

## 4.2 FORESTRY

### 4.2.1 INTRODUCTION TO FORESTRY

This section describes the forest environment and management practices in the vicinity of Pacific Gas and Electric Company's hydroelectric facilities across Project Lands included in the divestiture. Specifically, this section provides an overview of forest management and discusses forestry-related issues associated with land management activities. The purpose of this section is to describe existing baseline forestry conditions, which form the basis from which impacts may be analyzed. Also included is a discussion of how forest management activities are regulated by various state and federal agencies and a discussion related to Timberland Production Zoning (TPZ). Following this overview are descriptions of the local forest conditions specific to the project lands in each Regional Bundle. For purposes of this section, forestland is considered to be any area where the predominant vegetation is trees. Timberland is that portion of forestland that is suitable for commercial timber harvesting.

### 4.2.2 SYSTEM-WIDE REGULATORY CONTEXT

Principal regulations controlling land use and timber harvesting on forested lands owned by Pacific Gas and Electric Company include:

- Federal laws and related policies that ensure compliance with the Endangered Species Act, and regulate the use of National Forest roads and harvest of National Forest timber.
- State legislation and related rules that regulate the harvest of timber from privately owned lands in California.
- Timberland Production Zoning, which regulate the type of land use on TPZ parcels.

#### 4.2.2.1 Federal Regulations and Policies

Federal regulations play a relatively minor role in regulating the harvest of timber on private lands. Federal regulations and policies that potentially affect timber harvesting include the following:

- Endangered Species Act compliance for Timber Harvest Plans (THPs) including review by the USFWS. Compliance is accomplished through the state regulatory THP process.
- Forest Service regulations governing the use of Forest Service Roads (*Forest Service Manual 2370 and 7700*) for construction, maintenance and use. The Forest Service permit conditions may include maintenance requirements, limitations on the timing of log hauling and payments to the Forest Service for deferred road maintenance.
- Removal of National Forest timber to facilitate the operation of the hydroelectric facilities is accomplished through a Timber Settlement Sale (*Forest Service Manual 2400*). This situation occurs when trees on National Forest property need to be removed to allow for the construction of facilities or transmission lines.

Other planning and study documents dealing with the management of National Forests in the vicinity of Pacific Gas and Electric Company assets in the Sierra Nevada include:

- The Sierra Nevada Ecosystem Project (SNEP). The SNEP was a scientific review of old growth forests on the National Forests and a study of the entire Sierra Nevada ecosystem by an independent panel of scientists. The SNEP did not set any policy direction.
- Various Land Management Plans for each of the National Forests. Each of the Forest's Land Management Plans sets direction how the National Forests are planned to be managed. These plans do not deal with harvesting of timber from adjacent private lands, but direct the USFS to "cooperate with FERC, other Federal and State agencies, and developers in helping realize the hydroelectric potential of water flowing from National Forest Lands."
- The Sierra Nevada Framework. The Sierra Nevada Framework, currently under review, would provide policy direction and amend Land Management Plans for all the California Owl Forests, including the Lassen, Plumas, Tahoe, Eldorado, Stanislaus, and Sierra. The Sierra Nevada Framework would establish management direction goals, desired future conditions, standards and guidelines and a strategy for inventory, monitoring and research to support adaptive management. Management direction applies to National Forest lands, not to adjacent private lands.
- Herger-Feinstein Quincy Library Group Forest Recovery Act FEIS (QLG). The QLG project proposes alternative fuel (vegetation) treatments on the Plumas, Tahoe (Sierraville RD only) and Lassen National Forests to meet ecologic, economic and fuel reduction objectives.

### 4.2.2.2 State Regulations and Policies

All owners of private timberland in California are required to have an approved THP before harvesting of commercial timber species (Z'berg-Nejedly Forest Practice Act of 1973). This applies to all lands that contain commercial timber species, regardless of zoning. The THP must be prepared by a Registered Professional Forester (RPF), who is responsible for the contents of the plan. Harvesting under a plan must be conducted by a Licensed Timber Operator (LTO).

The California Department of Forestry and Fire Protection (CDF) is responsible for approving a THP. The CDF Forest Practice Inspector periodically inspects operations on a THP to ensure that plan conditions are being followed. The CDF can issue notices and citations to correct violations. Approval may involve several procedural steps that generally take between one and two months; for plans Pacific Gas and Electric Company submitted since 1996, the average time between submitting a THP and THP approval was 55 days. The THP and its associated agency and public review are considered the functional equivalent of a CEQA document. Reviewing agencies generally include CDF, CDFG, RWQCB, and CDMG. A northern spotted owl "No Take" determination is required for THPs specifying harvest within this species' range prior to final review of the THP (applies to lands within the Shasta Region and Potter Valley FERC area). This determination requires review and consultation with the USFWS (Endangered Species Act of 1973). Review by NMFS for assessment of impacts to listed salmonids would likely be required for THPs along the Eel River (Potter Valley Project).

A THP must include the following components, all of which must conform to Forest Practice Rules (*Title 14, California Code of Regulations Chapters 4 and 4.5*):

- Silvicultural methods: how trees will be harvested to ensure continued productivity and protect other resources. Approved methods include selection, group selection shelterwood, thinning, sanitation/salvage and clearcutting.
- Logging Methods: harvesting techniques and equipment. Commonly used logging methods include tractor (skidder), cable and helicopter.
- Retention requirements: how many trees will be left on site after harvesting.
- Reforestation: ensure trees will be re-planted or otherwise regenerated after harvest, including preparing a site for planting.
- Erosion Control: measures designed to mitigate or curb soil movement. Measures include construction and spacing of waterbreaks and limitations on logging during the winter.
- Stream Protection: includes designation of watercourses and stream protection zones and mitigation measures for disturbances within these zones. Stream crossing by roads or skid trails are addressed and mitigated. New or reconstructed crossing require permits are issued by the CDFG (CDFG code Section 1600-1603.).
- Protection of Unstable Areas: measures for operations in and around slides or slide prone areas.
- Hazard Control: for fire and insect control. Measures include lopping (top limbing) logging slash near roads and structures.
- Fire Protection: measures designed to reduce the risk of wildfire. Measures include restrictions on smoking, warming fires, and blasting and welding. The timber operator is required to have one person patrol the operation two hours after the cessation of operations each day during the dry period.
- Cumulative impacts assessment: This includes impact evaluation and mitigation of biological, soils, watershed, visual, traffic and recreation resources, taking into account past and future impacts on the THP and adjacent lands.
- Archaeological assessment: This includes a survey of known archaeological sites and resources along with a survey of the site to identify unknown archaeological occurrences.

In addition to the Forest Practice Rules, the California Public Resources Code deals with fire precautionary measures that apply to timber harvesting operations. Specific measures include:

- Sufficient number of fire tools to equip all employees involved with yarding and loading of logs (*California Public Resource Code Sections 4427, 4428*); and
- Functional spark arresters for each internal combustion engine (*California Public Resources Code Section 4442*)

Under the Forest Practice Rules, a landowner may also file for Exemptions and Emergency Notices (*California Practice Rules Sections 1038 and 1052*). Emergency Notices are filed to accomplish the timely harvest of dead and dying timber (or salvage), often in response to a fire or insect epidemic. Under an exemption, a landowner can remove small volumes of timber for salvage harvest or hazard reduction.

**4.2.2.3 Timberland Production Zoning (TPZ)**

Approximately 24,000 acres of project lands are zoned Timberland Production Zoning (TPZ). Authorized by the Forest Taxation Reform Act of 1976 and the Timberland Productivity Act of 1982, these parcels receive favorable tax treatment and are assessed based on potential site productivity and not necessarily on market value (Table 4.2-1). A transaction would not trigger a reassessment of these properties, unless the new owners request a change in zoning.

**Table 4.2-1 Assessed Values – Pine-Mixed Conifer Region -Timberland Production Zoning**

Site	Description	Value/Acre
I	Most Productive	\$155
II	Highly Productive	\$109
III	Medium Productive	\$85
IV	Low Productive	\$60
V	Marginally Productive	\$33

Permitted uses on a TPZ parcel include:

- Forest management (i.e., timber harvest activities);
- Grazing, beekeeping, watershed management, fish and wildlife management, fish and wildlife habitat, and other uses directly incidental to and wholly compatible with the primary use;
- Hunting, fishing, camping and similar recreational uses not involving any permanent improvement of the land or interfering materially with its primary use; and
- Christmas tree farms.

The following uses on TPZ lands require a Use Permit from the applicable county:

- Living quarters for persons fully and necessarily employed on the premises;
- Other indirect uses of mineral resources, such as sand, gravel, cinders, rock, ores, minerals, water and steam, for other than forest management, provided the development will not significantly detract from the use of the property for forest management; and
- Erection, construction, or alteration of a gas, electrical, water or communication transmission facility, or other public improvements.

If an owner desires to convert a TPZ parcel to another use, the owner must make this request in writing to the applicable county (*California Government Code Section 51120-51121*). New zoning would be specified upon Board of Supervisor approval by majority vote and will take effect 10 years to the date of approval.

If an owner desires an immediate rezoning, the approval requires 4/5ths approval from the applicable county Board of Supervisors and would trigger a CEQA process (*California Government*

*Code Section 51130-51134*). The Board of Forestry must make a determination that the immediate rezoning is in the public interest and the California Department of Forestry and Fire Protection (CDF) Director must approve the Timberland Conversion Permit. Upon rezoning, the property would be reassessed and would be subject to tax recoupment fee to recover the difference between the old assessment and the new assessment.

### 4.2.3 SYSTEM-WIDE SETTING

Approximately 78,000 acres of Project Lands are classified by Pacific Gas and Electric Company as forestland (Table 4.2-2). Forestland acres include commercial forestland, as well as oak woodlands and other forests containing non-commercial species. The forest environment includes the range of vegetation communities typical of the Sierra Nevada (refer to the Terrestrial Biology section for a detailed description of project vegetative communities). Descriptions of the forest environments for each Region are described in each regional bundle section.

**Table 4.2-2 Forest Acres - All Regions**

Region	Total Land Acres <sup>a</sup>	Total Forestland Acres <sup>b</sup>	Commercial Forestland Acres
Shasta	43,716	35,409	20,500
DeSabra	17,860	14,977	7,100
Drum	22,548	18,749	12,800
Motherlode	7,960	6,561	2,900
Kings Crane-Helms	2,843	2,000	200
Total (approximately) <sup>c</sup>	95,082	77,696	43,500

<sup>a</sup> From Pacific Gas and Electric Company's GIS-All land acres (SBE parcel coverage) excluding water

<sup>b</sup> From Pacific Gas and Electric Company's GIS-Forest Land Use Cover

<sup>c</sup> Totals may not add up exactly due to rounding

#### 4.2.3.1 Forest Management

Project Lands that can potentially support timber harvest total about 43,500 acres, which represents less than one percent of the total commercial forestland in California.<sup>1</sup> The total area includes lands that may not be currently suitable for harvest due to forest characteristics (too small or too young) or lands that may not be currently feasible to harvest (potential harvest volumes are too low to justify an entry).

Total harvest on Project Lands in the 1990-99 period was 131 million board feet under THPs, exemptions and emergency notices. Annual harvest volumes over the past decade have varied between 5 and 22 million board feet (Figure 4.2-1). These harvest volumes do not include harvests from lands Pacific Gas and Electric Company owned, but subsequently sold, during the past

<sup>1</sup> California's commercial forestland covers 16 million acres. As a percentage of total California timberland Pacific Gas and Electric Company represents 0.3% [43,500 acres / 16,000,000 acres = 0.3%].

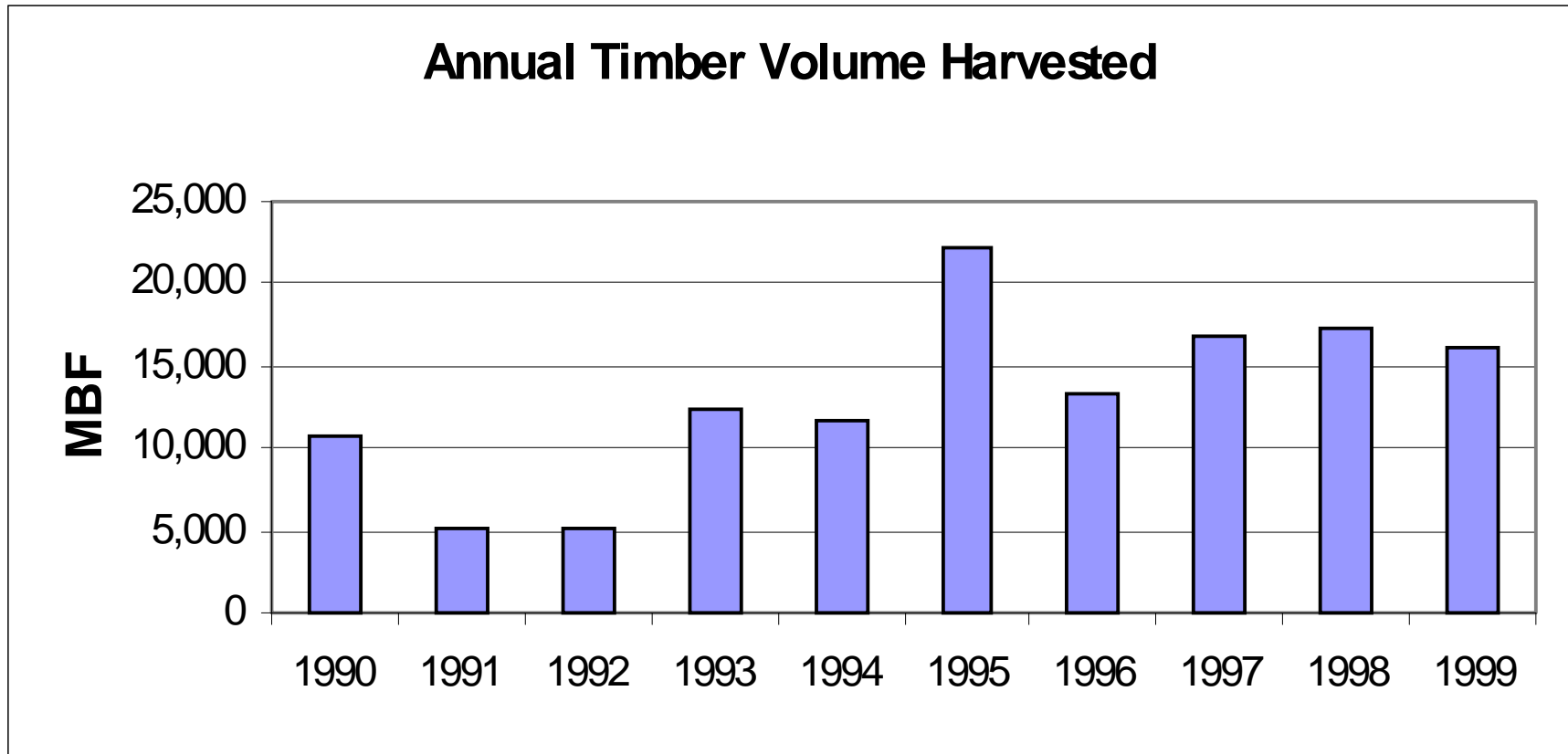


Figure 4.2-1 Project Wide Annual Harvest Volume

decade. Harvest of dead and dying trees accounted for 23 percent of all timber harvested during this period, but accounted for 50 percent of the total volume harvested in 1995, the year with the highest volume level. During the mid-1990s, an insect epidemic, principally in white fir, resulted in a spike in harvest levels. Another contributing factor to rising harvest levels was the increased emphasis by Pacific Gas and Electric Company to remove potential hazard trees adjacent to powerlines. Volume removed under exemptions and emergency notices accounted for 20 percent of the timber volume harvested, matching closely the amount of salvage harvest.

