DRAFT

Environmental Assessment

for issuance to Sierra Pacific Industries, Inc. of an Enhancement of Survival Permit for activities covered by the *Candidate Conservation Agreement with Assurances for Fishers on the SPI ownership in the Klamath, Cascade, and Sierra Nevada Mountains*

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Abbreviations

APCD	Air Pollution Districts
AQMD	Air Quality Management Districts
BOF	Board of Forestry
BP	before present
CAAQS	California ambient air quality standards
CAL FIRE	California Department of Forestry and Fire Protection
CCAA	Candidate Conservation Agreement with Assurances
CDFW	California Department of Fish and Wildlife
CEQ	Council on Environmental Quality
CESA	California Endangered Species Act
CFPRs	California Forest Practice Rules
CFR	Code of Federal Regulations
CH_4	methane
CHRIS	California Historic Resources Information System
CO	carbon monoxide
CO_2	carbon dioxide
dbh	diameter at breast height
DPM	diesel particulate matter
DPS	distinct population segment
EA	Environmental Assessment
EIS	environmental impact statement
EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act
ESP	Enhancement of Survival Permit
ESU	evolutionarily significant unit
FPR	Forest Practice Rule
GHG	greenhouse gases
HCP	habitat conservation plan
HRA	habitat retention areas
HRI	Historical Resources Inventory
IC	information center
LEAF	Landscape Evaluation Area – Fisher
MLD	most likely descendant
mph	miles per hour
MSP	Maximum Sustained Production of High Quality Timber Products
N_2O	nitrous oxide
NAAQS	national ambient air quality standards
NAHC	Native American Heritage Commission

NEPA	National Environmental Policy Act
NO_2	nitrogen dioxide
OHP	Office of Historic Preservation
Pb	lead
PCB	polychlorinated biphenyl
PM10	particulate matter 10 microns in diameter or less
PM2.5	particulate matter 2.5 microns in diameter or less
QMD	quadratic mean diameter
RWQCB	Regional Water Quality Control Board
Service	U.S. Fish and Wildlife Service
SFI	Sustainable Forestry Initiative
SMARA	Surface Mining and Reclamation Act
SO_2	sulfur dioxide
SPI	Sierra Pacific Industries, Inc.
THP	Timber Harvest Plans
TO	territory opportunity
USC	United States Code
WHR	Wildlife Habitat Relationship
WLPZ	watercourse and lake protection zone

Executive Summary

Sierra Pacific Industries (SPI) has prepared a Candidate Conservation Agreement with Assurances (CCAA) as part of an application for an Enhancement of Survival Permit (ESP) pursuant to the U.S. Endangered Species Act of 1973 as amended (ESA) covering fishers (*Pekania pennanti*) in the West Coast Distinct Population Segment (DPS). Fishers in the West Coast DPS are currently candidates for listing under the ESA. The purpose of this CCAA is to provide conservation benefits for fishers. By committing to implement the CCAA, SPI will receive assurances that the Service will not require any additional conservation measures or any additional land, water, or resource use restrictions beyond those voluntarily agreed to and described in the CCAA should fishers become listed.

The issuance of a permit, in this case an ESP, is considered a Federal Action for the purposes of the National Environmental Policy Act (NEPA) and as such, this Environmental Assessment (EA) has been prepared.

The CCAA covers activities that SPI routinely carries out during the management of their private forestland including timber harvesting and associated support activities. In some cases these activities may result in take (as defined under the ESA) of fishers that would be prohibited if fishers in the West Coast DPS were listed as threatened or endangered.

The Conservation Measures in the CCAA describe in detail how SPI will maintain habitat for fishers, avoid killing or harassing fishers, and identify and reduce known threats to fishers. These Conservation Measures will be applied in areas that are currently occupied by fishers and also in areas where fishers are not currently known to occur. This protects extant populations and may also facilitate the expansion of the fisher's geographic distribution in California.

In this EA we describe the affected environment and environmental consequences of the proposed Federal Action. We analyze in detail the potential to cause significant direct, indirect or cumulative environmental impacts to a number of resources including:

- Air quality.
- Hydrology.
- Biological resources.
- Social and economic resources.
- Cultural resources.
- Cumulative effects.

We also analyze 2 alternatives to the proposed action of entering into the CCAA and issuing the associated ESP. These alternatives are a No Action alternative and excluding SPI's Stirling Management Area (SMA) under the current CCAA. The SMA is already covered under a previous CCAA (Permit Number: TE166855-0).

With this EA we invite interested parties to comment on the proposed action. Our analysis demonstrates that the federal action of issuing the permit and the consequences of implementing the Conservation Measures in the CCAA do not result in significant environmental effects, and thus, an Environmental Impact Statement is not necessary. A Finding of No Significant Impacts (FONSI) shall be prepared.

Glossary

Capable land – Enrolled Land that is capable of growing forest vegetation (e.g., excluding rocky areas, meadows) and suitable (accessible and manageable) with soils that can grow forest vegetation to the HF4 class.

Clearcutting – The clearcutting timber regeneration method involves the removal of a stand in one harvest.

dbh – The average diameter of a tree measured outside the bark at breast height, 4.5 feet (1.37 m) above the average ground level.

Den stand – A contiguous forest stand that contains at least one den structure (tree) with a suitable micro-structure (cavity), and presumably provides the escape cover, microclimate, and access to forage necessary for reproductive success. The contiguous forest stand that is considered a fisher den stand is named a Contiguous Core Stand (CCS).

DPM – Diesel particulate matter, particles emitted by diesel engines and considered a toxic air contaminant by the California Air Resources Board

DPS – Distinct population segment. A DPS is a vertebrate population or group of populations that is discrete from other populations of the species and significant in relation to the species as a whole.

ESA – Endangered Species Act, there are separate Federal and State of California ESAs.

ESP – Enhancement of Survival Permit under Federal Endangered Species Act, Section 10(a)(1)(A)

Even-aged harvest – see clearcutting.

GHGs – Greenhouse gases; gases which contribute to climate change. The primary greenhouse gases are carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O)

Habitat elements – The physical conditions or structures used by fishers or their prey. These include den structures, snags, green culls, and down logs.

