Jackson Demonstration State Forest Advisory Group
Background Materials for the August 27-28, 2010 Meeting

Contents

1. Kathy, 7/20/10: LC Recommendation: Camp 3 Out Area to Late Seral Development

To: JAG
From: Kathy Bailey on behalf of the Landscape Committee
Re: Recommend designating Camp 3 THP out area as Late Seral Development
Date: July 20, 2010

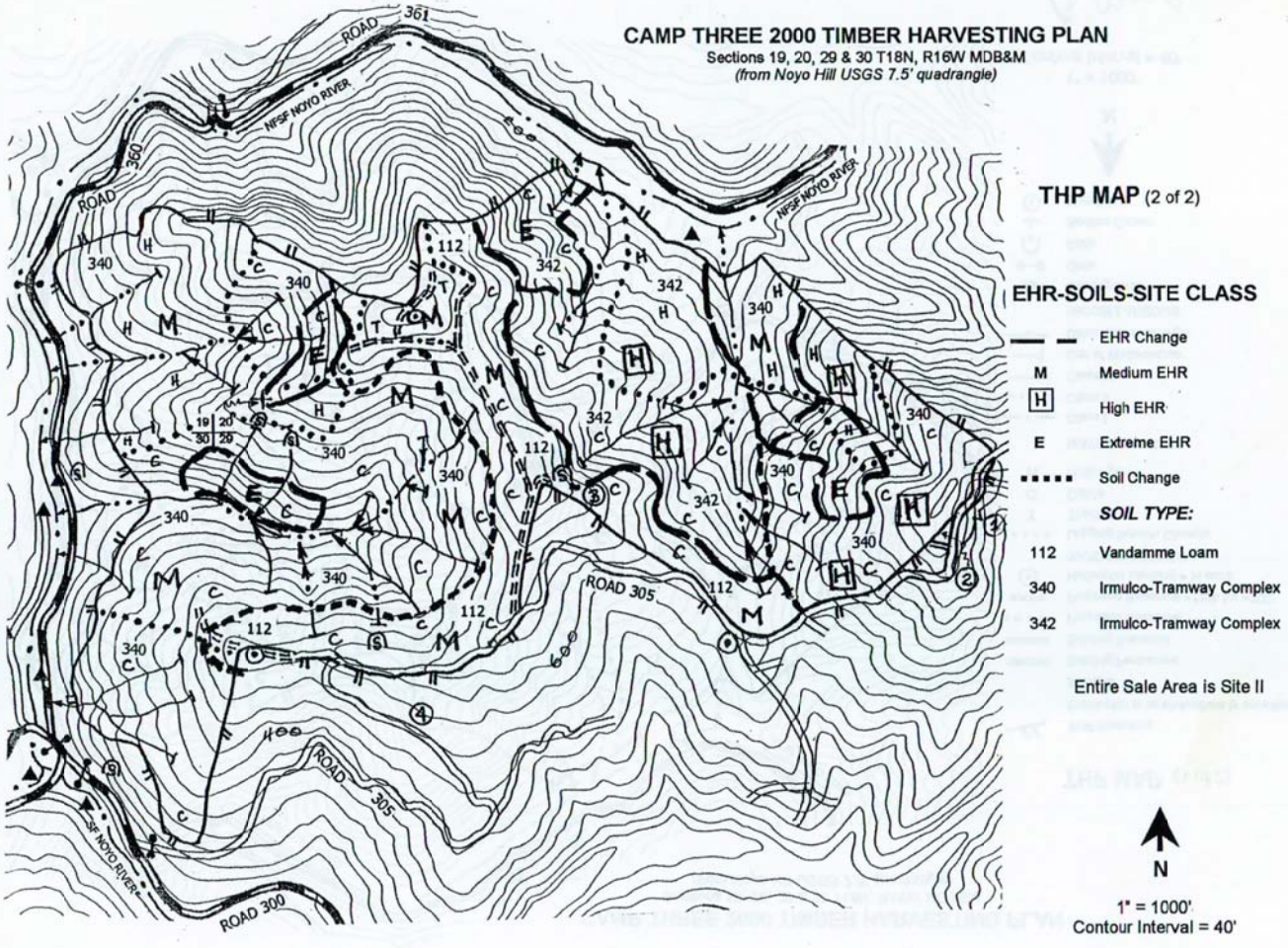
At the Landscape Committee's May 20, 2010 meeting, it was called to our attention that we had inadvertently left out including in our Late Seral Development recommendation a small parcel of land adjacent to the Camp 3 THP that had been drawn out of the THP area. After reviewing the maps and considering possible alternatives to designating this area for Late Seral Development, we determined that this area would best contribute to the Management Plan Goal #2 of Restoration by being designated the same way all the adjacent land was designated, ie for Late Seral Development.

A review of the Camp Three 2000 THP maps, which I had in my files, shows that the parcel is unlikely to exceed approximately 140 acres. The THP itself (1-99-484) is 366 acres. It is shown in its entirety in relation to the THP area on the THP Map, Page 30. On the north, it abuts Road 360, Road 361, and the NFSF Noyo River; similarly on the east and west. On the north it adjoins the THP.

The "Geology and Geomorphic Features Map on Page 31 shows the segment of the out-area that is adjacent to the THP. The map key shows that the out-area is classified both Inner Gorge and Slopes >70%. Given that this area drops to both the river and the roads, RPF Fay Yee is likely to have drawn this area out of the THP to avoid conflicts with road useage in this high recreation use area.

The Landscape Committee recommends designating this THP out-area as Late Seral Development.

[THP maps attached.]


CAMP THREE 2000 TIMBER HARVESTING PLAN
Sections 19, 20, 29 & 30 T18N, R16W MDB&M
(from Noyo Hill USGS 7.5' quadrangle)
THP MAP (2 of 2)
EHR-SOILS-SITE CLASS
EHR Change
M Medium EHR
H High EHR
E Extreme EHR
Soil Change
SOIL TYPE:
112 Vandamme Loam
340 Irmulco-Tramway Complex
342 Irmulco-Tramway Complex
Entire Sale Area is Site II
N
1" = 1000'
Contour Interval = 40'
ROAD 361
ROAD 360
ROAD 305
ROAD 300
NFSF NOYO RIVER
SF NOYO RIVER

CAMP THREE 2000: GEOLOGY and GEOMORPHIC FEATURES
Sections 19, 20, 29 & 30 T18N, R16W MDB&M
(from Noyo Hill USGS 7.5' quadrangle)
THP Boundary
Debris Slide Amphitheater/ Slope
Debris Slide
Slopes > 70%
Inner Gorge
N
1" = 1000'
Contour Interval = 40'
Geology and Geomorphic features related to landsliding.
By R. Kilbourne, Noyo Hill USGS 7.5' quadrangle.

2. Kathy, 8/13/10: LC Section 7, Even-aged Management Recommendations

Section 7. Excerpts from JDSF Management Plan Regarding Even-aged Management

The following excerpts from the current Plan require a discussion by the full JAG to determine the extent to which JAG recommends modifications:

Page 255:

"All proposed even-aged management will be presented to the appropriate advisory entities for review and recommendation prior to implementation.

Clearcutting* *will be restricted to a cumulative maximum of 100 acres per decade and only for purposes of research, demonstration, addressing forest health, or addressing problematic conditions for regeneration. Up to an additional 400 acres may be clearcut per decade, but only for research purposes that cannot be met through any other method.*

[The Landscape Committee is recommending the following change indicated in red.]

The total area of the Matrix receiving ***even-aged**** *silvicultural treatments other than Matrix Silviculture shall be the minimum required for the scientific validity of the research involved.not exceed 2,700 acres per decade. In addition, even-aged management will be tied to:*
a) the Forest condition it is intended to produce.
b) necessity and appropriateness for accommodating research investigations either immediately or at a later time.
These constraints (i.e. a, b) do not apply to even-aged management necessary for addressing forest health or problematic regeneration conditions."

* Bolding added for clarity

3. Kathy, 8/13/10: LC Section 6, Other Recommendations

Section 6. Other Recommendations from Landscape Committee as of May 21, 2010, with an August 13 addendum by Kathy Bailey indicated in red underline

By consensus, the Landscape Committee recommends the following regarding landscape-related management measures:

1. Maintain NSO Nest Tree Buffers

Management Measure: Until at least the next major review of the JDSF Management Plan, maintain standard 18-acre Forest Practice Rule buffer zones anchored on NSO nest trees for a minimum of ten years after the site was last confirmed occupied.

