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Comment : Draft EIR, JDSF

The DEIR offers six alternatives. The preferred alternative is a maximum sustained yield approach which use the Forest Practice Rules, FPR, for its land management rules. Tethering the draft land management plan to the FPR is based on a management policy to administer the Jackson Demonstration State Forest, JDSF, as a single purpose, commercial, market driven tree farm. However since tree farms do not work in this region it is likely to be sold for development once such failure is demonstrated by the use and employment of the land management policies embodied in the Draft Land Management Plan, DLMP. This is the “demonstration” which is presently underway and will be continue incident to the proposed alternative. Two major corporate private holders have already demonstrated that tree farms do not succeed here and have sold their holdings. These enterprises were likewise operated for maximum sustained yield. The DEIR fails to provide meaningful specifics explaining why the DLMP approach will succeed while the other enterprises have failed.

The DEIR does not offer an “ecosystem alternative”. See Record of Decision, Six Rivers National Forest, Attached. As more fully explained therein this alternative accords primacy to the restoration and subsequent protection of public trust interests in the public resource. This means the restoration of a climax redwood forest ecosystem as was formerly the case and includes revitalizing the water courses along with endangered salmonids. The EPA listing of JDSF rivers and the Endangered Species Act, ESA, listing of its salmonids are ipso facto proof that the watersheds have been degraded by the cumulative watershed effects,CWE, of logging plans. They also demonstrate that the FPR are ineffectual to control such CWE. The DEIR document does not specify how or why, in detail, its methods will successfully reverse CWE.

The Board of Forestry, BOF, has previously managed this multi-purpose, public trust resource, which is JDSF, as a private, single purpose asset managed solely for the production of income through intensive timber harvesting. Despite this policy it is a public trust resource, including the stands and water courses, and its managers are fiduciaries whose disclosure responsibilities, according to law, are both explicit and comprehensive. See, Big River Sonata, film documentary showing public trust resources , Big River Estuary, Attached. Yet the DEIR does not explain its lack of an ecosystem alternative though the public beneficiaries are entitled by law to a detailed explanation of the methods by which the proposed management plan will achieve the same results as the ecosystem approach insofar as restoration of the ecosystem which has been degraded by CWE. Notably, the CWE have occurred while the resource has been managed for maximum sustained yield.

The Caspar Creek Study, CCS, a project of the forest’s managers, has resulted in state of the art recommendations by the researchers. They have discovered that the present strategies for the control of CWE are ineffective. These rely on the subjective judgment of the forester to determine if the plan will have CWE or not. If she concludes that it will then she recommends changes in the plan or adds mitigations ns to offset the CWE. If this approach is an effective one there would have been no severely diminished public trust interests in JDSF as is undeniably the case.

The insights in hydrology, geomorphology and other pertinent watershed sciences achieved by

the CCS appear in the attached Record of Decision, ROD, Six Rivers National Forest, and Six Rivers National Forest Land Management Plan, SRNFLMP. The core of the ecosystem approach is a watershed assessment. This is a multi-disciplinary watershed specific effort to identify issues of concern within that watershed in order to design restoration and control strategies customized for that watershed. Timber harvesting is prohibited in such watersheds pending completion of the watershed assessment together with the methods for addressing the issues of concern found by the assessment. Watershed assessments are also used to identify key watersheds suitable for refugia purposes and to be administered as such.

According to the DEIR for a JDSFLMP previous commenters have suggested a comprehensive watershed approach. The response to the suggestion is;

“This alternative would require multiple landowners to participate and agree to management direction over the long term. The feasibility of such a mutually acceptable agreement is remote because adjoining public and private ownerships have differing management objectives.....likelihood of increased impacts associated with more intense off-site activities resulting from a mitigation bank on JDSF.” Pg. 60 DEIR JDSF.