HF – The forest habitat form (HF) system that SPI applies to their ownership. The HFs are defined by an area's tree class size, large tree component (the number of trees per acre of a specific size), and canopy cover. The HFs combine forest types by expected wildlife species use. The habitat form classes are applied at the stand scale and represent a trend in forest growth over time. The HF system is similar to the WHR system but is more detailed and is derived from more ground-based data. The SPI HF system categories are:

- **HF1** – The youngest HF and usually the result of post-harvest (clearcut) regeneration, brush field rehabilitation, or fire salvage harvesting of substantially damaged timberlands
- **HF2** – May occur in the mixed or the even land class; after pre-commercial thinning at age 8 to 15 years; consists of WHR 3M and D stands with 6-11" QMD with >40% canopy closure
- **HF2Hv** – May occur in the mixed or the even land class; consists of WHR 4M and D stands that are ≥ 11" and <13" dbh with >40% canopy closure
- **HF4** – In the mixed land class HF4 has a canopy cover ≥ 60 percent, a stand level QMD of ≥13 inches dbh, and at least 9 trees per acre that are ≥22 inches dbh. In the Even aged land class HF has a canopy cover ≥ 60 percent, a stand level QMD of ≥13 inches dbh, and at least 20 trees per acre that are ≥22 inches dbh. While the species use component of the HF system is based on the California WHR system it is refined by on-the-ground sampling of stand characteristics. There is not a direct crosswalk between the SPI HF system and the CWHR

system, however, discussions of the systems are provided in CCAA Appendices F, G, H, and I.

HRA – Habitat Retention Areas; the primary measure to maintain and recruit habitat elements within individual timber harvest units; these features will remain and provide the habitat elements in the future stand; the HRA will be composed of a representative sample of the species and diameter classes occurring among the co-dominant and dominant trees prior to harvest and will be retained at a rate of 2 percent of the total harvest area not including WLPZs.

Land Class – SPI's land type classification of their ownership. It consists of five categories: mixed, inoperable, non-forest, regen, and even. The forests on the mixed land class were created by various types of uneven-aged management which left many trees un-harvested during the harvest entries that created them. The inoperable class is forested land that cannot be harvested by standard methods. The regen class is areas made up of artificially regenerated stands originating from emergency salvage or silviculture such as shelterwood systems, group selection areas, clearcuts or brush field rehabilitation. The even class is regen stands old enough and sufficiently dense to cruise, and that have been cruised, by SPI's standard timber cruise methodology.

LEAF – Landscape Evaluation Area – Fisher; 54 LEAFs have been identified within occupied Pacific fisher territory on SPI enrolled lands. The LEAFs are contiguous, approximately 10,000 acre areas (hexagonally shaped) that contain female fisher Territory Opportunities as well as other suitable fisher habitat that provides foraging, dispersal and genetic interaction between individuals.

Conservation LEAF – 43 of 54 LEAFs that will be preserved on SPI enrolled lands; the LEAFs are a second order aggregation of suitable amounts of habitat for a reproducing female fisher. These aggregations occur with 4,000 acre area that are important parts of female fishers' annual home range.

Maximum Sustained Production – see Option A.

Mixed land class – See land class

Option A – The California Forest Practices Act requires that forest landowners demonstrate the achievement of maximum sustained production (MSP) of high quality timber products. Under the Forest Practice Rules forest landowners demonstrate compliance with the MSP requirement by applying one of three different options: Option A, Option B or Option C. Option A is an Option A plan that produces the yield of timber products specified by the forest landowner, balances growth and harvest over time with a specific assessment area, realizes growth potential, maintains good stand vigor, and makes provisions for adequate regeneration. The Option A yield is applied over a 100-year planning horizon and the amount of harvest over a rolling 10-year period or longer cannot exceed the long-term sustained yield. Individual timber harvest plans (THPs) must demonstrate that they meet the production, as well as all FPR, requirements. The timber product yield must reflect biological and economic considerations as well as constraints from non-timber factors. Option B is to develop a Sustained Yield Plan (SYP) or a nonindustrial timber management plan (NTMP). Option C is for ownerships less than or equal to 50,000 acres

QMD – Quadratic mean diameter; a measure of the average diameter of all trees > 5 inches dbh in an area or stand.

Selection harvest - Under the selection regeneration method, the trees are removed individually or in small groups sized from 0.25 to 2.5 acres

SFI – Sustainable Forestry Initiative; an independent nonprofit organization that audits forestry operations to determine if they meet SFI's forest management standards.

Territory Core – An area within an animal's home range that provides home sites (e.g., dens), refuges, and dependable food sources.

Territory Opportunity – A territory opportunity (TO) is a forested area expected to provide appropriate female fisher habitat. A TO has minimum levels of tree diameter, canopy cover, and numbers of large trees expected to provide den stands.

THP – Timber Harvest Plan. A document prepared for groups of individual timber harvest units. It contains the harvest unit layout, all biological and other constraints, mitigation measures, silvicultural timber harvest methods and a variety of other information including how the FPRs and other applicable laws are met. Under the California FPRs the THP is a California Environmental Quality Act (CEQA) functional equivalent document with a Cal Fire, state agency (CDFW, Regional Water Quality Control Board, California Geological Survey) and public review process. CEQA functional equivalence means that it meets CEQA requirements and that a separate CEQA document (e.g., an environmental impact report) or process is not required.

TO – Territory Opportunity; it consists of 2,000 acres in the form of four contiguous 500-acre hexagons that have:

- at least one Territory Core (a 500-acre hexagon containing a den core and at least 30 percent HF4 and an additional 20 percent of HF2v for second order level; four contiguous hexagons of approximately 10,000 acres
- The den core has at least 30 acres of contiguous HF4 that is also contiguous to at least an additional 20 acres of HF2Hv, for a combined total of 50 acres or more
- The remaining three contiguous Support Cores that complete the Territory Opportunity are 500-acre hexagons that might not have a CCS, but each have at least a total of 50% HF4 and/or HF2Hv combined.

