

Timber

Analysis Area

The analysis area for the timber sustainability topic is comprised of the NFS lands of the IPNF and KNF. For the purposes of this document, each Forest's conditions and trends are evaluated separately.

Conditions and Trends

The AMS and AMS Technical Report described the timber production revision topic and the analyses that would be conducted to address this topic. The following information is an update to the AMS, providing more detail and results of analyses.

Timber Suitability

The AMS outlined the existing condition and trend for timber suitability. Timber suitability classification from the 1987 Forest Plans has been reviewed and updated based on current data, new definitions, and the use of new technology (e.g., Geographic Information Systems, or GIS). The definition of "timber suitability" has been redefined under the 2005 Planning Rule. The process and the steps are described in FSH 1909.12, chapter 60. The following describes the steps utilized in determining lands generally suitable for timber production.

This suitability analysis attempts to compare the 1987 Forest Plan to the revised figures presented in the 1987 Forest Plan as Amended (see below) and the Proposed Land Management Plan. There is not, however, a clean crosswalk between the timber suitability analysis under the 1982 regulations and the 2005 Planning regulations and some categories and steps do not always coincide. The 1987 Plan as Amended reflects the 1987 Plan with amendments (e.g., INFSH, Grizzly Bear Access Amendment), current data, and following the current (2006) process for determining timber suitability.

The first step in the suitability process is the identification of lands generally not suitable for timber harvest. Criteria for determining lands generally not suitable for timber harvest are outlined in FSH 1909.12, 62.1. Lands generally not suitable for timber harvest are those where:

1. Statute, Executive Order, or regulation prohibits timber harvest on the land, or the Secretary of Agriculture or the Chief of the Forest Service has withdrawn the land from timber harvest as described in section 62.11.
2. At the broad forest scale, the Responsible Official estimates that soil, slope, or other watershed conditions will be irreversibly damaged by timber harvest as described in section 62.12.
3. At the broad forest scale, the Responsible Official estimates that there is no assurance that such lands can be adequately restocked within five years after harvest as described in section 62.13.
4. Trees are unable to grow due to environmental conditions (such as insufficient rainfall, low temperature, or other growing conditions preventing the establishment of tree cover).

There is no required order for applying the above criteria. Some lands would fall into more than one criterion. For the planning zone, the order shown above is the order the lands were subtracted. Lands not meeting the above criteria are generally suitable for timber harvest and are further designated as:

1. Lands generally suitable for timber production. These lands are generally suitable for timber production. Harvest will occur on a planned, scheduled basis under determined rotations.
2. Other lands. These lands are not suitable for timber production. Harvest may occur, but is not scheduled or planned, with no rotation. Harvest would be compatible with desired condition and occur for purposes other than timber production. Examples of these types of lands include grizzly bear core areas, old growth, riparian areas, and management area designations of backcountry. For lands with a special area designation (e.g., recommended wilderness, SIAs, proposed RNAs), the Responsible Official has determined timber harvest is not an appropriate tool to achieve desired condition. Any cutting of trees in these special areas would result in no removal of the resulting wood fiber.

Tables T-1 and T-2, below, summarize timber suitability acres for the IPNF and the KNF.

Table T-1 IPNF – Comparison of Lands Generally Suitable for Timber

Criteria	1987 Plan	1987 Plan as Amended	Proposed Land Management Plan
Total National Forest System Lands	2,478,500	2,498,400	2,498,400
1. Statue, E.O., or regulation prohibits timber harvest ¹	-51,000	-30,600	-30,600
2. Irreversible damage is likely ²	0	-269,500	-269,500
3. Unable to assure restocking in five years ³	-267,300	-50,100	-50,100
4. Trees unable to grow for environmental reasons ⁴	-161,700	-75,700	-75,700
Lands Generally Not Suitable for Timber Harvest	480,000	425,900	425,900
Lands Generally Suitable for Timber Harvest	1,998,500	2,072,500	2,072,500
1. Generally Suitable for Timber Production	1,584,100	1,176,000	969,100
2. Other Lands	414,000	896,500	1,103,400
a) Responsible Official determines harvest is not appropriate as a tool to achieve desired condition ⁵	NA	90,500	126,500
b) Responsible Official determines harvest is appropriate as a tool to achieve desired condition ⁶	414,400	806,000	976,900
Generally Not Suitable for Timber Production	894,400	1,322,400	1,529,300

Table T-2 KNF – Comparison of Lands Generally Suitable for Timber

Criteria	1987 Plan	1987 Plan as Amended	Proposed Land Management Plan
Total National Forest System Lands	2,265,200	2,218,600	2,218,600
1. Statue, E.O., or regulation prohibits timber harvest ¹	-97,100	-97,100	-97,100
2. Irreversible damage is likely ²	-277,900	-248,700	-248,700
3. Unable to assure restocking in five years ³	0	-20,000	-20,000
4. Trees unable to grow for environmental reasons ⁴	-82,000	-145,000	-145,000
Lands Generally Not Suitable for Timber Harvest	457,000	510,800	510,800
Lands Generally Suitable for Timber Harvest	1,808,200	1,707,800	1,707,800
1. Generally Suitable for Timber Production	1,283,200	758,000	817,200
2. Other Lands	525,000	949,800	890,600
a) Responsible Official determines harvest is not appropriate as a tool to achieve desired condition ⁵	NA	41,100	113,100
b) Responsible Official determines harvest is appropriate as a tool to achieve desired condition ⁶	525,000	908,700	777,500
Generally Not Suitable for Timber Production	982,000	1,460,600	1,401,400

¹Includes wilderness, wilderness study area, established RNAs, and congressionally designated scenic areas.