Purpose: To test whether or not Northern spotted owls will reoccupy nesting and roosting areas after they have apparently been abandoned.

2. Buffers for Old Growth Outside Reserves

Management Measures: Any exceptions to the following will need approval by, at least, the Assistant Forest Manager and RPF, and will require a field visit. Exceptions may include the need for removal of buffer trees for safety. Apply all of the following.

- In all harvests, buffer all old growth conifers and hardwoods by, at a minimum, maintaining trees that appear to have intermingling limbs, or at some point in time, will grow to have intermingling limbs.
- Additionally, determine whether any old growth tree exhibits attributes (as described in the old growth definition) that may biologically benefit from additional buffering: Assess the attributes, and pick buffering trees that best enhance or protect them, if needed. (NOTE: Take care to fully reflect on the OG attributes and fairly assess the best method/tree-trees available for buffering purposes. Retained buffer trees should be those that will be healthy and wind firm subsequent to the harvest. Common attributes to review are cavities, large limbs and flat tops.
- For old growth trees that have immediate same aged replicates (side-sprouts): leave all same-aged/similar-aged side sprouts. [Language subject to clarification.]
- Unless operationally impossible to do so safely or without damaging other important resource values, maintain an equipment exclusion zone at least thirty (30) feet from the trunk of any old growth tree. KB August 13, 2010 addendum: The original draft recommendation was for a 20-foot equipment exclusion zone measured from the drip line. Mike Anderson advocated for the equipment exclusion standard of 30 feet from an old growth trunk, which in the interest of consensus, the Landscape Committee adopted. As of the July 30 JAG meeting, Mike A is not supporting this old growth buffer policy anyway. After having subsequently assessed a number of old growth trees at Hendy Woods State Park, I recommend that this equipment exclusion zone be pegged at "a roughly symmetrical area centered on the trunk that encompasses at least 20 feet beyond the

greatest extent of the tree's drip line, measured on the ground." (The intent being that there is an EEZ around the entire tree that is significantly away from the trunk and the canopy.)

Rationale: To attempt to ensure that all old growth trees outside Old Growth Reserves are protected from potential damage during harvest operations, the Landscape Committee recommends special management measures for buffering old growth trees. While these measures are generally based on concepts in the recently revised Old Growth Screen Tree policy of the Humboldt Redwood Company, they are more protective. This is justified for the following reasons:

1. JDSF is public land that is required to be managed for multiple goals, as identified in the Management Plan beginning on Page 18. Relevant to the recommendation of these management measures, these include: #2 Forest Restoration; #3 Watershed and Ecological Processes; and #5 Recreation and Aesthetic Enjoyment.

2. Additionally, according to Chapter 9 (page 265), Lessons from the Redwoods, in the book *The Redwood Forest*, edited by Reed Noss on behalf of the Save-the-Redwoods League (2000):

> "Protection of redwoods in parks and other reserves has not sampled the various [plant] associations equally. Some types of redwood forest are unrepresented. For example, 10.75 percent of the redwood forests in the southern section is in the highest category of protected areas, compared to 5.76 percent in the northern section and only 1.36 percent in the central section."

According to the map on page 42 of this book, the HRC lands are located in the northern section, while JDSF is located in the central section with the smallest proportion of protected acres for redwoods.

Old growth resources deserve a very high degree of protection at JDSF because of both the multiple management goals of the forest and its location in an area that is not served by a high degree of redwood protection.

Although information on other conifers and hardwoods is not as readily available, the general lack of public land in the redwood region of Mendocino County suggests that protection for old growth of all species is also warranted.

3. Create New Growth and Yield Model

Recommendation: Within the Center of Excellence focused on Silviculture, undertake the following:

Develop and test a growth and yield model for un-even and even-aged stands in the redwood region that not only is capable of making accurate projections out to 100 years and beyond, but also takes into account landowner returns as affected by log quality variations.

Rationale: In the course of our work, the Landscape Committee was often frustrated by the limitations of existing growth and yield models. Department practitioners and other forest

managers regularly warned us not to rely on any model projection past approximately 40 years. Additionally, many relevant points of information could not be modeled with available tools. Jackson appears to be the ideal place to undertake the long-term studies needed to rectify the shortcomings of existing models. Such a project appears to be consistent with the proposed Center of Excellence #3 regarding Silviculture.

4. John, 6/10/10: References to Use of Herbicides in the JDSF Management Plan

Extracted by Helms, June 10, 2010

Page 10: Past use of herbicides limited to four situations –

1. road management related to treatment of native vegetation
2. reforestation that targets native shrubs
3. control of hardwoods to adjust conifer/hardwood ratios
4. control of invasive weed species as part of Integrated Weed Management Program

A total ban on herbicide use would compromise research and development values on the Forest and would result in adverse environmental consequences such as expansion of area on and off the Forest occupied by invasive species.

Herbicides may be used in individual research and demonstration projects that are scientifically designed and approved.

Operationally, only used when no other effective and feasible control methods are found after consideration of scope of problem, opportunities to effectively manage the situation, available alternatives to their potential effectiveness, costs, etc.

Page 28: JDSF requested to curtail or eliminate use of herbicides by public Citizens Advisory Committee 1997-1998. Some requests to continue or increase use to control invasive weeds. See also p. 198.

Page 29: Mendocino County does not use herbicides for roadside vegetation control on state or county roads. County-wide, forestry use of herbicides declined from 1.2% of total County pesticide use in 2002 to 0.4% of total use in 2004. On JDSF, use has declined since the 1990s.

Page 51: <u>Use of Herbicides</u>

Past use generally hand spraying to control native hardwoods, native brush (Ceanothus), and invasives such as French broom and Jubata grass. Also in early- and mid-1990s to clear roadsides of invasive weeds. Over past 5 years use has been minimal due to cautious use and low level of management activity.

Page 85: Timber Sales

May consider hand spraying for control of hardwoods.

Page 93: Invasive Weed Species

JDSF policy is to encourage growth of native species and support Integrated Weed Management programs (this is a prevention-oriented, ecologically-based approach to managing weeds cost-effectively with minimal risk to people and environment). Control of non-native invasives has demonstration value.

Page 94: To extent feasible, JDSF staff will avoid or minimize the use of chemical herbicides.

Page 95, Chapter 3, "Herbicides"

CAL FIRE and BOF recognize public controversy regarding herbicide use. A total ban could compromise research and demonstration values.

JDSF use limited to:

1) when no other effective and feasible control methods are found
2) no herbicide use unless it is integral to long-term, ecologically based management
3) public and environmental safety is a priority
4) herbicide use will be evaluated for aesthetics and potential reaction to seeing dead plants

Herbicide use requires effectiveness and feasibility analysis and limited to part of an integrated pest management program. Herbicide use will be considered with a mix of mechanical and other vegetation treatments to promote natural levels of native hardwoods.

Herbicide use not permitted for purpose of treatment of native species for road maintenance unless for a specific fire prevention project. Also, use is restricted when used for control of hardwoods to adjust conifer/hardwood stocking ratios and control of invasive weed species as part of an Integrated Weed Management program .

Page 142: Existing JDSF studies on herbicides

In relation to precommercial thinning

Temporal and spatial successional complexes (page 208)

Small-scale trials OK (page 279)

Page 200: UC Center for Forestry Workshop 1989 recommendations include "Establish efficiency and safety of herbicides".

Page 259: Appendix IX Mitigation and Prevention Measures.

Invasive Weeds

To the extent feasible, avoid or minimize use of chemical herbicide weed management tools.

Herbicides

- Management Measures. JDSF will adopt the following limitations –
  Only when no other effective or feasible control methods

  Effectiveness and feasibility analyses required

  No herbicide use unless it is integral to long-term ecologically-based management
- Public and environmental safety a priority
- Aesthetics will be evaluated
- Roadside vegetation – not used to treat native vegetation unless there are significant over-riding management concerns such as fire prevention
- Conifer/hardwood stocking levels – adjusting imbalance by herbicides limited to reforestation on East-side where high tanoak stocking can prevent native conifer establishment and growth. Use of herbicides only when other options are prohibitively expensive or not likely to be successful, etc.

Page 285: Consult with Native American tribes to identify important plant collecting areas

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5. Jere, 6/25/09: Economics Committee Recommendations

JDSF JAG Economics Committee

Summary of Actions/Recommendations

Full JAG Meeting of June 25 and 26, 2010

Committee Members: Melo, Liquori, Tilley, Braudrick, Taylor

Staff: Jameson and Eng

The Economics Committee was assigned six specific tasks in the adopted Work Plan. The actions/recommendations from the Committee are organized by those tasks, and the date of the action/recommendation is also shown.