WHR – California wildlife habitat relationship system; the WHR contains life history, geographic range, habitat relationships, and management information on amphibians, reptiles, birds, and mammals with an associated plant community classification and abbreviation. With respect to forest plant communities the WHR system has identifiers for specific forest types as well as classes for tree canopy closure and tree sizes.

WLPZ – Watercourse and Lake Protection Zones, or buffer zones, required by the FPRs and established along streams, lakes and wetlands.

Chapter 1—Introduction

This environmental assessment (EA) has been prepared by the U.S. Fish and Wildlife Service (Service) pursuant to the National Environmental Policy Act (NEPA). It evaluates the potential impacts to the human environment that may result from the issuance to Sierra Pacific Industries, Inc. (SPI) of an Enhancement of Survival Permit (ESP) under Section 10(a)(1)(A) of the Federal Endangered Species Act (ESA) for activities covered by the *Candidate Conservation Agreement with Assurances for Fishers on the SPI ownership in the Klamath, Cascade, and Sierra Nevada Mountains* (Fisher CCAA or CCAA). The ESP would cover incidental take of fishers (*Pekania pennanti*) that could result from timber harvest and associated activities on the enrolled portions of SPI's ownership in California, over approximately 1.5 million acres of land. The CCAA would provide incidental take authorization for fishers on SPI lands in the event that the species is listed.

The ESA and its implementing regulations prohibit take of any fish or wildlife species that is federally listed as threatened or endangered without prior approval pursuant to either Section 7 or Section 10 of the ESA. ESA defines *take* as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct." More specific definitions of "harass" and "harm" are included in the Code of Federal Regulations (CFR) at 50 CFR 17.3.

Issuance of a Section 10(a)(1)(A) ESP constitutes a discretionary federal action by the Service and is thus subject to the National Environmental Policy Act (NEPA). Regulations for an ESP associated with a Candidate Conservation Agreement with Assurances under the Endangered Species Act can be found at 50 CFR 17.22(d)(1) for endangered wildlife species and 50 CFR 17.32(d)(1) for threatened wildlife species. This EA was prepared pursuant to NEPA (42 United States Code [USC] 4321; 40 CFR 1500.1), and the President's Council on Environmental Quality (CEQ) guidelines on implementing NEPA.

1.1 Fisher CCAA Overview

SPI is applying for an ESP based on the proposed CCAA for fishers (*Pekania pennanti*) within the West Coast DPS (covered species) from the Service. The purpose of the CCAA is to provide a regulatory mechanism for SPI to implement conservation measures that support fishers in a manner that allows the Service to issue an ESP for the inland portions of SPI's California timberland ownership, called the Enrolled Lands. SPI's coastal lands in California are excluded.

This EA evaluates the potential impacts of the proposed action by the Service. It also evaluates the impacts of other alternatives, including the no-action alternative. The purpose of the EA is to inform the lead federal agency and the public of the effects on the human environment of their action in issuing the ESP. The Service will use the EA to comply with NEPA for its action. See Section 1.3, *Purpose and Need of Proposed Action*, for more details on the purpose of this document under NEPA.

1.1.1 Background

The proposed action would result in an agreement that will allow SPI to continue managing their timber and other land consistent with the California Forest Practice Rules and guided by Maximum Sustained Production according to state law. In the CCAA SPI has agreed to apply specific conservation measures in order to meet the CCAA Standard. The CCAA standard is met if the Service determines that the benefits of the conservation measures in the agreement, when combined

with those benefits that would be achieved if it is assumed that the measures would also be implemented on other necessary properties, would preclude or remove any need to list the covered species. If the Service determines that the conservation measures in the proposed CCAA meets the CCAA standard an ESP will be issued. The fisher West Coast DPS is currently proposed for listing as threatened under the ESA (79 FR 60419; 80 FR19953). If the species becomes listed during the 10-year term of the CCAA, SPI will not be required to provide additional mitigation beyond that described in the CCAA, as long as they stay within the take limits established by the CCAA and the permit.

1.1.2 Enrolled Lands

The Enrolled Lands are shown on Figure 1-1 and total approximately 1,571,000 acres within 16 counties as shown in Table 1-1.

Table 1-1. SPI Enrolled Lands

County	*Enrolled Lands (acres)*
Amador	28,037
Butte	137,190
Calaveras	72,864
El Dorado	137,702
Lassen	164,055
Modoc	98,624
Nevada	48,264
Placer	31,715
Plumas	96,303
Shasta	257,727
Sierra	52,985
Siskiyou	61,356
Tehama	116,644
Trinity	191,378
Tuolumne	72,829
Yuba	3,291
Total	1,570,964

Enrolled Lands are organized into 16 Covered Species Conservation Areas (Figure 1-1) that group SPI landholdings by major mountain range, watershed, and general vicinity. The Enrolled Lands may increase or decrease as the result of the sale, purchase, or exchange of SPI lands. Under the proposed agreement, SPI has committed to providing the full suite of Conservation Measures on newly acquired lands and maintain their conservation obligations even in the event of a reduction in the Enrolled Lands. In the event that new lands are enrolled, all the conservation measures will be applied and SPI will not seek any additional take above that which is initially authorized. Changes in the Enrolled Lands will be treated as minor amendments to the extent allowable per the applicable regulations.