Timber volume on Project Lands from old-growth trees (as defined by the State Board of Equalization) accounted for about 22 million board feet within the past decade, or 17 percent of the total volume harvested. About 80 percent of the old growth volume was removed in the 1995-99 period. Harvest levels on Project Lands have shown an increase over the past 10 years in contrast to the decreasing trend on other private lands in California, in part due to market conditions and increased regulatory pressure. Part of the spike in the Pacific Gas and Electric Company harvest in the mid-1990's can be attributed to tree mortality.<sup>2</sup> The Statewide annual harvest volume from 1977 to 1999 is shown on Figure 4.2-2.

### ***Timber Harvest Practices***

The Forest Practice Rules (*Title 14, California Code of Regulations Chapters 4*) are very specific regarding the types of cutting methods allowed on private lands in California. The two major categories of managing forest stands are classified as either even-aged or uneven-aged. Under even-aged management, a forest is grown to a final harvest age (between 50 and 80 years) and is then regenerated by either planting or natural sprouting or seeding. Under uneven-aged management, a forest is harvested periodically (every 10 to 30 years), promoting an array of age and size classes; regeneration of new trees is generally accomplished naturally. Forest Practice Rules require the landowner to leave a specified number of trees for stocking following harvest.

Under uneven-aged management the following cutting methods are generally employed:

- Single Tree Selection: Trees are removed individually, leaving a stocked forest of trees in various age and size classes. Harvest is targeted toward removing diseased and poor form trees and then to space trees to promote optimum growth.
- Group Selection: Trees are removed in openings between 0.25 and 2.5 acres to promote a forest of various age and size classes. Harvest groups are often targeted toward pockets of diseased or insect-killed trees.

Under even-aged management the following cutting methods are generally employed:

- Clearcutting: All merchantable trees are harvested. On Site I (highest productivity site), trees need to be 50 years old. For Sites II and III, the final harvest age is 60 years. For Sites III and IV, the final harvest age is 80 years. The maximum size of a clearcut opening is 20 acres for areas that would be

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<sup>2</sup> If the Feather River properties sold to SPI had been included there would have been a significantly higher harvest level shown for 1996). Pacific Gas & Electric Company's timber harvest accounts for less than one percent of the total annual timber volume harvested in California [13 million board feet/ 2 billion board feet = 0.7%].

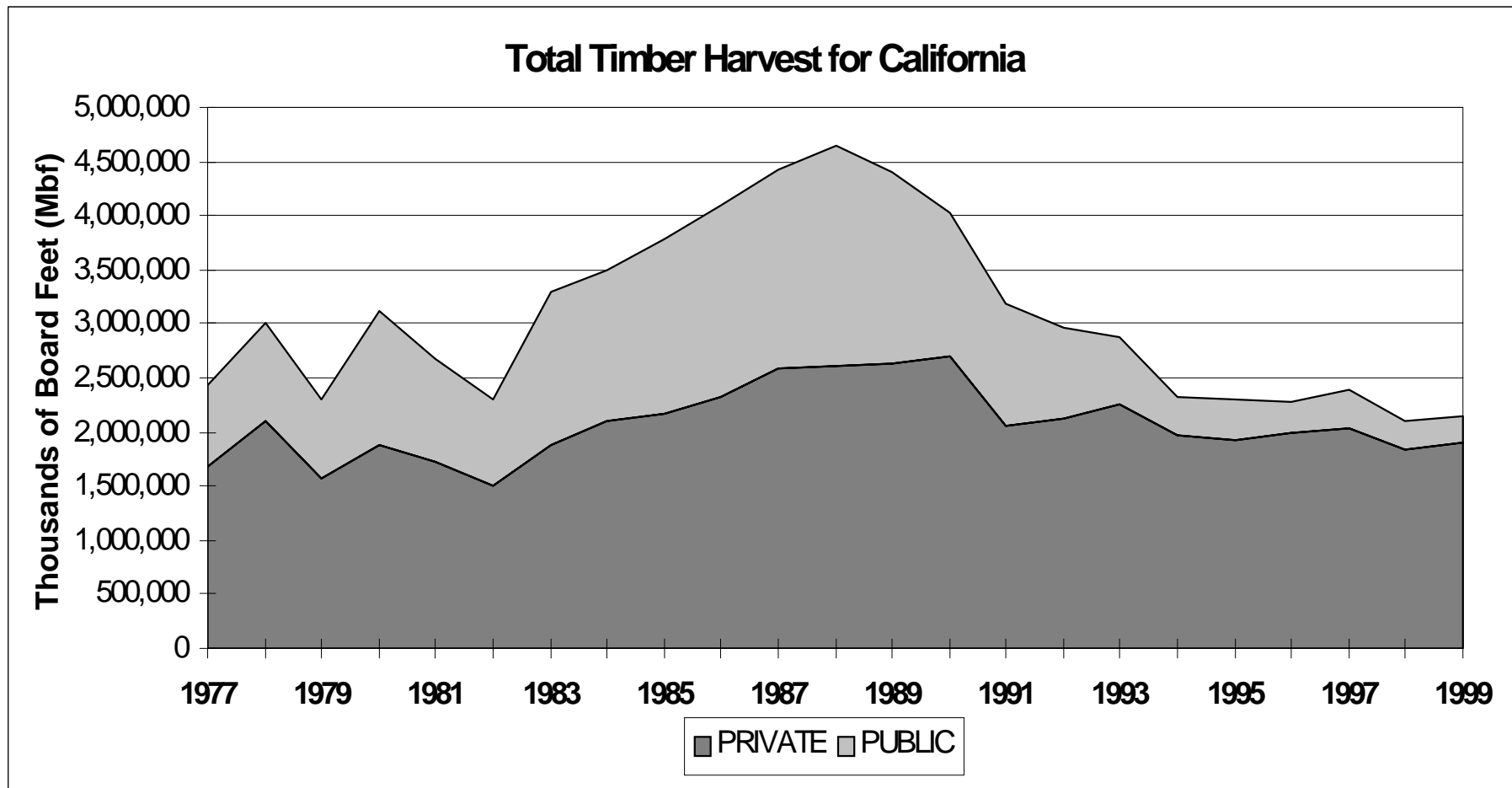


Figure 4.2-2 Statewide Annual Harvest Volume



tractor logged. The maximum size is 30 acres for areas to be logged by cable or aerial methods. Under certain conditions the maximum size can be increased to 40 acres. The minimum distance between clear cut openings is 300 feet and the area between clear cut openings must be a logical logging unit. Within two (or three) years of harvest the clearcut area must have at least 300 commercial conifer trees (seedlings and saplings) established per acre.

- **Seed Tree:** Harvest all trees with the exception of at least eight 18-inch trees per acre (or four 24 inch trees per acre). The intent is to allow for the regeneration of a new stand of trees from the seed of the seed trees. Once the young stand is established the remaining seed trees would be harvested under a seed tree removal.
- **Shelterwood:** Harvest all trees with the exception of at least 16 18-inch trees per acre. This is similar to a seed tree cut, but may require an additional seed step cut, before a new stand of trees is established.
- **Shelterwood Removal:** This harvest would remove most, if not all, of the merchantable trees. Following removal of the shelterwood trees there would be sufficient numbers of small trees to meet required stocking standards (300 trees per acre).

Under even-aged management, commercial thinning prior (usually between 10 to 20 years) to a final harvest is permitted under Forest Practice Rules. The purpose of a thinning is to capture the volume of trees that might die during the life a timber stand and improve growth and vigor of the residual trees. The residual stand of trees (the trees not harvested) must meet specified density requirements.

One additional intermediate treatment is the removal of dead and dying trees. Specifically, salvage refers to the harvest of dead and dying trees that have been killed as a result of insect, fire, windthrow, flood or other injury. Sanitation refers to the removal of trees that have been infected by disease or insects in order to maintain the health and vigor of the stand.

### ***Pacific Gas and Electric Company Timber Harvest Practices***

During the past ten years, Pacific Gas and Electric Company has covered much of its core timberland ownership with THPs. During the 1990s, Pacific Gas and Electric Company scheduled harvest operations on 24,000 acres of lands now being considered part of the divestiture. Pacific Gas and Electric Company's timber harvesting approach has centered on uneven-aged management or selection type harvesting. Covering about 92 percent of the acres under plan, the major silvicultural prescriptions planned have been partial cut methods predominantly selection and group selection. Even-aged prescriptions were predominantly shelterwood removal<sup>3</sup>, which results in harvest of larger and older trees with sufficient numbers of younger aged trees on site to meet stocking requirements. Clearcutting accounted for 1 percent of all the acres planned for harvest. The selection prescription used most recently on a large proportion of Pacific Gas and Electric Company's lands precludes an immediate re-entry with the same selection harvest prescription.

<sup>3</sup> Most of these acres are on lands located in the North Fork Feather Canyon (DeSabra watershed). Additional acres were harvested under Shelterwood Removal, but were sold to SPI and are no longer part of the ownership.

In recent years, Pacific Gas and Electric Company has prepared and amended plans to include a higher proportion of acres under a group selection prescription. This prescription involves harvesting of all merchantable trees in small areas or groups up to a maximum of 2.5 acres. Pacific Gas and Electric Company's harvest openings are typically much smaller than 2.5 acres and have targeted groups showing signs of insect attack and disease. Under this method 80 percent of the group selection acres must meet minimum stocking standards for a selection prescription. This means that not more than 20 percent of the group selection units can be harvested at one time. The group selection method allows for the harvest of more timber than a standard selection prescription and the holes created by the harvest allow for the establishment of younger trees that require more sunlight, such as Ponderosa pine.

Pacific Gas and Electric Company has utilized a special prescription termed a "Modified Fuelbreak" to create shaded fuelbreak and reduce the potential for a damaging wildfire. The Canyon Dam THP near Lake Almanor included about 300 acres of a modified fuelbreak, where trees were thinned and the fuels were treated by a combination of biomass harvesting and piling and burning logging slash. Biomass harvesting involves the cutting, removing and chipping of small trees and tops to reduce fuel loading; chipped material is hauled as fuel for biomass energy plants.

### **4.2.4 REGIONAL AND LOCAL SETTING AND REGULATORY CONTEXT**

This section describes the forest environment and management practices, and local regulations and policies in each Regional Bundle, and each local bundle, as appropriate. Specifically, this section provides an overview of forest management in the region and discusses forestry-related issues associated with land management activities.

#### **4.2.4.1 Shasta Regional Bundle**

##### **Regional Setting**

##### ***Forest Environment***

Project Lands in the Shasta Regional Bundle total 43,716 acres, of which 35,409 acres are considered forestland. Approximately 8,587 acres are designated as TPZ. Forested lands include eastside pine and juniper vegetation communities near Fall River Mills and Hat Creek, mixed-conifer forestland in the Pit River and upper Battle Creek areas and low- elevation pine and non-commercial forestlands near Kilarc-Cow Creek and lower Battle Creek. Table 4.2-2 shows the forest acres, estimated commercial forest acres and total land acres by FERC License Area in the Shasta Region.

**Table 4.2-2 Shasta Region Forest Acres**

FERC Area	Total Land Acres <sup>a</sup>	Forest Acres <sup>b</sup>	Estimated Commercial Forest Acres
Hat Creek FERC 2661	3,034	2,560	100
Pit 1 FERC 2687	9,775	2,650	0
Pit 3, 4, & 5 FERC 0233	14,142	13,772	10,500
McCloud-Pit FERC 2106	7,464	7,415	6,600
Kilarc Cow Creek FERC 606	2,422	2,409	900
Battle Creek FERC 1121	6,879	6,603	2,400
Total <sup>c,d</sup>	43,716	35,409	20,500

<sup>a</sup> From Pacific Gas and Electric Company GIS – All land (SBE Parcel coverage), excluding water.

<sup>b</sup> From Pacific Gas and Electric Company's GIS – Forest Land Use Cover.

<sup>c</sup> 216 acres shown as part of Pit 1 Project in Pacific Gas and Electric Company's GIS are included with McCloud-Pit project in this table (3 parcels adjacent to Pit #6).

<sup>d</sup> Totals may not add up exactly due to rounding.

### ***Forest Management***

Approximately 20,500 acres in the Shasta Regional Bundle are suitable for timber management; and timber harvests have been sustained on much of these lands for several decades. Since 1990, about 7,900 acres have been planned for harvest under THPs. The predominant management regime has been uneven-aged, accounting for 97 percent of the total acreage; individual selection accounted for 90 percent of all acres planned for harvest.

Timber harvest during the 1990-99 period was 58 million board feet, averaging about 6 million board feet per year (Figure 4.2-3). Dead and dying trees accounted for 29 percent of harvest volume, with the bulk of the harvesting occurring between 1993 and 1995. About 75 percent of the timber volume was removed under THPs with the remaining volume removed under exemptions and emergency notices. Volume from old growth trees accounted for 10 percent of the total volume removed. As shown in Table 4.2-3, currently there are three active THPs in the Shasta Region. These three THPs are planned for transfer with the divestiture. According to Pacific Gas and Electric Company land managers the Tunnel THP will be extended for two additional years.

