occupied fish habitats, and related ACSOs because the EA failed to properly assess the cumulative impacts of sediment throughout the stream network. Although EA2 includes the background sediment from natural sources, existing roads and recent fires, it analyzed this data in a way that makes the inputs from the Jazz sale artificially small. *See Rhodes Comment2 at 24-5.*

For example, it is instructive to look at the combined water quality impacts to an individual subwatershed. Because the Jazz Timber Sale is spread out over 2,000 acres in seven subwatersheds, the Forest Service approaches its analysis of cumulative impacts on a large geographic scale which masks the site specific impacts to some of the most degraded subwatersheds. In particular, Bark is concerned about

cumulative impacts to the Farm Creek-Collowash River subwatershed. There is no place in the EA that overlays all the different hydrological impacts on each subwatershed. A careful read through both the EA and the hydrologist's report show that the Farm Creek subwatershed is already in poor condition, and will experience the greatest amount of impact from the rebuilding of roads. In the Watershed Condition Framework assessment, Farm Creek ranked lower than most, with a 2.8 for roads, and 2.17 for Aquatic Habitat.¹² *Hydro Rept. at 4*. Also, Farm Creek is the only subwatershed that is at the threshold of concern for Stream Drainage Network Extension,¹³ as well as experiencing the largest sediment input from "natural background" and roads of any of the subwatersheds in the project area. *Hydro Rept. at 15, 36*. With this as the environmental baseline for the Farm Creek subwatershed, it is very concerning that it is the subwatershed that will be receiving the largest impact from the rebuilding of decommissioned roads.

Of the estimated 19 tons of sediment generated from road rebuilding, 13 tons would be in the Farm Creek subwatershed, and must be evaluated in the context of pre-existing high background levels and stream drainage network connectivity. Indeed, this is exactly what a cumulative impacts analysis should disclose, as: "[s]ometimes the total impact from a set of actions may be greater than the sum of the parts. For example, the addition of a small amount of sediment to a creek may have only a limited impact on salmon survival, or perhaps no impact at all. But the addition of a small amount here, a small amount there, and still more at another point could add up to something with a much greater impact, until there comes a point where even a marginal increase will mean that no salmon survive." *Klamath-Siskiyou Wildlands Center v. BLM*, 387 F.3d at 994. When the Forest Service only assesses the aquatic impacts in the context of the entire Collawash watershed, it fails to acknowledge the actual, significant impacts to affected subwatersheds.

e. Impacts of Road Building, not adequately analyzed because masked as "re-building"

One of Bark's biggest concerns about the Jazz Timber Sale is that the re-construction of 12 miles of roads will set back the recovery of the Collawash watershed by at least a decade. As regards wildlife, after ten years of non-use and vegetation recovery, an area begins to assume roadless like qualities and character. This, of course, builds slowly, and as it does, the "decay" of behavioral and ecological avoidance also begins slowly. This can occur at an individual level, at a generation level, and at a population level. After 50 years, an area may be close to pre-impact habitat effectiveness even though there may well be some behavioral phenotypes that may have suffered depletion or alteration during the initial period of high impact.

As regards water quality, it is extremely well-documented that road construction vastly elevates erosion for many years (Potyondy et al., 1991; USFS, 1993; Rhodes et al., 1994; USFS and USBLM, 1997a; b; Beschta et al., 2004), particularly in the first two

¹² In the WCF, 2 indicates "Fair" and 3 indicates "Poor".

¹³ Somehow, in the transition from the Hydrologist Report to the EA, Farm Creek miraculously recovered, and moved from 9.9% to 8.4%. *EA2 at 94*. There is no explanation for the discrepancy in the numbers between the EA and Hydrologist Report. In the face of this inconsistency, we prefer to rely on the numbers in the expert report.

years when the construction causes a persistent increase in erosion relative to areas in a natural condition. *Rhodes Comment2 at 20*. Specifically, major reconstruction of unused roads can increase erosion for several years and potentially reverse reductions in sediment yields that occurred with non-use. (Potyondy et al. 1991).

i) Failure to accurately disclose current condition of decommissioned roads

The Forest Service acts as though rebuilding these roads has no significant impact because the roads once existed on the landscape. Although in different stages of recovery, every single road segment whas recovered some degree of hydrologic function, and with this project will lose the benefit from years of the recovery.

The Forest Service never disclosed the levels of recovery for each road segment planned to be rebuilt. For some roads, like the road into Unit 70, decommissioning – which included being ripped significantly at 3 separate stream crossings – was done just two years ago!¹⁴ Other decommissioned roads have recontoured to the landscape and would have to be cut though to use – with impacts akin to building a new road bed. The roads into units 28, 56, 58, 60, 114, 116 and 118 all require “cutting temporary road through the recontouring”¹⁵ which indicates that the old road bed has substantially disappeared as the area naturally moves toward hydrologic recovery.