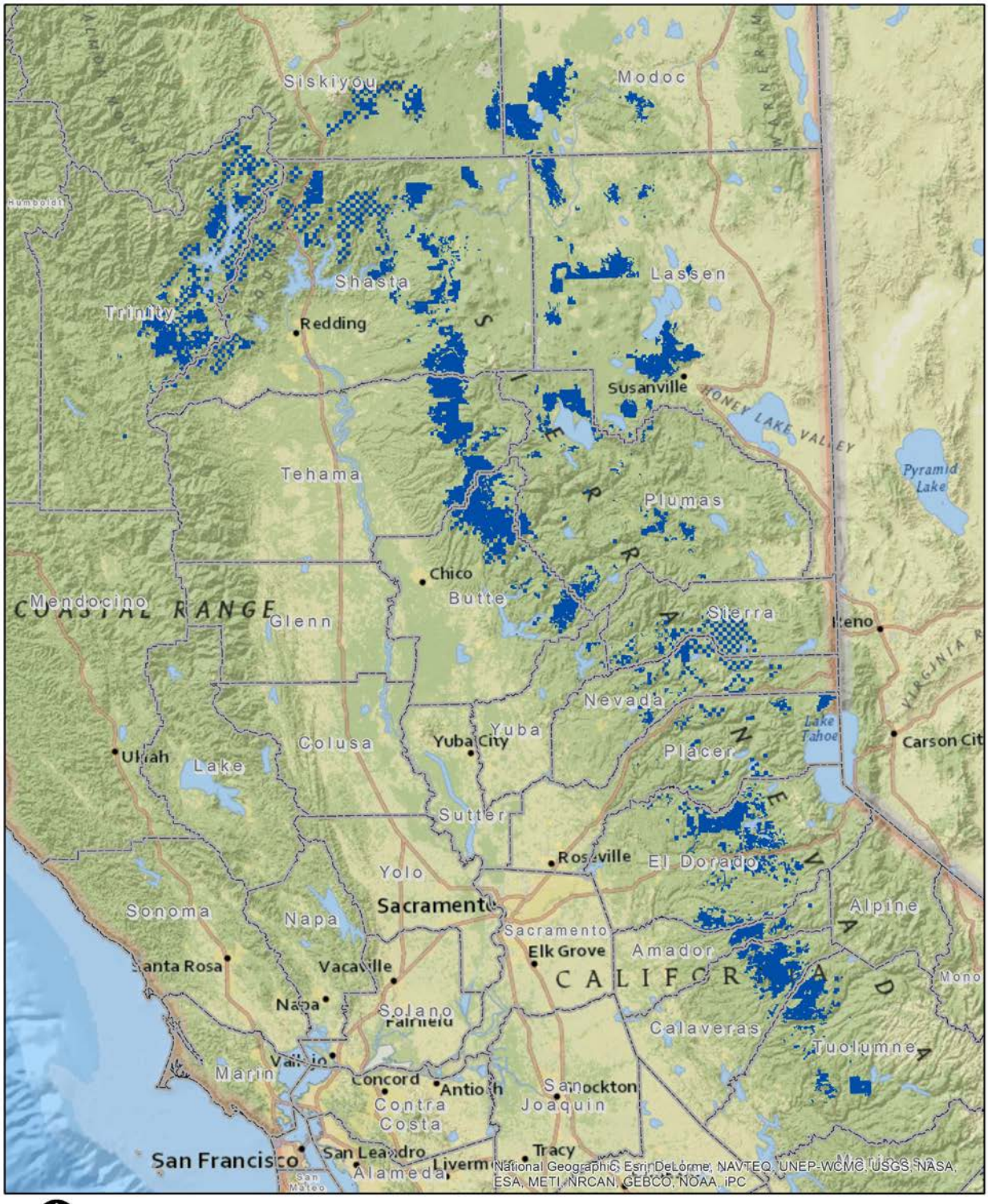

Figure 1-1. Enrolled Lands

1.2 Overview of NEPA

NEPA provides an interdisciplinary framework with action-forcing procedures requiring federal agency decision-makers to take environmental factors into account for their proposed action and a range of alternatives. NEPA applies to all federal agencies and to most of the activities they manage, regulate, or fund that affect the human environment. NEPA requires all agencies to consider and to publicly disclose the environmental implications of their proposed actions through the preparation of appropriate documents. CEQ has adopted regulations and other guidance providing detailed procedures that federal agencies must follow to implement NEPA.

As stated in the CCAA Handbook, issuance of an Enhancement of Survival Permit (ESP) is a federal action subject to NEPA. The purpose of NEPA is to promote productive and enjoyable harmony between human activity and the natural world by ensuring that there is analysis and disclosure of the environmental issues surrounding a proposed federal action. The CEQ regulations implementing the procedural provisions of NEPA (40 CFR 1500-1508) require all agencies to analyze the impacts of their proposed actions and to include other agencies and the public in the process. In this case, an EA must be prepared because the Service, as the federal lead agency under NEPA, has determined that the action is not categorically excluded from NEPA and an EA is required to analyze the impacts of the proposed action to determine the significance of the impacts.

The purposes of an EA are to briefly analyze the impacts of a proposed action to identify the significance of the impacts and to determine whether development of an environmental impact statement (EIS) is needed, to analyze alternatives for proposals that involve unresolved conflicts concerning uses of available resources, and to aid an agency's compliance with achieving NEPA's purposes when preparation of an EIS is not necessary. An EA will contain a brief discussion or description of: (1) the purpose and need for the proposed action, (2) the nature of the proposed action, (3) alternatives to the proposed action that were considered, (4) the environmental impacts of the proposed action and its alternatives, and (5) a list of agencies and persons consulted in the NEPA review process.

1.3 Purpose and Need of Proposed Action

NEPA requires that an EA briefly describe the underlying purpose and need for the Agency's proposed and alternative actions (40 CFR 1502.13).

1.3.1 Underlying Need

The Service is considering entering into this agreement in order to secure commitments from the applicant that will reduce known threats to fishers and result in conservation benefits that would not be achieved in the absence of the agreement. Entering into this agreement fulfills the Service's need to conserve wildlife resources before they require protection under the ESA. The underlying need for the proposed action arises from the potential take of fishers, a species currently proposed for listing, that occurs on the Enrolled Lands for which the Permittee has applied for an ESP from the Service pursuant to Section 10(a)(1)(A) of the ESA.

1.3.2 Purpose and Need Statement

The purposes of the proposed action for the Service are listed below.

- Reduce known threats to fishers and work with willing private landowners to maintain habitat and provide conservation benefits that may be greater than those achieved through the take prohibition and restrictions applied under the ESA.