**Table 4.2-3 Active Timber Harvesting Plans - Shasta Region**

Timber Harvest Plan Name	Timber Harvest Plan Number	FERC License Number	Acres <sup>a</sup>	Expiration Date
Tunnel 2001	2-97-261-SHA (4)	233, 2106	1,600	October, 2000
Baxter Bridge	2-99-295-SHA	233	1,200	December, 2002
Masters	2-99-280-SHA	2106	900	November, 2002

<sup>a</sup> Acres are from THPs.

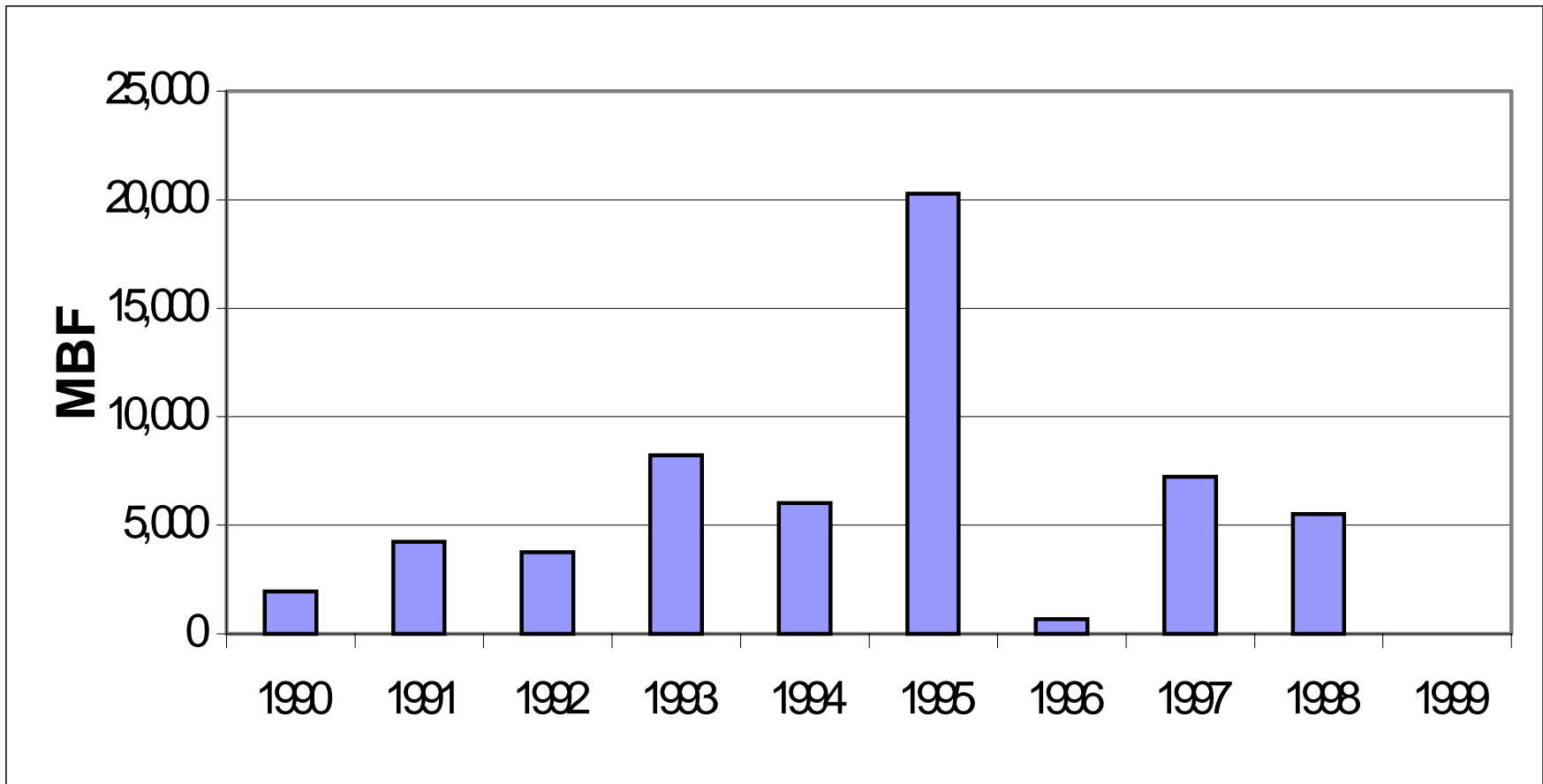


Figure 4.2-3 Annual Harvest Volume, Shasta Regional Bundle

**Bundle 1: Hat Creek*****Hat Creek 1 and 2 (FERC 2661)***

***Forest Environment.*** The Hat Creek 1 and 2 Project Lands cover 3,034 acres, of which 2,560 acres are classified as forestland. Vegetation communities include ponderosa pine forest, and other communities that are dominated by non-commercial tree species, brush species and grass. Principal commercial species in the ponderosa pine forest are ponderosa pine, white fir, incense cedar, and lodgepole pine.

***Forest Management.*** Of the 2,560 acres of forestland, about 100 acres are suitable for timber management, with remainder of the forestland is either non-commercial or marginally commercial. Lands designated as TPZ cover 1,517 acres. The commercial forest includes occasional pockets of ponderosa pine where relatively deep soils occur. No THPs were conducted on these lands during the last decade. Neighboring landowners include the USFS (Lassen National Forest), Fruitgrowers Supply, and Walker Heirs (managed by Beaty & Associates).

**Bundle 2: Pit River*****Pit 1 (FERC 2687)***

***Forest Environment.*** The Pit 1 Project Lands cover about 9,775 acres, of which 2,650 acres are classified as forestland. Vegetation is dominated by non-commercial species such as oak and gray pine and various brush and grass species. Ponderosa pine comprises a very minor component.

***Forest Management.*** Of the 2,650 forested acres, none are considered suitable for timber management. Although the area is classified as predominantly forest, site productivity is too low to sustain the management of commercial species. There are no acres designated as TPZ.

***Pit 3, 4, and 5 (FERC 0233)***

***Forest Environment.*** The Pit 3, 4, and 5 Project Lands cover 14,142 acres, of which 13,772 acres are classified as forestland. Vegetation communities include ponderosa pine stands on the upper end of Lake Britton, transitioning to mixed conifer forests along the lower reaches. Primary species include Douglas fir, white fir, incense cedar, and ponderosa pine.

***Forest Management.*** Of the 13,772 acres of forestland, about 10,500 acres are considered suitable for timber management. Lands designated as TPZ cover 928 acres. Much of the lands associated with this project have been managed for timber production over the past decade, including the highly productive “Flatwoods” area. There are two active THPs (THP No. 2-97-261, THP No. 2-99-295), covering about 1,800 acres. Harvest methods include selective cutting and a mix of tractor logging on the gentle to moderate slopes and helicopter yarding within the steep canyons. Neighboring landowners include the USFS (Shasta-Trinity National Forests), BLM, Walker Heirs (managed by Beaty & Associates), SPI, Roseburg Forest Products, and various non-industrial private owners.

***McCloud-Pit (FERC 2106)***

***Forest Environment.*** The McCloud-Pit Project Lands contain 7,249 acres, of which 7,206 acres are classified as forestland. Vegetation types include mixed conifer forest stands, containing Douglas fir, white fir, ponderosa pine, incense cedar, and sugar pine. On the drier sites, chinquapin brush fields are the sole vegetative community. In addition, there are patches throughout the area that are dominated by black oak and canyon live oak.

***Forest Management.*** Of the 7,206 acres of forestland, there are 6,500 acres suitable for timber management. Lands designated as TPZ cover 4,520 acres. These lands, like those associated with FERC 0233, have been actively managed for timber production over the past decade. There are two active THPs (THP No. 2-97- 261; THP No. 2-99-280), covering 1,900 acres. Harvest in this project area employs selective cutting methods and includes a mix of tractor logging on the gentle to moderate slopes and helicopter yarding within the steep canyons. Neighboring landowners include the USFS (Shasta-Trinity National Forests), Walker Heirs (managed by Beaty & Associates), SPI, Roseburg Forest Products and various non-industrial private owners.

**Bundle 3: Kilarc-Cow Creek**

***Kilarc-Cow Creek (FERC 0606)***

***Forest Environment.*** The Kilarc-Cow Creek Project Lands cover 2,422 acres, of which 2,409 acres are considered forestlands. Vegetation communities include mixed conifer forest, ponderosa pine and oak-gray pine association. The principal commercial species are ponderosa pine, Douglas fir, and incense cedar. The lower elevations adjacent to Cow Creek are dominated by gray pine, black oak, and various brush species such as manzanita, whitethorn, and deerbrush.

***Forest Management.*** Of the 2,409 acres of forestland, about 900 acres are considered suitable for timber management, but are at the lower elevational limit customarily managed for producing forest products. Accordingly, these lands have experienced limited silvicultural activities. Lands designated as TPZ cover 918 acres. Neighboring landowners include BLM, Roseburg Forest Products, and Walker Heirs (managed by Beaty & Associates).

**Bundle 4: Battle Creek**

***Battle Creek (FERC 1121)***

***Forest Environment.*** The Battle Creek Project Lands cover 6,879 acres, of which 6,603 acres are considered forestland. Vegetation communities include mixed conifer forest at Battle Creek Reservoir, Lake McCumber and Shingletown, to oak-gray pine timber types between the Volta Powerhouse and Coleman Powerhouse. The mixed conifer forest contains ponderosa pine, Douglas fir, incense cedar, white fir, sugar pine, red fir, lodgepole pine and California black oak.

***Forest Management.*** Of the 6,603 acres of forestland, about 2,400 acres are considered suitable for timber management. Lands designated as TPZ cover 2,520 acres. There are no active THPs,

but harvest has occurred on these lands over the past decade, including a THP at Lake McCumber and some salvage harvest. Neighboring landowners include the USFS (Lassen National Forest), La Tour Demonstration State Forest, BLM, SPI, and the Walker Heirs (managed by Beaty & Associates).

#### 4.2.4.2 DeSabra Regional Bundle

##### Regional Setting

##### *Forest Environment*

Project Lands in the DeSabra Regional Bundle total 18,014 acres, of which 14,977 acres are classified as forestland (Table 4.2-4). The region includes a range of vegetation communities, including mixed conifer forests near Lake Almanor and Butt Valley and low elevation pine and canyon live oak vegetation types along the Butte Creek and Feather River Canyons.

##### *Forest Management*

About 7,100 of the 14,977 acres in the DeSabra Region are suitable for timber management and have sustained timber harvests for several decades. Lands designated as TPZ cover 5,346 acres. Since 1990, about 3,900 acres have been scheduled for harvest under THPs. The predominant type of management has been uneven-aged cutting, accounting for 73 percent of the acres planned for harvest during the last decade.

**Table 4.2-4 DeSabra Region Forest Acres**

FERC Area	Total Land Acres <sup>a</sup>	Forest Acres <sup>b</sup>	Estimated Commercial Forest Acres
Upper North Fork Feather FERC 2105	3,659	3,206	2,900
Bucks Creek FERC 619	1,159	1,100	1,000
Rock Creek – Cresta FERC 1962	3,072	2,005	600
Poe FERC 1962 <sup>c</sup>	4,212	4,195	1,800
DeSabra-Centerville FERC 803	2,415	2,333	700
Hamilton Branch	2,233	1,003	100
Lime Saddle	121	109	0
Coal Canyon	1,143	1,026	0
Total <sup>d</sup>	18,014	14,977	7,100

<sup>a</sup> From Pacific Gas and Electric Company's GIS – All lands (SBE parcel coverage) excluding water.

<sup>b</sup> From Pacific Gas and Electric Company's GIS – Forest Land use Cover.

<sup>c</sup> Includes 4 parcels listed in Pacific Gas and Electric Company GIS as associated with FERC 2105. These parcels are adjacent to Lake Oroville and other Poe Project Lands. The closest FERC 2105 parcels are located several miles northeast of these parcels.

<sup>d</sup> Totals may not add up exactly due to rounding.

Timber harvest during the 1990-99 period was 27 million board feet or about three million board feet per year (see Figure 4.2-4). Volume from dead and dying trees accounted for only four percent of the harvest; similarly, volume from exemptions and emergency notices accounted for four percent of the volume harvested. Volume removed from old growth trees accounted for 11 percent of the volume harvested over the past decade.

Pacific Gas and Electric Company conveyed 3,092 acres of timberland in the North Fork Feather Canyon to SPI in 1997. While under Pacific Gas and Electric Company ownership the THP was prepared by an SPI forester and the logs were sold to the same company. A substantial amount of the volume was removed by helicopter. Timber harvested from this property is not included in the above volume totals.

The DeSabra Region contains one active THP, the Canyon Dam THP (Table 4.2-5); however, all the scheduled timber volume was removed in 1999.

**Table 4.2-5 DeSabra Region – Active Timber Harvesting Plans**

THP Name	THP No.	FERC License No.	Acres	Expiration Date
Canyon Dam	2-97-281-PLU	2105	1,260	November, 2000

**Bundle 5: Hamilton Branch**

***Hamilton Branch (non-FERC)***

***Forest Environment.*** The Hamilton Branch Project Lands include 2,233 acres of which 1,003 acres are considered forestland. Vegetation is dominated by marsh and meadows along the fringe of Mountain Meadows Reservoir. There is second growth ponderosa and lodgepole pine on the well-drained areas adjacent to the reservoir and along the facilities connecting the reservoir to the Powerhouse.

***Forest Management.*** Of the 1,003 forested acres, only about 100 acres are suitable for timber management. Lands designated as TPZ cover 199 acres. Most of the forestland is either in non-commercial lodgepole pine or is directly adjacent to facilities, streams and lakes, which removes most of this project land from serious timber management consideration. Pacific Gas and Electric Company’s harvest has been restricted to occasional salvage entries.



