Analysis of Effects of JAG Recommendations on Future Potential Harvests in JDSF

Summary

The JAG has recommended a number of changes in the acreages to be managed under different silvicultures and also in the acreage in reserves. The changes can be divided into two broad categories, 1) changes in the Older Forest Structure Zone and Reserves, and 2) changes in management of the remaining acreage managed primarily for timber production (the Matrix). Each of these will be considered.

Table 1 summarizes the acreages and estimated production effects that are derived in detail in following sections. The estimates were based on the potential harvests for different silvicultural options contained in the 2008 JDSF Option A[1], Adjustments were made where appropriate to normalize the initial inventories per acre in different silvicultural categories.

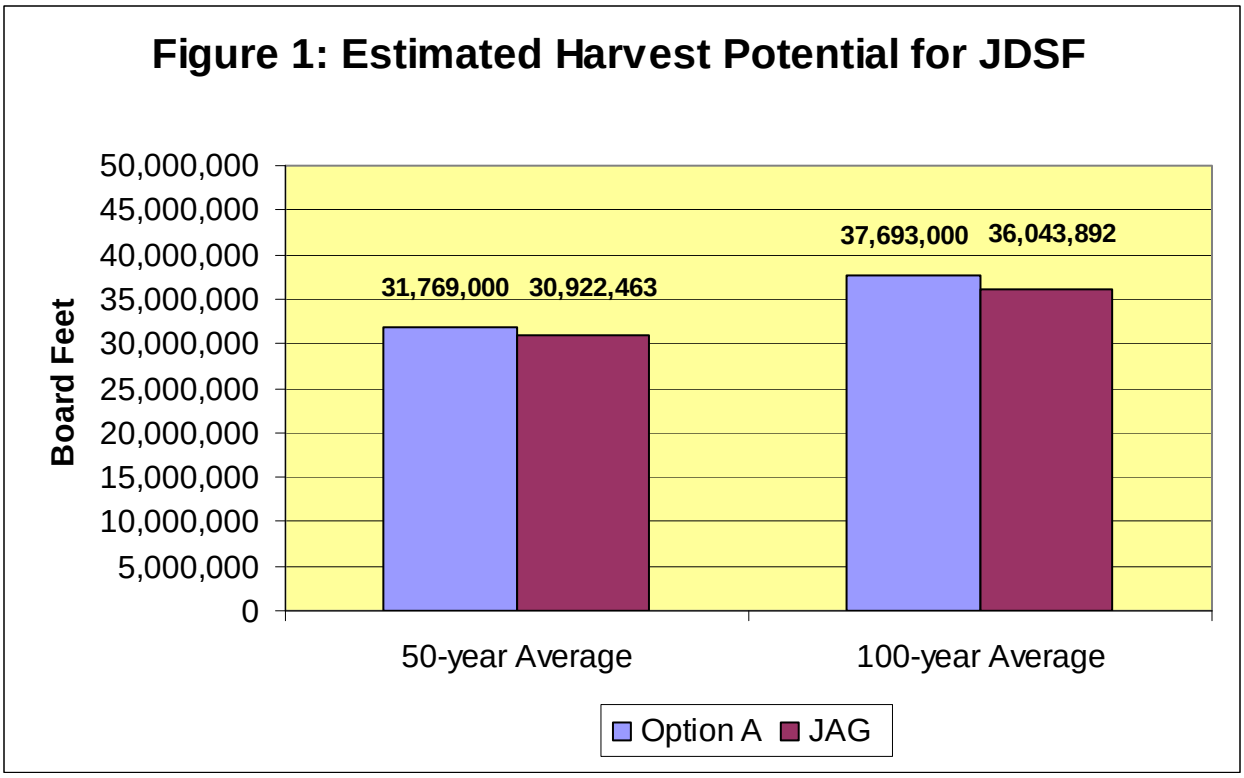
Table 1: Option A-Based Estimate of the Effects on Future Harvest Potential of Changes Initiated by JAG

		Changes in Potential Annual Harvest (board feet)	
	Acres	40-year Average	100-year Average
Added LSDAs (1)	215	-64,700	-50,700
Added OFDAs (2)	2,275	-323,000	-464,100
Added Reserves	1,942	-891,900	-969,500
Matrix Silviculture	23,000	+817,000	+250,000
Total Changes		**-462,600**	**-1,484,300**
2008 Option A Average Harvest		31,769,000	37,693,000
JAG Average Harvest		**31,306,400**	**36,208,700**

Notes:
(1) LSDA: Late Seral Development Area
(2) OFDA: Old Forest Development Area

The estimates in Table 1 include all allocation changes from the 2008 Management Plan, including those that were initiated in a negotiated settlement and later endorsed by the JAG. The harvest potential with JAG recommendations is smaller but relatively close to the JAG Option A projections for both the 40-year and 100-year periods.

[1] *Jackson Demonstration State Forest Plan for the Achievement of Maximum Sustained Production of High Quality Timber Products in Accordance with Title 14 CCR 913.11(a)*, April 2, 2008. Commonly referred to as "Option A for JDSF".



Allocation Changes from the Management Plan

Cal Fire has provided two, somewhat different but complementary estimates of changes in silvicultural allocations from those in the 2008 Management Plan (MP).

One, shown in Table 2, is based on a GIS analysis of changes in acreage amounts assigned to different allocation categories. This analysis takes into account multiple allocation categories that may occur within a given geographical area, the most important of which are the Class 1 and Class to WLPZ areas that are distributed across the landscape, but also include recreation corridors, neighborhood and campground buffers, etc. The WLPZ areas are important because all of them are managed for late seral development under the 2008 MP.