- Respond to the Applicant's (SPI) application for an ESP based on the proposed CCAA that may result in incidental take of fishers within the Applicant's Enrolled Lands. The Service's decision on issuance of an ESP will consider the applicant's objectives, which are to provide SPI regulatory certainty concerning land use restrictions that might otherwise apply, should the fisher become listed under the ESA.
- Ensure that the benefits of the conservation measures to be implemented, when combined with the benefits that would be achieved if it is assumed that similar conservation measures were also implemented on other necessary properties, would preclude or remove any need to list the covered species.
- Protect, conserve, and enhance the survival of fishers and their habitat on the Enrolled Lands.
- Provide a measured conservation approach that conserves the ecosystems on which the covered species depends, and that may improve the current understanding of fishers' habitat needs to inform future conservation efforts.
- Contribute toward the long-term survival and recovery of the covered species through the maintenance of a substantial proportion of the applicant's lands in the conditions that are currently providing habitat for fishers, and the retention of key habitat components in all forest management activities that occur on the Enrolled Lands.

This purpose and need establishes the basis for determining whether other viable alternatives to the proposed action may meet the intended purpose, applicant's objectives, and reduce potential effects.

1.4 Legal and Policy Guidance

The ESA establishes a process for evaluating the status of species believed to be at risk of extinction. Species facing extinction are listed as endangered; species at risk of becoming endangered are listed as threatened. Listed species are protected under the ESA. If and when a species becomes listed under the ESA, that action triggers both a regulatory and a conservation responsibility for federal, state, and private property owners. These responsibilities stem from Section 9 of the ESA and its implementing regulations that prohibits "take" (i.e., harass, harm, pursue, shoot, wound, kill, trap, capture, or collect, or attempt to engage in any such conduct) of listed species. Under Section 7, federal agencies must ensure their actions will not jeopardize the continued existence of the listed species.

Sections 2, 7, and 10 of the ESA allow the Service to enter into this CCAA. Section 2 of the ESA states that encouraging interested parties "…through federal financial assistance and a system of incentives, to develop and maintain conservation programs is a key to safeguarding the Nation's heritage in fish, wildlife, and plants." Section 7 of the ESA requires the Service to review the programs it administers and to use such programs in furtherance of the purposes of the ESA. Lastly, Section 10(a)(1)(A) of the ESA authorizes the issuance of permits for acts that would otherwise be prohibited by Section 9 if such acts are expected to enhance the propagation or survival of the affected species. By entering into this fisher CCAA, the Service is using its Candidate Conservation Program to further the conservation of the nation's fish and wildlife.

To provide an incentive for voluntary conservation of species that are candidates for listing and are located on non-federal lands, the Service adopted a final policy and regulations for CCAAs under the authority of Section 10 of the ESA (64 FR 32726). Under a CCAA, a property owner commits to implement the specific conservation measures on non-federal lands for species covered by the CCAA. In exchange, a property owner receives incidental take coverage and assurances from the Service that additional commitments of land, water, or finances would not be required and additional commitments of land, water, or finances would not be imposed on them if the species becomes listed in the future, provided the CCAA is being properly implemented. These assurances provide

regulatory certainty to the enrollee regarding their activity on non-federal lands covered by the CCAA.

1.5 Public and Agency Involvement

This document is intended to inform decision-makers and the public before decisions are made and before actions are taken. To this end the Yreka Fish and Wildlife Office contacted the FWS Region 8 office, the National Marine Fisheries Service, the California Department of Fish and Wildlife, and 46 Tribal Leaders to inform them of our intention to work with SPI on developing a CCAA and potentially issuing an ESP for fishers. More details regarding these outreach efforts are contained in Chapter 5 of this EA. Additional outreach efforts include publication in the Federal Register of a Notice of Availability of the public comment draft of this EA and the CCAA.

Chapter 2—Alternatives

This chapter describes the proposed action. As referenced in CEQ's NEPA regulations regarding the contents of an EA (40 CFR 1508.9[b]), NEPA requires federal agencies to develop, study, and briefly describe alternatives to a proposed action and to evaluate how those alternatives can resolve resource conflicts. This chapter also describes the alternatives considered during preparation of the CCAA and this EA, as well as alternatives that were considered but eliminated from detailed consideration.

2.1 Alternatives Analyzed in this EA

2.1.1 Alternative 1—No-Action Alternative

Under the no-action alternative, SPI and the Service would not enter into a CCAA, the Service would not issue a Section 10(a)(1)(A) ESP, and SPI would continue its forestry operations without the CCAA and without the permit. Because the fisher is not a federally listed species, no change in SPI's existing management and operations with respect to fisher habitat would be needed, because the take prohibitions under the ESA apply to only listed species. Similarly, because the northern California ESU of the species is not listed under the California Endangered Species Act (CESA), no change in SPI's existing management would be needed with respect to fisher habitat as a result of state law because, as above, take prohibitions under the CESA apply to only candidate and listed species.[1] SPI would continue its timber harvest practices consistent with Timber Harvest Plans

[1] At their August 4-5, 2015 meeting the California Fish and Game Commission (Commission) determined that listing the fisher as threatened in the Northern California ESU was not warranted. The commission determined that listing the fisher Southern Sierra Nevada ESU was warranted and authorized staff to begin the official rulemaking process (California Fish and Game Commission 2015). The Commission indicated that these findings would be adopted at a future meeting. As of the preparation of this Draft EA in December 2015, the findings have not been adopted at subsequent Commission 2015 meetings (October 7-8; November 5; and December 9-10). However, the fisher listing/non-listing finding will be addressed at the Commission meeting on February 10-11, 2016. For the purposes of alternatives analysis in this Draft EA the Commission decision to not find the listing of the Northern California fisher ESU as warranted is considered a reasonably foreseeable action with the Fish and Game regulations to be so amended. Consequently, no additional protective measures would be required under California law and regulations. However, as the fisher is presently a candidate species for listing under the California Endangered Species Act (CESA) in both the Northern California ESU and Southern Sierra Nevada ESU, forestry operations must demonstrate take avoidance in each THP within the current occupied range or within dispersal proximity to that range (CAL FIRE 2013). The THPs must contain operational provisions that avoid take as defined by and consistent with the candidate status of fisher under the CESA. The THPs "must: 1) incorporate provisions in the plan which will avoid take per CESA FGC § 2090 or 14 CCR § 892(d); 2) include a CEQA discussion of potential significant adverse impacts to fishers as defined in 14 CCR § 895.1 and described in Technical Rule Addendum #2; and 3) describe how Functional Wildlife Habitat will be maintained as described in 14 CCR § 897(b)(1)(B)." Additionally, a fisher-specific cumulative effects assessment must be included in the THP. These types of measures have been in place for some time. If the Commission's fisher Northern California ESU decision is not implemented or changed then forestry operations on the proposed Enrolled Lands would be conducted per the appropriate

(THPs) submitted under its approved Option A demonstration of Maximum Sustained Production of High Quality Timber Products (MSP) (approved on September 16, 2002), per the Forest Practice Rules (14 CCR 933.11) and other state permits and regulations. SPI might not voluntarily retain the habitat types and elements described in the CCAA, and might not apply the other conservation measures specified in the CCAA; there would be no requirements to do so.