²Includes wetlands, land with high water tables, and lands with inadequate response information (alpine larch, high elevation lodgepole pine).

³Rocky, very dry, or very cold areas

⁴Land not capable of supporting trees

⁵Examples include recommended wilderness, SIAs, proposed RNAs.

⁶Examples include grizzly bear core areas, riparian areas, and areas allocated to backcountry management area.

Figures T-1 and T-2 display lands where timber harvest is a tool for the IPNF and KNF under the Proposed Land Management Plans.

As the Proposed Land Management Plans for the Forests (also known as the Plan) are implemented on the ground, timber suitability numbers may change based on site-specific analysis. Broad scale information is used in determining lands generally suitable for timber harvest and timber production in the Plan. As a result, changes may occur at the project-scale level using site-specific data. Changes to timber suitability will be monitored during implementation of the Plans.

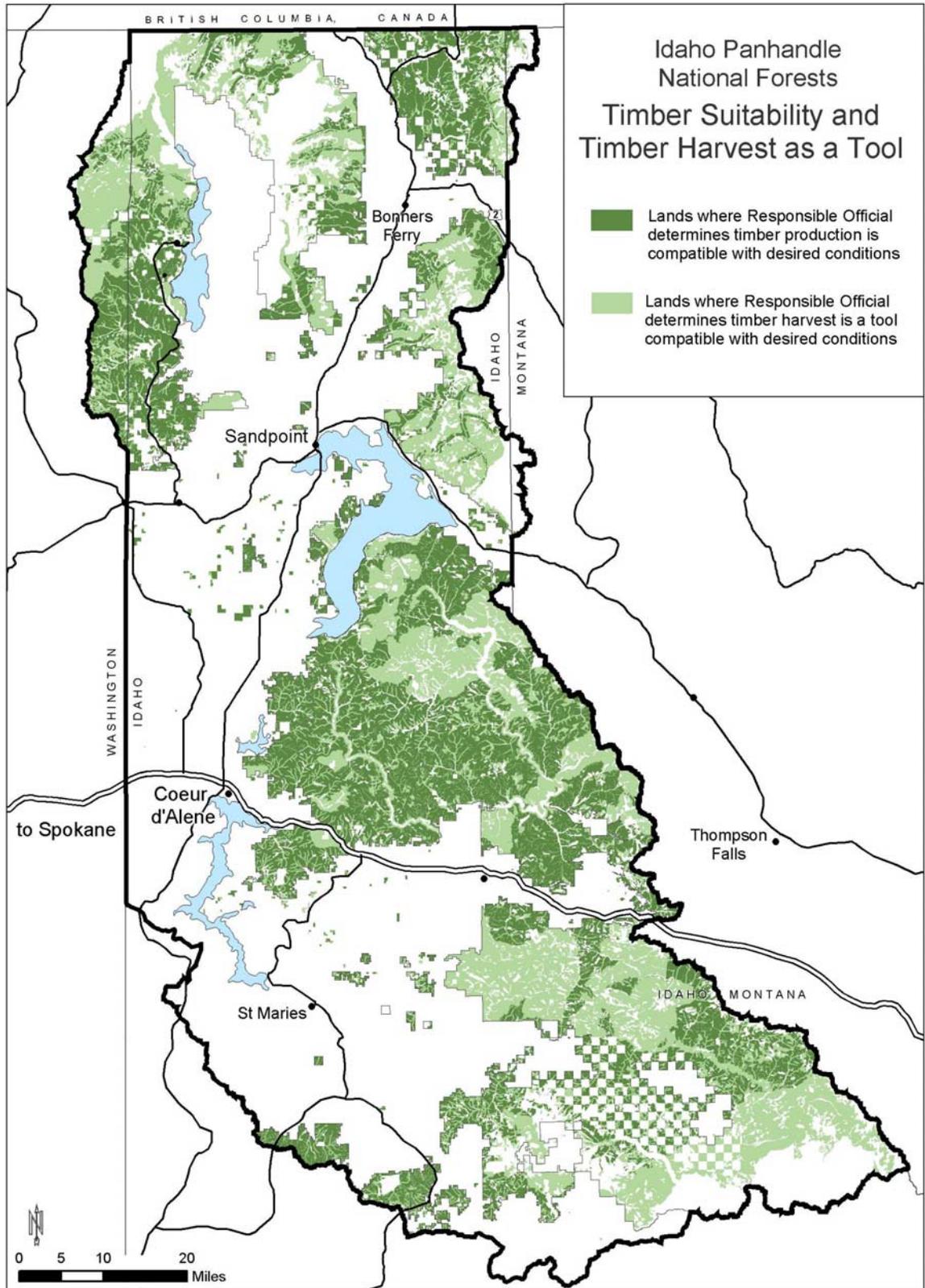


Figure T-1 Timber Suitability on the IPNF under the Proposed Plan

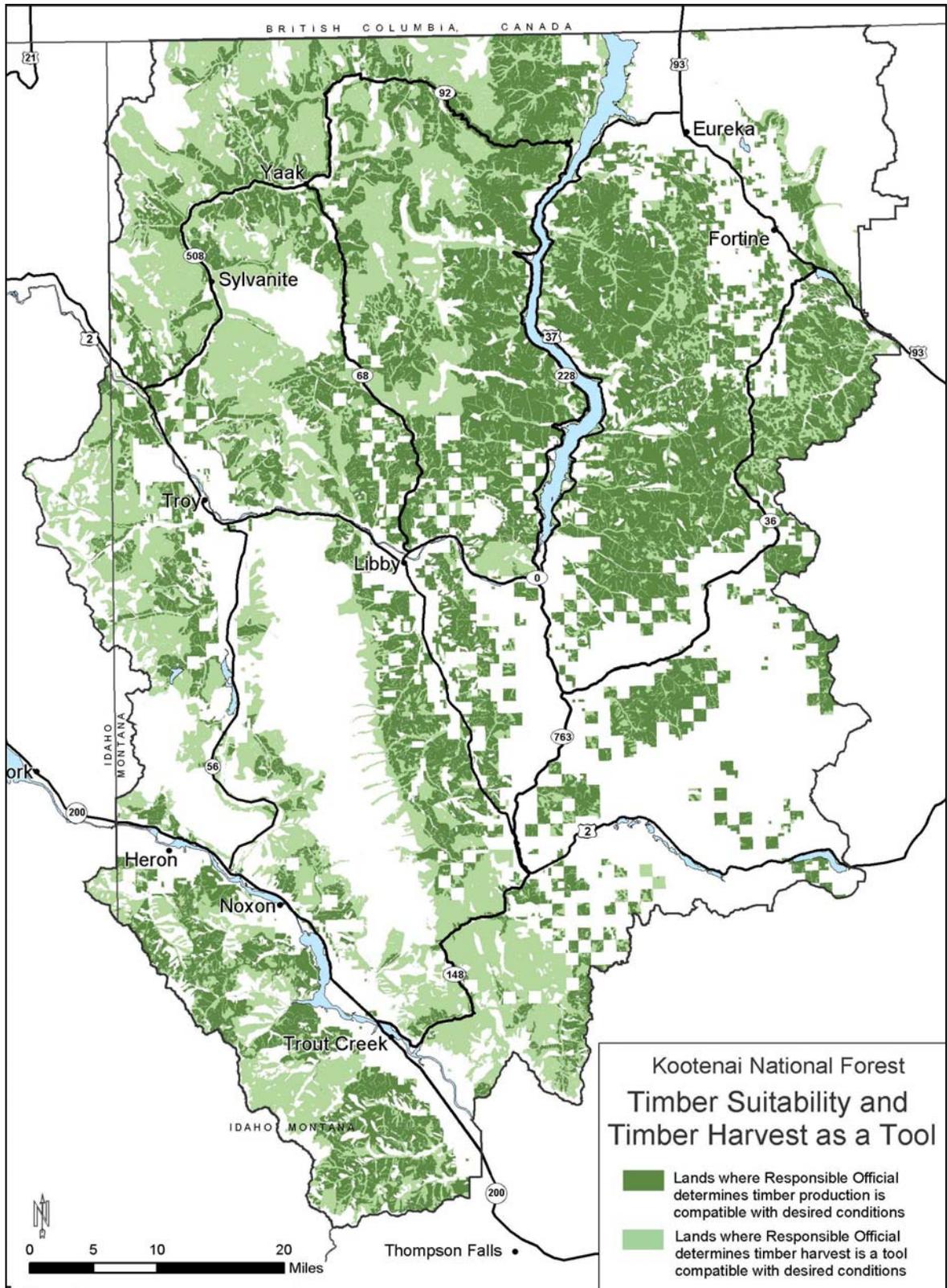


Figure T-2 Timber Suitability on the KNF under the Proposed Plan

Timber Demand

Timber demand was analyzed as part of the 1987 Forest Plans. For the IPNF, a potential timber demand of 190 to 253 MMBF per year was estimated (IPNF Forest Plan EIS, page II-82). For the KNF, a potential timber demand of 223 MMBF per year was estimated for the KNF (KNF Forest Plan EIS, page II-57), based on regional goals used in the 1980 RPA projections. In addition, analysis of potential timber supply requirements for the KNF was developed for five decades, resulting in ranges from 178 to 224 MMBF in the first two decades.