Table 2

JDSF 2008 MP	ACRES		After JAG and Other Allocation Changes	ACRES
OLD GROWTH GROVE	449.90		OLD GROWTH GROVE	446.73
RESERVE	0.00		RESERVE	1,731.93
LATE SERAL DEVELOPMENT	601.80		LATE SERAL DEVELOPMENT	1,543.17
MARBLED MURRELET	1,348.74		MARBLED MURRELET	1,348.74
OFSZ	4,636.82		OFDA	6,910.84
JUGHANDLE	246.50		JUGHANDLE	246.50
WLPZ	7,289.47		WLPZ	6,651.92
WOODLAND LATE SERAL	1,894.64		WOODLAND LATE SERAL	1,894.50
Sub-Total	16,467.86		***Sub-Total***	20,774.34
MATRIX	26,699.45		MATRIX	23,065.70
RESEARCH	2,372.50		RESEARCH	2,190.75
CAMPGROUND BUFFER	45.05		CAMPGROUND BUFFER	23.32
CONSERVATION CAMP	31.75		CONSERVATION CAMP	31.75
CYPRESS	164.42		CYPRESS	109.94
EUCALYPTUS AREA	266.07		EUCALYPTUS AREA	266.07
H2O SUPPLY	31.95		H2O SUPPLY	31.95
NEIGHBOR BUFFER	396.61		NEIGHBOR BUFFER	337.88
PARLIN FORK MGT AREA	220.41		PARLIN FORK MGT AREA	220.41
POW ROW	83.42		POW ROW	80.54
PYGMY	457.32		PYGMY	381.60
RT CORRIDOR	1,413.15		RT CORRIDOR	1,135.69
Total	48,649.94		***Total***	48,649.94
Source: Helge Eng, Cal Fire				
Date: 2010-11-01				

A second table, Table 3, was provided with the acreages of each specific geographical area whose silvicultural allocation has changed from the 2008 MP. In this table, the areas are assigned to a primary silvicultural allocation, without allowing for other allocation categories that may be included within the geographical areas.

Table 2

Map #	Area Designation	Acres Reserve	Acres LS	Acres OFD	JAG or Other Allocation
1	Highway 20 East			230	OFD
2	Dresser Grove		86		LS
3	None				
4	Road 1000		12		LS
5	West of Waterfall Grove		47		LS
6	South of Waterfall Grove			120	OFD
7	Indian Springs Fire Study (includes tanoak study area)	213			Reserve - Note 1
8	Bob's Woods Meadow	8			Reserve
9	N of NFSF Noyo LS			504	OFD
10	Volcano East thumb			177	OFD
11	Camp 6 Brandon headwaters			202	OFD
22	Volcano Brandon tributaries			386	OFD
12	Brandon Gulch THP		350		LS
	Brandon Gulch THP East		166		LS
13	Camp Three THP N		53		LS
	Camp Three THP E		160		LS
14	Camp Three THP Reserve	160			
17	Noyo to Big River Link			841	OFD
18	North Fork Caspar Controls	195			Reserve
19	Jughandle Pine/Cypress Extension	1156			Reserve
20	Tanoak Study Reserves	671			Reserve
	Totals	**2403**	**874**	**2460**	**5737**

Note 1: Indian Springs Resrve is tentative, to be reviewed by Research Planning Team
Note 2: An entry in the table, for Camp 3 Out of THP, was in error and has been omitted.
Source: Lynn Webb, JDSF
Date: 2010-11-19

Acreage totals of the allocation changes are shown at the bottom. The grand total of acreage changes is 5,737 acres, shown at the bottom right.

Looking only at the grand total, one could easily gain the impression that the changes initiated by the JAG imply major changes in the harvest potential of JDSF. As we shall see in the following, where the allocation changes are examined in more detail and their production implications are analyzed, the changes are far more modest than the aggregate acreage number may suggest.

Allocation Changes among Productive Categories

Allocations to reserves will be considered separately. First, we examine the acreage changes from the 2008 MP among actively managed silvicultural categories.

Figure 1 graphically shows the allocations in the 2008 MP and the changes made from that plan. These underlying values in the figure were taken from both Tables 2 and 3. The figures for the 2008 MP and changes in Matrix and OFDA acres were from Table 2. Those for Late Seral Development acres added were from Table 3.

What is immediately apparent in Figure 1 is the that the changes in the Late Seral Development Areas (LSDAs) and Older Forest Development Areas (OFDAs) – in red – are relatively small compared to the total acreage – all of the blue areas combined. The only substantial changes are the addition to the OFDA and the subtraction from the Matrix. These, of course, have offsetting effects on production that we will examine.

What is not apparent in the figure is the JAG recommendation that the Matrix acres be managed substantially differently than proposed in the 2008 MP. We will consider the harvest implications of this recommendation at a later point. We will first examine the changes in Late Seral and Older Forest allocations.

Late Seral Allocation Changes

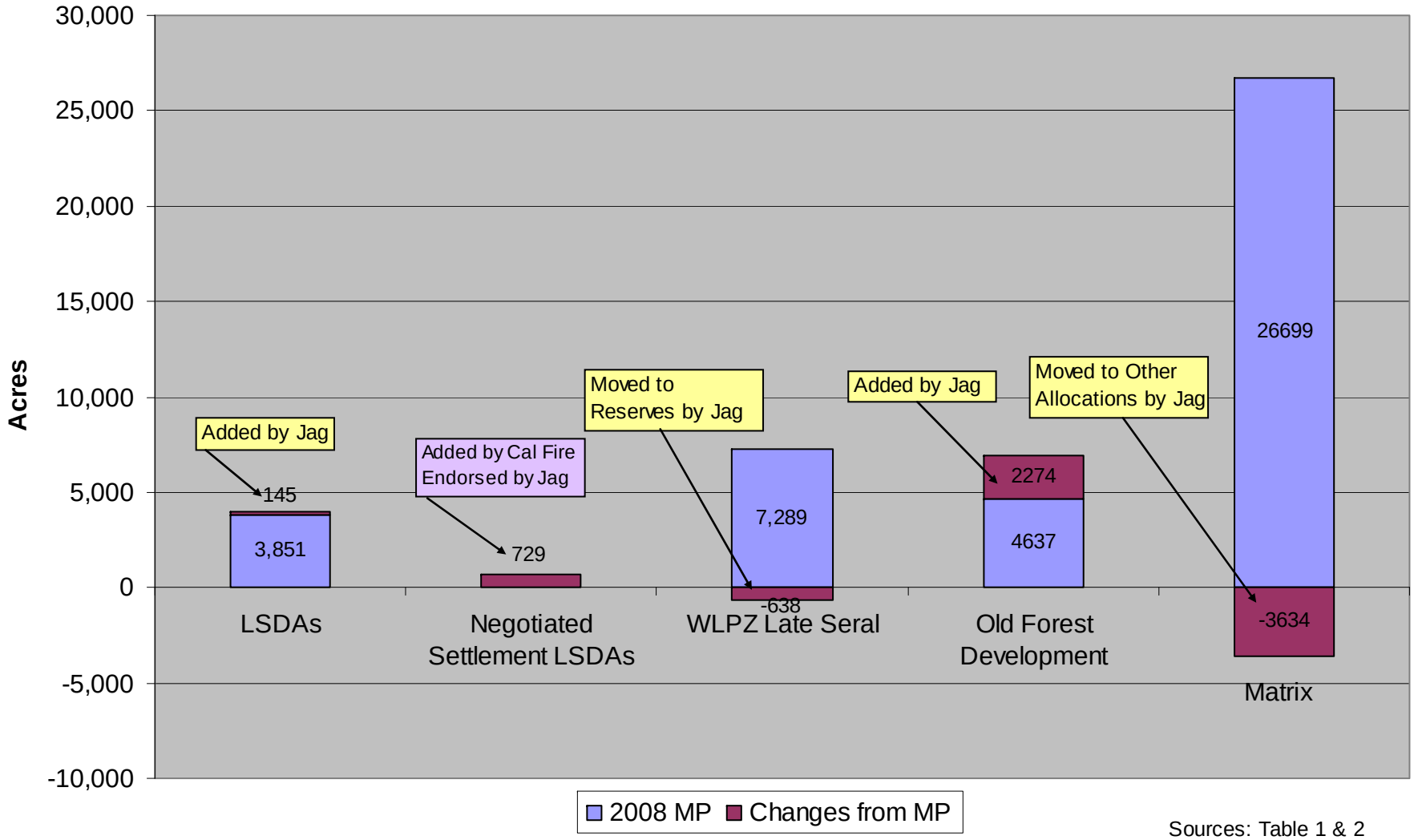
Some Changes Were from a Negotiated Settlement: An important observation is that not all changes from the 2008 MP were initiated by the JAG. Cal Fire entered into a negotiated settlement with parties previously involved in litigation and purchasers of enjoined THPs. This settlement occurred after the MP was approved but before the JAG was formed; thus the JAG had no role in the negotiated settlement.