SPI timber harvest and associated activities that would continue under the no-action alternative include the covered activities described below under alternative 2, the proposed action. Under the no-action alternative, if fishers became federally listed in the future, SPI would need to modify their operations to avoid take or obtain an ITP under Section 10(a)(1)(B) of the ESA, including preparation of a habitat conservation plan (HCP), for any of its operations that would result in take of the species. The standard approach required to get an HCP is the inclusion of measures to avoid, minimize, and mitigate the impacts of take to the maximum extent practicable. A CCAA standard requires plans to preclude the need to list the species. A CCAA for fishers will provide greater conservation benefit than would be achieved under an HCP. In the absence of an ITP covering impacts to the listed species, SPI's actions would be modified to avoid take of the listed species.

Under alternative 1, the existing Stirling Management Area Fisher CCAA would continue until its permit expires in 2028. At that time, if the fisher is not listed, SPI might request to renew the permit.

2.1.2 Alternative 2 (Proposed Action)—Issue the 10-Year Permit Based on Applicant's Proposed CCAA

Under this alternative, the Service would issue a 10-year Section 10(a)(1)(A) ESP with associated conditions for the covered activities described in the CCAA. The permit would allow for take of up to 60 individual fishers by death or injury, 180 individuals by harassment, and 79 individuals by harm, as defined in ESA regulations, over the 10-year term of the CCAA and associated enhancement of survival permit. This incidental take[2] would occur while SPI is conducting otherwise lawful activities associated with its timber harvest and associated land management activities. The permit would require the implementation of all of the conservation measures set forth in the CCAA as well as monitoring and reporting. To maximize the benefits for fishers, implementation of the conservation measures would begin on January 1, 2016.

The biological goals and objectives of the CCAA are to:

- Provide fisher habitat aggregations that are representative of an important portion of a female fisher home range across both the occupied range and unoccupied portions of its range at the 10,000-acre scale.
- Minimize potential impacts on fishers by reducing the likelihood of killing, injuring, or disturbing them during their reproductive and rearing periods.

state regulations, either no take or other measures. In these circumstances forestry operations under all the alternatives would be similarly directed and the effects on fisher would be similar. It is expected that SPI would continue to operate under its approved Option A demonstration of Maximum Sustained Production of High Quality Timber Products as it does currently under the fisher's candidate status no take requirements with similar timber volumes harvested over the 10 year period of the proposed CCAA and ISP. Consequently, the effects of the various fisher regulations on other resources would also be similar.

[2] Incidental take would not occur until the fisher is listed as threatened or endangered. Before listing, no take per se is occurring because that term applies only to species listed under the ESA. To quantify the effects of issuing the permit, the CCAA assumes that the species would be listed immediately after issuance of the Section 10(a)(1)(A) ESP, and thus "take" accounting begins immediately.

The timber harvest operations that SPI conducts would not change from those used currently; however, the conservation measures including the retention of habitat elements and habitat retention areas (HRAs[3]) would be a mandatory condition of the permit. The difference between the no-action alternative and the proposed action is that under the proposed action, substantially greater amounts of fisher habitat and important habitat elements would persist at the landscape, local, and timber harvest unit scales. As described in chapter 1 of the EA, the proposed CCAA applies to all the SPI Enrolled Lands (a total of 1,570,964 acres), including the 159,966-acre Stirling Management Area, which has been operating under an existing Fisher CCAA (Permit Number: TE166855-0) since May 15, 2008 (see description of alternative 3).

The proposed CCAA conservation measures for SPI Enrolled Lands are listed in Table 2-1. Covered activities included in the CCAA are the 12 SPI forest management, timber harvest, and associated activity items listed in Table 2-2.

Table 2-1. Proposed CCAA Conservation Measures

Conservation Measure	*Description*	*Location of Conservation Measure*
Conservation Measure 1: Maintain approximately 80 percent of existing Landscape Evaluation Areas for Fisher (LEAFs) as Conservation LEAFs	LEAFs are identified as approximately 10,000-acre landscapes that have been judged to have the highest-quality fisher habitat on and adjacent to the SPI Enrolled Lands within the fisher occupied range. They are contiguous areas that contain at least one female fisher Territory Opportunity (TO) as defined, as well as other suitable fisher habitat in amounts and configurations that are judged to provide for reproduction, foraging, dispersal, and genetic interaction between individual fishers. Because of intermingled and discontinuous ownerships, each 10,000-acre LEAF is not owned entirely by SPI; accordingly, not all areas within LEAFs are included as Enrolled Lands. However, each LEAF is at least 25-percent SPI-owned, and within each LEAF more than 50 percent of the SPI land is comprised of a combination of habitat form class HF2, HF2Hv, or HF4 (see table note) in the Mixed land class or equivalent vegetation size and density. No more than 20 percent of the SPI portion of each LEAF is devoid of vegetation cover. Conservation LEAFs are shown in Figure 2-1. This conservation measure requires that 43 of the 54 initially identified Conservation LEAFs (roughly 80 percent) would maintain their current function as high-quality fisher habitat.	Existing fisher occupied range
Conservation Measure 2: Maintain at least 50 percent of existing capable Enrolled Lands in the Mixed land class	A small percentage of the Enrolled Lands do not meet the definition of capable land. Of the 1. 4 million acres of capable land, 50 percent equals approximately 700,000 acres. These 700,000 acres are not specifically identified or mapped, but would be maintained in the Mixed land class at the landscape level. Capable land contains soils that either currently have or can grow dense forests of large trees (thus excluding rocky areas, highways, lakes, and meadows). The Mixed land class is derived from various types of uneven-aged timber harvest practiced over many decades by previous landowners. Large, commercially valuable trees were removed, so trees greater	Enrolled Lands