Timber capacity and capability have been analyzed for the KNF and IPNF, based on each Forest's impact zone. These impact zones, or economic impact areas, were delineated to analyze the affects of forest management on jobs and income. Recent log flow information from the KNF and IPNF, provided by the University of Montana's Bureau of Business and Economic Research (BBER), was used to assist in the delineation of impact zones. Refer to the Social and Economic section of this document for further information on the impact zones.

The analyses of timber capacity and capability was also conducted by the University of Montana's BBER and utilized in subsequent reports prepared for the IPNF and the KNF (Keegan et al., 2005a and 2005b). For the purposes of these reports, the term "capacity" refers to the volume of timber (excluding pulpwood) that existing mills could utilize annually. The term "capability" refers to the volume of trees of a certain size class that existing mills can efficiently process annually. The following information on timber demand is excerpted from these reports.

IPNF Timber Demand

Virtually all of the IPNF's non-reserved timberland is found in five Idaho counties: Benewah, Bonner, Boundary, Kootenai, and Shoshone. Less than six percent of the recent (2001) timber harvested in this area currently comes from the IPNFs. Most (99 percent) of the timber harvested from these counties was from green (live) trees. The species composition of the harvested volume in this five-county area was as follows: Douglas-fir about 26 percent, true firs 22 percent, western hemlock 16 percent, and western larch 12 percent. Western Redcedar accounted for 11 percent, while western white pine, ponderosa pine, lodgepole pine, and Engelmann spruce combined accounted for the remaining 13 percent. Sawmills and veneer/plywood manufacturers received about 95 percent of the volume harvested from these counties. Other products, including cedar products, house logs, posts, utility poles, and log furniture accounted for the remaining timber harvest volume.