The negotiated settlement changed the silviculture for the Camp 3 and Brandon Gulch THPs to Late Seral Development from their previous designations, and it assigned a portion of the Camp 3 THP to a no-harvest reserve.

Both of these THPs have been implemented and will not be re-entered for at least 20 years; thus their silvicultural designation will have no effect on potential harvests for at least the next twenty years.

The JAG was asked to review the designations for the allocations made in the negotiated settlement. It chose to accept the designations initiated by Cal Fire, but as it did not initiate these designations, it does not seem reasonable to assign the harvest impacts of these designations to the JAG.

Figure 1: Non-Reserve Allocation Changes from 2008 MP



Sources: Table 1 & 2

Additions to LSDAs: Only 145 acres were added by JAG to LSDAs. These were all to create small increases in late seral buffers around Old Growth Reserves existing in the 2008 MP. The changes were from OFDA to LSDA. An additional 729 acres were added to OFDA as a result of a negotiated settlement after approval of the 2008 Management Plan. These additional acres were comparable to other OFDA acres.

Table 4 presents an estimate of the effects on future production potential of the additions to LSDA. These estimates are based on Option A projected differences in harvest potential of OFDA and LSDA acres.

Table 4: Option A-Based Estimate of the Effects on Future Harvests of LSDA Acres Added after the 2008 Management Plan

LSDA Acres Added by JAG	Reduction in 50-year average annual harvest potential per acre	50-year annual average potential harvest loss (bf)	Reduction in 100-year average annual harvest potential per acre	Reduction in 100-year annual average potential harvest (bf)
215	**301**	**-64,691**	**236**	**-50,734**
LSDA Acres Added by Negotiated Settlement	Reduction in average annual harvest potential per acre: years 20-50	50-year annual average potential harvest loss (bf)(Note 2)	Reduction in 100-year average annual harvest potential per acre (Note 2)	Reduction in 100-year annual average potential harvest (bf) (Note 2)
729	**428**	**-187,207**	**274**	**-199,853**
Totals				
944		**-251,898**		**-250,587**

Notes: Estimates of loss in Harvest potential are from the 2008 JDSF Option A analysis. The loss is calculated as the difference between harvest potentials of OFSZ acres (renamed OFDA acres by JAG) and LSDA acres. This assumes all acres shifted to LSD were average OFSZ acres.

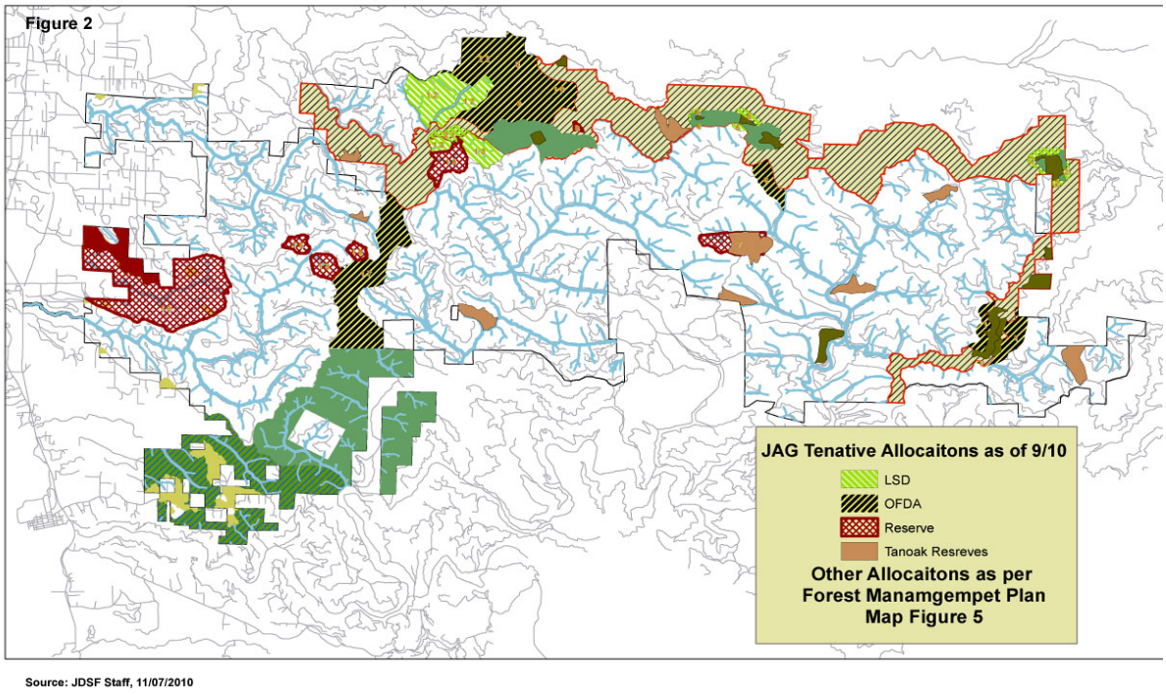
Changes in WLPZ Late Seral: WLPZ Late Seral (WLPZ LS) acreage is distributed across the forest. WLPZ acres within LSDAs are counted in the WLPZ LS Category; so moving less-constrained silviculture categories to LSDA acreage does not change the amount in the WLPZ LS category. On the other hand, WLPZs occurring within Reserves are not counted as WLPZ LS, because reserves are unmanaged.