Task 1: What revenue requirements are needed to meet the desired budget?

On April 3-4, 2009, the committee discussed the revenue requirements to implement the Management Plan as adopted by the Board of Forestry. The conclusion was that about $6 million is required. The committee adopted a table that indicates the timber volume that must be harvested to raise $6 million at bid prices ranging from $50 to $800 per MBF.

Task 2: What is the desired budget?

See above Task 1 for April 3-4, 2009. The desired budget to implement the Management Plan as adopted by the Board of Forestry is $6 million.

Task 3: What is the needed budget?

On April 3-4, 2009, the committee reviewed the current staff and expense levels, about 38% of what is needed to implement the Management Plan as adopted by the Board of Forestry. The committee adopted a table that indicates the timber volume that must be harvested to raise $2.3 million at bid prices ranging from $100 to $1,000 per MBF.

Task 4: Is CAL Fire able to produce a profit-loss statement, at least quarterly, to track revenues, costs and cash flows?

On February 23-24, 2009, the committee discussed a profit-loss statement that identified cost centers or cost departments for JDSF. These are timber sales, recreation, security, monitoring and research. Allocation of salaries needs to be based on time spent by staff in these cost centers. The committee recommends these cost centers and the allocation method, leaving the details within the cost centers for JDSF staff to refine and implement.

Task 5: How do we balance revenue generation and our priority goals? What can we afford?

On June 26-27, the committee recommended that the (timber) sale program will reflect the standards for silviculture consistent with the landscape allocation. The committee discussed the need to generate cash

to support the various JDSF programs and to demonstrate silvicultural methods used to achieve land management goals.

On June 26-27, 2009, the committee discussed the use of money as a minor source of funding. The committee recommends that if a "Prudent Reserve" is established (See Task 6), the reserve funds could be invested in a money-market-type fund, and that the interest earned should be applied to state forest programs.

On August 10, 2009, the committee discussed the highly variable costs for individual research projects. The cost projection for the Camp 3 Sale was a base. This indicated a high initial cost to establish the research project, with periodic monitoring at lower costs. Some years had no costs at all between the periodic monitoring years. The committee recommends a year-by-year projection of individual research project costs (to) provide the base for annual budget allocations as a line item. The projection will be updated periodically. (See also Task 4 that identifies the cost centers.)

On August 10, 2009, the committee discussed the difference between JDSF-RFP projects and other projects that will have different sponsors. The committee recommends that JDSF-RFP projects use the above recommendation for annual and future budgets and that other projects (will) be required to provide a long-term projection of costs with assurance from the initiator of budget support.

On August 10, 2009, the committee discussed the high cost of transporting logs to mills far from JDSF. The committee recommendation is that in order to reduce transportation costs and raise net values for sales, JDSF should continue to support local utilization of material produced in nearby forest and saw mill operations. This would have a supporting role for local communities.

Task 6: How do we leverage resources to develop the Science Agenda?

On June 26-27, the committee discussed the variable cash flows associated with the market for timber. Also discussed was the need to support the research and demonstration functions, regardless of the market for timber. The committee recommends that PRC Section 4799.13 may need to be amended to allow for a "Prudent Reserve" to support the various functions at JDSF in times of poor timber markets.

On June 26-27, 2009, in line with the above recommendation, the committee recommends that a one-year operating reserve be created, gradually as market conditions allow. The reserve funds should be a dedicated fund that would apply to the entire state forest program, and based on current and near-term program costs.

On August 10, 2009, the committee discussed the possibility that grants could be a resource to develop the science agenda. Staff informed the committee that there is no professional grant writing capability in CAL FIRE. The City of Fort Bragg does have professional grant writing capability, and that has provided millions of dollars for city programs. The committee also noted the information provided by Dan Porter about grants supporting the projects in Mill Creek and Smith River, Del Norte County. The committee recommends that CAL FIRE should obtain professional grant-writing capability as a way to gather funds (for the science program).

Matters discussed; no committee recommendation:

June 26-27, 2009: Create an inventory of sufficient THPs to respond to market demands. Use variable harvest levels – higher in good markets and lower in poor markets). Consider limiting high-cost deferred maintenance projects, especially those remote from timber sale areas and/or seeking grants for deferred

maintenance projects. Use volunteers to conduct projects at low or no cost to the state. Reduce travel expenses; require multiple occupants in state vehicles. Require all persons at a work site to actually work and minimize supervision costs.

On August 10, 2009, the committee discussed the fact that JDSF stumpage sales are different from sales of logs preferred by local private timber sellers and local saw mills. The committee recommends that JDSF should determine the feasibility of changing its timber sale process from the sale of stumpage to the sale of delivered logs. This will create several changes, including: (a) JDSF will hire one or more loggers for timber sales. (b) JDSF will need to have log purchase orders from several mills, which JDSF prefers to do with staff rather than by contract with a private log sale contractor. (c) JDSF (will need to) change internal policies that require sale to the highest bidder, if qualified to carry out a contract.

On August 10, 2009, following a very low bid on a timber sale, the committee discussed the practice of the expense of substantial capital projects on individual timber sales. In private practice, capital projects are required to be amortized either against a large timber volume or over an extended period of time. By comparison, all operating expenses are charged to a sale volume. The committee discussed a recommendation to differentiate capital costs from operating expenses related to sales. JDSF should consider the development of more traditional business cost accounting practices that proportionally allocate capital costs into relevant timber sales as appropriate.

On August 10, 2009, the committee had a discussion of the structure of JDSF reporting. There are examples of equipment and personnel assigned to JDSF who really provide other functions in the Mendocino Ranger Unit. The committee considered a recommendation that JDSF staff report directly to the Resource Management staff and not to the Mendocino Ranger Unit. That was deferred to a future discussion.

Several times, the committee had fact-finding discussions about the sale of carbon credits for a source of income to JDSF. The result was that this is not now feasible, because the Management Plan indicates an increasing timber volume over time, and it is not reasonable to assign further increases of carbon sequestration to management practices. Further, the fact that JDSF is public land raises issues not likely to allow qualification for the sale of carbon credits as a source of income.

6. Mike L, 7/25/10: Research Committee Draft Report v5.1

Research Committee

DRAFT Report v5.1

July 25th 2010

Mike Liquori, Chair

John Helms

Dan Porter

Vince Taylor

Brad Valentine

Preface

This document presents another DRAFT Research Committee Report that reflects the cumulative results of nearly 2 years of work within the Research Committee. The DRAFT document integrates and summarizes the core recommendations and supporting elements. The Core Recommendations are intended to be concise – additional detail and discussion is provided in the Appendices (which will be provided to JAG in a future meeting).

All of the concepts reflected by the colored text have been discussed and are consistent with prior approved documents and/or JAG discussions. The vast majority of the content in this document should be familiar as it has been seen before. The language used in this document was compiled by several sources of previously reviewed, edited, and (where noted) approved documents, including:

- *The nearly approved May 24th Draft Research Recommendations Document (v. 3.1)*
- *The JAG Approved October 2009 Research Document*
- *The JAG Approved February 2009 Mission-Oriented Priorities Documents*
- *The Science Workshop Notes (as vetted by invited participants) – text here is often paraphrased, but consistent with the concepts*
- *Notes from the June 2010 JAG meeting – to incorporate appropriate changes (again, text is usually paraphrased and wordsmithed)*
- *The Extended Draft Research Recommendations Document (v 1.1) from the integration effort - this working Research Committee document was not previously reviewed by JAG as a whole, but represents nearly 4 days of effort compiling elements from over 40 meeting notes & other associated documents, much of which has been informally presented to JAG for discussion. It represents a more complete discussion of core elements and includes important detail that*

will be essential toward implementation. The Executive Summary from this document was extracted by the Integration Team, and has been used as the basis for a consensus document.

- ***Black Text*** *reflects entirely new language, most of which is consistent with discussions within JAG and/or necessary transition text.*

Modest word-smithing has maintained the substantive content. In places, the text is slightly changed, mostly to provide effective narrative transitions, clarify intent, or to address verb tense, grammar, etc. Such minor changes are not distinguished so as to keep the document as clean as possible. The recommendations in yellow boxes have been revised to reflect changes to the underlying document structure.