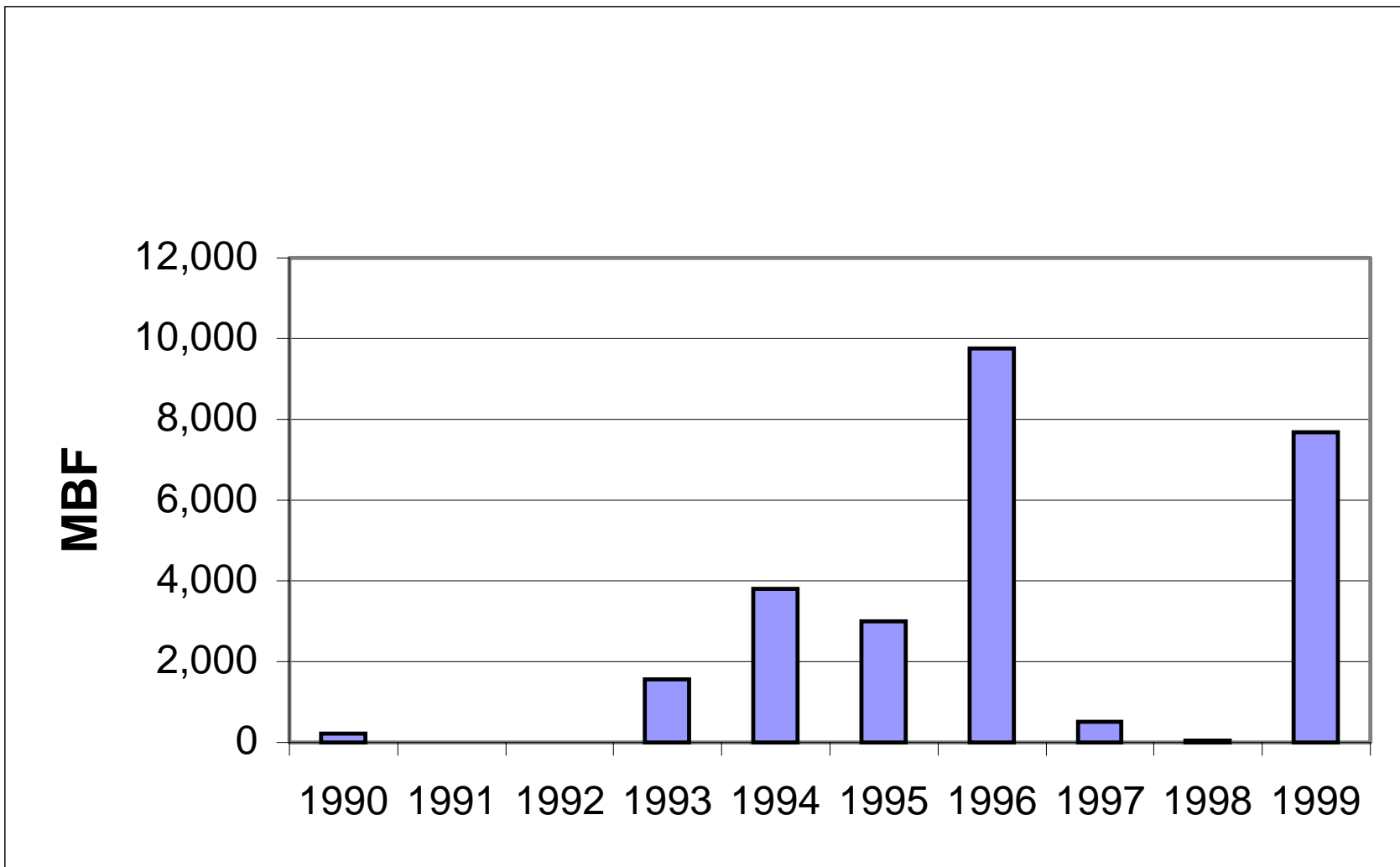


Figure 4.2-4 Annual Harvest Volume, DeSabra Regional Bundle

**Bundle 6: Upper North Fork Feather River**

***Upper North Fork Feather River (FERC 2105)***

***Forest Environment.*** The Upper North Feather River Project Lands contain 3,659 acres, of which 3,206 acres are classified as forestland. Vegetation communities include mixed-conifer near Lake Almanor and Butt Valley Reservoir and low elevation canyon vegetation types within the North Fork Feather River Canyon. Principal species include those commercial timber species typical for the west slopes of the Sierra Nevada, including white fir, ponderosa pine, Douglas-fir, incense-cedar and sugar pine; lodgepole pine is found adjacent to meadows and lakes. Principal understory species include manzanita, deerbrush, tan-oak and whitethorn. On the steep canyon slopes of the North Fork Feather River Canyon, the above species are joined with increased amounts of canyon live oak and brush species.

***Forest Management.*** About 2,900 acres are considered suitable for timber management. Lands designated as TPZ cover 805 acres within the Upper North Fork Feather River FERC area. With the exception of salvage harvests, there have only been two THPs within this project area: the Canyon Dam THP and the Butt Valley Hazard Tree THP (THP No. 2-94-393-PLU)- covering about 1,900 acres. The most recent major harvest activity was the Canyon Dam THP near Lake Almanor, which includes 355 acres of a community fuelbreak adjacent to Canyon Dam, Union Pacific Railroad right-of-way, and both the Plumas and Lassen National Forests. Harvest prescriptions were a mix of selection and group selection. Typically salvage harvests and removal of hazard trees adjacent to campgrounds and facilities have taken place. Neighboring landowners include the USFS (Plumas and Lassen National Forests), Collins Pine, Walker Heirs (managed by Beaty & Associates) and SPI.

***Rock Creek-Cresta (FERC 1962)***

***Forest Environment.*** The Rock Creek-Cresta Project Lands contain 3,072 acres, of which 2,005 acres are considered forestland. Vegetation communities include conifer and lodgepole pine stands in the vicinity of Humbug Valley and mostly steep canyon timberland and brush within the North Fork Feather River Canyon. Principal commercial species are Douglas-fir, ponderosa pine, white fir, sugar pine and incense-cedar. Understory hardwood and brush species include black oak, tan-oak, bigleaf maple, canyon live oak, manzanita, and deerbrush.

***Forest Management.*** Of the 2,005 forest acres, about 600 acres are suitable for timber management. Project Lands designated as TPZ cover 1,646 acres. Portions of the Project Lands were harvested by helicopter under a THP (THP No. 2- 95-408 BUT(1)) in 1996. The area has limited potential for timber management, due to steep slopes (limited to helicopter logging) and low site productivity. The silvicultural prescription employed was shelterwood removal. Neighboring landowners include the USFS (Plumas National Forest) and SPI.

***Poe (FERC 2107)***

***Forest Environment.*** The Poe Project Lands contain about 4,212 acres of which 4,195 acres are considered forestland. Topography generally consists of steep canyon lands. Principal vegetation includes ponderosa pine, Douglas-fir, sugar pine and incense-cedar. The low elevations grade into non-commercial forest dominated gray pine, live oak, black oak, big-leaf maple and various brush species, dominated by manzanita.

***Forest Management.*** About 1,800 of the 4,195 forest acres are considered suitable for timber management. Lands designated as TPZ cover 2,424 acres. Commercial forestland contains a mix of highly productive sites outside the canyon to low productivity and marginal sites on the slopes of the North Fork Feather River Canyon. Poe Project Lands were covered by three THPs in 1996 (THP No. 2-95-408, 2-96-040 and 2-96-135) and were logged under a mix of helicopter and tractor logging. Shelterwood removal, selection and rehabilitation were the silvicultural prescriptions used on these THPs. Neighboring landowners include the USFS (Plumas National Forest), SPI and various non-industrial private landowners.

**Bundle 7: Bucks Creek*****Bucks Creek (FERC 0619)***

***Forest Environment.*** The Bucks Creek Project Lands cover 1,159 acres, of which 1,100 acres are classified as forestland. This project contains two separate areas: one located on the steep canyon slopes of the North Fork Feather River; and the other on the forested area adjacent to Bucks Lake. Principal commercial timber species include white fir, ponderosa pine, Douglas-fir, incense-cedar and lodgepole pine.

***Forest Management.*** Of the 1,100 forest acres, about 1,000 acres are considered suitable for timber management. Project Lands designated as TPZ cover 164 acres. The steep canyon tract was harvested under a THP in 1996 (THP No. 2-95-407-PLU(2)) and was recently burned in the Bucks Fire. The Bucks Lake lands contain a mix of sawtimber, pole timber and lodgepole pine; although the area shows evidence of being harvested, no harvest has occurred in the past 10 years. Neighboring landowners include the USFS (Plumas National Forest) and SPI.

**Bundle 8: Butte Creek*****DeSabra-Centerville (FERC 0803)***

***Forest Environment.*** The DeSabra-Centerville Project Lands contain 2,415 acres, of which 2,333 acres are considered forestland which contains a mix of commercial and non-commercial timberland. Most of the commercial forest is located in the Toadtown-DeSabra area and contains a mix of ponderosa pine, sugar pine, Douglas-fir, white fir and incense-cedar.

***Forest Management.*** Of the total 2,333 forest acres, about 700 acres are considered suitable for timber management. Lands designated as TPZ cover 108 acres. Over four million board feet were

removed in the DeSabra Timber Sale (THP No. 2-93-010) from 378 acres between 1993 and 1995. The sale was adjacent to the DeSabra Forebay and the Skyway. Selection was the predominant prescription, leaving a well-stocked stand of large trees. Other entries in the area have been confined to salvage harvest. Neighboring landowners include SPI and various non-industrial private landowners.

### ***Lime Saddle (non-FERC)***

***Forest Environment.*** The Lime Saddle Project Lands contain 121 acres, of which 109 acres are classified as forestland.

***Forest Management.*** These Project Lands contain no lands suitable for commercial timber harvest. No acres are designated as TPZ.

### ***Coal Canyon (non-FERC)***

***Forest Environment.*** The Coal Canyon Project Lands contain 1,143 acres, of which 1,026 acres are considered forestland.

***Forest Management.*** These Project Lands contain no lands suitable for commercial timber harvest. No acres are designated as TPZ.

#### **4.2.4.3 Drum Regional Bundle**

##### **Regional Setting**

##### ***Forest Environment***

Project Lands in the Drum Regional Bundle include two distinct geographic areas containing 22,548 acres of which 18,749 acres are considered forestland (Table 4.2-6). The Sierra Nevada portion of this Regional Bundle is centered primarily along the Interstate 80 corridor in Nevada and Placer Counties and the other lies adjacent to Eel River and Lake Pillsbury in Lake and Mendocino Counties. The Sierra portion includes three FERC License Areas (the Drum-Spaulding, the Narrows and the Chili Bar) and covers a wide range of vegetation communities that correspond primarily to the elevational changes that occur on the western slopes of the Sierra Nevada. Parcel elevations range from less than 1,000 feet to more than 8,000 feet (msl). This wide elevational range results in diverse vegetation including subalpine areas dominated by red fir, lodgepole pine, mountain hemlock, Jeffery pine, western white pine, juniper and aspen. Mid-elevation areas are dominated by mixed conifer timber stands containing ponderosa pine, sugar pine, white fir, Douglas-fir, incense cedar and black oak. Oaks, brush species and gray pine, dominate the low elevation areas.

The Eel River/Lake Pillsbury parcels, also known as Potter Valley, support a variety of vegetation communities also typical of the mixed conifer and mixed hardwood-conifer vegetation communities of the Northern California Coast Range. The dryer south facing slopes support more oak and brush species.

**Table 4.2-6 Drum Region Forest Acres**

FERC Area	Total Acres <sup>a</sup>	Forestland Acres <sup>b</sup>	Estimated Commercial Forest Acres (est.)
Drum-Spaulding FERC 2310	16,354	14,450	9,400
Narrows FERC 1403	87	87	0
Chili Bar FERC 2155	164	154	0
Potter Valley FERC 0077	5,943	4,058	3,400
Total Acres <sup>c</sup>	22,548	18,749	12,800

<sup>a</sup> From Pacific Gas and Electric Company's GIS – All land (SBE parcel coverage) excluding water.

<sup>b</sup> From Pacific Gas and Electric Company's GIS – Forest Land Use Cover.

<sup>c</sup> Totals may not add up exactly due to rounding.

### ***Forest Management***

About 12,800 of the 18,749 forest acres are suitable for timber management. Project Lands designated as TPZ cover 8,172 acres. These timberlands are generally located between 2,000 and 6,000 feet above msl in the Sierra area. In Potter Valley, the commercial forestlands are scattered throughout the area. Since 1990, about 7,400 acres have been harvested under THPs in the Drum Region. The predominant management type has been uneven-aged silviculture involving selection harvesting which accounted for 95 percent of the total acreage harvested.

Timber harvested during the 1990-99 period totaled about 47 million board feet (see Figure 4.2-5). About 77 percent of the timber was removed under THPs with the remaining volume removed under salvage exemption and emergency notices (the removal of dead or dying trees). All of the 15 THPs harvested since 1990, except one in Potter Valley, were located in Drum-Spaulding Project Lands. Additionally, there are eight THPs covering about 5,500 acres that are active on Drum-Spaulding Project Lands but currently have no record of harvesting or contain some unharvested volume. There are eight active THPs in the Drum Region (Table 4.3-7) covering about 5,500 acres.