Table 2 and Figure 1 show a decrease of 638 acres in WLPZ LS, which logically must be due solely to the additions to Reserves. We will review the additions to reserves and effects on future production later.

Changes in Older Forest Allocation

The JAG made significant additions to the area to be managed as Older Forest Development. The JAG increased the OFDA acreage of the 2008 MP (4637 acres) by 2274 acres (excluding the WLPZ LS acres). These additions were made entirely to create a functionally more effective Old Forest Structure Zone (OFSZ) across the forest. Significant additions were made in the north-central area of the forest and in a north-south corridor to connect two late seral areas (Figure 2).

The additions to OFDA amount to about 5% of the total area of JDSF. Harvests will continue within OFDAs, but the future harvest potential of the OFDAs may be lower than under an alternative silviculture..



Estimating Harvest Effects of Allocation Changes

Changing acreage silvicultural allocations from one category to another, e.g., from single-tree selection to late seral development, will generally affect future potential harvests.

The JAG has made changes in acreage allocation. We would like to know how these allocations affect potential future harvests. Unfortunately, this is not simple to know. The effects on harvest of an allocation change depend on many variables, including the initial inventory per acre, the length of time being considered, and many details of the alternative silvicultures involved, including the percentage of inventory harvested upon entry, how harvests are divided among different size classes, the criteria for making an entry, and the length of time between entries.

Using Option A: One approach to making estimates is to use the JDSF Option A[2] calculations of potential harvests per acre for different silvicultures for a chosen period, e.g. forty years. One can straightforwardly apply the difference in harvests/acre between two silvicultures to the acres involved to make an estimate of the associated change in total future harvests. But, in terms of policy analysis, using the Option-A estimates has a number off shortcomings:

- The initial inventories per acre for the silvicultures analyzed in Option A vary widely, from a low of 29 mbf/acre to a high of 48 mbf/acre. A higher initial inventory will, other things being equal, produce a higher estimate of future harvests.

  We have attempted to adjust for different initial inventories by adjusting the estimated future harvest in a given category by the ratio of the forest-wide average initial inventory to the initial inventory in the given category.

- Some silvicultures, such as even-age, can produce high harvests in a given period, but then will have following periods of low harvests. The results, thus, depend upon the period chosen.

- Inventory growth per acre differs significantly among the silvicultures analyzed. To the extent more forest growth goes into inventory rather than harvests, estimated future harvests will be lower. This is especially true for Late Seral management, where much of growth goes into inventories rather than harvests.

- The Cryptos model that underlies Option A has important shortcomings in emulating actual growth process associated with different silvicultures.

Using Expert Judgment: An alternative approach is to use "expert judgment." One can ask silvicultural experts their opinion of how much effect on future harvests and inventories they would expect from changing given acreage from one silviculture to another.

This approach has the advantage that experts can often take into account many factors that are not captured at all or well by the Cryptos model that underlies Option A calculations.

Disadvantages of expert judgment are that experts may have significantly differing estimates and it is likely to prove difficult to obtain any analytical justification for the estimates.

[2] *JDSF Option A*, op. cit.

In the case of OFDA, one could argue that the management recommended for OFDA by the JAG is quite similar to that recommended for Matrix acres. The main differences are a greater emphasis on growing older trees and allowing some trees to grow beyond harvestable size. Experts might be able to make a rough estimate of the effects of these differences on future harvest volume.

For a variety of reasons, we have not made an effort to obtain estimates based on expert judgment.

Approach Used: We will use Option A projections, adjusting its results for each silviculture to reflect differences in the initial inventories per acre.[3] This adjustment process helps to remove the effects of differing initial inventories on future harvest estimates.

JAG Additions to OFDA and Harvest Effects

Changes initiated by the JAG would add 2460 acres to OFDAs, including WLPZ acres. Excluding the WLPZ acres, which would be managed the same whether on not within an OFDA, the added acres equal 2,275.

Table 5 presents estimated effects of the added OFDA acres based on Option A projections.[4] It is assumed that the added OFDA acres are transferred from average "Matrix" acres (forest total excluding No-Harvest, OFDA and Late Seral acres).

Table 5: Option A-Based Estimate of the Effects on Future Harvests of OFDA Acres Added from 2008 MP (1)

	Annual Harvest per acre	
	50-year Average	100-year Average
OFDA	682	695
Option A "Matrix" Average	824	899
OFDA – Forest Average	-141	-204
Added OFDA Acres	2,274	2,274
Production Change from added OFDA acres (bf per year)	**-321,647**	**-463,636**

(1) The future harvests projected for a specific silvicultural category were multiplied by an "inventory adjustment factor" equal to the forest average inventory per acre divided by /the category initial inventory per acre. This compensates for differing initial inventories per acre in different categories.

[3] The future harvests projected for a specific silvicultural category were multiplied by an "inventory adjustment factor" equal to *the forest average inventory per acre divided by /the category initial inventory per acre.* For example, if the forest average inventory per acre is 20% greater than a specific category, the harvest projections in Option A for that category are multiplied by a factor of 1.2.

[4] The initial inventories of land assigned to OFDAs in the 2008 MP had relatively low inventories per acre. The inventory adjustment factor for OFDA was 1.38

In the next forty years, the Option-A analysis indicates that the added OFDA acres will result in the loss of about 323,000 bf per year. For the next 100 years, the loss would average about 464,000 bf per year.

According to the Option-A projection, potential harvests would average about 31 million bf/year; thus loss from added OFDA acres would amount to about one percent of potential production. For the 100-year period, the loss of production would be about 1.2% of projected average production of 38 million bf/year.

Higher Stumpage Values per board foot: Trees harvested from OFDAs will be of significantly larger diameter than average, because this is one of the objectives of this silviculture. Larger diameter trees have a significantly higher stumpage value per board foot; thus the net revenue return from the added OFDA acres could well be positive even though volume is lower.

Do Option A estimates seem reasonable?:

The Option A analysis projects that OFDA silviculture will have a production potential 17% lower than the Matrix average for the first 40 years, and 27% lower for the 100-year period. Given that OFDA silviculture is essentially selection silviculture aimed at growing and harvesting larger trees, it seems surprising that the harvest potential would be so much lower than the Matrix average, especially the 27% lower projected for the 100-year period[5].