Happy Reading, Mike

Core Recommendations

We propose that a **World-Class Research Forest** is fostered by its integrated research program and is realized by the ability of that program to drive forest management activities in a manner that is broadly recognized as a source of quality, rigorously tested, scientific knowledge. A World-Class Forest is one where:

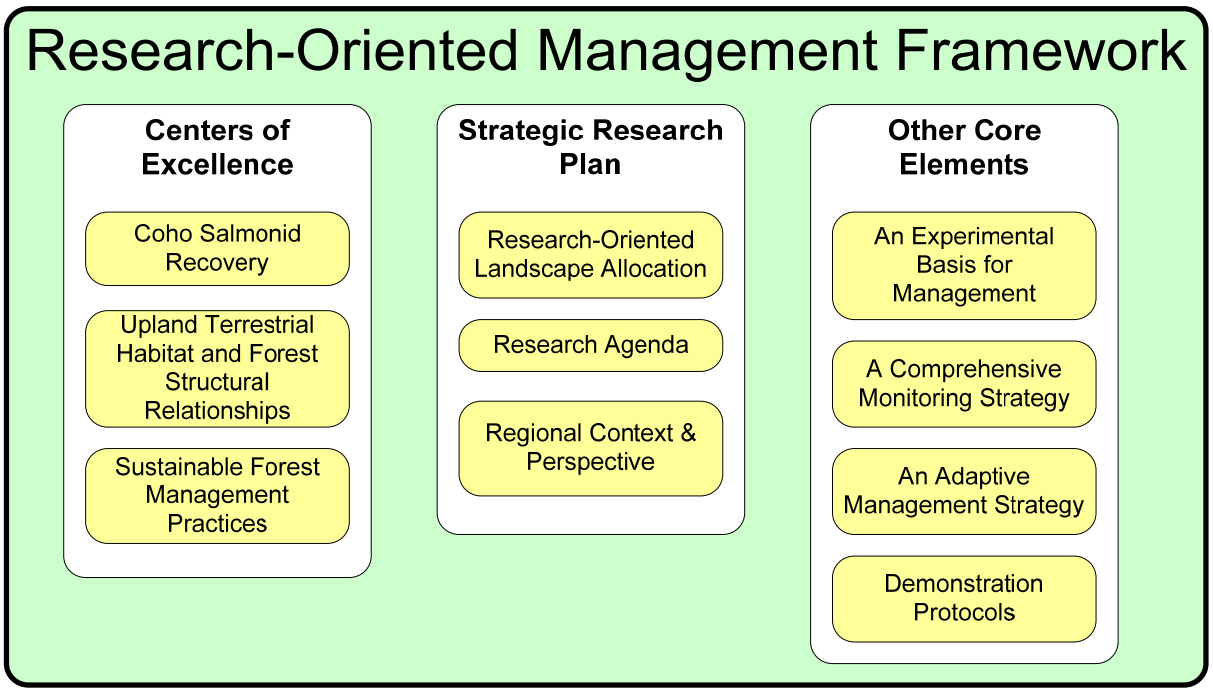
- The management plan and its landscape allocation create the opportunities for testing important hypotheses related to forest science, policy and management.
- Research efforts extend beyond the forest to integrate studies and lessons from, and inform management decisions on, other relevant forestlands.
- The forest uses opportunities, both on the forest and regionally, to seek answers that are relevant to a broad cross-section of stakeholders and other landowners.
- Research results are published and cited widely, in a breadth of professional and scientific journals, especially those highly regarded within and among disciplines.
- Techniques are actively developed that support sustainable forest management practices and knowledge-based policies, both of which are transportable to other landscapes and inform key issues.
- Data, maps, and history are well-tracked and well-maintained.

Together, these qualities will create a compelling set of conditions that will attract cooperative funding opportunities and diverse researchers investigating a broad array of subjects.

The following JAG proposal represents our best effort to develop a management framework that would fit within the existing Management Plan framework and the other JAG recommendations.

A Research-Oriented Management Framework

To put JDSF on a path toward World-Class status, we recommend that the Board adopt and implement a **Research-Oriented Management Framework**, as described in this document. The long-term objective for a Research-Oriented Management Framework on JDSF is to provide a transparent and objective scientific basis for forest management in California's redwood region. A scientific basis describes a rational system of technical information, models and other tools that inform policy and management, and collectively describes the methods for achieving sustainable economic, ecologic, and social stewardship of the forest.



The proposed Framework would integrate several key concepts (each described below) that together provide an organizational structure for testing and improving forest policies and practices both within JDSF and throughout the Redwood region (and perhaps beyond). This Framework should be organized around **Centers of Excellence** that describe the state-of-the-art science using models that range from simple conceptual models to more detailed empirical and/or quantitative models. Such models would provide organizational rigor that could provide a structure for scientists and would over time, improve the ability to predict impacts associated with management practices and enable management to achieve ecological goals.

The framework should also consider a **Strategic Research Plan** that leverages the forest's resources to the benefit of core management issues. Such a Strategic Research Plan would integrate the efforts related to Centers of Excellence with the operational management of the forest. It would identify and implement a landscape allocation that better supports research activities, and would provide a structure for organizing relevant research at a regional and/or state-wide scale.

Over a period of a few years, this Research-Oriented Management Framework should lead to the development of formal management systems (combinations of regulations, policies, practices and

Adaptive Management) that would provide important tools and management models for other landowners.

Centers Of Excellence

Centers of Excellence define a focused, yet multi-disciplinary research programs for the Forest that help resolve critical issues facing forest management and forest resources within and beyond the Redwood Region. The Centers of Excellence will focus on informing applied forest management issues while recognizing that sustainable forest management is best ensured by an underpinning based on a fundamental understanding of ecosystem dynamics. Centers of Excellence should be drawn from issues that are politically and socially important and of likely continuing interest to stakeholders and researchers. Centers should be aimed at obtaining information that will help develop a greater understanding between important forest outputs and management by informing policies, practices, and associated consequences. The Centers of Excellence will be compelling, integrative, and exciting, drawing researchers from broad national and international professional networks. The Centers will also be durable, focused on solving complex challenges, the solutions to which will likely to be iterative and for which Jackson Demonstration State Forest, at the center of the redwood region, is well-positioned to answer.

To avoid spreading resources too thin, the number of Centers should be constrained, with an initial JAG recommendation tentatively set at three. In addition, Centers should be focused enough to prevent the largely ad-hoc approach to forest management JAG believes exemplifies R&D activities on JDSF to date. The recommended Centers of Excellence listed below evolved from discussions within JAG, science workshop participants, and limited external outreach. We recommend that additional outreach and more detailed consideration by the Board of Forestry and the Research Planning Team (see Implementation Section) should help to refine and/or revise the finally selected centers. JAG recognizes that adopting Centers of Excellence may have some undesirable consequences such as over-riding R&D on other important topics. Thus, JAG believes that allowances for these should explicitly be acknowledged in subsequent considerations by bodies discussed further in this document. With explicit recognition of other important research, these risks are off-set by the value of the focus brought by the Centers of Excellence.

Additional detail regarding development of Centers of Excellence are discussed in Appendix X.

A Strategic Research Plan *(formerly several subsections compiled into a single new section)*[1]

A Strategic Research Planning process would integrate an analysis of existing and desired future conditions using proven scientific methods with other key concepts and goals described in the Management Plan and JAG Recommendations. The primary components of our recommended Strategic Research Plan include:

[1] This proposed re-organization allows us to consolidate 3 recommendations into 1.

- A **Research-Oriented Landscape Allocation** process that carefully and thoughtfully apportion the forest to support rigorous testing of key working hypotheses and assumptions, as it will establish the context by which research is crafted and documented.

- A **Research Agenda** that works collaboratively with scientists and stakeholders to develop a list of key issues and management questions related to each Center of Excellence. The Research Agenda will provide a framework for identifying desired research projects, monitoring requirements, and management activities needed to support desired research projects..

- A **Regional Context & Perspective** that considers JDSF in the context of management regimes and practices available on other lands, so as to extend the Research Program's relevance to stakeholders throughout the entire Redwood region.

Research-Oriented Landscape Allocation

A critical step in creating a Research-Oriented Management Framework is aligning the contemporary and future landscape allocation of stand-level characteristics (e.g. age, structure, composition) in ways that provide a landscape that supports research and demonstration that are directed towards the Centers of Excellence. Equally important is the recognition of the Regional Context in which work at JDSF is conducted, which is to say JDSF is one of handful of large, consolidated ownerships where forest management experiments and adaptive management can take place in the redwood region.