**Table 4.2-7 Drum Region Active Timber Harvesting Plans**

THP Name	THP No.	FERC License No.	Acres	Expiration Date
Lincoln Highway	2-96-464/PLA	2310	870	January, 2001
Bowman	2-98-011/PLA	2310	660	June, 2001
Deer Creek Forebay	2-99-019/NEV	2310	479	April, 2002
Spaulding Helo.	2-97-300/NEV	2310	548	November, 2000
Spaulding Tract.	2-97-301/NEV	2310	385	November, 2000
Boardman-Crist	2-99-185/PLA	2310	747	October, 2002
Grouse Camp 19	2-99-188/NEV	2310	1,480	September, 2002
Emigrant Pass Helo	2-99-212/PLA	2310	340	October, 2002

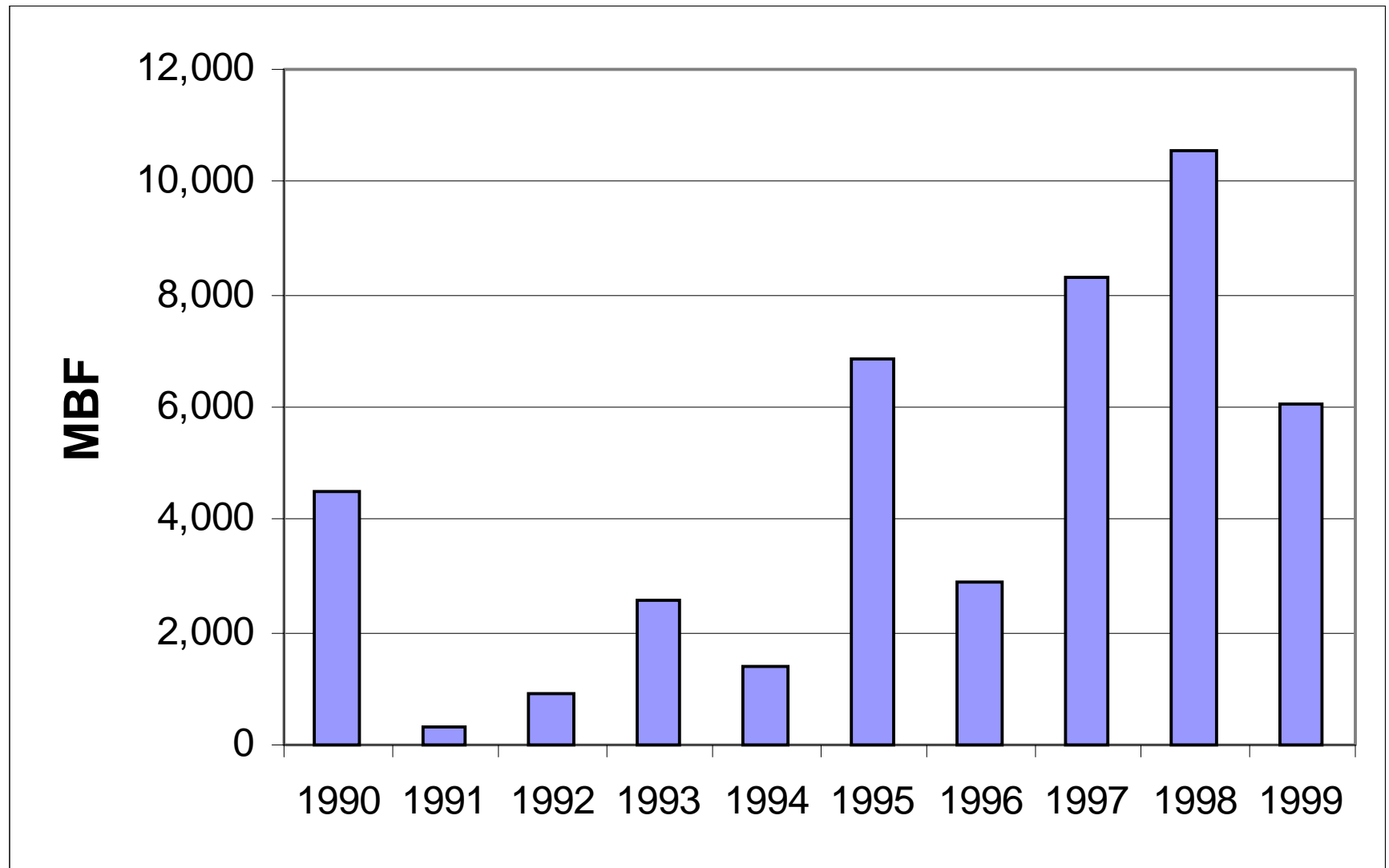


Figure 4.2-5 Annual Harvest Volume, Drum Regional Bundle

Five THPs are currently planned for transfer with divestiture: Grouse Camp 19, Spaulding Tractor, Bowman, Spaulding Helicopter, and Boardman Crist. The remaining THPs (as well as a portion of Boardman Crist) were harvested in the Year 2000. The expiration dates on all eight active THPs could be extended, if necessary, for two additional years except for the Lincoln Highway THP, which could be extended one additional year.

### **Bundle 9: North Yuba River**

#### ***Narrows (FERC 1403)***

***Forest Environment.*** The Narrows Project Lands comprise 87 acres at the 600-foot-elevation level, all classified as forestland. The vegetation community is limited to non-commercial gray pine and various species of oak and brush.

***Forest Management.*** Due to the low elevation, low site and steep inner-gorge topography, these parcels are not considered commercial timberland. There are no Project Lands designated as TPZ.

### **Bundle 10: Potter Valley**

#### ***Potter Valley (FERC 0077)***

***Forest Environment.*** The Potter Valley Project Lands cover 5,943 acres ranging from about 500 feet to about 1,000 feet above msl along side slopes that lead to Lake Pillsbury and the Eel River. Land classified as forestland covers 4,058 acres. Principal tree species consist primarily of Douglas-fir, ponderosa pine and oak. Live oak and brush species are dominate on the dryer south facing slopes and ridge tops while the conifers are concentrated in higher site pockets along stream bottoms, in draws and on north facing slopes. Alders and willows are mixed with the conifers along riparian corridors.

***Forest Management.*** Of the 4,058 forest acres, 3,400 acres are suitable for timber management. Lands designated as TPZ cover 260 acres. Over five million board feet of timber volume were removed under one THP that was harvested in the early 1990's. Pacific Gas and Electric Company's THP for the Trout Creek area was withdrawn by Pacific Gas and Electric Company in 1989, due to concerns about potential impacts to old growth and archeological sites. The primary neighboring landowner is the USFS (Mendocino National Forest) and mixed small private ownerships.

### **Bundle 11: South Yuba River**

#### ***Drum-Spaulding (FERC 2310)***

***Forest Environment.*** The Drum-Spaulding Project Lands cover 16,354 acres with elevations ranging from less than 1,000 feet above msl at the Newcastle powerhouse area to more than 8,000 feet above msl in the White Rock Lake area. Lands classified as forest cover 14,450 acres. A variety of vegetation communities including red fir, lodgepole pine, Jeffery pine, western white pine, juniper and aspen. The higher subalpine areas around White Rock Lake, Meadow Lake, Fall

Creek and Fordyce Lake support oak (live oak and black oak), gray pine and various brush species dominate the lower elevations parcels associated with the Halsey, Wise and Newcastle powerhouses. Mixed conifer stands composed of ponderosa pine, sugar pine, white fir, Douglas fir and incense cedar dominate the middle elevational ranges associated with the parcels in the proximity of the Spaulding, Deer Creek, Drum, Dutch Flat and Alta powerhouses.

**Forest Management.** Of the 14,450 forest acres, 9,400 acres are suitable for timber management. Project Lands designated as TPZ cover 7,912 acres. Fourteen THPs were harvested in the past 10 years which resulted in the removal of about 31 million board feet from about 6,900 acres. In addition, approximately 11 million board feet of salvage timber (dead or dying trees) was removed from over many Project Lands during the last 10-year period. The primary neighboring landowners above the vicinity of the Alta powerhouse are the USFS (Tahoe National Forest), SPI and mixed small private ownerships. Below the Alta powerhouse area the neighboring ownerships shift toward the BLM and mixed small private ownerships.

### **Bundle 12: Chili Bar**

#### ***Chili Bar (FERC 2155)***

**Forest Environment.** The Chili Bar Project Lands comprise 164 acres at the 1,200-foot elevation level, of which 154 acres are classified as forest. The vegetation community is limited to non-commercial gray pine and various species of oak and brush.

**Forest Management.** Due to the low elevation, low site and steep inner gorge topography, these parcels are not considered commercial timberland. There are no lands designated as TPZ.

### **4.2.4.4 Motherlode Region Bundle**

#### **Regional Setting**

##### ***Forest Environment***

Project Lands in the Motherlode Regional Bundle total 7,960 acres with 6,561 acres classified as forestland (Table 4.2-8). This area contains a wide range of vegetation communities that correspond primarily to the elevation changes that occur on the western slopes of the Central Sierra Nevada. Pacific Gas and Electric Company parcels in this region range in elevation from less than 1,000 to more than 8,000 feet above msl. This wide elevation range results in diverse vegetation including sub-alpine areas dominated by red fir, lodgepole pine, mountain hemlock, Jeffery pine, western white pine, juniper and aspen. Mid-elevation areas are dominated by mixed conifer timber stands containing ponderosa pine, sugar pine, white fir, Douglas-fir, incense cedar and black oak. Low elevation areas are dominated by oak (live oak and black oak), brush and gray pine. Some of the high elevation parcels are near the boundary of the Mokelumne or Emigrant Wilderness Areas.



**Table 4.2-8 Motherlode Region Forest Acres**

FERC Area	Total Acres <sup>a</sup>	Forestland Acre <sup>b</sup>	Estimated Commercial Forest Acres
Mokelumne FERC 0137	6,218	4,848	2,100
Spring Gap FERC 2130	741	737	200
Phoenix FERC 1061	991	976	600
Merced Falls FERC 2467	10	0	0
Total Acres <sup>c</sup>	7,960	6,561	2,900

<sup>a</sup> From Pacific Gas and Electric Company's GIS – All land acres (SBE parcel coverage) excluding water.

<sup>b</sup> From Pacific Gas and Electric Company's GIS – Forest Land Use Cover.

<sup>c</sup> Totals may not add up exactly due to rounding.

### ***Forest Management***

Of the 6,561 acres of forestland, about 2,900 acres are suitable for timber management. Lands designated as TPZ cover 2,014 acres. These timberlands are located primarily between 2,000 and 6,000 feet above msl. Since 1990, about 500 acres have been harvested under four THPs. In addition, one THP was approved in 1999 and was harvested in 2000, with a small portion extended to 2001. The predominant management type has been uneven-aged silviculture involving selection harvesting, which accounted for 99 percent of the total acreage harvested. Timber harvests during this period totaled about 9 million board feet (Figure 4.2-6). About 56 percent of the timber volume was removed under THPs with the remaining volume removed under salvage exemptions and emergency notices (removal of dead or dying trees).

Currently there is one active THP (Table 4.2-9), in the Motherlode Region.

**Table 4.2-9 Motherlode Region Active Timber Harvesting Plans**

THP Name	THP No.	FERC License No.	Acres	Expiration Date
Tiger Creek	4-99-90/AMA	0137	540	November, 2002

This THP is planned for harvest prior to divestiture; however, the expiration date could be extended to November 2004.

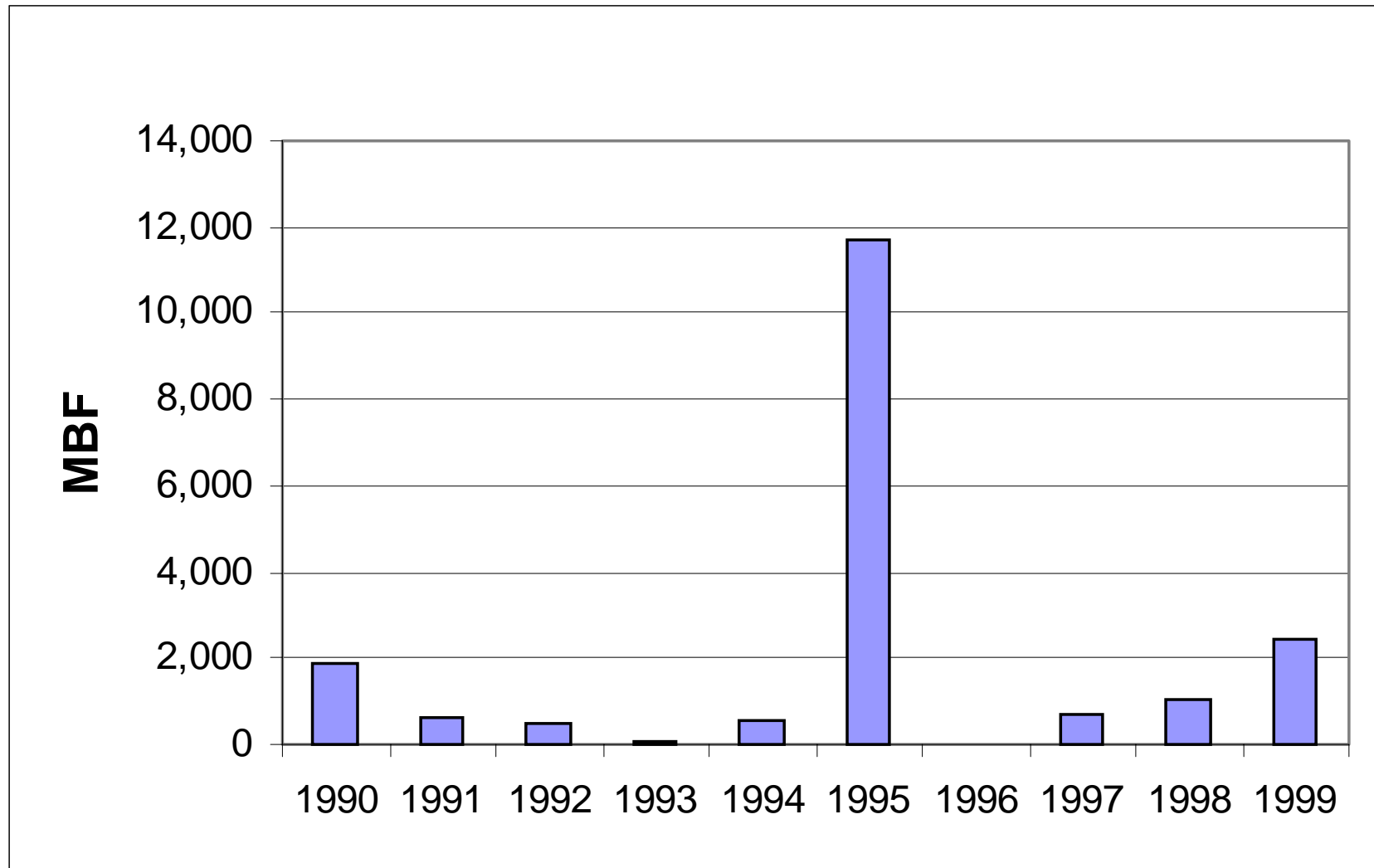


Figure 4.2-6 Annual Harvest Volume, Motherlode Regional Bundle

**Bundle 13: Mokelumne River*****Mokelumne Project (FERC 0137)***

***Forest Environment.*** The Mokelumne Project Lands consist of 6,218 acres with elevations ranging from less than 1,000 feet above msl at the Electra powerhouse to more than 8,000 feet above msl at Blue Lakes. Land classified as forest covers 4,848 acres. A variety of tree species are present, including red fir, lodgepole pine, Jeffery pine, western white pine, juniper and aspen in the higher sub-alpine areas around Blue Lake, Meadow Lake, and Summit Lake. Oak (live oak and black oak), gray pine and various brush species occur in the lower elevation areas associated with the West Point and Electra powerhouses. Mixed conifer timber stands composed of ponderosa pine, sugar pine, white fir, Douglas-fir and incense cedar dominate the middle elevational range associated with Bear River, Salt Springs and Tiger Creek. Steep and rocky inner gorges dominate much of the terrain adjacent to the North Fork Mokelumne River.