The IPNF identified a five-county area as the "Idaho Panhandle National Forests Impact Zone." The counties comprising the Idaho Panhandle National Forests Impact Zone are Benewah, Bonner, Boundary, Kootenai, and Shoshone counties in Idaho. Within this five-county Idaho Panhandle National Forests' Impact Zone, there are 41 timber-processing facilities currently operating: 18 sawmills, 8 log home manufacturers, 5 cedar products manufacturers, 4 post and small pole plants, 3 veneer and plywood facilities, 2 utility pole plants, and 1 log furniture manufacturer.

As of September 1, 2005, capacity to process timber in the Idaho Panhandle National Forest Impact Zone is 210,047 thousand cubic feet (MCF), with 74 percent of capacity being used. Mills in the Idaho Panhandle National Forests Impact Zone are currently using about 155,857 MCF of timber annually (Table T-3). Slightly less than 92 percent (142,835 MCF) of the volume processed in the Impact Zone is composed of trees with diameter at breast height (DBH) greater than or equal to 10 inches. Nearly eight percent (12,430 MCF) of the volume processed comes

from trees 7.0 - 9.9 inches DBH, while less than one percent (592 MCF) of processed volume comes from trees less than 7 inches DBH.

Table T-3 Annual Volume of Timber Processed by Tree Size Class (Excluding Pulpwood) for the Idaho Panhandle National Forests Impact Zone

Thousand Cubic Feet of Timber		Thousand Board Feet Scribner of Timber	
Tree DBH (inches)	Volume Used	Tree DBH (inches)	Volume Used
<7	592	<7	592
7-9.9	12,430	7-9.9	47,731
10+	142,835	10+	580,409
Total	155,857	Total	628,732

About 81 percent (170,085 MCF) of existing capacity in the Idaho Panhandle National Forests Impact Zone is not capable of efficiently utilizing trees less than 10 inches DBH (Table T-4). Slightly less than 40,000 MCF of timber-processing capacity is capable of utilizing trees less than 10 inches DBH, and nearly all of this is in the 7 - 9.9 inches DBH class.

Table T-4 Annual Total Capacity and Capability* to Process Trees by Size Class (Excluding Pulpwood) for the Idaho Panhandle National Forests Impact Zone

Thousand Cubic Feet of Timber		Thousand Board Feet Scribner of Timber	
Tree DBH (inches)	Capability	Tree DBH (inches)	Capability
<7	840	<7	840
7-9.9	39,122	7-9.9	150,229
10+	170,085	10+	696,267
Total Capacity	210,047	Total Capacity	847,336

* Note: Capability in <7 and 7-9.9 inch classes is the maximum volume capable of being used efficiently; capability in 10+ inches. Class is portion of total capacity NOT capable of efficiently using trees with DBH <10 inches.

A substantial amount of the capacity capable of utilizing smaller diameter trees is being used to process larger trees or going unused. About 70 percent of capacity in the less than 7 inches DBH category is currently utilized to process trees less than 7 inches DBH, but just 32 percent of capacity in the 7 - 9.9 inches DBH category is being used to process trees 7 - 9.9 inches DBH. More than 14,000 MCF of capacity capable of using trees 7 - 9.9 inches DBH are used annually to process trees greater than or equal to 10 inches DBH.

KNF Timber Demand

Virtually all of the KNF non-reserved timberland is located in two Montana counties: Lincoln and Sanders. More than 35 percent of the recent (1998) timber harvest in this two-county area originated from the KNF. Most (84 percent) of the timber harvested from these counties consisted of green (live) trees. The species composition of the harvested volume in this two-county area was: Douglas-fir approximately 38 percent, lodgepole pine 27 percent, and western larch 14 percent, true firs and ponderosa pine each accounted for 8 percent, Engelmann spruce, western Redcedar, western hemlock, and western white pine combined accounted for the remaining 6 percent. Sawmills and veneer/plywood manufacturers received over 90 percent of the volume

harvested from these two counties. Other products, including house logs, posts and poles, and cedar products accounted for the remaining timber harvest volume.

The KNF identified a five-county area as the “Kootenai National Forest Impact Zone.” The counties comprising the Kootenai National Forest Impact Zone are Bonner and Boundary counties in Idaho; and Flathead, Lincoln, and Sanders counties in Montana. Within the five-county Kootenai National Forest Impact Zone there are 63 timber-processing facilities currently operating: 25 sawmills, 17 log home manufacturers, 8 post and small pole plants, 5 log furniture manufacturers, 3 veneer and plywood facilities, 2 utility pole plants, 2 cedar products manufacturers, and one pulp and paper mill.

As of September 1, 2005, capacity to process timber in the Kootenai National Forest Impact Zone is 191,020 thousand cubic feet (MCF), with slightly less than 78 percent of capacity being used. Mills in the Kootenai National Forest Impact Zone are currently using about 148,899 MCF of timber annually (Table T-5). Slightly less than 87 percent (129,209 MCF) of the volume processed in the Impact Zone is composed of trees with diameter at breast height (DBH) greater than or equal to 10 inches. Nearly 13 percent (18,977 MCF) of the volume processed comes from trees 7.0 - 9.9 inches DBH, while less than 1 percent (714 MCF) of processed volume comes from trees less than 7 inches DBH.