Of particular note is the “existing alignment” into Section 18, which the EA says was “never decommissioned” but which, in fact, has fully recovered as Bark has told the Forest Service many times, including pictorially in the first appeal. Due to the level of full recovery on the alignment proposed as Road U18PR, reopening the alignment will entail the same impacts as construction of a new road, which are not disclosed in the EA. *See photos in Att. B*. This construction will cause immediate, large, and enduring increases in erosion and sediment delivery to streams, although this is not made known in the EA. Not only does the EA fail to capture the true impacts of building the road in Unit 18, it misleadingly acts as if the forest will be left in *better* condition after the Jazz Timber Sale, by stating that it was “never actually actively decommissioned” but after the project, it would be decommissioned after use. *EA2 at 25*. While this may seem like an improved condition on paper, in reality, the Forest Service will be building a new road through a lovely stand of remnant old-growth, which will leave a scar on the landscape for the next 30 years to come. This is not restoration, or even mitigation. This is simply an undisclosed, long-term, adverse impact.

ii) Road reconstruction leads to persistent adverse impacts

Road networks in many upland areas of the Pacific Northwest are the most important source of management-accelerated delivery of sediment to anadromous fish habitats. The sediment contribution to streams from roads is often much greater than that from all other land management activities combined, including log skidding and yarding.

¹⁴ The new EA says that the road to Unit 70 was “decommissioned in error” and that the Jazz sale will have to reverse over half of the work that was already done. *EA at 25*. Instead of undoing and redoing all this work, why not simply drop unit 70 from the project? It is in a Late Successional Reserve, which would be much better served by allowing the road to remain decommissioned and rather than setting recovery back by a few more years.

¹⁵ This is indicated of the Forest Service’s road maintenance spreadsheet, which was part of the original Jazz project file.

Road related landsliding, surface erosion and stream channel diversions frequently deliver large quantities of sediment to streams, both chronically and catastrophically during large storms. Roads may have unavoidable effects on streams, no matter how well they are located, designed or maintained. *Hydro Rept at 26.*

Terrestrial wildlife is also greatly influenced by road density. Roads impact wildlife in a variety of ways including direct mortality from vehicle collisions; increased poaching, over-hunting, and over-trapping facilitated by access; reduced numbers of snags and down logs; increased negative edge effects; facilitated or hindered movement depending on species; and chronic negative interactions with humans (Wisdom et al. 2000).

The Forest Service recognized the importance of removing roads from the Collawash Watershed in its recent Increment 2 Road-decommissioning project. The Increment 2 Preliminary Assessment acknowledged that “until a road is removed and natural drainage patterns are restored, the road will likely continue to affect the routing of water through watersheds. *Inc. 2 PA at 33.* And that, [t]he sediment contribution to streams from roads is often much greater than that from all other road management activities combined, including log skidding and yarding.” *Inc. 2 PA at 34.*

In the context of these very known road impacts, it is simply incorrect for the Forest Service to act as if rebuilding 11.5 miles of roads – including four stream crossings and eight seep intercepts - will not have a significant impact on the aquatic and terrestrial environment. Rather than continuing to restore the watershed by decommissioning roads, the Jazz Timber Sale will re-build 11.5 miles of already decommissioned roads at a cost of over \$250,000. In no way can rebuilding these roads be construed as restoration, as it will have the double effect of both losing the recovery that has already begun to occur on these roads, and creating new sources of sediment, increased temperature, and habitat fragmentation for years to come.

Much of the Forest Service’s claim that the road building will not significantly impact the environment is built around its claim that the temporary roads would be decommissioned and revegetated immediately following completion of harvest operations. EA2 even goes so far as to claim that the roads will be “obliterated” (see EA2 at 82). None of these claims are reassuring. First off, Bark’s post-logging monitoring found several instances of temporary roads left open, with no erosion control measures, many seasons after logging had been completed, such as in the Swag and Dry timber sales. Similarly, when NMFS assessed the Jazz Timber Sale, it estimated that “...approximately 21% of the roads may not be decommissioned after project completion” based on the MHN’s decommissioning track record within the Jazz Timber Sale area. *LOC at 25.* This does not provide much assurance that the Forest Service will, in fact, follow-through with the minimal decommissioning the BMPs require.