***Forest Management.*** Of the 4,848 forest acres, about 2,100 acres are suitable for timber management. Project Lands designated as TPZ cover 1,385 acres. Approximately four million board feet of timber volume was removed under two THPs that covered about 300 acres on these lands during the last decade. In addition, extensive salvage of dead and dying timber was conducted over many of the acres in this project area during this last 10-year period. The primary neighboring landowners above 2,000 feet above msl include the USFS (El Dorado and Stanislaus National Forests) and SPI. Below 2,000 feet elevation, the BLM and mixed small private ownerships are the primary neighboring landowners.

**Bundle 14: Stanislaus River*****Spring Gap-Stanislaus (FERC 2130)***

***Forest Environment.*** The Spring Gap Project Lands consist of 741 acres with elevations ranging from less than 2,000 feet above msl at the Stanislaus Forebay parcel to more than 6,000 feet above msl at the Kennedy Meadows parcels. Project Lands classified as forest cover 737 acres. A variety of tree species are present, including red fir, lodgepole pine, mountain hemlock, western white pine, Jeffery pine and aspen in the higher elevations. Oak (live oak and black Oak), gray pine and various brush species occur in the lower elevation areas. Mixed conifer timber stands composed of ponderosa pine, sugar pine, white fir, Douglas-fir, incense cedar and black oak dominate the middle elevational range typified by the parcels near Sourgrass Meadows.

***Forest Management.*** Of the 737 acres of forestland, about 200 acres are suitable for timber management. There are no lands designated as TPZ. Approximately one million board feet were removed under two THPs that covered about 200 acres on these lands during the last decade. In addition, extensive salvage of dead and dying timber was conducted over many acres in this project area during this last 10-year period. The primary neighboring landowners include the USFS (Stanislaus National Forest) and SPI in the middle elevations, USFS in the upper elevations and USFS and small mixed private ownerships at the lower elevations.

***Phoenix (FERC 1061)***

***Forest Environment.*** The Phoenix Project Lands consist of about 991 acres with elevations ranging from less than 2,000 feet above msl in the small parcel above the Phoenix powerhouse to over 4,000 feet above msl in the parcels south of Crandall Peak. Project Lands classified as forest cover 976 acres. The Phoenix Project Lands support a variety of vegetation communities including mixed conifer stands composed of ponderosa pine, sugar pine, white fir, Douglas-fir, incense cedar and black oak. Oak (live oak and black oak) gray pine and various brush species occur on the small parcel above the Phoenix powerhouse.

***Forest Management.*** Of the 976 forest acres, about 600 acres are suitable for timber management. Project Lands designated as TPZ cover 629 acres. There was no timber volume removed under THPs on these lands during the last decade. However, salvage of dead and dying timber was conducted over many of the acres in this project area. The primary neighboring landowners include the Stanislaus National Forest and SPI. The majority of the parcels for this project area lie above and around Lyons Reservoir. Those lands above the reservoir are primarily commercial timberland, but the potential to intensively harvest is limited due to riparian considerations along the South Fork Stanislaus River and lower site volcanic rock features. The parcels adjacent to the reservoir are dominated by the reservoir itself and established recreation sites making commercial timber management very difficult even though some high site timberland is present. Besides the small parcel above the Phoenix powerhouse, two other small parcels exist in the project area, which offer limited timber harvesting opportunities. The commercial use of these parcels is constrained by their small size (approximately 40-acre each) and riparian considerations.

**Bundle 15: Merced River**

***Merced Falls (FERC 2467)***

***Forest Environment.*** The Merced River Project Lands contain 10 acres, of which no acres are considered forested.

***Forest Management.*** No acres of these Project Lands are suitable for timber management and no lands are designated as TPZ.

**4.2.4.5 Kings Crane-Helms Regional Bundle**

**Regional Setting**

***Forest Environment***

Project Lands in the Kings Crane-Helms Region total 2,843 land acres, of which 2,000 acres are classified as forestland (Table 4.2-10). The forested lands include a range of vegetation environments including high-elevation red fir and lodgepole pine to non-commercial gray pine and oak at the lowest elevations.

**Table 4.2-10 Kings Crane Forest Acres**

FERC Area	Total Land Acres	Forest Acres	Estimated Commercial Forest Acres
Crane Valley FERC 1354	1,077	1,015	100
Kerckhoff FERC 0096	228	207	0
Helms FERC 2735.	342	342	100
Haas-Kings River FERC 1988	445	377	0
Balch FERC 0175	0	0	0
Tule River FERC 1333	78	59	0
Kern Canyon FERC 0178	673	0	0
Total	2,843	2,000	200

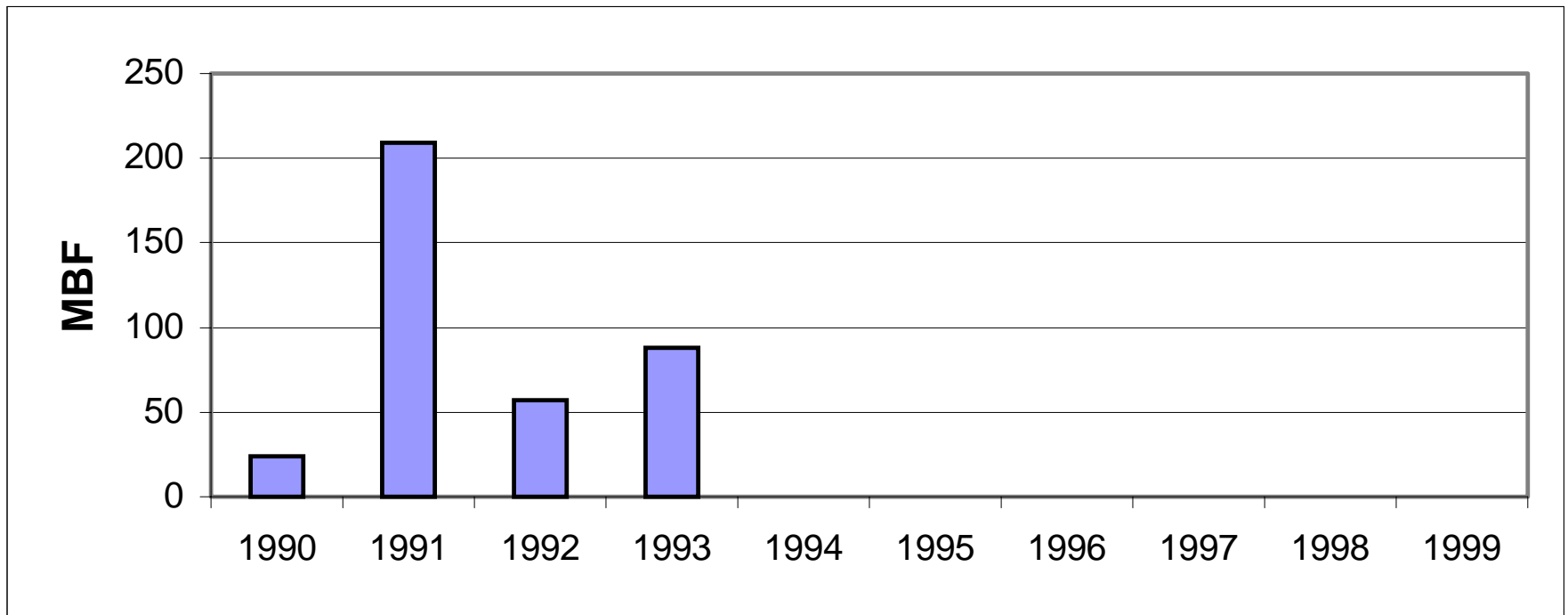
***Forest Management***

Of the 2,000 forest acres, approximately 200 acres are suitable for timber management and little timber harvesting has occurred on these lands with the exception of salvage harvests. There are no lands designated as TPZ. Harvests over the past decade have been limited to the removal of dead or hazard trees in the vicinity of power or recreation facilities. Timber harvest during this period was 400 thousand board feet, averaging about 40 thousand board feet per year (Figure 4.2-7). Dead and dying trees accounted for 100 percent of the harvest volume, with the bulk of the harvesting occurring between 1993 and 1995. All the timber volume was removed under exemptions and emergency notices. Volume from old growth trees accounted for six percent of the total volume removed. Currently there are no active THPs in the Kings Crane Region.

**Bundle 16: Crane Valley*****Crane Valley (FERC 1354)***

***Forest Environment.*** The Crane Valley Project Lands contain 1,077 acres, of which 1,015 acres are considered forestland. Vegetation is predominantly blue oak and gray pine at the lower elevations, ponderosa pine, live oak, and black oak at the mid-elevations, and red fir and lodgepole pine at higher elevations.

***Forest Management.*** Of the 1,015 forest acres, only about 100 acres are suitable for timber management. There are no lands designated as TPZ. Although there is limited area suitable for timber management, no THPs were conducted on these lands during the last decade. Most of the potentially suitable forestland is located adjacent to power or recreation facilities, which make forestlands in this area unsuitable for long-term timber management. Salvage harvest has taken place to recover insect-killed pine, mainly to reduce hazards. Neighboring landowners include the USFS (Sierra National Forest).



**Figure 4.2-7 Annual Harvest Volume, Kings Crane-Helms Regional Bundle**

**Bundle 17: Kerckhoff*****Kerckhoff (FERC 0096)***

***Forest Environment.*** The Kerckhoff Project Lands cover 228 acres, of which 207 acres are classified as forestland. The vegetation within this project is limited to non-commercial foothill species such as oak and gray pine.

***Forest Management.*** Of the 207 forest acres, no acres of these Project Lands are suitable for timber management. There are no lands designated as TPZ.

**Bundle 18: Kings River*****Helms Pumped Storage (FERC 2735)***

***Forest Environment.*** The Helms Project Lands contain 342 acres, all of which is classified as forestland. Vegetation types include red fir-lodgepole pine at the higher elevations and mixed-conifer at the low to mid-elevations.

***Forest Management.*** Of the 342 acres, about 100 acres are considered suitable for timber management. There are no lands designated as TPZ. A THP was conducted in the Project Lands during the 1980's.

***Haas-Kings River (FERC 1988)***

***Forest Environment.*** The Haas-Kings River Project Lands cover 445 acres, of which 377 acres are considered forestlands. Vegetation types include lodgepole pine, ponderosa pine and blue oak savannah.

***Forest Management.*** Of the 377 forest acres, no acres are considered suitable for timber management. There are no lands designated as TPZ.

***Balch (FERC 0175)***

There are no land acres associated with this FERC license.

**Bundle 19: Tule River*****Tule River (FERC 1333)***

***Forest Environment.*** The Tule River Project Lands cover 78 acres, of which 59 acres are considered forestland. The forest acres contain non-commercial gray pine and oak.

***Forest Management.*** Of the 59 forest acres, no acres are suitable for timber management. There are no lands designated as TPZ.

## **Bundle 20: Kern Canyon**

### ***Kern Canyon (FERC 0178)***

***Forest Environment.*** The Battle Creek Project Lands cover 673 acres of which no acres are considered forestland.

***Forest Management.*** No acres are suitable for timber management. There are no lands designated as TPZ.

#### **4.2.4 STANDARDS OF SIGNIFICANCE**

For purposes of this analysis impacts to forestry resources are considered significant if:

- Increased harvest levels as a result of the project over the first five years following divestiture could result in a 5 percent reduction in commercial timber inventories in affected counties and resource areas in California.

A five percent threshold is selected because there could be a noticeable reduction in the amount of timber resource either available for harvest or for habitat for forest species. This standard of significance addresses the temporary decline in timber inventory as a result of timber harvesting.

- Land use development as a result of the project could result in a 5 percent loss of commercial forestland in any affected counties in California.

A five percent reduction in commercial forestland or productivity would be a level where there would be a noticeable reduction in the number of timber produced. This standard of significance addresses the long-term effect of removing forestlands taken out of production as a result of land development.

#### **4.2.6 ANALYTICAL METHODS**

##### **4.2.6.1 Timber Inventory and Productivity**

The evaluation of the baseline condition and analysis of the probable project impacts was based on the projected levels of harvest discussed in Chapter 3. The project is projected to cause an increase in the level of timber harvest resulting in a decline in timber inventories over the first five years of divestiture. Within the first five years of an ownership change, the new owner would have a reasonable opportunity to harvest the legally and economically available timber resources on Project Lands. Following the first five-year period, harvest levels would likely be reduced when compared to the baseline to allow the inventory time to grow back. To determine the project's effect on inventories, estimated growth and harvest is projected for the timberland property included in the divestiture. The project's effect is calculated as the difference between baseline and project inventories:



- Five-year Growth less Baseline Harvest = Baseline Inventory after five years
- Five-year Growth less Project Harvest = Project Inventory after five years
- Baseline Inventory less Project Inventory = Inventory reduction due to the project

The estimated reduction in inventory is compared to Forest Service Survey estimates of timber inventories in the affected counties or county groups to estimate the effects of the project. For impacts to the entire system, all three relevant interior California Resource Regions are used as bases to evaluate system-wide impacts.<sup>4</sup>

To determine the reduction in forest productivity, the analysis relies on the land use development assumptions in Chapter 3. Land use development would cause conversions to other uses, forcing timberland out of production. The amount of land removed from forest production and the loss of productivity from these lands are compared to Forest Service Survey estimates of timberland acres in the affected counties or regions to estimate the effects of the project. For impacts to the entire system, all three relevant interior California Resource Regions are used as bases to evaluate system-wide impacts.

Elevation and timber site considerations were used to estimate the number of acres that would be suitable for long-term commercial forest management. The estimated acreage suitable for timber management was determined by reducing the total forestland area to account for lands supporting non-commercial species and lands that are too difficult to manage intensively. The latter includes lands adjacent to reservoirs, powerhouses, penstocks, canals, transmission lines, and riparian habitat where efficient commercial tree harvest and growth are difficult. The scattered distribution of many of the small parcels also limit values for long term timber management, but this consideration was not used to identify lands suitable for this purpose because adjacent land owners may desire to enlarge or “block-up” their current timberland ownerships with the parcels.

The following potential impacts are considered to have no effect and are not further analyzed.