Table T-5 Annual Volume of Timber Processed by Tree Size Class (Excluding Pulpwood) for the Kootenai National Forest Impact Zone

Thousand Cubic Feet of Timber		Thousand Board Feet Scribner of Timber	
Tree DBH (inches)	Volume Used	Tree DBH (inches)	Volume Used
<7	714	<7	714 MCF
7-9.9	18,977	7-9.9	72,872
10+	129,209	10+	547,021
Total	148,899	Total	620,607

About 74 percent (141,203 MCF) of existing capacity in the Kootenai National Forest Impact Zone is not capable of efficiently utilizing trees less than 10 inches DBH (Table T-6). Slightly less than 50,000 MCF of timber-processing capacity is capable of utilizing trees less than 10 inches DBH, and nearly all of this is in the 7 - 9.9 inches DBH class.

Table T-6 Annual Total Capacity and Capability* to Process Trees by Size Class (Excluding Pulpwood) for the Kootenai National Forest Impact Zone

Thousand Cubic Feet of Timber		Thousand Board Feet Scribner of Timber	
Tree DBH (inches)	Capability	Tree DBH (inches)	Capability
<7	1,873	<7	1,873
7-9.9	47,944	7-9.9	184,105
10+	141,203	10+	610,185
Total Capacity	191,020	Total Capacity	796,164

* Note: Capability in <7 and 7-9.9 inch classes is the maximum volume capable of being used efficiently; capability in 10+ inches class is the portion of total capacity NOT capable of efficiently using trees with DBH <10 inches.

A substantial amount of the capacity capable of utilizing smaller diameter trees is being used to process larger trees or is simply going unused. Only about 38 percent of capacity in the less than 7 inches DBH category is currently utilized to process trees less than 7 inches DBH, and just 40 percent of capacity in the 7 - 9.9 inches DBH category is being used to process trees 7 - 9.9 inches DBH. More than 18,000 MCF of capacity capable of using trees 7 - 9.9 inches DBH are used annually to process trees greater than or equal to 10 inches DBH.

Timber Supply

Past and Current Supply

Timber supply under the 1987 Forest Plans was described in the AMS Technical Report and in forest plan monitoring and evaluation reports. These documents show that timber supply levels have been below those projected in the 1987 Forest Plans. Reasons for the difference between projected and actual harvest levels include forest plan amendments (e.g., INFSH), new or updated Threatened and Endangered (T&E) recovery direction, water quality concerns, policies regarding entry into inventoried roadless areas, public controversy, and a reduction in budget. Over the last five years, the IPNF had planned to sell approximately 60 MMBF/year. The amount of timber sold on the KNF has averaged 64 MMBF/year over the past decade and 47.3 MMBF/year over the last five years.

In order to provide a tangible comparison to the Proposed Land Management Plans, and as a means to display the changes since the 1987 Forest Plans, the timber harvest levels provided under the 1987 Forest Plans as Amended were calculated (see Appendix B) and timber sale program quantities (TSPQ) generated. These calculations were based on updated data, changes to suitability, updated models, and updated direction (e.g., forest plan amendments and laws, regulations, and policies that have come into effect since the Forest Plans were approved in 1987). These calculations demonstrated an annual average TSPQ of 71.8 MMBF/year for the IPNF and 61.5 MMBF/year for the KNF over the next decade.

Future Supply

The timber sale program quantity (TSPQ) for the Proposed Land Management Plan was calculated considering timber suitability, vegetation desired condition, other resource objectives, and the management requirements in NFMA. Current budget levels were also utilized in the calculation of TSPQ.

Timber harvest levels for the Proposed Land Management Plan were calculated using Spectrum (see Appendix B). A range was built for the TSPQ based on two model runs using different objectives. The lower range was generated by running the model with the goal to achieve vegetation desired condition as quickly as possible, while meeting other resource objectives. The higher range was produced by running the model with an objective to maximize timber production in the first decade and then to achieve vegetation desired condition as quickly as possible while meeting other resource objectives.

The TSPQ is tracked separately by suitability component (i.e., lands generally suitable for timber production and other lands). Only those lands where timber harvest is a suitable tool were included in determining TSPQ. Table T-7 displays the TSPQ by suitability component for the first decade for each forest. Outputs are shown by both MMCF and MMBF per year.

Table T-7 Timber Sale Program Quantity (TSPQ) by Forest for the first decade

Forest	Total TSPQ (MMCF/year)	TSPQ from lands generally suitable for timber production (MMCF/year)	TSPQ from other lands (MMCF/year)
IPNF	13.2 – 13.7	11.4 – 11.5	1.8 – 2.2
KNF	10.2 – 12.2	8.6 – 10.1	1.6 – 2.1
Forest	Total TSPQ (MMBF/year)	TSPQ from lands generally suitable for timber production (MMBF/year)	TSPQ from other lands (MMBF/year)
IPNF	69.9 – 73.2	60.2 – 61.7	9.7 – 11.5
KNF	55.7 – 65.7	46.7 – 54.8	9.0 – 10.9

The TSPQ is produced in response to moving towards the desired condition for vegetation and other resources, through the application of the silvicultural prescriptions displayed in Table T-8. This harvest regime is associated with the lower range of the TSPQ. The number of acres would be slightly different (lower or higher, depending on species and size class harvested) for the higher range of TSPQ.