Though the projected losses from the increase in OFDA acres seem acceptable, given the values of older forest for habitat and ecological restoration, details of the Option A analysis for OFDA raise doubts about whether it captures accurately the intent of OFDA silviculture as recommended by the JAG.

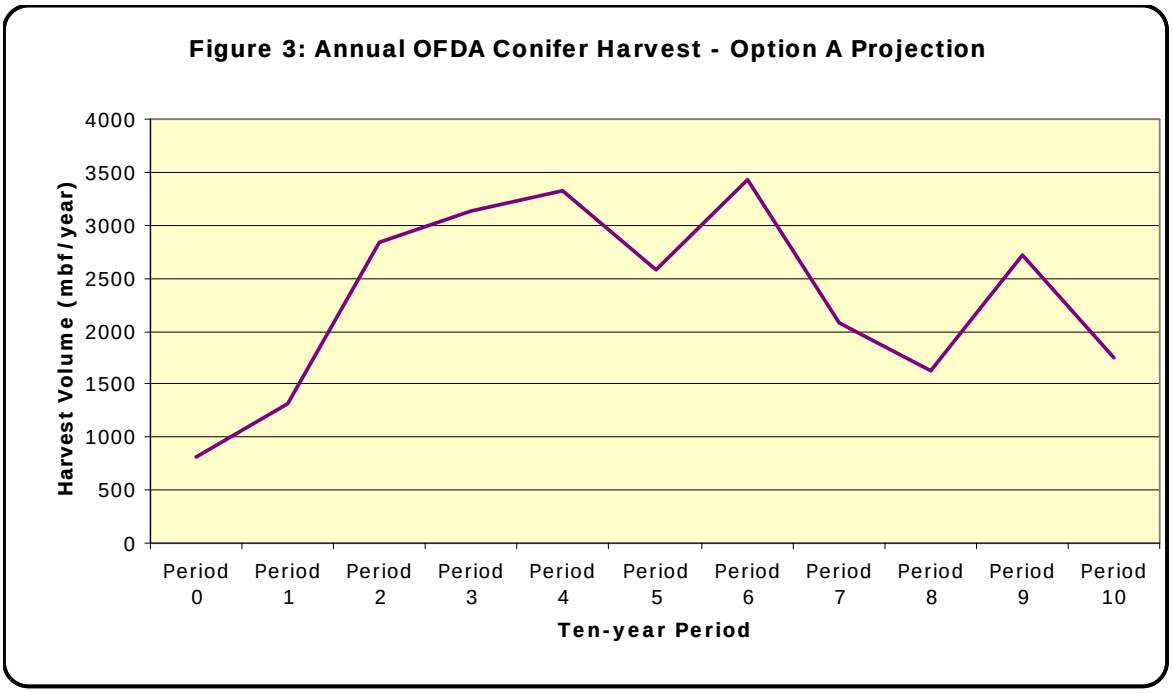
- The Option A parameters for OFDA seem less oriented toward increasing average tree size and stocking than those for regular single-tree selection. This is contrary to the intent of OFDA as defined by the JAG
    - For OFDA, entry precondition is 150 sq ft of Basal Area with retention after harvest of 110 ft^2 per acre. For Single-Tree/Cluster selection, entry precondition is 200 ft^2 of Basal Area and retention after harvest is 150 ft^2 per acre. Thus, in Option A, OFDAs are harvested at lower stocking levels and to lower Basal Area retention levels.
    - For OFDA the diminution quotient (q) is 1.1 for 5" diameter classes. For Single-Tree/Cluster selection, q is 1.25 for 2" diameter classes.

      q is the ratio of trees in adjacent diameter classes. A smaller value of q and larger diameter classes result in relatively few large trees; thus the parameters used in Option A for OFDA imply managing for relatively few large trees in the stand.
- The JAG envisions that OFDAs will be managed so that harvest volumes increase initially and eventually stabilize. As Figure 3 shows, Option A projects an initial increase in OFDA volumes but then a decrease. Is this reasonable?

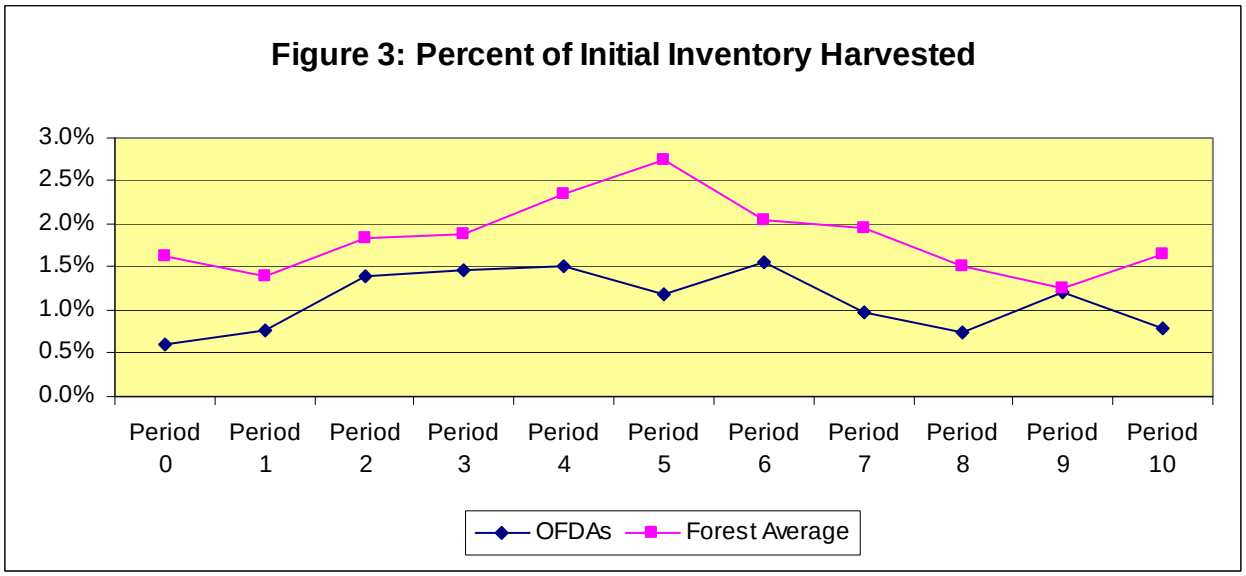
  The projected decline in OFDA production after year 60 explains why the

[5] In the Option A, selection silviculture harvest potential is projected to be about equal to the forest average for both 40 and 100-year periods.

projected harvest loss from adding OFDA acres is larger for the 100-year period than for the 40-year period (Table 5).