#### **4.2.6.2 Reforestation**

The project could result in an increase in timber harvesting and even-aged management systems but would not likely cause a reduction in reforestation efforts. Under Forest Practice Rules and the THP process, a landowner is required to restock the lands with commercial conifer species suitable for the site. For those acres that would be harvested by clearcutting, there would be increased investment in reforestation, including clearing the site (including burning), planting tree seedlings

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<sup>4</sup> From Waddell and Bassett, Timber Resource Statistics for the North Interior Resource Area of California, USDA Forest Service Resource Bulletin PNW-RB-222 March 1997, Waddell and Bassett, Timber Resource Statistics for the Sacramento Resource Area of California, USDA Forest Service Resource Bulletin PNW-RB-220 March 1997, and Waddell and Bassett, Timber Resource Statistics for the San Joaquin and Southern Resource Areas of California, USDA Forest Service Resource Bulletin PNW-RB-224 March 1997

and herbicide treatments to control brush competition. For these reasons, the project is not expected to have a measurable effect is not further analyzed.

### 4.2.6.3 Timber Trespass

Timber trespass is defined as harvesting of timber that occurs in land not owned by the harvester. The risk of trespass could potentially increase under the project proportional to the amount of acreage harvested and possibly by the increase in multiple landowners (where they would occur). Harvested acreage is projected to approximately double the projected rate of harvest from the baseline. Although the potential for trespass is likely to increase, these occurrences are usually isolated and are usually a result of oversight on the part of the landowner or the logger employed to do the harvest. Under California Civil Code 3346, a person who cuts the trees of another is subject to damages at two to three times the value of the trees damaged or removed, which is a significant existing deterrent to timber trespass. Therefore, the project is not expected to have a measurable effect of timber trespass and this issue is not further analyzed.

### 4.2.6.4 Carbon Cycling

The issue of carbon sequestration involves the amount of carbon tied up in the biomass of vegetation. Removal of trees results in carbon dioxide being released to the atmosphere, to which some authorities attribute increased levels of global warming. To the extent timber inventory or biomass levels change as a result of the project, there could be changes in the total amount of carbon sequestered in the trees versus released into the atmosphere. Regional forest inventories are expected to decrease less than one percent in each Regional Bundle (see Impact 2-1), and would be expected to have a negligible impact on the forest inventory in the interior regions of California. This loss is further reduced, because over half of the biomass removed through harvesting would be sawn into products, such as lumber, which continue to sequester carbon, instead of non-wood substitutes, such as steel, which require use of fossil fuels. For these reasons the project is not expected to have any measurable effect on carbon cycling and this issue is not further analyzed.

## 4.2.7 INTRODUCTION TO IMPACTS AND MITIGATION MEASURES

Two impacts were identified for Forestry:

- Impact 2-1: The project could result in a reduction in regional forest inventories (Less than Significant).
- Impact 2-2: The project could result in a decrease in productive timberlands (Less than Significant).

Where impacts are significant, mitigation measures are recommended at the conclusion of the analysis of each impact.

In Chapter 3, the EIR described the assumptions related to how a new buyer could increase the rate of timber harvest on divested lands. Described below, are possible harvest scenarios under both the baseline and the project.

Annual timber harvest levels are projected to increase from about 14 million board feet (MBF) with the baseline to about 30 million board feet with the project for the first five years following divestiture. Likewise the annual number of harvested acres would increase from 2,040 to 4,040 acres. Table 4.2-11 displays the timber volume and projected harvest during the first five-year period.

**Table 4.2-11 Projected Acres and Timber Volume Harvested Over the First Five Years of Divestiture - All Regions**

Region	Timber Volume Harvested (MBF)		Acres Harvested	
	Baseline	Project	Baseline	Project
Shasta	35,025	67,520	5,700	8,350
DeSabra	3,400	15,150	500	1,930
Drum	27,125	55,190	3,500	8,280
Motherlode	3,900	8,850	500	1,430
Kings Crane	150	800	0	200
<b>Total</b>	<b>69,600</b>	<b>147,510</b>	<b>10,200</b>	<b>20,190</b>
<b>Annualized</b>	<b>13,890</b>	<b>29,502</b>	<b>2,040</b>	<b>4,040</b>

Harvest projections for the project show substantial increases over the baseline. Timber harvest is expected to increase by 112 percent and acreage harvested by 98 percent during the five-year period. Volumes are projected to increase at a rate greater than the acreage rate increase, due to the use of more even-aged harvest methods, including clearcutting. Volumes increase at higher rates, because clearcut acres would generally have more volume harvested per acre than selection cut acres.

#### **4.2.7.1 Shasta Regional Bundle**

Annual timber harvest levels are projected to increase from about seven million board feet under the baseline to about 14 million board feet under the project. Likewise, the annual number of harvested acres would increase from 1,140 to 1,670 acres. Table 4.2-12 displays the amount of timber volume and the number of acres projected to be harvested during the first five-year period following divestiture.

Under both the project and baseline, harvest activity is projected to center in the McCloud-Pit and Pit 3, 4, 5 Project Lands. Clearcutting would be the predominant even-aged cutting method on those acres proposed for even-aged management. Under the project, additional timber harvest is projected in the vicinity of Whitmore (Kilarc-Cow Creek), Shingletown, and North Battle Creek Reservoir.

**Table 4.2-12 Shasta Region - Acres and Timber Volume Harvested Projected Over the First Five Years of Divestiture**

FERC Area	Timber Volume Harvested (MBF)		Acres Harvested	
	Baseline	Project	Baseline	Project
Hat Creek	50	50	0	0
Pit 1	25	25	0	0
Pit 3, 4, 5	19,850	36,795	2,800	3,800
McCloud-Pit	14,750	23,200	2,900	3,400
Kilarc Cow Creek	50	850	0	350
Battle Creek	300	6,600	0	800
<b>Total</b>	<b>35,025</b>	<b>67,520</b>	<b>5,700.</b>	<b>8,350</b>
<b>Annual</b>	<b>7,005</b>	<b>13,504</b>	<b>1,140</b>	<b>1,670</b>

**4.2.7.2 DeSabra Regional Bundle**

Annual timber harvest levels are projected to increase from about 700 thousand board feet under the baseline to about three million board feet under the project. Likewise, the annual number of harvested acres would increase from 100 to 386 acres. Table 4.2-13 displays the amount of timber volume and the number of acres projected to be harvested during the first five-year period following divestiture.

**Table 4.2-13 DeSabra Region - Acres and Timber Volume Harvested Projected Over the First Five Years of Divestiture**

FERC Area	Timber Volume Harvested (MBF)		Acres Harvested	
	Baseline	Project	Baseline	Project
UNF Feather River	500	5,650	0	600
Bucks Creek	50	3,850	0	500
Rock Creek-Cresta	50	1,600	0	300
Poe	1,200	2,100	200	250
DeSabra Centerville	1,550	1,550	300	200
Hamilton Branch	50	400	0	80
Lime Saddle	0	0	0	0
Coal Canyon	0	0	0	0
<b>Total</b>	<b>3,400</b>	<b>15,150</b>	<b>500</b>	<b>1,930</b>
<b>Annual</b>	<b>680</b>	<b>3,030</b>	<b>100</b>	<b>386</b>

Timber harvest under baseline and project conditions would take place in the DeSabra and Big Bend (Poe FERC) Project Lands. Under the project, clear cutting would be increased in both areas. The

timber harvests would occur in the Lake Almanor, DeSabra, Bucks Lake, Mountain Meadows, and Yellow Creek Area. Clearcutting and shelterwood removal harvests are projected to occur near Lake Almanor and Bucks Lake.

#### 4.2.7.3 Drum Regional Bundle

Annual timber harvest levels are projected to increase from about five million board feet under the baseline to about 11 million board feet under the project. Likewise, the annual number of harvested acres would increase from 700 to 1,656 acres. Table 4.2-14 displays the amount of timber volume and the number of acres projected to be harvested during the first five-year period following divestiture.

**Table 4.2-14 Drum Region - Acres and Timber Volume Harvest Projected Over the First Five Years of Divestiture**

FERC Area	Timber Volume Harvested (MBF)		Acres Harvested	
	Baseline	Project	Baseline	Project
Drum Spaulding	23,075	35,190	3,140	5,380
Narrows	0	0	0	0
Chili Bar	0	0	0	0
Potter Valley	4,050	20,000	360	2,900
<b>Total</b>	<b>27,125</b>	<b>55,190</b>	<b>3,500</b>	<b>8,280</b>
<b>Annual</b>	<b>5,425</b>	<b>11,038</b>	<b>700</b>	<b>1,656</b>

Harvesting would take place in both the Drum-Spaulding and Potter Valley Project Lands under both the baseline and the project. Under the project, even-aged harvesting would increase. Approved THPs in the Drum-Spaulding Project Lands would continue to be implemented as prepared under the baseline. Under the project, THPs would be amended to include even-aged cutting. In the Potter Valley, an increased amount of acreage under even-aged harvesting is projected. Under the project, additional harvesting would occur near Yuba Gap, Lake Spaulding East and Dutch Flat including even-aged cutting methods.

#### 4.2.7.4 Motherlode Regional Bundle

Annual timber harvest levels are projected to increase from about 800 thousand board feet under the baseline to about 1.8 million board feet under the Project. Likewise, the annual number of harvested acres would increase from 100 to 286 acres. Table 4.2-15 displays the amount of timber volume and the number of acres projected to be harvested during the first five-year period following divestiture.

**Table 4.2-15 Motherlode Region - Acres and Timber Volume Harvested Projected Over the First Five Years of Divestiture**

FERC Area	Timber Volume Harvested (MBF)		Acres Harvested	
	Baseline	Project	Baseline	Project
Mokelumne	800	4,750	0	850
Spring Gap	200	600	0	80
Phoenix	2,900	3,500	500	500
Merced Falls	0	0	0	0
<b>Total</b>	<b>3,900</b>	<b>8,850</b>	<b>500</b>	<b>1,430</b>
<b>Annual</b>	<b>780</b>	<b>1,770</b>	<b>100</b>	<b>286</b>

Under both the baseline and the project, harvest activity is projected to occur in the Mokelumne, Spring Gap and Phoenix Project Lands. Harvest activity is expected to increase as a result of the project in all three Project Lands.

**4.2.7.5 Kings Crane-Helms Regional Bundle**

Annual timber harvest levels are projected to increase from about 30 thousand board feet under the baseline to about 160 thousand board feet under the project. Likewise, the annual number of harvested acres would increase from 0 to 40 acres. Table 4.2-16 displays the amount of timber volume and the number of acres projected to be harvested during the first five-year period following divestiture.

**Table 4.2-16 Kings Crane-Helms Region - Acres and Timber Volume Harvested Projected Over the First Five Years of Divestiture**

FERC Project	Timber Volume Harvested (MBF)		Acres Harvested	
	Baseline	Project	Baseline	Project
Crane Valley	100	300	0	100
Kerckhoff	0	0	0	0
Helms	50	500	0	0
Haas-Kings River	0	0	0	100
Balch	0	0	0	0
Tule River	0	0	0	0
Kern Canyon	0	0	0	0
<b>Total</b>	<b>150</b>	<b>800</b>	<b>0</b>	<b>200</b>
<b>Annual</b>	<b>30</b>	<b>160</b>	<b>0</b>	<b>40</b>

Under the project, a selection harvest is projected for forested areas in the vicinity of Bass Lake, Manzanita Lake, and Wishon Reservoir. This harvest level is an increase over the baseline, where only a salvage harvest is anticipated.

#### 4.2.8 IMPACT 2-1: IMPACT, ANALYSIS, AND MITIGATION MEASURES

**Impact 2-1: The project could result in a reduction in regional forest inventories (Less than Significant).**

##### 4.2.8.1 Impact 2-1: Shasta Regional Bundle

Timber harvest in the Shasta Region would occur in Shasta County. The Shasta County inventory of timber volume is approximately 16 billion board feet. The project would result in an inventory reduction of approximately 32 million board feet (Table 4.2-17). For the Shasta Region, the project is expected to decrease inventories by less than one percent and is under the five percent threshold for significance; therefore, impacts to forest inventories are considered to be *Less than Significant*.

**Table 4.2-17-Estimated Reduction in Forest Inventories - Shasta Regional Bundle**

Bundle	5-Year Growth (MBF)	Baseline		Project		Inventory Change as a Result of the Project (MBF)	Inventory Change as a Percentage of Shasta County
		5-Year Harvest (MBF)	Inventory Change (MBF)	5-Year Harvest (MBF)	Inventory Change (MBF)		
Hat Creek	150	50	100	50	100	0	0.00%
Pit River	34,200	34,625	-425	60,020	-25,820	-25,395	-0.16%
Kilarc Cow Creek	1,350	50	1,300	850	500	-800	<0.01%
Battle Creek	4,800	300	4,500	6,600	1,800	-6,300	-0.04%
<b>Total</b>	<b>40,500</b>	<b>35,025</b>	<b>5,475</b>	<b>67,520</b>	<b>27,020</b>	<b>-32,495</b>	<b>-0.20%</b>

##### 4.2.8.2 Impact 2-1: DeSabra Regional Bundle

Harvest activities would take place in Butte, Lassen and Plumas Counties. The Butte/Plumas<sup>5</sup> Counties inventory of timber volume is approximately 25 billion board feet. The project-caused inventory reduction is expected to be 12 million board feet (Table 4.2-18). For the DeSabra Region, the project is expected to decrease inventories by less than one percent and is under the five percent threshold for significance; therefore, impacts to forest inventories are considered *Less than Significant*.

<sup>5</sup> Lassen County is omitted, because only a small part of the projected harvest would take place in that county.

**Table 4.2-18 Estimated Reduction in Forest Inventories - DeSabra Regional Bundle**

Bundle	5-Year Growth (MBF)	Baseline		Project		Inventory Change as a Result of the Project (MBF)	Inventory Change as a Percentage of Butte/Plumas Counties
		5-Year Harvest (MBF)	Inventory Change (MBF)	5-Year Harvest (MBF)	Inventory Change (MBF)		
Hamilton Branch	50	150	150	400	-200	-350	0.00%
Upper North Fork Feather	7,950	1,750	6,200	9,350	-1,400	-7,600	-0.03%
Bucks Creek	1,750	50	1,700	3,850	-2,100	-3,800	-0.02%
Butte Creek	1,225	1,550	-325	1,550	-325		0.00%
<b>Total</b>	<b>11,125</b>	<b>3,400</b>	<b>7,725</b>	<b>15,150</b>	<b>-4,025</b>	<b>-11,750</b>	<b>-0.05%</b>

**4.2.8.3 Impact 2-1: Drum Regional Bundle**

Harvest activities are projected to take place in Lake, Mendocino, Placer and Nevada Counties. For purposes of this analysis, Potter Valley bundle's impact is evaluated in reference to timber inventories in Lake County.<sup>6</sup> The Lake County inventory is estimated at approximately three billion board feet. The impact of the South Yuba River bundle is evaluated in reference to timber inventories in Placer and Nevada Counties. The Placer/Nevada Counties inventory is estimated at approximately 12 billion board feet. The impacts of the North Yuba and Chili Bar bundles are not evaluated, because no harvest is expected in these areas. The project-caused inventory reduction is expected to be 28 million board feet, including a 16 million board feet reduction in the Potter Valley Bundle and a 12 million board feet reduction in the South Yuba River bundle (Table 4.2-19). For the Drum Region, the project is expected to decrease inventories by less than one percent and is under the five percent threshold for significance; therefore, impacts to forest inventories are considered *Less than Significant*.