Second, the term “obliteration” is an extreme overstatement of what the Forest Service actually plans to do to these rebuilt roads. At most, the BMPs direct that temporary roads would be subsoiled to a depth of at least 18 inches or scarified with a loader, water bars placed every 150 feet, and motorized access prevented by a berm. *EA2 at 38.* This does not say how much of the road surface will be decompacted – but Bark’s field experience is that the Forest Service typically only decompacts the first 1/8 mile.

Indeed, this is reflected in the Forest Service's plans for 6311-130: that only the first 1/8 mile will be decompacted. *EA2 at 25*. This is a far cry for true decommissioning, and is not anywhere close to obliteration.

The commonly accepted definition of road decommissioning in scientific literature is defined as the physical treatment of a roadbed with a variety of methods to restore the integrity of associated hillslopes and flood plains and their related processes and properties. (Switalski et al. 2004). The most common forms of road decommissioning include ripping the roadbed, restoring stream crossings, and fully recontouring the hillside. It is important to differentiate between the scientific studies evaluating the effectiveness of road decommissioning in restoring hydrologic functions, and the Forest Service's more minimal treatments, which are more akin to road closure, than decommissioning.

Even if the "temporary" are decommissioned, the reconstruction will irretrievably eliminate existing recovery on unused roads and vastly setback future recovery on these alignments, resulting in long-term elevation of sediment delivery to streams under the Jazz Timber Sale. *See Rhodes Comment2 at 19*. The damage to soil productivity on reconstructed and re-opened roads will persistently retard the re-establishment and regrowth vegetation and trees on road alignments, as can be seen on many of unused roads in the Jazz Timber Sale area, even after years of non-use. The EA itself recognizes that after the project, "road recovery would take approximately 30 years". *EA at 102*. These temporary roads will persist on the landscape for *years*, as will their adverse impacts.

Available scientific information indicates that the Jazz Timber Sale's road activities, including reconstruction of closed and abandoned roads, will persistently elevate erosion and sediment delivery, for in several ways. Reconstructed roads cause elevated erosion and sediment for many years after decommissioning (Beschta et al., 2004). The USFS Region 5 method for estimating cumulative watershed effects indicates that even 10 years after road decommissioning, a mile of decommissioned road is equivalent to 0.2 miles of new road in terms of adverse cumulative effects (Menning et al., 1996). After 50 years, a mile of obliterated road has still has impacts equivalent to 0.1 mile of new road (Menning et al., 1996). Thus, it is apparent that decommissioning does not instantaneously eliminate the persistent impacts of roads on erosion and sediment delivery, building these roads will have adverse impacts to the aquatic and terrestrial environment, and are not in compliance with the Aquatic Conservation Strategy."

4) Failure to meet Aquatic Conservation Strategy Objectives

The Decision Notice conclusion that "Key indicators for water quality, habitat, flow, channel condition, and watershed condition will be *maintained or enhanced*" (*DN2 at 16*) is not supported by the scant information presented in the EA, nor does it take into consideration a number of relevant factors that, in fact, show that the Jazz Timber sale will retard attainment of several key Aquatic Conservation Strategy Objectives. Taking into account both the information presented in the EA, and the expert opinion presented in the Rhodes Comment2, it is clear that the Jazz Timber sale will degrade water quality and is out of compliance with the ACSOs.

Complying with the ACS objectives means that an agency must manage the riparian-dependent resources to maintain the existing condition or implement actions to restore the conditions. *NFP at B-10*. Commercial logging in Riparian Reserves is allowed *only when necessary* to “acquire the desired vegetation characteristics needed to attain ACS objectives.” *NFP at C-33*.

The Forest Service has failed to establish the need for commercial thinning to attain ACSOs – aside from stating that the riparian vegetation is “overstocked” with relatively uniform trees with low levels of diversity. Bark’s extensive experience on the ground in the project area leads us to conclude that this is a drastic oversimplification of the riparian areas, which include many spacious, diverse, well-functioning stands. Even if the Forest Service’s generalization were true, this still doesn’t support logging in Riparian Reserves, as the Forest Service never shows why the logging and road building of the Jazz sale is **needed** to attain ACSOs. Instead, as detailed below, there are several ACSOs that the project area does not currently meet that would be negatively impacted by the Jazz Timber Sale, such as the Collawash’s existing lack of in-stream woody debris, elevated sediment production and flashy flows.