This is a striking admission considering that the Caspar Creek researchers recommend control of CWE by limiting the amount of land logged over time in a watershed. This is termed an “activity based threshold”. The FPRs do no such thing. Rather they leave it to the subjective judgment of the landowner’s agent, the forester, to first identify potential impacts with cumulative effect potential and then devise “remediations”. No one knows how much timber is being removed from a watershed during a given time period because the FPRs do not require such a data base. See Cumulative Watershed Effects, Caspar Creek and Beyond, Reid, pg. 124. The authors of the DEIR are here conceding that the FPRs are designed to oversee extensive, market driven, industrial logging operations and are not designed to restore and maintain watershed integrity and balance through control of CWE. If the FPR were also designed to control CWE all the various holders would not have to mutually agree to control CWE. Instead the FPR themselves would require that all Timber Harvest Plans comply with the rules for that watershed designed by a multi-disciplinary team to address the issues of concern highlighted by the watershed assessment. This admission is the crux of the issue of whether this document complies with the California Environmental Quality Act. It is a clear admission that the favored alternative is management of the forest with the same goals and purposes as an industrial, single purpose forest operation. It lacks an ecosystem alternative and uses the very same FPR as govern single purpose, maximum sustained yield operations. The BOF fiduciaries have chosen to retain the anachronistic FPR as well as to specifically employ them in their governance of the public resource for which they are management trustees.

“..the feasibility of such a mutually acceptable agreement is remote...” and **“ ..this alternative was eliminated....due to technical infeasibility.”**

This is an obfuscation. So long as the FPR do not require the other holders in the watershed to follow modern forest science methods for control of CWE the only option is their voluntary acquiescence. The response to the comment makes it seem as if the commenter should have known better than to suggest an unworkable alternative. But it seem far more likely that the commenter was suggesting that the FPR be changed to a watershed approach to provide protection for water quality and fisheries. After all the BOF has control over both the design of the FPR and the DLMP. And while private holders may own the land they do not own the waters and fisheries except as public trust beneficiaries with the rest of us. What’s more the Mono Lake Cases hold that no one can acquire a vested interest resulting in the impairment of public trust interests. This means they could not legally object to changes in FPR for the purpose of controlling CWE. Put in plain terms the ecosystem approach is not technically infeasible. The Six Rivers Plan Land Management Plan is a technically feasible implementation of an ecosystem approach alternative. Six Rivers Plan Land Management Plan, Attached. Rather the ecosystem alternative is legally infeasible because the Forest Practice Rules do not implement the recommendations of scientists for control of cumulative watershed effects in this region. Report to the Legislature, Cumulative Watershed Impacts, Dr. Leslie Reid, Attached.

The CCS has presented the managers with state of the art strategies for the restoration and control of CWE as well as the technically researched reasons that prior strategies have not been successful.

Present Strategies:

Impact Thresholds: These are considered from the viewpoint of the resource impacted. These have been found to have limited utility in a world of delayed, downstream effects and unpredictable storm events. That is to say since the responses from the impacted resource lag behind the land use activities which cause them the trend of change may be irreversible by the time the threshold is surpassed. Cumulative Watershed Effects: Caspar Creek and Beyond, Reid Pg. 124, Attached.

Details supporting this conclusion are given at page 124 in the Reid paper, id. The DEIR does not explain in detail the specific impact thresholds to be used by the managers, the watersheds to which they will apply nor in what manner they are not subject to the above criticism. The DEIR states that "selected" watershed will be monitored for impacts resulting from THPs. Then THP requirements may be designed to address these impacts or concerns. This is too vague for meaningful comment, except to say that it is too vague. Even if it were specific the methodology is unworkable. By the time the impacts are measured it is likely that the effects will be irreversible. Reid, id, pg. 124.

Mitigation: Research has disclosed that mitigation measures are not effective in controlling CWE. Reid, id, Pg. 123, Attached. For example mitigation does not presently require that all future impacts from a plan and associated roads be repaired as part of the plan. Instead mitigation measures are taken to offset the effects of future plans.

Riparian Reserves: See below.