[3] A habitat retention area (HRA) is a portion of a timber harvest unit with the purpose of maintaining and recruiting habitat elements into future forest stands. It will consist of a representative sample of the species and diameter classes among the dominant and co-dominant trees present prior to harvest. These areas will be retained at a rate of 2 percent of the total harvest unit area, excluding required wetland, lake, and stream buffers. HRAs are not required in harvest areas smaller than 2.5 acres in size.

Conservation Measure	*Description*	*Location of Conservation Measure*
	than 30 to 40 inches diameter at breast height (dbh) are now rare in the Mixed land class. Where present, these large-diameter trees primarily exist as cull trees or snags. Consequently, the forests contain trees of various sizes and ages, canopy closures are commonly over 50 percent, tree growth rates are relatively slow, and there are a variety of legacy trees, snags, and logs from past selective timber harvest.	
Conservation Measure 3: Identify and maintain habitat elements important to fishers	Habitat elements important to fishers include den sites, rest sites, and areas of dense canopy cover as well as habitat for small mammals and other fisher prey items. These elements would be identified and maintained as specified in the CCAA in timber harvest units and adventitiously in other treated areas such as fuel breaks.	Enrolled Lands
Conservation Measure 4: Mitigation of substantially damaged timberlands (California Forest Practice Rules [CFPRs] 14 California Code of Regulations [CCR] 895.1)	Substantially damaged timberlands are timberlands where unpredictable events (for example, fire or insect outbreaks) kill trees, and all dead, dying, or damaged trees (but not undamaged trees) can be harvested immediately to allow maximum economic recovery. In these areas SPI would retain snags, wildlife trees, and habitat retention areas (HRAs; see table note) as described for operations in undamaged areas. If all trees are dead, then the retention standards would be met with dead trees.	Enrolled Lands
Conservation Measure 5: Reduce potential impacts on fisher den sites	This measure would be implemented by seasonal restrictions, acting on fisher sightings near harvest operations, identification of potential den trees during timber harvest unit layout, wildlife surveys, and other activities. It would prohibit the felling of potential den trees during natal den periods (March 1 to May 15) and restrict the felling of such trees during the maternal den periods (May 16 to July 31).	Existing fisher occupied range
Conservation Measure 6: Minimize risk of fishers drowning in water tanks	This measure ensures that tank openings are adequately screened or closed to prevent fishers from entering. If the tank is no longer needed, this measure requires opening or breaching the tank so that it provides a fisher exit route. In some cases tanks may be fitted with devices that allow fishers to escape should they fall into a tank that cannot be effectively closed.	Enrolled Lands
Conservation Measure 7: Reduce potential impacts from illegal marijuana cultivation and firewood cutting	Trespass is controlled by limiting access where feasible. Observations by field personnel and prompt law enforcement notification also reduces potential impacts of illegal activities. SPI participates in site remediation after law enforcement finishes its action or investigation.	Enrolled Lands

Conservation Measure	*Description*	*Location of Conservation Measure*
Conservation Measure 8: Reduce potential for catastrophic fire	Reduction in catastrophic wildfire is addressed through commercial thinning of Even-aged harvest units supported by construction of a network of fuel breaks. Commercial thinning reduces ladder fuels and creates greater spacing between trees that can help reduce wildfire spread. Fuel breaks provide a functional space and safety zone to conduct fire suppression. Fuel breaks are strategically placed in locations that consider sources of lightning or human-caused ignition and prioritize access by suppression forces. In fuel breaks, surface and ladder fuels are reduced and trees are removed to provide wide spacing between live tree crowns to minimize the potential for an advancing crown fire to propagate through the fuel break. Fuel breaks would compose approximately 2 to 3 percent of Enrolled Lands over the permit term.	Enrolled Lands

Notes:

- A territory opportunity (TO) is a forested area expected to provide appropriate female fisher habitat. A TO has stands with specified levels of tree diameter, canopy cover, and numbers of large trees expected to provide den opportunities. In general only the Mixed land class is counted as fisher habitat.
- The capable, Mixed land, and Even-aged land classes and the habitat form classes (HF2, HF2Hv, and HF4) are classifications used by SPI to manage its timberlands. The Mixed land class generally contains stands that have been selectively harvested and have trees with a wide range of diameters. The Even-aged land class contains stands where trees are essentially the same age, and hence, have similar diameters and heights.
- HF2 stands may occur in the Mixed or Even-aged land class and have 6- to 11-inch quadratic mean diameter (QMD) and more than 40 percent canopy closure. When SPI "cross-walks" Habitat Forms to the California Wildlife Habitat Relationship (WHR) classifications, HF2 includes 3M and 3D stands. In the WHR system, size class 3 represents pole-sized trees (6 to 11 inches dbh), cover class M represents canopy closures of 40 to 59 percent, and cover class D represents canopy closures of 60 to 100 percent.
- HF2Hv stands may occur in the Mixed or Even-aged land class and have an 11 to 12.9 inch quadratic mean diameter (QMD) and at least 50-percent canopy closure. HF2Hv includes WHR 4M and 5M. In the WHR system, size class 4 represents small trees of 11 to 24 inches dbh; size class 5 represents trees >24 inches and cover class M represents canopy closures of 40 to 59 percent.
- In the Mixed land class, HF4 has a canopy cover greater than or equal to 60 percent, a stand level QMD of greater than or equal to 13 inches dbh, and at least 9 trees per acre that are greater than or equal to 22 inches dbh. In the Even-aged land class, HF4 has a canopy cover greater than or equal to 60 percent, a stand level QMD of greater than or equal to 13 inches dbh, and at least 20 trees per acre that are greater than or equal to 22 inches dbh. When SPI "cross-walks" Habitat Forms to the WHR classification HF4 includes WHR classes 4D, 5D, and 6. In the WHR system, size class 4 represents small trees of 11 to 24 inches dbh; size class 5 represents medium/large trees >24 inches; and size class 6 represents size class 5 trees with a distinct layer of size 3 or 4 trees and a total canopy closure of 60 to 100 percent.
- An HRA is a portion of a timber harvest unit left unharvested with the purpose of maintaining and recruiting habitat elements into future forest stands.