Similar to its reliance on the BMPs, the Forest Service relies on the “no-cut” buffers to mitigate project impacts to water quality. This is misplaced. Although not disclosed in EA2, the Rhodes Comment details several scientific assessments including those of the USFS, have noted the need for far wider stream protection widths than those afforded under the Jazz Timber Sale are necessary to protect streams from the adverse impacts of logging, landings, and roads. USFS et al. (1993), USFS and USBLM (1995a; b) indicate that a protected area with a width of at least about 300 feet from each side of a stream is needed to protect aquatic resources from the impacts of upslope disturbance, although this is not disclosed in the EA. *Rhodes Comment2 at 28*. Because of their importance and sensitivity, smaller non-perennial and headwater streams need to receive as much *or more* protection than larger streams if aquatic resources are to be protected. Scientific information amply indicates that there is a high degree of certainty that the lack of adequate riparian protection under the Jazz Timber Sale and its logging, landing, and road activities in RR will appreciably degrade RR functionality and several ACSOs in conflict with the direction in the NFP, contrary to the cursory statements in the EA regarding the adequacy of the Jazz Timber Sale’s no cut buffers. *Rhodes Comment2 at 29*.

In addition, the Jazz Timber Sale’s no-cut buffers are inadequate to eliminate the impacts of road activities within Riparian Reserves because roads and skyline yarding corridors pierce these buffers. A no-cut buffer does not exist between roads and streams at stream crossings. Therefore, a no-cut buffer has no significant effect on mitigating the persistent impacts caused by roads activities at and near stream crossings, including the impacts on sediment delivery, runoff, LWD, stream shading, and water temperatures.

As detailed below, the Jazz Timber Sale is not needed to attain ACSOs, and will actually prevent maintaining and enhancing the following ACSOs:

ACSO #3: Physical Integrity. Jazz EA states that this ACSO is met “through design criteria and the protection provided by Riparian Reserves”. It asserts that Design criteria would minimize erosion, that density thinning would restore diverse healthy

riparian areas, that *new* roads would not cross streams and that the project would provide a sufficient quantity of shade and large woody debris. *EA2 at 124*. This is not supported by the information in EA2 and the other relevant factors that Bark has raised through comments and this appeal.

In addition to all the information presented in section 3.d. above, the long-term reductions in LWD prevents attainment of this ACSO. EA2 acknowledges that wood quantities in most streams are already below the current standards. *EA2 at 114*. The Watershed Condition Framework disclosed that the aquatic habitat indicator – which assesses habitat fragmentation, large woody debris, and channel shape and function – is currently quite low for every affected subwatershed, meaning these attributes are functioning at an “unacceptable risk”. *Hydro. Rept. at 4*.

However, EA2’s assertion that “the stream protection buffers would continue to supply nearly the same level of small wood recruitment to streams” conflicts with both the LOC and relevant scientific literature.¹⁶ The LOC states that the logging in RR would reduce LWD recruitment to streams by 15% to 75%. *LOC at 22*. Rhodes Comment2 details how the vast reductions in tree mortality due to logging in RR will cause significant and irretrievable losses of in-stream wood recruitment. *See Rhodes Comment2 at 8-9*. Although not adequately assessed and discussed in the EA, this persistent loss of LWD will retard meeting ACSOs for decades. This downed wood is important to the RR function of detaining sediment from both natural and management-induced upslope disturbances and thereby limiting increases in sediment supply to streams from such disturbances (Rhodes et al., 1994), as the USFS has acknowledged (USFS et al., 1993; USFS and USBLM, 1997a; b). In the context of already degraded aquatic habitat and a lack of in-stream woody debris, any decrease in the amount of woody debris will retard attainment of ACSO #3. The Jazz Sale will clearly decrease the amount of available LWD, and thus cannot comply with this ACS. *See Rhodes Comment2 at 10-11*.

ACSO #5: Sediment. As noted extensively above, road construction and road use contribute more sediment to a watershed than any other activity, and BMPs do not sufficiently mitigate these impacts which extend over time. *See Rhodes Comment*, noting that re-use and reconstruction elevate soil impacts, irretrievably reverse all soil recovery that has accrued during the period of non-use, and persistently degrade *all* soil functions, new landing construction causes immediate, persistent, and especially severe losses of soil productivity and losses of soil functions. *Rhodes Comment2 at 19-21*.

While the EA recognizes that road construction has increased the amount of sediment in the watershed, it asserts that the project design criteria, including wet weather haul

¹⁶ The study the Forest Service cites (Johnston. 2011) to support its contention that “90% of LWD in western Oregon and Washington streams originated at ground distances between 33 and 66 feet from streams” does not, in fact, apply to the type of forests found in the Jazz Timber Sale area. As described in its abstract, this study focused on “undisturbed mature or old-growth forests in central and southern British Columbia.” Not only did the Forest Service misrepresent the study area, an old-growth forest is necessarily going to have different mortality patterns than a second-growth forest in the stem exclusion phase. Thus, this study cannot be relied on to support the Forest Service’s assertion that the 50 - 100 foot stream buffers will provide adequate sources of LWD.