The Caspar Creek Study, CCS, has been performed within the boundaries of JDSF. The research has addressed the issues of CWE. The findings have been that the FPR do not solve sediment deposits in banks, in pools and in the form of bed aggradation. Nor do they effectively address subsequent bank erosion and downstream migration of sediment, flooding due to raised beds, summer low flows, soil productivity thresholds, loss of canopy, gullying, unstable slopes and loss of woody debris. Because the research has revealed the dynamics of these processes the scientists have been able to devise and test corrective measures including effective use of agencies in multi-disciplinary efforts. See Report to the Legislature, Cumulative Watershed Impacts, Dr. Leslie Reid. Public input on the issue of rewriting the FPR to implement these measures has been squelched by considering them as given in the report. But they must be publicly discussed because the FPR as written will inevitably take down the watersheds. Moreover this discussion, because of the research and recommendations cited can and should ascend to the level of peer review once the DEIR is redrawn and resubmitted as it must be to comply with the California Environmental Quality Act, CEQA.

Caspar Creek Study Preferred Strategies:

1. Sediment Effects: A key strategy is the use of Activity Based Thresholds. This places a limiting value on the total area logged in the watershed during a specified time period. Cumulative Watershed Effects, Caspar Creek and Beyond, Reid, Pg. 124. A watershed should be in a state of equilibrium by means of self limitation. The instances of canopy loss are limited because the means by which trees can be naturally removed is limited by natural constraints. Beavers cannot fell sequoia semper virens. At least not any genetically unmodified species. But economic systems are not self limiting. This is why they experience horrific oscillations and tend to crash from time to time. It is crystal clear that the BOF is agent of the economic system in this context and is functionally blind to threats to the public trust interests in a balanced ecosystem without which these interests evaporate with the irreversible disequilibrium of the redwood forest climax ecosystem. If the BOF were percipient there would be an ecosystem

approach alternative in this document and it would be the preferred alternative. See Record of Decision, Six Rivers National Forest, Attached.

2. Channel Changes from Altered Woody Regime. The strategy recommended by the Caspar Creek research is Impact Based Best Management Practices. In this case use of Riparian Reserves. However riparian reserves are not in themselves sufficient to reverse the trend of aquatic habitat degradation. They must be combined with watershed analysis to identify the causes of problems, restoration programs to reverse the causes and speed recovery, as well as careful protection of key watersheds to insure that watershed-scale refugia are present. Reid, Cumulative Watershed Effects, Caspar Creek and Beyond, Reid, Pg. 124, 125. Thus the FPR require amendment to include a requirement for watershed assessments as well as identification of key watersheds to be used as refugia. A thorough discussion of recommended methods for control of CWE is contained in Cumulative Watershed Effects, Caspar Creek and Beyond, Reid, attached

A respect for the equilibrium of watershed dynamics has been matured in the comprehension of CCS researchers. Their findings penetrate to the heart of issues of sediment transport, canopy loss, unstable slopes, soil productivity as well as the extended time dimension in which these processes play themselves out. See Comment Letter re PalCo SYP/HCP, Robert F. Curry PhD, Attached. Until managers have at least a rudimentary grasp of the discernible signatures of balanced ecosystems as well as the indicia of those in disequilibrium they have to rely on what they do know. Unfortunately the BOF only knows about maximum sustained yield, profit driven logging operations but has not learned the basics of watershed hydrology and geomorphology. This is why an ecosystem approach is nowhere to be found in their DEIR, nor in the FPR themselves.

This document contains a gross misrepresentation of the findings of forest scientists apparently to rationalize the argument that public trust values are adequately protected by the draft land management plan. The following statement put forth by the BOF is designed to lull the public trust beneficiaries into a belief that in spite of the scheduled clear cutting, envisioned in the millions of board feet, the watershed in JDSF will not continue to be degraded.

"As much of the increased sediment load was related to increased storm flow volumes those increases are expected to be short lived as the Forest grows back". DEIR pg. 368,369.