Table T-8 Acres Harvested by Silvicultural Prescription by Decade

Silvicultural Prescription	Decade 1 (acres/decade)	Decade 2 (acres/decade)	Decade 3 (acres/decade)
IPNF – Lands Generally Suitable for Timber Production			
Regeneration Cutting (even- or two-aged)	18,800	22,500	19,300
Uneven-aged Management	5,000	5,000	5,000
Intermediate Harvest (commercial thin)	33,700	21,300	13,200
Prescribed Burning	0	0	6,000
IPNF – Other Lands			
Regeneration Cutting (even- or two-aged)	4,500	1,500	4,000
Uneven-aged Management	0	0	0
Intermediate Harvest (commercial thin)	2,000	8,500	300
Prescribed Burning	38,400	42,700	31,300
KNF – Lands Generally Suitable for Timber Production			
Regeneration Cutting (even- or two-aged)	19,500	18,800	15,800
Uneven-aged Management	5,000	5,000	5,000
Intermediate Harvest (commercial thin)	20,800	10,500	23,800
Prescribed Burning	0	48,600	26,200
KNF – Other Lands			
Regeneration Cutting (even- or two-aged)	6,600	6,200	4,800
Uneven-aged Management	0	0	0

Intermediate Harvest (commercial thin)	2,800	0	500
Prescribed Burning	70,700	30,200	52,600

Timber harvest volumes associated with the treatments in Table T-8 are shown in Table T-9. Both Tables contain decadal numbers, which is the total amount treated or harvested over each decade.

Table T-9 Volume Harvested by Silvicultural Prescription by Decade

Silvicultural Prescription	Decade 1 (MCF/decade)	Decade 2 (MCF/decade)	Decade 3 (MCF/decade)
IPNF – Lands Generally Suitable for Timber Production			
Regeneration Cutting (even- or two-aged)	57,000	79,300	88,700
Uneven-aged Management	10,100	7,100	5,100
Intermediate Harvest (commercial thin)	47,200	28,000	20,400
IPNF – Other Lands			
Regeneration Cutting (even- or two-aged)	15,800	6,000	17,700
Uneven-aged Management	0	0	0
Intermediate Harvest (commercial thin)	2,100	11,900	200
KNF – Lands Generally Suitable for Timber Production			
Regeneration Cutting (even- or two-aged)	58,100	63,600	54,500
Uneven-aged Management	3,900	7,000	8,900
Intermediate Harvest (commercial thin)	24,000	15,500	22,700
KNF – Other Lands			
Regeneration Cutting (even- or two-aged)	15,600	16,400	15,900
Uneven-aged Management	0	0	0
Intermediate Harvest (commercial thin)	900	0	500

The above treatments were in response to moving towards desired conditions for vegetation. The trends from these treatments are summarized in the vegetation topic in the CER.

To ensure sustainability, a long-term sustained yield capacity (LTSYC) was calculated for each Forest based on management activities to achieve desired conditions. The LTSYC is not constrained by budget. Table T-10 displays the LTSYC for each Forest.

Table T-10 Long-term Sustained Yield Capacity (LTSYC) by Forest

Forest	LTSYC from all lands (MMCF/year)	LTSYC from lands generally suitable for timber production (MMCF/year)	LTSYC from other lands (MMCF/year)
IPNF	16.7	14.9	1.8
KNF	13.9	12.5	1.4

Figures T3 – T6 display the TSPQ in relation to the LTSYC by suitability component for each Forest. Timber production on lands generally suitable for timber harvest produces a non-declining, regulated flow of timber products that do not exceed the LTSYC (see Figures T-3 and T-5). Timber production on other lands produces an irregular flow of timber products, sometimes exceeding LTSYC (see Figures T-4 and T-6). When yields are combined from all lands (i.e., the sum of lands generally suitable for timber production and other lands), the TSPQ does not exceed LTSYC.