**Table 4.2-19-Estimated Reduction in Forest Inventories – Drum Regional Bundle**

Bundle	5-Year Growth (MBF)	Baseline		Project		Inventory Change as a Result of the Project (MBF)	Inventory Change as a Percentage of Affected Counties
		5-Year Harvest (MBF)	Inventory Change (MBF)	5-Year Harvest (MBF)	Inventory Change (MBF)		
North Yuba River	NA	NA	NA	NA	NA	NA	NA
Potter Valley	5,950	4,050	1,900	20,000	-14,050	-15,950	-0.57%
South Yuba River	16,450	23,075	-6,625	35,190	-18,740	-12,115	-0.10%
Chili Bar	NA	NA	NA	NA	NA	NA	NA
<b>Total</b>	<b>22,400</b>	<b>27,125</b>	<b>-4,725</b>	<b>55,190</b>	<b>-32,790</b>	<b>-28,065</b>	<b>-0.19%</b>

<sup>a</sup> Potter Valley – Lake County; South Yuba River – Placer/Nevada Counties

<sup>6</sup> Mendocino County is omitted, because only a small part of the harvest is projected in that county and that the Mendocino County timber resource is mainly coastal redwood-Douglas-fir, as opposed to the Potter Valley area timber, which is interior mixed-conifer.



#### 4.2.8.4 Impact 2-1: Motherlode Regional Bundle

Harvest activities are projected to take place in Amador, Calaveras and Tuolumne Counties. For purposes of this analysis, the Mokelumne River bundle's impact is evaluated in reference to timber inventories in Amador and Calaveras Counties. The Amador/Calaveras Counties inventory is estimated at approximately four billion board feet. The impact of the Stanislaus River bundle is evaluated in reference to timber inventories in Tuolumne County. The Tuolumne County inventory is estimated at approximately six billion board feet. The impact of the Merced River bundle is not evaluated, because no harvest is expected in that bundle area. For the three counties evaluated, Amador, Calaveras and Tuolumne, the project-caused inventory reduction is expected to be five million board feet (Table 4.2-20). For the Motherlode Region and each respective bundle within the region, the project is expected to decrease inventories by less than one percent and is under the five percent threshold for significance; therefore, impacts to forest inventories are considered *Less than Significant*.

**Table 4.2-20-Estimated Reduction in Forest Inventories – Motherlode Regional Bundle**

Bundle	5-Year Growth (MBF)	Baseline		Project		Inventory Change as a Result of the Project (MBF)	Inventory Change as a Percentage of Counties
		5-Year Harvest (MBF)	Inventory Change (MBF)	5-Year Harvest (MBF)	Inventory Change (MBF)		
Mokelumne River	4,200	800	3,400	4,750	-550	-3,950	-0.10%
Stanislaus River	1,600	3,100	-1,500	4,100	-2,500	-1,000	-0.02%
Merced River	NA	NA	NA	NA	NA	NA	NA
<b>Total</b>	<b>5,800</b>	<b>3,900</b>	<b>1,900</b>	<b>8,850</b>	<b>-3,050</b>	<b>-4,950</b>	<b>-0.05%</b>

<sup>a</sup> Mokelumne River – Amador and Calaveras Counties; Stanislaus River – Tuolumne River

#### 4.2.8.5 Impact 2-1: Kings Crane-Helms Regional Bundle

Limited harvesting is projected to take place in Madera County in both the Crane Valley and Kings River bundles. The estimated inventory in Fresno/Madera is approximately seven billion board feet. The impacts of the Kerckhoff, Tule River and Kern Canyon bundles are not evaluated, because no harvest is expected in these bundle areas. The project-caused inventory reduction is expected to be 650 thousand board feet (Table 4.2-21). For the Kings Crane-Helms Region and each respective bundle within the region, the project is expected to decrease inventories by less than one percent and is under the five percent threshold for significance; therefore, impacts to forest inventories are considered *Less than Significant*.

**Table 4.2-21 Estimated Reduction in Forest Inventories – Kings Crane-Helms Regional Bundle**

Bundle	5-Year Growth (MBF)	Baseline		Project		Inventory	Inventory
		5-Year Harvest (MBF)	Inventory Change (MBF)	5-Year Harvest (MBF)	Inventory Change (MBF)	Change as a Result of the Project (MBF)	Change as a Percentage of Fresno/Madera Counties
Crane Valley	175	100	75	300	-125	-200	0.00%
Kerckhoff	NA	NA	NA	NA	NA	NA	NA
Helms	75	50	125	500	-325	-450	-0.01%
Kings River	NA	NA	NA	NA	NA	NA	NA
Tule River	NA	NA	NA	NA	NA	NA	NA
Kern Canyon	NA	NA	NA	NA	NA	NA	NA
<b>Total</b>	<b>350</b>	<b>150</b>	<b>200</b>	<b>800</b>	<b>-450</b>	<b>-650</b>	<b>-0.01%</b>

**4.2.8.6 Impact 2-1: Evaluation of Impact to Entire System**

After the first five years of divestiture, the project is expected to decrease timber inventory by about 68 million board feet over 43,500 timberland acres. This accounts for an estimated 148 million board feet of timber harvest and 80 million board feet in growth. Under the baseline, timber inventory is expected to increase by 10 million board feet, accounting for 70 million board feet of timber harvest and 80 million board feet of growth. The project-caused difference (the difference between inventory and the baseline) is 78 million board feet across the ownership, which is 0.04 percent of all the sawtimber volume inventories in the interior regions of California [78 MMBF/186,000 MMBF = 0.04%].<sup>7</sup> Following the first five-year period, growth would likely increase at a rate greater than harvest to allow forest inventories to recover. The project is expected to decrease California's interior timber inventories by less than one percent and is under the five percent threshold for significance; therefore, system wide impacts to forest inventories are considered *Less than Significant*. No mitigation is required.

**4.2.9 IMPACT 2-2: IMPACT, ANALYSIS, AND MITIGATION MEASURES**

**Impact 2-2: The project may result in a decrease in productive timberlands (Less than Significant).**

**4.2.9.1 Impact 2-2: Shasta Regional Bundle**

Land use conversions to development use could cause a loss of timberland acres and timber productivity (Table 4.2-22). There are approximately 1.2 million timberland acres in Shasta

<sup>7</sup> The area evaluated includes the following resource regions and relevant counties: Northern Interior Resource Area (Siskiyou, Trinity, Modoc, Shasta, and Lassen Counties), Sacramento Resource Area (Butte, Colusa, El Dorado, Glenn, Lake, Napa, Nevada, Placer, Plumas, Sacramento, Sierra, Sutter, Tehama, Yolo and Yuba Counties) and San Joaquin and Southern Resource Area (Alpine, Amador, Calaveras, Fresno, Imperial, Inyo, Kern, Kings, Los Angeles, Madera, Mariposa, Merced, Mono, Orange, Riverside, San Bernardino, San Diego, San Joaquin, Stanislaus, Tulare, and Tuolumne Counties).

County with annual productivity estimated at 550 million board feet per year. As a consequence of development projected for the project, timberland acreage in Shasta County is expected to decline 4,200 acres and annual productivity by one million board feet. For the Shasta Region and each respective bundle within the region, both timberland acreage and productivity are expected to decline less than one percent and is under the five percent threshold for significance; impacts associated with a reduction of productive timberland in the Shasta Regional Bundle are considered *Less than Significant*.

**Table 4.2-22 Loss of Timberland Acres and Productivity – Shasta Region**

Bundle	Timberland Acres converted to Development	Timberland Acreage Reduction as Percentage of Shasta County	Loss of Annual Productivity (MBF)	Loss of Productivity as a Percentage of Shasta County
Hat Creek	0	0.00%	0	0.00%
Pit River	2,700	0.22%	1,080	0.20%
Kilarc-Cow Creek	100	0.01%	30	0.01%
Battle Creek	1,400	0.12%	560	0.10%
<b>Total</b>	<b>4,200</b>	<b>0.35%</b>	<b>1,680</b>	<b>0.31%</b>

#### 4.2.9.2 Impact 2-2: DeSabra Regional Bundle

Land use conversions to development use could cause a loss of timberland acres and timber productivity (Table 4.2-23). There are approximately 1.6 million timberland acres in Butte and Plumas Counties with annual productivity estimated at 480 million board feet. As a consequence of development projected for the project, timberland acreage in Butte and Plumas Counties is expected to decline 3,100 acres and annual productivity is expected to decline by one million board feet. For the DeSabra Region and each respective bundle within the region, both timberland acreage and productivity are expected to decline less than one percent and are under the five percent threshold for significance; therefore, impacts associated with a reduction of productive timberland in the DeSabra Regional Bundle are considered *Less than Significant*.

**Table 4.2-23 Loss of Timberland Acres and Productivity-DeSabra Region**

Bundle	Timberland Acres converted to Development	Timberland Acreage Reduction as Percentage of Butte/Plumas Counties	Loss of Annual Productivity (MBF)	Loss of Productivity as a Percentage of Butte/Plumas Counties
Hamilton Branch	100	0.01%	40	0.01%
Upper North Fork Feather	2,400	0.15%	720	0.15%
Bucks Creek	300	0.02%	105	0.02%
Butte Creek	300	0.02%	105	0.02%
<b>Total</b>	<b>3,100</b>	<b>0.20%</b>	<b>970</b>	<b>0.20%</b>

### 4.2.9.3 Impact 2-2: Drum Regional Bundle

Land use conversions to development use could cause a loss of timberland acres and timber productivity (Table 4.2-24). There are approximately 180,000 timberland acres in Lake County with annual productivity estimated at 54 million board feet per year. Within Nevada and Placer Counties there are approximately 775,000 timberland acres with an annual productivity estimated at 230 million board feet per year. As a consequence of development projected for the Project, timberland acreage in Lake, Nevada and Placer Counties is expected to decline 4,600 acres and annual productivity by 1.6 million board feet. The impacts of the North Yuba River and Chili Bar Bundles are not evaluated because they do not contain commercial timberland. For the Drum Region and each respective bundle within the region, both timberland acreage and productivity are expected to decline less than one percent and are under the five percent threshold for significance; therefore, impacts associated with a reduction of productive timberland in the Drum Regional Bundle are considered *Less than Significant*.

**Table 4.2-24 Loss of Timberland Acres and Productivity – Drum Region**

Bundle	Timberland Acres converted to Development	Timberland Acreage Reduction as Percentage of Affected Counties <sup>a</sup>	Loss of Annual Productivity (MBF)	Loss of Productivity as a Percentage of Affected Counties
North Yuba River	NA	NA	NA	NA
Potter Valley	200	0.11%	70	0.13%
South Yuba River	4,400	0.57%	1,540	0.67%
Chili Bar	NA	NA	NA	NA
<b>Total</b>	<b>4,600</b>	<b>0.48%</b>	<b>1,610</b>	<b>0.56%</b>

<sup>a</sup> Potter Valley – Lake County; South Yuba River – Placer/Nevada Counties

### 4.2.9.4 Impact 2-2: Motherlode Regional Bundle

Land use conversions to development use could cause a loss of timberland acres and timber productivity (Table 4.2-25). There are approximately 308,000 timberland acres in Amador and Calaveras Counties with an annual productivity estimated at 123 million board feet per year. Within Tuolumne County there are approximately 479,000 timberland acres with an annual productivity estimated at 192 million board feet per year. As a consequence of development projected for the Project, timberland acreage in Amador, Calaveras and Tuolumne Counties is expected to decline 1,000 acres and annual productivity by 400 thousand board feet. The impact of the Merced River Bundle is not evaluated because it does not contain commercial timberland. For the Motherlode Region and each respective bundle within the region, timberland acreage and productivity are expected to decline less than one percent and are under the five percent threshold for significance; and therefore, impacts associated with a reduction of productive timberland in the Motherlode Regional Bundle are considered *Less than Significant*.

**Table 4.2-25 Loss of Timberland Acres and Productivity – Motherlode Region**

Bundle	Timberland Acres converted to Development	Timberland Acreage Reduction as Percentage of Affected Counties <sup>a</sup>	Loss of Annual Productivity (MBF)	Loss of Productivity as a Percentage of Affected Counties
Mokelumne River	700	0.23%	280	0.23%
Stanislaus River	300	0.06%	120	0.06%
Merced River	NA	NA	NA	NA
<b>Total</b>	<b>1,000</b>	<b>0.13%</b>	<b>400</b>	<b>0.13%</b>

<sup>a</sup> Mokelumne River – Amador and Calaveras Counties; Stanislaus River – Tuolumne River

#### 4.2.9.5 Impact 2-2: Kings-Crane Helms Region

Land use conversions are not expected to cause a measurable decrease in timberland acres in the Kings-Crane Helms Region or any of the bundles within the region. Therefore, the impact is considered to have *No Effect*.

#### 4.2.9.6 Impact 2-2: Evaluation of Impact to Entire System

An estimated 11,600 acres of timberland are expected to be converted to non-timber uses. This accounts for 0.09 percent of all the timberland acres in the interior regions of California [11,600 acres/12,931,000 acres]. On a system wide basis, the total loss in annual timber productivity would be approximately four million board feet. By comparison, the total California timber harvest in 1999 was 2.2 billion board feet (1.9 billion board feet on private lands) and the typical annual log consumption for a California sawmill is between 30 and 80 million board feet. The project is expected to decrease the amount of California's interior productive forestland and timber productivity by less than one percent and is under the five percent threshold for significance; therefore, impacts associated with a reduction of productive timberland systemwide are considered *Less than Significant*. No mitigation is required.

**4.2.10 REFERENCES**

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