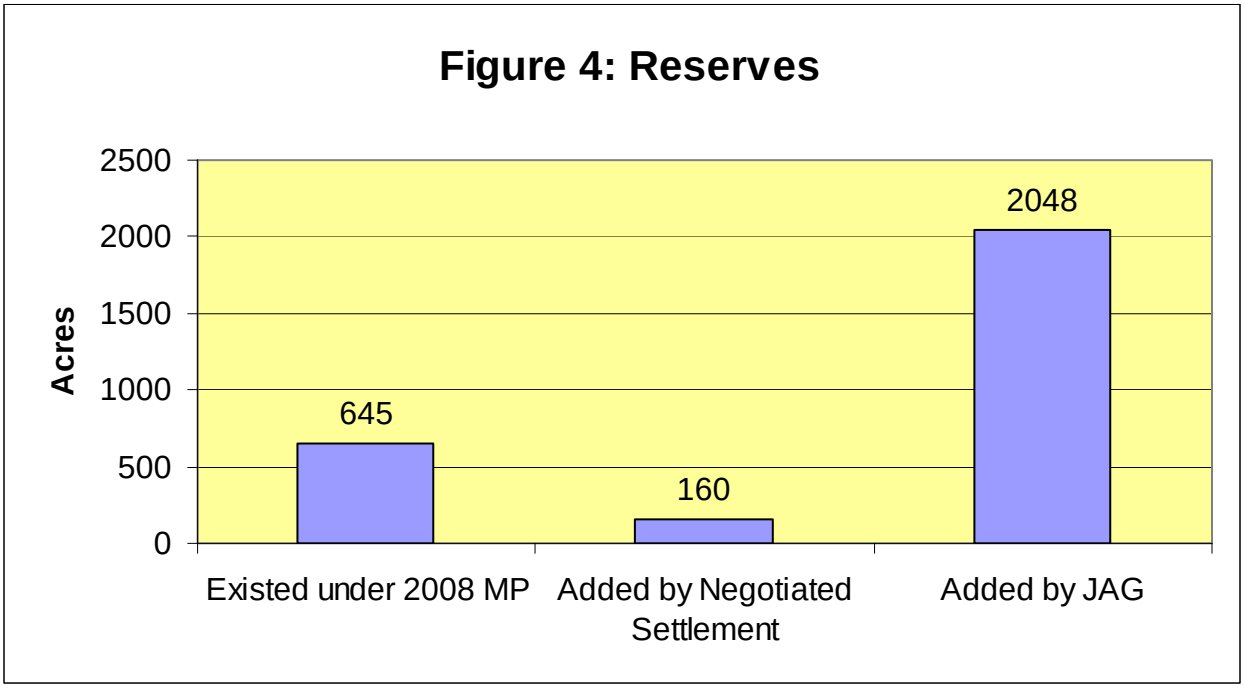
A second feature of the Option A projection seems open to question. Option A projects a significantly lower percent of inventories harvested in OFDAs than the forest-wide average (Figure 3). Is this reasonable?



The questions raised about the Option A projections for OFDAs suggest that they may poorly reflect the intended silviculture for OFDA and may underestimate the future harvest potential of OFDAs.

Changes in Reserves

Reserves existing under the 2008 Management Plan and those added since are summarized in Figure 4.



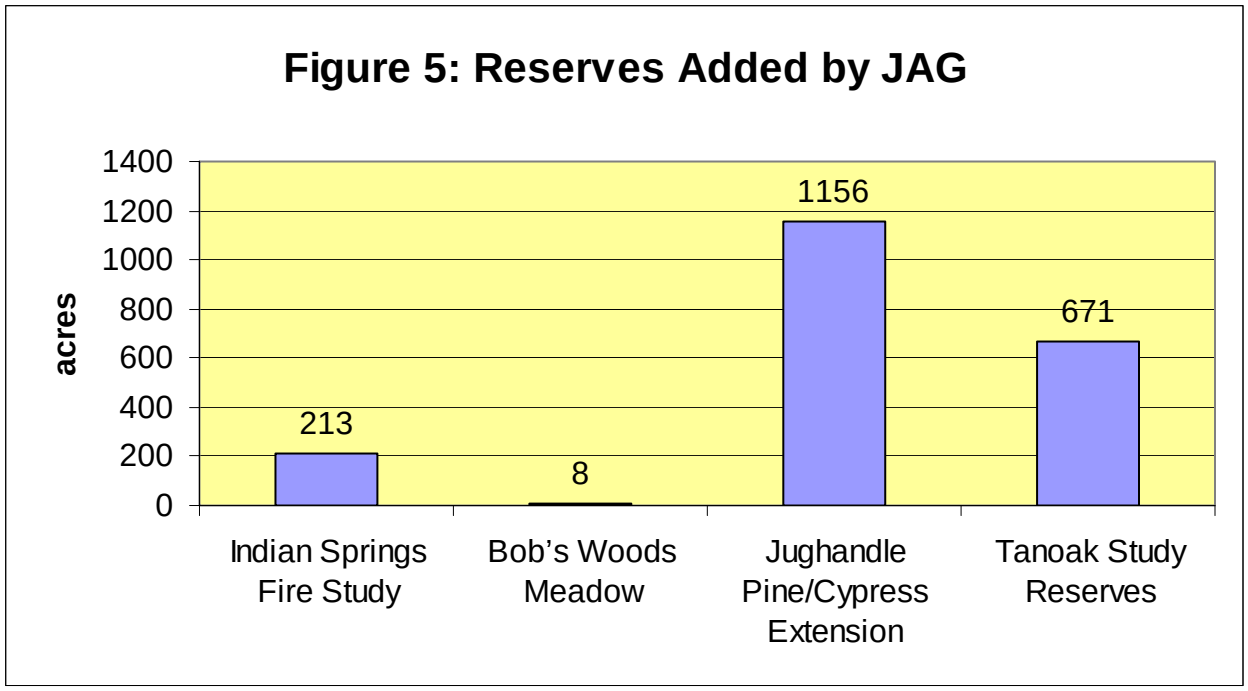
The 645 acres that are noted in Figure 4 as “Existed under 2008 MP” consist of 450 acres of Old Growth Reserves, plus 195 acres of research control reserves in the Caspar Creek Research Area.

JAG has added a substantial amount of acreage to Reserves. One observation is that even with all of the additions, the amount in reserves is about 2,800 acres. Arguably, this is a relatively small amount of reserves for a public forest of almost 50,000 acres.