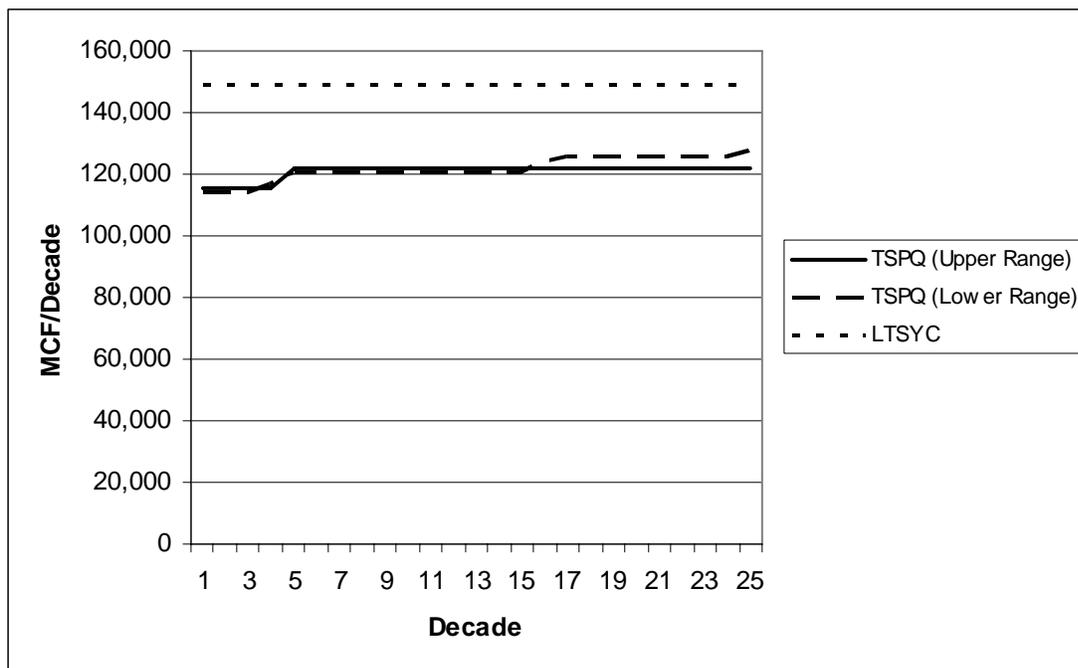


Figure T-3 IPNF Timber Sale Program Quantity and Long-term Sustained Yields for Lands Generally Suitable for Timber Production

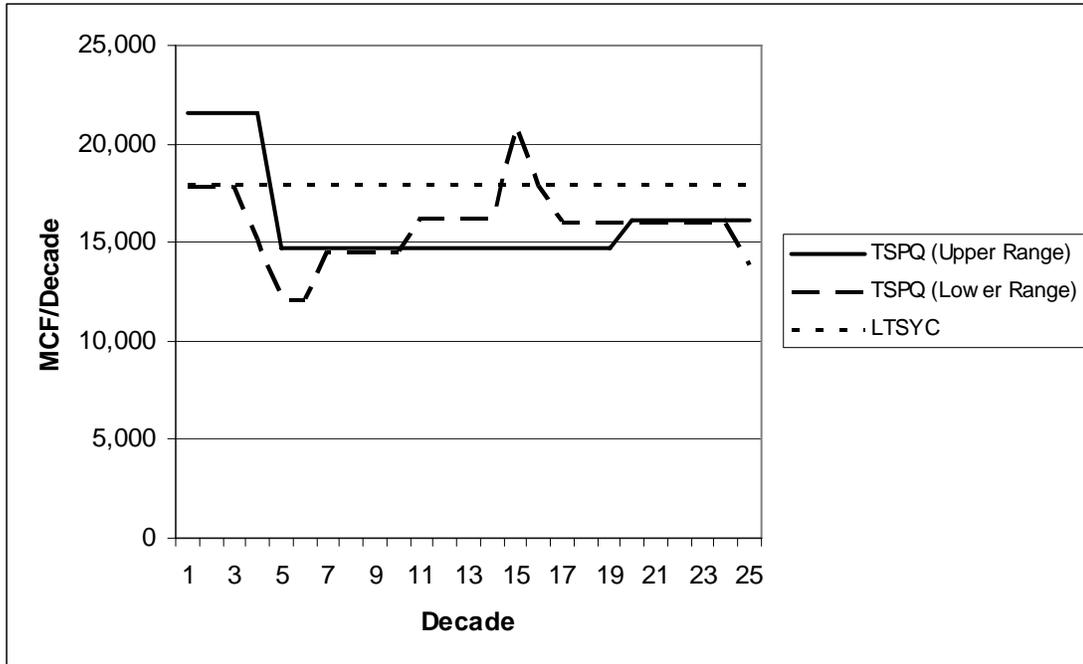


Figure T-4 IPNF Timber Sale Program Quantity and Long-term Sustained Yields for Other Lands

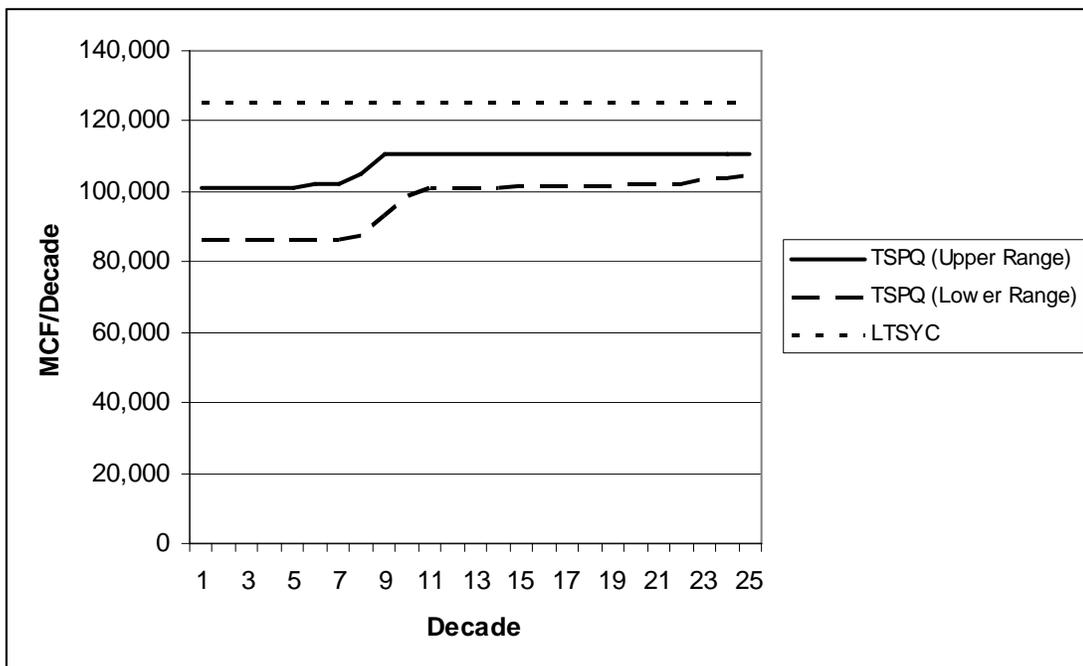


Figure T-5 KNF Timber Sale Program Quantity and Long-term Sustained Yields for Lands Generally Suitable for Timber Production