JAG's recommendations for Landscape Allocation and Matrix Silviculture (see Section X) provide a management system[2] that will generate the revenues needed to help fund the Research and Demonstration Program while preserving and advancing many of the unique stand structures within JDSF. JAG has compiled *Guidelines for Interim Research* (Appendix X) that we believe would provide appropriate constraints during the period required by the Strategic Research Planning process and the transition toward implementation of the overall framework. We anticipate that JAG's recommendations should be subject to appropriate scientific peer-review and comment as described by the scope of work in Appendix X.

The existing Allocation (Table 1 and 7) described in the Management Plan describes silvicultural allotments designed to support a more ad-hoc approach to research opportunities, and are not necessarily in alignment with the Centers of Excellence concept. The proposed revisions to the landscape allocation (offered elsewhere in this document[3]) are a first step toward a landscape allocation that promotes all the goals of the Management Plan while preserving options for integrating a research focus more fully into forest operations. The future iteration of landscape allocation should also be informed by JAG's Landscape Recommendations, the Strategic Research Planning process, and broader coordination with the Board's Research and Science Committee.

We recognize that a diversity of forest and stand conditions maintained and created over time is a common feature of research and demonstration forests and that such conditions are best created as a

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[2] The May 24th document describes this as an interim management system, but doesn't identify the interim period nor the gap in information that would lead to revisions. These revisions seek to clarify.

[3] Refers to the Landscape Committee's recommendations

result of a well-organized, well supported, and focused research program described by this Research-Oriented Management Framework. Additionally, we recognize that the current approach for allocation that relies upon seral stage definitions may not provide a sufficient range of conditions required for high quality research. Seral stages can imply certain structural conditions, but that for some management research needs, seral classes alone will not suffice. Thus, we favor the adoption and/or development of stand classification systems that better describe the range of structural and habitat conditions that can support the research program. Additionally, we recommend that JDSF staff should utilize measures (and practices) that ensure sufficient diversity for a wide range of research. We also recognize that a science-based landscape planning process would substantially help to inform this issue.

The landscape allocation of forest stand conditions and silvicultural systems defines the research setting for the forest. Thus, it enables and constrains assumptions and hypotheses the research community can apply to evaluate ecosystem response to management activities. The allocation can also provide stability in stand structure that supports long-term research. A poorly considered or unstructured allocation substantially restricts potential research opportunities, and would compromise the Centers of Excellence.

Because the research focus is derived from pursuing scientific Centers of Excellence, we suggest that JAG is not the appropriate group to develop the final spatial allocation for JDSF. The preferred approach to develop spatial harvest allocations on large productive forestlands uses a planning process that requires considerable scientific and analytical effort including growth and yield modeling, spatial harvesting modeling, wildlife modeling, and cumulative effects analyses. The teams necessary to develop these planning efforts include biometricians, forest analysts, wildlife biologists, watershed scientists, operational managers, and others. Developing a "world-class" landscape allocation for JDSF with the intent of improving management practices in the redwood region should be consistent with this approach. A review of approaches used by other research forests, and other cooperatives would benefit this effort. Our Recommendation 5 should address this issue.

An approach for implementing a Research-Oriented Landscape Allocation is described in Section X.

A Research Agenda

A Strategic Research Plan requires that priorities are clearly assigned so that resources can be identified and integrated into the management plan and overall management infrastructure. The Research Agenda is an effort to compile the relevant issues and priorities for each Center of Excellence, in a manner that is supported by stakeholders, updated regularly, and accurately reflects knowledge gained (both within and external to JDSF research).

A Research Agenda works collaboratively with stakeholders and scientists to develop the programmatic focus for each Center of Excellence, including the key science questions/issues, monitoring needs, synthesis opportunities, methods of study, funding requirements, desired outcomes, etc.

A Regional Context & Perspective

A landscape-based, cooperative approach to developing the Research and Demonstration Program increases the relevance of JDSF to many stakeholders. Also, the ability to influence management at regional scales is greatly improved by collaborating with other landowners throughout the Redwood region. An extensive evaluation of existing land bases, silvicultural systems, management systems,

and information needs will inform this regional context, and will support allocation, landscape planning, and a more cooperative approach to research.

While considering this Regional context, a Research-Oriented Management Framework should also consider how to **Leverage JDSF's Unique Qualities** – both in terms of what is special to JDSF as well as what is common to other lands. Studies are possible virtually anywhere, opportunities for active manipulation on other lands are often incidental to and supportive of achieving economic goals. One of the unique qualities of JDSF is its capacity for Research and Demonstration that allow for manipulations that foster the goal of learning and teaching about forest management as opposed to a focus primarily on revenue generation. JDSF supports independent and / or geographically distinct areas for replicates of land management and associated studies. Other lands may be more tightly bound by Habitat Conservation Plans or conservation easement constraints, and have less stability of ownership and purpose. By providing a contrast to these land-bases, JDSF can expand the range and depth of experimental study designs that may yield new innovations in forest management. Also, focus on common features will encourage more interest by other landowners and will expand the influence of JDSF. Recommendations 5, 6 and 7 can be used to provide such a regional context and perspective.

Other Core Framework Elements

Recommendation #4: Integrate all management treatments and methodologies within JDSF with the over-arching principles of hypotheses testing, monitoring, adaptive management, and demonstration.

Other core concepts that should be explicitly integrated into this Research-Oriented Management Framework include:

- **An Experimental Basis For Management** - is a management philosophy that views every significant management activity as an opportunity for research, experimentation, and/or monitoring activities that can inform management practices and/or policies. It is a philosophy in which the perpetual quest for resolving core management issues drives the management orientation of the forest. An Experimental Basis is driven by testing as many hypotheses as practicable, within a range of scientific rigor appropriate to the issue. An Experimental-Basis for Management improves the ability to predict responses to management activities by encouraging hypothesis testing at every opportunity, and providing the infrastructure to engage the resources to provide conclusive resolution to these hypotheses. An Experimental Basis supports repetitions of treatments and analysis over time can help minimize spurious results derived from short-term variability (e.g., climatic), and will be critical in long-term understanding of forest ecology/management in the face of novel environments (e.g., global climate change, new pests/pathogens, etc.). That is, long-term studies can circumvent problems with the more standard practice of substituting space for time.

- **A Comprehensive Monitoring Strategy** – that outlines necessary monitoring approaches, protocols, staffing needs, access, etc., and is tightly coupled with Centers of Excellence, the Research Agendas, Landscape Management Planning, the Adaptive Management Framework, and the Demonstration program. The Monitoring Strategy should extend beyond timber stand

measurements to include other important ecological and scientific data related to wildlife, water resources, air quality, carbon, etc.

- **An Adaptive Management Strategy** – that identifies performance measures, resource objectives, study designs, key questions, and other elements that integrate and direct monitoring and research activities within the forest (and beyond). The Adaptive Management Strategy is an integral component of the overall Framework and should inform practices both on JDSF and throughout the Redwood Region

- **Demonstration Protocols** – that outline the types of appropriate demonstration projects and how information is compiled and distributed to stakeholders

The proposed Research-Oriented Management Framework should provide more than sufficient opportunities to generate substantial revenues while meeting all the other goals of the forest (as described in both the Management Plan and these JAG recommendations). Additional Core Elements are described in greater detail within the Appendix.

Recommended Implementation Approach

We recommend that the Board consider implementing this proposed Research-Oriented Management Framework by:

- A **Research Planning Team** that will develop strategies for aligning the Centers of Excellence with the Landscape Allocation and Research Agenda

- A **Redwood Research Group** that would be responsible for developing the Centers of Excellence and overall research, monitoring, demonstration, adaptive management and outreach programs

- A **Regional Research Consortium** that promotes collaboration and outreach among all stakeholders, and

- Developing an **Administration and Governance** structure that fits within the existing resources of CALFIRE and the Board of Forestry

Research Planning Team

Recommendation #5: Convene and support a Research Planning Team responsible for developing a working Strategic Research Plan.

A Research Planning Team should be compiled to provide important technical review, analysis and recommendations that will help JDSF develop a Strategic Research Plan that will guide the transition toward a Research-Oriented Management Framework. This team would have a limited scope, and would be expected to produce its deliverables within 4-9 months. The Team (working in coordination with the Board's Research and Science Committee, JDSF Staff, CALFIRE, and other stakeholders) would be responsible for several tasks, including:

- **Synthesizing information for the existing landscape** – using existing studies and data to begin to develop simplified (cartoon) conceptual models that could be used (over time) to build toward more quantitative models using to test what we think we know and don't know about the key relationships in each Center of Excellence, and how the forested landscape (both within and beyond JDSF) can be used to leverage our collective understanding

- **Providing comments on the identified Centers of Excellence** – including a more complete description of the mission for each Center of Excellence, how it will look like on the landscape; what the key research questions would be for each center; and the associated research activities.