restrictions, equipment slope restrictions, and erosion control methods would ensure that the Jazz sale met ACSO #5. *EA2 at 126.*

The enduring increases in erosion and runoff from road activities will contribute to persistent, significant increases in delivery of sediments to streams. At least nine stream crossings will be reconstructed and subject to the re-opening of roads. Hydrological connectivity is typically high at stream crossings, where little can be done to effectively reduce runoff and sediment delivery from roads to streams (Kattlemann, 1996), as the USFS has repeatedly conceded. For instance, the Plumas National Forest Travel Management FEIS (2010) noted: “Road/stream crossings are significant sources of sedimentation on [Forest Service] lands. Even well-drained roads and trails will likely deliver some amount of surface-generated sediment to stream channels at crossings.” Therefore, it is clear that the re-opening of roads under the Jazz Timber Sale will vastly elevate sediment delivery to streams these nine crossings, contrary to the statements in the EA and DN.

Again, despite Forest Service assertions to the contrary, BMPs do not eliminate the adverse impacts of roads on sediment delivery. For instance, BMPs cannot eliminate sediment delivery from roads to streams at stream crossings (Kattlemann et al., 1996; Beschta et al., 2004; Rhodes and Baker, 2008). Megahan et al. (1992) and USFS and USBLM (1997c) noted that it is not possible to log areas without increasing erosion and sediment delivery, regardless of BMPs involved or care in implementation, especially when roads are involved. Based on review of available data, MacDonald and Ritland (1989) concluded that roads typically double suspended sediment yield even with state-of-the-art construction and erosion control and that suspended sediment contributions from surface erosion, alone, from roads in the absence of mass failure, are typically in the range of 5 to 20 percent above background and remain at elevated levels for as long as roads are in use. Notably, this would, in many cases including the Jazz Timber Sale, prevent attainment of ACSO #5. *Rhodes Comment2 at 26.*

EA2 does acknowledge that “regardless of the PDCs and BMPs, it is probable that timber and rock haul would introduce some limited sediment . . .” (EA2 at 88), and that road reconstruction will lead to 19 tons of sediment entering into the watershed. (EA2 at 84). As noted above, the actual amount entering the watershed is likely even higher. In no way can the Forest Service conclude that this project is necessary to maintain and restore the sediment regime.

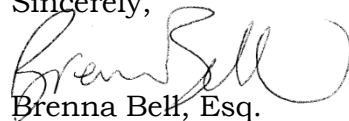
ACSO #8: Species Composition and Structural Diversity. This ACSO requires the Forest Service to “maintain and restore the species composition and structural diversity of plant communities in riparian areas and wetlands to provide adequate summer and winter thermal regulation, nutrient filtering, appropriate rates of surface erosion, bank erosion and channel migration and to supply amounts and distributions of coarse woody debris sufficient to sustain physical complexity and stability.”

As noted extensively above, the riparian areas in the Jazz timber sale area are already deficient in woody debris, both in stream and out, and the timber sale will decrease the amount of available down wood for many decades. While this fact alone shows that the Forest Service cannot meet ACSO #8, the lack of woody debris also increases stream side erosion in these unstable streams and decreases soil productivity.

The Forest Service keeps relying on its assertion that logging is necessary to attain later successional characteristics sooner while never fully explaining why this is necessary to meet the needs of riparian dependent species. This is very similar to the recent Oregon District Court Opinion regarding the Goose Timber Sale in the Willamette National Forest, where the court found that the Forest Service only asserted that the logging is necessary to achieve late successional characteristics faster, but not why that goal is necessary to "supply amounts and distribution of coarse woody debris" to achieve ACS Objective 8. Simply put – logging in the Riparian Reserves is NOT NEEDED to attain the ACSOs. These forests are naturally recovering and, left to their own, will grow in such a way that will increase amounts of LWD, decrease sediment, and ensure long term healthy riparian functioning.

In conclusion, Bark believes that the Jazz Timber Sale is a commercially-driven timber sale, thinly masquerading as forest restoration, which fails to follow several important substantive and procedural environmental laws and mistakenly relies on unreliable BMPs. This is the wrong direction for the Forest Service to be going in the management of the public's lands and water. This decision is in error, both legally and practically, and should be withdrawn until such time as the Forest Service can comply with all necessary regulations, take into account the will and interest of the public, and make a decision that truly will support meaningful restoration on Mt. Hood National Forest.

Sincerely,

A handwritten signature in black ink, appearing to read "Brenna Bell", with a large, stylized loop at the end.

Brenna Bell, Esq.
Staff Attorney & NEPA Coordinator

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