There is no detail given. Is the statement contemplating clearest which will regenerate and thereby cause sediment loss to stop. How can this be? Following the clearcut it will take years before the seedlings become mature tree with full canopy and root systems. But since the policy is maximum sustained yield the same stands will immediately clearcut again. What about existing sediment deposits in the form of bed aggradation and stream bank deposits? The following is an excerpt from Comment Letter by Dr. Curry on the DEIR for PalCo SYP/HCP addressing similar sediment issues.

"1. The proposed cutting schedule, with highly accelerated initial cutting (34,903 acres of clearcut out of 54,382 acres harvested in the first decade (27 percent of the PalCo holdings) will have very significant hydrologic impact that directly affects salmonids and other species. Completely unaddressed are the issues of the effects of such a cut schedule on effective precipitation (rainfall that reaches the ground where it may become runoff). Professional colleague Dr. Leslie Reid in her response to the PalCo SYP/HCP will address this issue in more detail.

"Interception losses occur when rainfall is evaporated from vegetation. Foresters often cite evapotranspiration as the causes of decreased runoff from a well-forested subwatershed as compared with one recently cut over or partly deforested. But measuring total evapotranspiration from a forest is virtually impossible. Interception losses are easily measured by simply measuring rainfall under a tree canopy and comparing it to that outside the canopy. Recent work (see cites by Leslie Reid) demonstrate that 30 to 50 percent of storm precipitation may be intercepted in high-rainfall high-intensity storm sites. When a forest canopy is removed in any significant proportion, the "leaf area index" decreases and interception losses also therefore decrease. This happens even in cold wet climates because air near the ground or even near a water surface is not completely saturated (100% humidity). An air mass at 90% humidity can still hold the equivalent of

several inches more precipitation if there is a large surface area to intercept and evaporate it. Forest cutting reduces the leaf area index by orders of magnitude. This effect has been measured on PalCo lands in an older Master's thesis effort at Humboldt State University.

“According to Dr. Reid’s analysis (personal communication) the effect of a modest and conservative 22 percent increase in effective precipitation results in about a doubling of flood frequency for mean annual winter floods and as much as a 250% increase in landslide volumes moving into watercourses. When such an effect is coupled with the compounding effects of increased sediment yield and resulting increases in stream aggradation as noted by Harvey Kelsey for sites below the PalCo holdings, and as noted in the data collected for Freshwater Creek for the comparative channel cross section surveys of 1975 and 1998, we end up with a combined effect for the first decade of 4-times the frequency of floods of any given magnitude below PalCo ownership in Freshwater Creek. The sedimentation effects that reduce cross-sectional area will persist much longer than the timber harvest effects. These sedimentation effects are largely gravel pool fillings, thus reducing habitat independent of fine-grained sediment yield that is the focus of the PalCo HCP effort. In landslide-prone terrain, the increased coarse sediment yield that results from the increased soil moisture and increased depth of saturation associated with the combined effect of decreased interception losses and decreased evapotranspiration all combine to compound the downstream, offsite cumulative effects of timber harvest as outlined in the PalCo document. Where is the analysis? How have the already-disequilibrated streams like Freshwater been factored into the SYP/HCP? Why are more new roads proposed for this already most over-roaded watershed? This is a prime example of the failure of the PalCo document to address hydrologic effects, whether obvious, like fog drip, or more subtle, such as increased flooding.” Curry, id, Pgs.. 7,8, Attached.

While the HCP involved a different North Coast watershed both instances contain similar complex hydrological and geomorphological considerations. A firm grasp of the essential basics of the dynamics of sediment entrainment and deposition is a complex study. The BOF is or should be aware of the complexity since much of the research of cumulative watershed effects, such as sediment transport has been done in the Caspar Creek Study located in JDSF itself. That research has not determined that the regrowth incident to maximum sustained yield land management results in no net sediment increases beyond natural baselines. The assertion that regrowth halts excess sediment transport in spite of ongoing massive clear cutting is a misrepresentation calculated to mislead the public into believing that the DLMP will result in restoration of salmonid habitat and water quality insofar as it has been degraded by excessive sediment transport.