- **Formulating testable working hypotheses** (including peer-review from cooperators) that could form the basis for a research program, including limiting factors models, desired future condition trajectories, experimental approaches etc.

- **Identify Allocation Classes** that represent management / allocation units within the forest that generate and/or maintain the desired stand conditions. The Planning Team should identify the size and distribution of units and how the units are arranged to support enquiry with focus on the Centers of Excellence

- **Developing a Research-Oriented Landscape Allocation** –building on the approaches described within the Management Plan and JAG Recommendations, and providing rationale for deviations from these approaches, the Team should provide maps and/or criteria for allocating stands into management units that would support the Centers of Excellence and other goals for the forest (as described in the Management Plan).

- **Informing and prioritizing key research questions for the Research Agenda within each Center of Excellence** – by providing recommendations down to the level of working hypotheses based on the key questions within each COE and provide guidance on the research agenda. In addition, identify the scientific gaps.

- **Comment on the financial requirements for implementing the research program** – including any influences on timber harvest, and estimated costs for research recommendations

Given the detailed technical rigor necessary for these tasks, this team will need to be sourced by professional staff, consultants and academics who can be paid for their efforts. A voluntary team will not be able to provide the amount of time and attention to detail necessary to complete these critical tasks. The Team's work should also be subject to appropriate review.

The envisioned Research Planning Team would integrate across existing conditions using scientifically based methods (e.g. Watershed Analysis & Landscape Ecology), stakeholder needs, a Redwood Region context, and the Centers of Excellence. The outcome will be a Strategic Research Plan that better supports the research associated with Centers of Excellence, and will have a broad base of support by stakeholders. We also expect the Research Planning Team to operate within specific sidebars so as to build on the work done to date and ensure that the goals of the Management Plan and JAG's Landscape Recommendations are recognized. Such sidebars and other considerations for a scope of work are discussed in Appendix X.

More detailed description of these tasks, including Principles for a Research-Oriented Landscape Allocation, a scope of work, necessary resource requirements, etc are provided in Appendix X.

Redwood Research Group

The effective implementation of the Research-Oriented Management Framework and the overall Research Program should be led by an organization whose mission is to establish and maintain the Centers of Excellence through research, coordinated monitoring, advocacy, education, outreach, and policy advisement.

We recommend that research, demonstration, and monitoring programs at JDSF should be managed, administered and staffed by a broadly-based research organization that is affiliated with, but semi-independent from, CALFIRE and JDSF operations. This will enable JDSF Management to focus on the day-to-day management and operations on the Forest, while developing the organizational infrastructure to support the Centers of Excellence and other research tasks.

The organization should consist of professional staff of interdisciplinary scientists dedicated solely to a research and/or monitoring mission (e.g. not directly associated with JDSF operations). It could be led by senior scientist(s) and/or Executive Director team, and it would substantially benefit by seeking funds beyond JDSF revenue sources (e.g. research grants, foundations, partnerships, etc). The organization should seek to coordinate research activities beyond JDSF properties where it serves a Center of Excellence, and it should provide extensive outreach and educational roles to all stakeholders (including academic scientists). It should collaborate closely with academic researchers, but as an applied research organization, may benefit by being outside of an academic institution.

The roles of the Redwood Research Group could include:

- **Acting as Scientific Stewards for each Center of Excellence** – by developing internal staff and external research partners who can integrate expertise, develop models, and otherwise coordinate the "brain-trust" that will facilitate the development of each Center
- **Staffing all Field Monitoring and Data Management Activities** – for JDSF lands, by providing the technical staff capable of collecting core monitoring data, developing standard protocols, maintaining data inventories, developing quantitative models, and other research-oriented tasks
- **Acting as a Facilitating Agency** – to ensure relevance to the broader forestry community by coordinating and funding research activities throughout the redwood region
- **Acting as Staff for Regional Cooperatives** – to help facilitate greater coordination of scientific and analytical tasks among landowners, agencies, and others
- **Administering Research on JDSF** – including grants to outside research organizations (e.g. consultants, academics, etc), development of requests for proposals, acceptance of projects, review of requests for research and demonstration, etc.
- **Leading Outreach Efforts** – which could include both educational and fund-raising functions that seek to build a broad base of support and resources from multiple stakeholders and partners, including foundations, grant agencies, universities, etc

- **Leading Adaptive Management** – by acting as advocates for new practices and policies that are developed as a result of JDSF research, the Research Group could help the dissemination of new technologies, and working to advance those recommendations thru the appropriate administrative and/or collaborative bodies

This organization could exist in various forms (e.g. An independent 3rd-party entity, independent CALFIRE center, within JDSF, within a University Extension, as a multi-agency cooperative, etc). The advantages and disadvantages to these various structures are discussed in Appendix X.

We recognize that the implementation of the Redwood Research Group may take several years to occur. Thus several of the governance and administration functions may require additional oversight during the interim. To address this issue, the JAG has provided *Guidelines for Interim Research* (Appendix X).

Redwood Regional Research Consortium (Long-Term)

Formation of a Redwood Region Research Consortium is an integral part of implementing the Research Framework. It positions JDSF within an integrative entity that unites efforts across the Redwood landscape by acting as a Hub for collaborative research that includes private and public lands. As such, this Consortium would differentiate itself from similar cooperatives by primarily drawing its participants from scientists employed by agencies, consultants, landowners, research scientists and other applied forestry practitioners (as opposed to strictly research-oriented organizations). Within the Consortium, JDSF's role can be a resource that provides data, funds and logistical support as well as part of the land base for research. Similarly, Consortium members can provide support for advancing research implications through adaptive management and policy revision efforts. In addition, members can provide financial support through in-kind services and additional funding. JDSF's lead in forming and sustaining a Consortium also increases the relevance of JDSF to stakeholders. Finally, the ability to manage and conduct meaningful research at landscape-scales is greatly improved by collaborating with other landowners throughout the Redwood region. CALFIRE could look to Washington (e.g., Washington's TFW) and Oregon (H.J. Andrews Forest) for models of functioning Research Cooperatives that involve a broad group of stakeholders.

The consortium would differ from the Redwood Research Group in that the Consortium would exist as a collaborative group of stakeholders and partners, while the Group would consist of paid staff dedicated to implementing the Research-Oriented Management Framework.

Administration & Governance

The administration and governance of the Research-Oriented Management Framework could be developed in coordination with the Board's Research and Science Committee, as well as the groups described above. Additional JAG thoughts are discussed in Appendix X.

7. Mike L, 7/25/10: Appendices (to be developed)

NOTE: Language for much of this is available from multiple sources, but needs substantial efforts at editing. A very rough working draft is available.

- **General Principles**
- **Guidelines for Interim Research**
- **Expanded Discussion: Research-Oriented Management Framework**
- **Expanded Discussion: Centers of Excellence**
- **Expanded Discussion: Defining the Research Planning Team Scope & Sidebars**
- **Expanded Discussion: Additional Core Elements**
- **Expanded Discussion: Redwood Research Group**

Appendix: Expanded Discussion: Defining the Research Planning Team Scope & Sidebars

The following simply compiles various text and language from several documents, and needs to be integrated, edited, and compiled into a coherent section. The coloring convention follows from the July 25th Draft Research Recommendations document.