Old Growth Reserves are about 450 acres. About one-half of Reserves are associated with research and studies (Caspar Creek Research Controls: 195 acres; Tanoak Study Reserves: 671 acres; Indian Springs Fire Study Reserve: 107 acres not in Tanoak Study Reserve).

The one reserve in a prime older forest area is also in the premier recreation area of the forest, adjacent to Camp One. This was added by Cal Fire in the negotiated settlement with parties in litigation.

.The Reserves added by JAG are shown in Figure 5.



Harvest Effects of JAG Additions to Reserves

Table 6 summarizes the estimated production potential of the areas added to Reserves since the 2008 Management Plan.

Table 6: Option A-Based Estimates of the Loss in Future Harvests from Additions to Reserves after the 2008 Management Plan

Reserves Added by JAG	Acres	Notes	50-year average annual harvest potential per acre	Reserves 50-year annual average potential harvest (bf)	100-year average annual harvest potential per acre	Reserves 100-year annual average potential harvest (bf)
Indian Springs Fire Study	107	1	824	88,129	899	96,167
(includes 106 acres of tanoak study area)						
Bob's Woods Meadow	8		0			
Jughandle Pine/Cypress Extension	1,156					
Redwood Douglas Fir Acres	*792*	2	824	652,186	899	711,668
WLPZ Acres	*108*	3	381	41,084	381	41,084
Tanoak Study Reserves	671	4	165	110,532	180	120,613
Total Acres and Harvest Loss from JAG Reserve Additions	1,942			**-891,931**		**-969,533**
Reserves Added by Negotiated Settlement						
Camp 3 Control/Reserve	160	5	1,235	197,673	1,348	215,702
Acres and Harvest Loss from Negotiated Settlement Reserve Addition	160			**-197,673**		**-215,702**
Total Acres and Harvest Loss from All Reserve Additions	**2,102**			**-1,089,604**		**-1,185,234**
Notes:						
1. Average Option A Matrix productivity.						
2. Average Option A Matrix productivity.						
3. WLPZ acres; average Option A Late Seral (includes WLPZ) productivity.						
4. Tanoak dominated stands; use 20% of Option A Matrix prouctivity.						

Effects of Recommended Matrix Silviculture on Future Potential Harvests

The JAG has termed the "Matrix" all land not in the Older Forest Structure Zone, Reserves, Special Concern Areas, or managed for an approved R&D project. The Matrix land will be the primary source of timber revenue for JDSF.

The JAG has recommended that the Matrix be managed using Matrix Silviculture, which is essentially light-touch single-tree selection (typically 30-35% basal area removal), with an emphasis on growing and harvesting larger trees (over 30" in diameter).

Applying Matrix Silviculture to the entire Matrix is a significant change from the planning that underlay the 2008 Management Plan. The 2008 MP does not specifically designate acres for even-age management, but the sustainable harvest projections in the 2008 JDSF Option A specify about 10,000 acres to have various forms of even-age management. Under JAG recommendations, no even-age management will occur in the Matrix except for approved research projects. The expectation is that such even-age research would involve relatively few acres.

It has proven difficult to adopt the JDSF Cryptos modeling to estimate the effects of the JAG Matrix Silviculture recommendations on future potential harvests in JDSF. Cryptos itself is difficult to configure to emulate a given silviculture accurately. Also, the staff person expert in GIS and Cryptos left the employ of JDSF early in 2010 and has not been replaced.

We can get a rough estimate of the effects of Matrix Silviculture using the 2008 Option A projections. The estimate is based on the following assumptions:

- The Option A category Selection 1 reasonably captures Matrix Silviculture. It is not an exact match, because the maximum diameter of retained trees at harvest is 40" in Selection 1, whereas Matrix Silviculture would allow some trees to reach the maximum practical size for harvesting, Also, Selection 1 allows up to 40% of basal area removal (if the minimum retention of 200 ft-sq of basal area is met). Matrix Silviculture does allow up to 40% basal area removal, but the expectation is that removal would be 30-35% except for long reentry intervals (greater than 20 years).
- In the 2008 Option A, Matrix acres are all except those assigned to OFSZ (equivalent to the JAG OFDA), LSD, and No Harvest.
- The percentage of Matrix acres assigned to each silviculture in the 2008 Option A will be used to calculate the potential harvest of the Matrix acres under the 2008 MP silvicultures.

  The number of Matrix acres receiving Matrix Silviculture in the present analysis will be less than the total of such acres in the 2008 MP because some of those acres were assigned to Reserves, LSDAs, and OFDAs by the JAG and by a negotiated settlement reached by Cal Fire.
- The number of Matrix acres used in the estimate is that provided in a table supplied by Cal Fire staff: 23,000 acres.[6]

The estimate of the effect of the silvicultural changes recommended by JAG will equal the difference between the projected potential harvests 1) applying Selection 1 to all Matrix acres, and 2) applying the silvicultures to the Matrix acres to the proportion of acres receiving such silvicultures in the 2008 Option A.[7]

[6] Sent to John Helms, JAG Chair, by Helge Eng, Cal Fire, November 6, 2010.

[7] To remove the influence of different initial inventories in different categories, the procedure actually applied to make the estimates for Matrix Silviculture was to take the Option A projected harvests for Selection 1 *per board foot* and multiply it by the inventory on the 23,000 acres in the JAG Matrix. For the

Future Potential Harvests in Matrix Acres Compared

Figure 6 and Table 7 show future harvest potentials for Matrix acres under JAG's recommendations, as identified by Cal Fire staff, using Option A projections for different silvicultural prescriptions.

For the first 50 years, the annual harvest potential Matrix Silviculture averages about 800,000 bf/ year greater than the Option A silvicultural mix. For the entire hundred-year period, the advantage of Matrix Silviculture averages about 250,000 bf/year (Table 1).

Option A silvicultural mix estimate, the Option A acreage in each silvicultural category was reduced by the same factor (0.74) to make the total acreage equal 23,000.