Another serious misrepresentation in the DEIR states that riparian areas will entrap sediment transported by runoff from roads and upslope logging sites.

“Equipment limitation zones and no cut buffer zones adjacent to watercourses will enhance protection from sediment deliver to watercourses,” DEIR Pg. 4.

The BOF is representing that this function of riparian buffers is a scientific fact. There is no citation of expert opinion in support. Nor is there any discussion of the persuasive expert findings to the contrary:

“But the proposed evaluation and establishment of thresholds seem to be based on the same faith or inherent unsupported belief system that those riparian streamside vegetative buffers or limited entry areas will somehow filter out the sediments that are being transported through them. As pointed out in my PalCo SYP/HCP review, there is neither physical on-the-ground evidence of such an imaginary effect of buffer strips (sometimes actually called filter strips by CDF), nor is there any after-the-fact sediment accumulation that would have to occur if such an effect did protect watercourses.” Letter Comment re DEIR for PalCo SYP/HCP, Curry, Pg. 2.

As a fiduciary the BOF has a high duty to employ experts to furnish advice and opinions regarding the protection of trust resources and to fully disclose issues about protection of trust resources to the beneficiaries. There is nothing in the DEIR which details the research and findings which support the assertion that stream buffers act as sediment traps.

Forest Inventory Management

Modern forest inventory management tools are the core of maximum sustained yield management. The primary tool is forest inventory and land management software. The plot data is data based according to generally accepted measurement methods and can be input from handhelds if desired. Ground proofing is simple because screen displays and reports quickly provide the data for the plot to be field verified. The DEIR does not provide meaningful details describing the inventory software used by the managers nor the manner and method of public access to the forest inventory database for ground truthing by the public. There is no detail describing the manner of audit of the inventory nor where and how the public can peruse the audits. This is a credibility gap of titanic proportions by managers gearing up to cut 31 million board feet per annum from our public forest. A functional description of a modern forest inventory application is attached. Assisi Forest Inventory Product Description, Attached.

Ecosystem Services and Externalized Costs

CEQA Guidelines, Sec. 15124, states that the Project Description should include a project's economic characteristics. DEIR pg. 37. The DEIR includes the cutting goal of 30 plus million bf per annum, timber prices, associated tax revenues and a brief analysis of recreational values in old growth forests. But there are externalized costs resulting from the extensive clear cutting as well. These costs are losses suffered by the ecosystem services provided by the resource. In order to quantify losses of these ecosystem services assets, the assets themselves have to be quantified for a baseline value. These assets include recreational services of hunting, fishing, camping, boating, swimming, photography and aesthetic enjoyment. Other assets are water filtration, replenishment of watertables, streams and aquifers, carbon sequestration, nutrient recycling, economically valuable plants, fish and wildlife. Still others are soil production and flood control.

The DEIR lacks quantification of the ecosystem services of JDSF. This is no doubt because the BOF has no records and does not know how many people recreate in the project, how much fresh water the watersheds formerly supplied, totals of fish counts, numbers of flooding incidence, wildlife survey totals water table levels and aquifer status for examples.

Especially important these days is the lack of quantification of the value of the water resources in the project. To the extent that the forest is hydrologically functional it provides water filtration lessening the expense of filtration for drinking water. To the extent that the forest replenishes aquifers and water tables it provides water itself. To the extent that its canopies intercept fog it furnishes additional water.

Securing the data enabling quantification of the value of ecosystem services is the province of the resource economist. This expertise also quantifies the losses associated with degradations of ecosystem services. These losses result from water pollution, lost recreational opportunities, lost scenic opportunities, diminished aesthetic values, diminished carbon sequestration, diminished flood control, diminished soil production, diminished nutrient cycling and losses of economically valuable wildlife, fish and plant species. Once resource econometric methods quantify these losses the externalized costs of the project are clear. Since the report does not include these externalized costs, neither the fiduciary and nor the beneficial owners can calculate all the actual costs associated with the project and thus reliably calculate whether the project will result in a net benefit or a net loss.