From October 11 Approved JAG Document

We define Landscape Allocation as *the process for setting apart portions of the landscape for a particular purpose*. Thus, the primary purpose for a Research-Oriented Landscape Allocation is to:

- Support the 3 Mission-Oriented Research Priorities for JDSF, including:

  Sustainable Production Forestry
  - Watershed Science, Restoration & Aquatic Habitat Recovery
  - Redwood Ecosystem Ecology & Dynamics
- Provide substantial areas for the development & maintenance of older forest structures that will broaden the distribution of forest structures both within JDSF and across the region
- To provide an opportunity (venue) for sustaining viable research[4], demonstration & monitoring activities that promote the goals of the management plan. These goals include:
  - Ecosystem Restoration
  - A Sustained Yield Of Timber Products
  - Recreation Opportunities

Principles for Landscape Allocation

- The landscape must provide a diverse range of forest structural conditions to support the scientific mission of the forest, resulting in a wider representation of forest types along the full developmental continuum of redwood ecosystems.
- The basis for the landscape allocation will be structured around a spatial and temporal distribution for forest characteristics based on landscape ecology principles, including:
  - A dynamic distribution of forest conditions that vary over space and time (e.g. shifting mosaic), such that space may be used to substitute for time
    - A key characteristic of which will be an enhanced integration of older forest structures and conditions
  - A mapping of disturbance regimes that are likely to occur on the forest, based on existing (and projected) geomorphic and ecological conditions
- The focus of these landscape allocations will seek to ensure an appropriate balance for scientific inquiry associated with the 3 Mission-Oriented Priorities identified by JAG, namely:
  - Sustainable Production Forestry

[4] *NOTE: level of research planning may not need to be extensive, since CALFIRE is not a research organization.*

    - Watershed Science, Restoration & Aquatic Habitat Recovery
    - Redwood Ecosystem Ecology & Dynamics
- The landscape condition will support the needs of a well-developed, programmatic adaptive management program that clearly identifies resource objectives, performance measures, etc.
- The landscape allocation should reflect the diverse needs of key stakeholders, including researchers, landowners, conservation groups, regulator and resource management agencies, and policy-makers.
- The resource issues having the greatest potential to drive large-scale allocations should be given highest priority (e.g. watershed analysis, terrestrial habitats, restoration, sustained productivity).
- Studies at JDSF with major commitments of land should have regional relevance.
- The allocation must consider the economic requirements of the forest.

From the Science Workshop

Constructing the Hypothesis-Oriented approach to allocation should start by:

- Synthesize information for the existing landscape
- Begin by developing simplified (cartoon) conceptual models
- Use the conceptual models to begin constructing more quantitative models using existing inventories and data to test what we think we know and don't know about the key relationships in each Center of Excellence
- Start simply, and increase the level of sophistication as knowledge develops
- Note that many existing models can be found within the existing scientific literature (and other forest management experiences). The key for JDSF is to refine and integrate these tools so that the results are relevant. Look to Watershed Analysis and similar tools.
- For Watersheds: begin active restoration of coho as soon as possible (recovery is urgently needed!)
- Active restoration focused on wood placement, fish passage and other habitat improvements (e.g. reconnect floodplains, etc)
- Intensively monitor to document what works (and what doesn't)
- Apply experimental methods using testable hypotheses
- Develop limiting factors models
- Formulate and test various working hypotheses (including peer-review from cooperators)

- Define upland units on wildlife/ecosystems needs (watersheds probably not useful unit structure for uplands)
- Define riparian units using geomorphic reaches
- Begin to define a desired future condition trajectory for all stands (or management units). Every manipulations is based on testing hypotheses.

From Initial Draft Research Document[5]??

A Research-Oriented Landscape Allocation – JDSF should develop a science-based landscape management planning process that supports the Centers of Excellence and Research-Oriented Management Framework. This planning process would integrate an analysis of existing conditions using proven scientific methods with other key concepts and goals described in the Management Plan and JAG Recommendations. The characteristics of this process should consider:

A collaborative, interdisciplinary team of scientists and managers that will evaluate existing data, develop/refine analyses of existing conditions, developing working conceptual models for each Center of Excellence, evaluate regional land-base characteristics, coordinate with stakeholder interests, etc

An objective evaluation procedure, borrowing from and building upon existing methods in Watershed Analysis and Landscape Ecology, that describes exiting conditions and potential future (i.e. desired) conditions

Be informed by relevant models or empirical trends and the associated hypotheses for each Center of Excellence

Provide a description for a desired long-term landscape-scale condition for the forest and methods for achieving that vision

Input from May 24th Meeting (from meeting notes):

Sidebar – Parameter Input

The Research & Demonstration Committee wanted to get further clarification regarding the sidebars or parameters for the proposed Research Planning Team. Below is a quick review of the input regarding sidebars from May 24th and the new input from June 26th:

JAG agreed to:

1. Centers of Excellence
2. Establishment of a Research Planning Team that would undertake a 3-6 month effort
3. JAG input/guidelines are given to the Research Planning Team
4. The threshold for doing something outside the matrix base silviculture guidelines are:
   - There is a research program in place
   - The project has an accompanying work plan

[5] This may have come from another document (its original source link has been misplaced).

- The project is driven by the Center of Excellence rather than being ad hoc, answering specific research questions
- If there is a major departure from the matrix prescription, there is a reasonable expectation that the research work requiring the departure silvicultural treatment will occur
- Linda Perkins said that she wants sideboards on research so that we do not do research projects that result in stand conditions that we don't like. It is not pure science.; must come back to values.
- Mr. Jani said that he would want to see specific information on research projects before they depart from sidebar
- Ms Bailey stated that she would feel better if the first project proposed under a Center of Excellence was not a departure from the matrix prescription
- Ms. Perkins said that she wants more direction regarding how the Research Planning Team reports back to JAG and other bodies – then she can support the above points. She does not want to see a disconnect between pure science and the multiplicity of values that JAG represents.

<u>June 26, 2010 Input from Meeting Notes</u>

1. Look at the forest as a whole and look at any research opportunities that may be lost due to the current Centers of Excellence and land allocations.
2. Design experiments that minimize the negative impacts with the range of scientific validity.
3. Operate within the current mission and goals of the forest as proposed by JAG
4. Consider the regional context and partners when designing the research agenda
5. Consider the sidebars identified during the May 24th meeting:

JAG Feedback

Research Planning Team Scope:

It may already be implied – but it would be useful to have a financing plan (sustained yield of timber products). Demonstrate how the research program and the recommendations from the Research Planning Team will live within an approved budget for the forest. JAG needs to make an explicit statement regarding the need for the Board of Forestry to provide and allocation – i.e. 25 million board feet/year

Include a statement that the scope of research projects will be as small and limited as possible for the COE and focused on the highest priorities.

Include a more robust or complete description of what each Center of Excellence will look like on the landscape; what the key research questions would be for each center; and the associated research activities.

We would like the Research Planning Team to confirm and comment on the identified Centers of Excellence. Whether these are the best and most appropriate centers of research focus.

Describe how the management recommendations will move forward across the forest through the 3 Centers of Excellence. The purpose of the forest is not purely research

Provide recommendations down to the level of working hypotheses based on the key questions within each COE and provide guidance on the research agenda. In addition, identify the scientific gaps.

Provide a sequenced and timed set of research priorities along with a process for periodic research reflections and re-evaluations.

Provide concepts, guidelines and a process for making allocation decisions. Identify the logic flow of how they came to their decisions and recommendations.

Leftover Silvicultural Guidelines and Landscape Allocation language [from may 24th draft]

Until such time as a research-oriented framework is completed, we recommend proceeding with approved JAG recommendations (See Appendix Y) for Matrix Silviculture as an interim management system for Matrix lands that will also, in part, generate the revenues needed to help fund the Research and Demonstration Program.

Use of silvicultural methods outside of the Matrix silvicultural guidelines can occur when required by the research program. Otherwise, prior to development of the long-term integrated research plan, the Guidelines for Interim Research will be followed.

After development of the research plan linked to the Centers of Excellence and associated landscape allocations, harvests justified by research will be implemented only when there is reasonable confidence that the research will be carried out. Steps that can demonstrate this level of confidence include:

- A research project-level work plan that is approved by a standing research committee.
- Develop and allocate the professional and financial resources needed to implement the research plan and associated work plan over the specified term.
- A statement of goals and expected progress in associated Centers of Excellence.

We recognize that a diversity of forest and stand conditions maintained and created over time is a common feature of research and demonstration forests and that such conditions are best created as a result of a well-organized, well supported, and focused research program as described above.. Additionally, we recognize that seral stages can have several structural concitions within them, and that for some management research needs, seral classes alone will not provide the range of conditions required for high quality research. For example:

- For riparian issues, there should be a range from open to closed canopies, as well as high-riparian mortality to low-riparian mortality, etc.
- For ecosystem functions (e.g. sediment transport], a key variable may be the frequency of entry (from fairly frequent entries to very long entries)
- Particularly important for some bird species, the habitat conditions (value) may be driven to interactions between overstory and understory density – forest conditions that may be related to different processes at various points during of succession.
- Similarly, for some wildlife, vertical as well as horizontal diversity may be important – i.e., scale and juxtaposition may override simple, within stand habitat condition.

Thus, we favor a short-term constraint [on what?] that defines stand structure by seral class definitions. We recommend that JDSF staff should utilize measures (and practices) that ensure sufficient diversity for a wide range of research continuums both among stands and at a sub-stand scale. We also recognize that a science-based landscape planning process would substantially help to inform this issue. The JAG has proposed a flexible uneven-aged management prescription for the matrix acres (i.e. those outside OFSDZs, LSD zones…) that will provide a limited range of diversity of forest conditions and learning environments.