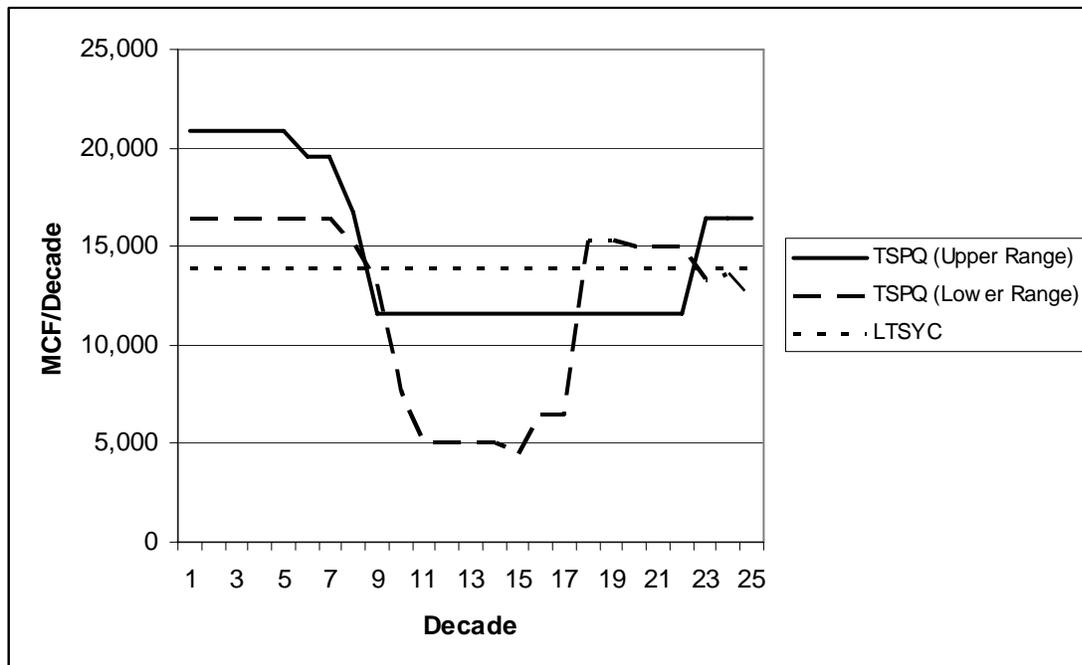


Figure T-6 KNF Timber Sale Program Quantity and Long-term Sustained Yields for Other Lands

As the Plan guidelines and other design criteria are implemented on the ground, harvest volumes may be limited based on site-specific analysis. Examples include water quality, wildlife, or heritage resource guidelines. Where possible, the effects of the Plan guidelines and other design criteria have been taken into account in the calculation of TSPQ and LTSYC. However, the TSPQ and LTSYC are considered maximums, and certain conditions may arise where guidelines and direction may limit the actual available volume.

In addition, 260 - 400 MCF/year on the IPNF and 300 - 550 MCF/year on the KNF would be available as non-sawlog (very small diameter) wood fiber over the first several decades. Harvest of non-sawlog, very small-diameter wood would occur on 5,000 – 15,000 acres/year on the IPNF and 5,000 – 8,000 acres/year on the KNF, in response to vegetation restoration and fuel reduction. The actual harvest and utilization of these products would depend on demand for small-diameter wood fiber and available markets. Both forests also have a portion of small size class (5-10 inches DBH) timber available for harvest, based on market.

The timber supply is well within the timber processing capacity for the Forests’ impact zones.

Timber Inventory

The Spectrum model calculates the timber inventory and stand average volume over the planning horizon. In providing for sustainable timber harvest levels, the model contains a requirement that ending timber inventory (the inventory that occurs in the final period) must be greater than or equal to the stand average volume. The stand average volume is calculated by determining the inventory before harvest for each regeneration silvicultural treatment for each period and averaging over all periods. The timber inventory is calculated for each period and compared at the end of the planning horizon to the stand average inventory.

On the IPNF, the stand average volume at the end of the planning horizon for run 1 is 294 MMCF and the timber inventory 1,212 MMCF. The stand average volume for run 2 is 278 MMCF and

the timber inventory 1,221 MMCF. The stand average volume is less than 25 percent of the timber inventory, indicating timber harvest levels would be sustainable.

On the KNF, the stand average volume at the end of the planning horizon for run 1 is 372 MMCF and the timber inventory 978 MMCF. The stand average volume for run 2 is 376 MMCF and the timber inventory 969 MMCF. The stand average volume is less than 40 percent of the timber inventory, indicating timber harvest levels would be sustainable.

Literature Cited

Keegan, Charles E, Todd A. Morgan, and Timothy P. Spoelma. 2005a. *Capacity and Capability of Mills in the Kootenai National Forest Impact Zone*. Bureau of Business and Economic Research, the University of Montana, Missoula, MT.

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