The CEQA does not require the public trust beneficiaries to speculate on the economic consequences of the project instead it requires the project managers, the BOF fiduciaries in this case, to research all the costs of the project in sufficient detail to permit meaningful and creative comment.

The Water Budget Further Details

“The hydrologic input of fog water to the redwood forests ecosystem is extremely high. When the fog collector data was compared to the data obtained from fog-drip collectors beneath trees it was

clear that the trees were a full 19-40% more effective at 'stripping' fog water out of the air mass. Moreover, between 20-50% of all the moisture input to the study site was due to the redwood trees themselves. These results suggest two things. First, that the hydrology and therefrom the ecology of redwood forests is intimately linked to the presence of the tree canopies themselves and the role they play in stripping fog, ameliorating the forest microclimate, and increasing the total annual income of water. Secondly, and, perhaps most importantly, from a management perspective, is the fact that loss of redwood trees due to natural disasters (e.g., fire, windthrow, or floods) or from logging or other land use practices which convert the forests to open habitats will dramatically alter the hydrological and ecological balance of these forests (see Bruijnzeel 1991). Loss of the canopy tree, *S. sempervirens*, therefore, would mean not only the loss of the biomass, nutrients within the biomass, and the soils (by post-disturbance erosion), by also a fundamental conversion of a once moist, cool, forested ecosystem into a more drought prone, and warmer ecosystem. Plants which depend upon the moisture input from fog drip, as well as the other microclimatic benefits of living in the forest, would certainly experience more frequent water stress because of lower water input and higher heat and evaporative conditions. It is also possible that both redwood seedlings and understory plants species which require forest conditions to regenerate including fog drip and cooler temperatures could disappear if the integrity of the redwood forests is disrupted." The Use Of Fog Precipitation By Plants In Coastal Redwood Forests, Todd E. Dawson, Cornell University.

The foregoing quotation describes a debit in the water budget incident to canopy loss which will be substantial resulting from the clear cutting agenda of the preferred alternative. Neither the DEIR nor the DLMP expertly quantifies this debit as linked to the 30 million plus board feet per annum to be extracted. This is water value which will be debited for many years and which there is no conceivable mitigation. What will be the monetary losses from lowered water tables? How much must be estimated for redrilling dry wells? What will be the estimated economic consequences of salt water intrusion into affected aquifers? What are projected losses of income from salmonid extinctions which affect offshore fisheries, commercial and recreational? The resource accounting will have to assume the worst case scenario because there is no provision in the DEIR and the DLMP for watershed assessments.

An ecosystem approach alternative will reduce or eliminate the externalized costs of logging. JDSF has been heavily logged for decades but the externalized costs have never been quantified. The present degraded condition of its watersheds will improve with a no logging alternative. In turn, over time, the quantified value of the ecosystem services will increase. A CEQA project accounting for the logging alternative and the no logging alternative will disclose the approach with the greater net benefit provide that the accounting also calculates trend lines. That is the logging alternative over time may follow a curve in which the ratio of externalized costs to benefits is increasing while the no logging alternative will follow a curve with the same ratio decreasing because the value of ecosystem services increases as the watersheds are restored. A condition which will not obtain incident to the logging alternative which has resulted in the current degraded condition.

James Harrington
dated: _____

Attached:

Report to the Legislature, Cumulative Watershed Impacts, Dr. Leslie Reid
Cumulative Watershed Effects, Caspar Creek and Beyond, Reid
Comment Letter re DEIR PalCo SYP/HCP, Robert R. Curry PhD
Assisi Forest Inventory Product Description
Six Rivers National Forest Record of Decision
Six Rivers National Forest Land Management Plan
Big River Sonata

CC: Hon Virginia Strom-Martin
Hon Wes Chesbro

Hon Fred Keeley