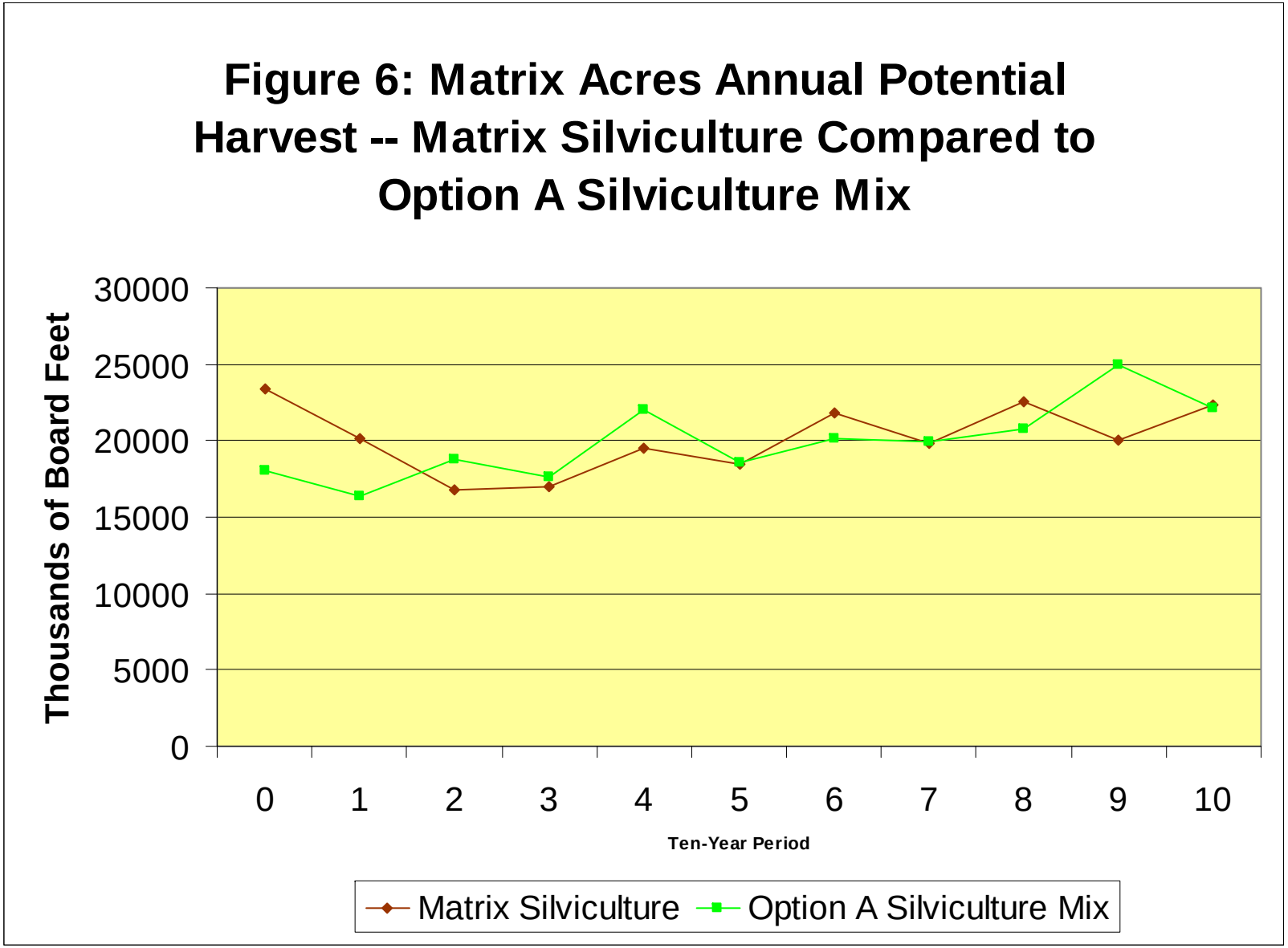


Figure 6: Matrix Acres Annual Potential Harvest -- Matrix Silviculture Compared to Option A Silviculture Mix
Thousands of Board Feet
30000
25000
20000
15000
10000
5000
0
0
1
2
3
4
5
6
7
8
9
10
Ten-Year Period
Matrix Silviculture
Option A Silviculture Mix

Table 7

Matrix Silviculture Conifer Harvest on JAG Matrix Acres (mbf per year)

		Period												
Prescription Group	Adjusted Acres	0	1	2	3	4	**Period 0-4 Average**	5	6	7	8	9	10	**All period Average**
Sel1	**23000**	**23391**	**20163**	**16763**	**17028**	**19473**	**19364**	**18513**	**21836**	**19848**	**22574**	**20068**	**22349**	**20182**

2008 Option A Mix Conifer Harvest on JAG Matrix Acres (mbf per year)

		Period												
Prescription Group	Adjusted Acres	0	1	2	3	4	**Period 0-4 Average**	5	6	7	8	9	10	**All period Average**
Sel1	5889	6555	5650	4697	4772	5457	**5426**	5188	6119	5562	6326	5624	6263	5656
Sel2	5013	2707	4461	4301	3267	4676	**3882**	4028	5595	4472	6173	5030	5937	4604
GSel1	2115	893	1414	1490	1422	1554	**1355**	1937	1984	2425	2386	2880	2225	1874
GSel2	2119	619	974	1323	1611	1878	**1281**	2196	2395	2739	2862	3233	2431	2024
Selection Total	**15136**	**10773**	**12500**	**11812**	**11072**	**13565**	**11944**	**13349**	**16093**	**15198**	**17747**	**16766**	**16856**	**14157**
2Age	1716	1245	844	934	1192	1673	**1820**	582	373	1214	860	2045	501	1334
CLCT	539	480	530	519	662	871	**905**	114	107	270	268	442	647	580
CLCT-Thin	659	213	180	825	760	742	**861**	796	781	143	129	407	596	651
ST	244	84	242	250	286	357	**428**	89	50	90	143	161	602	298
ST-Thin	314	30	110	171	407	449	**489**	387	470	124	71	104	603	382
VR1	1147	2317	822	604	770	1334	**1122**	541	216	1119	525	1713	651	943
VR1-Thin	1056	571	254	1741	985	970	**1119**	1111	988	298	199	846	579	874
VR2	1132	1751	636	474	605	1218	**950**	616	259	1139	562	1659	587	870
VR2-Thin	1056	571	254	1406	835	839	**958**	968	822	337	229	862	515	775
Even-Age Total	**7864**	**7263**	**3871**	**6924**	**6502**	**8453**	**6603**	**5203**	**4068**	**4734**	**2985**	**8238**	**5282**	**5775**
All	**23000**	**18036**	**16371**	**18735**	**17574**	**22018**	**18547**	**18552**	**20161**	**19932**	**20732**	**25004**	**22137**	**19932**
JAG Minus Option A		**5355**	**3792**	**-1972**	**-547**	**-2545**	**817**	**-39**	**1675**	**-83**	**1842**	**-4936**	**212**	**250**