We see the "natural forestry" concept as a desirable working hypothesis that could be developed and tested within the Center for Sustainable Forest Management Practices. If chosen for testing, then its land allocation requirements should be determined in a similar manner to determining requirements of other research hypotheses.

8. Brad, 8/12/10: Hardwood Dominated Stand Retention

Hardwood Dominated Stand Retention

For Consideration by Jackson Advisory Group (JAG)

Brad Valentine

At Landscape Committee and full JAG meetings, the value of and need for retaining the hardwood-dominated early/mid-seral stands has been raised several times. Such a recommendation from JAG would accomplish important goals for a Demonstration State Forest Management Plan: that is, it would explicitly provide for this distinct seral stage / habitat. Important non-exclusive goals supported by this action include:

- ecological -- allow for both biotic and abiotic natural successional processes to lead to coniferous forest seral conditions;
- wildlife -- provide for hardwood and hardwood stand associated species;
- research -- provide examples of this stage in the forest's successional trajectory for research purposes, including use as 'controls' for evaluating costs and benefits of nearby rehab efforts;
- educational -- exemplify a segment of the forests response to severe disturbance; and
- recreational -- provide mushroom diversity and mushrooming opportunities.

I was tasked by the Landscape Committee to recommend hardwood stands for retention. Initially, I suggested two options:

- Process-based approach -- an RPF would evaluate the forests in and near a THP in development for areas that would meet criteria for hardwood dominance and area. If any stand(s) met the criteria, the RPF would evaluate it should be identified and retained based primarily on relative amount in the portion of the forest.
- Fixed (pre-set) approach -- Use information available; identify specific existing stands that are candidates for retention.

Response was to pursue the fixed approach.

To designate stands using a fixed approach, I used the Map Figure 7 from the Management Plan (assuming it is accurate) and followed these guidelines:

- for research opportunities (replicates, east-west gradient), distribute across the forest with 3 stands identified in each of the east-west 1/3 segments of the JDSF;
- minimize area influence of size and shape - relatively large and circular to attain "internal" conditions and minimize edge effects (initial minimum size calculation is 25 acres); and
- range of stands' tree size-age - I tried for some diversity, but there are few in size classes less than 4 that meet guidelines a & b.

I have not visited each site, so do not know the accuracy of the map relative to either the dominance of hardwoods or the tree sizes. See attached map (Fig. 1) for my initial suggestions for stands to be maintained as hardwood stands on JDSF. These stands range in size from 17 to 106 acres, and are all classified as Mixed Hardwood Conifer (Table 1)

Management guidelines for these would be to conduct no timber operations or conduct hardwood control in them until after conifer basal area exceeds 2/3 of the stands total basal area. An option for retention would be to allow conifer harvest that does not decrease the Hardwood:Conifer ratio. That could be consistent with wildlife and recreational goals, but would be inconsistent with the others.

Table 1. Characteristics of hardwood stands identified for retention (data provided by Lynn Webb).

T0 Map Label	Acres	JDSF Type details	Description
W1	17	MHC4D	Scattered conifers over RW, fir and tanoak mix
W2	30	MHC4M	Moderate conifer mix over tanoak and DF
W3	87	MCH3D	Scattered conifers over Tanoak and RW mix
C1	40	MCH6D	Scattered conifers over Tanoak and RW mix
C2	92	MCH3D	Scattered conifers over Tanoak and Madrone
C3	85	MCH4D	Tanoak and DF mix
E1	70	MCH4M	Scattered conifers over Tanoak and RW mix
E2	50	MCH4D	Dense tanoak and DF mix
E3	106	MHC4	Scattered conifers over Tanoak and DF mix
sum	*578*		

As an aside, Lynn Webb indicated that JDSF typed Montane Hardwood WHR on the forest conservatively with about 4% of the forest. Fine scale tanoak areas would have been incorporated in larger conifer blocks. The inventory plot data shows 1.7 % of the plots fell in areas

that measured hardwoods but no conifers, and about 12% of the plots had more hardwoods than conifers based on basal area. The modeling shows initial hardwood inventory across the forest at 52,530 (mcf); increasing to 66,053 (20%) for the Option A, and 81,649 (55%) for one of the Landscape Committee simulations out 50 years. I suspect that these estimates are Forest-wide, and do not reflect explicitly on providing for hardwood-dominated stands.

Also as an aside, the area and distribution of hardwood-dominated stands will likely decline without some even-aged management coupled with fire and minimal hardwood control efforts.

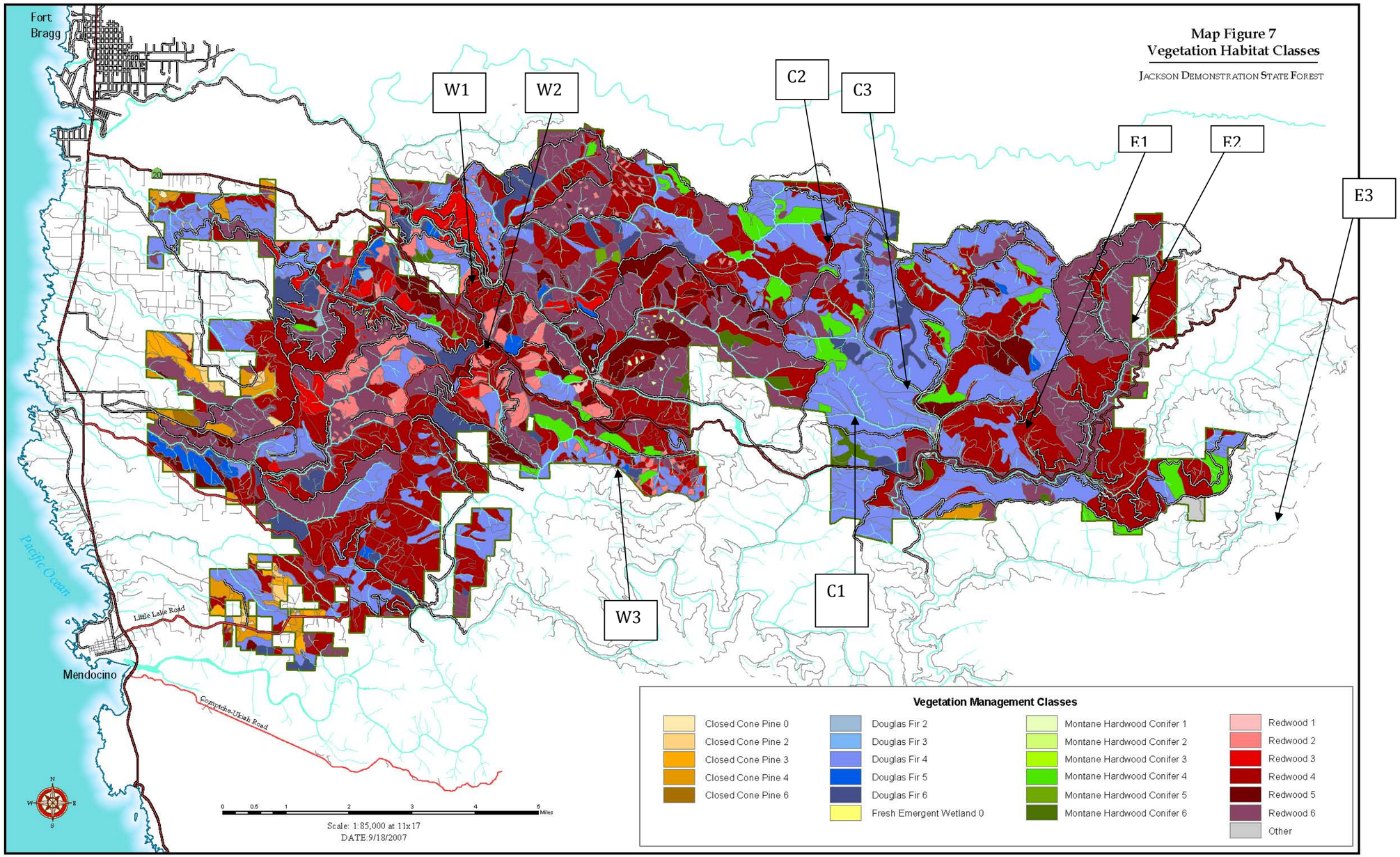

Fig. 1. Stands identified for hardwood-dominance retention, 3 each in eastern, central, and western Jackson Demonstration State Forest.