Table 2-2. Proposed CCAA Covered Activities

Activity	*Description*
1. Timber harvest activities as defined by the California Forest Practice Rules (CFPRs) (Title 14, California Code of Regulations Chapters 4, 4.5, and 10) when they are included as part of an approved Timber Harvest Plan (THP) or Emergency Exemption Notification in accordance with the CFPRs	These activities include felling, bucking, and yarding timber; loading and landing operations; transportation of forest products and equipment; chipping; timber salvage; transport of wood products, water, and rock; road construction, reconstruction, and maintenance; herbicide applications, crossing facility placement and maintenance; site preparation; mastication; and prescribed burning.
2. Rock pit development and rock processing	Rock pit development occurs to provide aggregate for SPI's forest roads and is done in compliance with the California Surface Mining and Reclamation Act (SMARA). Rock pit development generally does not require tree removal because the soil depth to the underlying rock layer is generally shallow, and large mature trees rarely grow there. Rock pit development requires the removal of vegetation (if present), excavation of the soil and weathered rock, and then excavation of the aggregate. The average rock pit disturbs less than 1 acre of land and is adjacent to existing roads. Rock pits may gradually increase in size over time but generally do not exceed 5 acres. Aggregate excavation may be done by ripping and pushing with a tractor crawler or digging with an excavator. On harder rocks, aggregate extraction may require drilling and blasting. The aggregate may require mechanical crushing to provide the needed size and uniformity. The aggregate is used to strengthen a road prism, road surface, and crossing facilities. Rock pit development and reuse of a rock source is intermittent depending on need.
3. Transport of aggregate products and heavy equipment	Transportation of aggregate and heavy equipment uses semi-trucks traveling to and across the SPI ownership transportation network. Semi-trucks used for hauling materials and equipment include water trucks, end-dump trucks, low beds, and belly dump trucks. Hauling operations generally occur at speeds less than 25 miles per hour (mph) because of the alignment and grade of the transportation system.
4. Watercourse crossing installation	Water crossings vary by water course size and range from culverts with an overlying road to gravel crossings. Culvert sizing (that is, water flow capacity) is done according to CFPR sizing requirements. Watercourse crossings are designed to minimize their impact on water resources and the adjacent riparian vegetation.
5. Road maintenance	Road maintenance includes grading and adding aggregate to strengthen a road prism or road surface. It is done on an as-needed basis to ensure the integrity of the road prism, road drainage, and associated crossing facilities and is done for travel safety and to minimize sediment contribution to water courses. Vegetation removal during road maintenance is limited to small brush and tree seedlings, branches, or grass that has grown in the travel-way.

Activity	*Description*
6. Road rights-of-way mastication	Road rights-of-way mastication of brush and small trees is conducted to maintain sight distance along the roadway and also to reduce fuel loads along roads so that the road functions as a more effective fuel break. Mastication of road rights-of-way targets limbs of larger trees, brush, and trees up to 6 inches dbh. Masticating roadway rights-of-way is applied in a narrow corridor adjacent to existing roads and does not target large trees.
7. Placement and use of water tanks	Water tanks are placed and maintained to create a water source for use in dust abatement on forest roads. Water tanks are placed on stable, level ground.
8. Timber cruising	For timber cruising, crews drive to a particular road location and then walk transects that traverse the SPI land, stopping every 4 chains (1 chain is 66 feet) and taking forest vegetation measurements.
9. Timber harvest plan preparation	THP preparation includes foresters driving to the THP area and then traversing the plan area on foot. They flag watercourse buffers, road alignments, and unit boundaries, perform archaeological reconnaissance and watercourse assessments, and mark timber.
10. Pre-commercial thinning	Pre-commercial thinning occurs in conifer plantations, generally when the planted trees are approximately 10 years old. It involves chainsaw felling of unwanted small diameter (less than 5 inches dbh) trees in the plantation to achieve a desired crop tree density. These thinned trees are sawn into chunks (lopping) to prevent that material from becoming infested with pine beetles.
11. Construction and operation of communication sites	Communication sites are sometimes constructed and maintained on SPI lands. To date, 17 communication sites have been constructed on SPI lands within the fisher's occupied range. Approximately 10 more could potentially be constructed in the occupied range. Maintenance of these sites occurs approximately annually. These sites are generally on high-elevation ridges or peaks that provide the desired coverage for a communication company. Communication sites are generally accessed by existing roads, although new road construction may be necessary in some instances. Appropriate measures of the CFPR would address the harvest of trees at these sites. Communication sites have one or more metal lattice or pole towers, multiple antennae, and one or more small 16-foot by 20-foot equipment shelters. They are equipped with one or more diesel-powered electrical generators. Site perimeters typically have 8-feet-high cyclone fencing for access control. Vegetation removal may be necessary to accommodate the site construction and maintenance and includes overhead or underground electrical power distribution lines. Communication site maintenance includes vegetation management for fire prevention using mechanical or herbicide treatments. Herbicide treatments are prescribed by a California Certified Pest Advisor and applications supervised by a California Certified Qualified Applicator under the authority of the California Department of Pesticide Regulation's pesticide program.
12. Research	Research on SPI land covers a variety of topics including landscape-wide mesocarnivore inventories, water quality assessments, and localized investigations of plant populations or wildlife use of a particular structure or site. These activities generally involve a crew driving on SPI land and walking to the point of interest to perform data collection activities.

With respect to timber harvest, the covered activities would be the same under alternative 2 as under the no-action alternative (alternative 1) except for the following slight differences:

- Maintenance of roughly 80 percent of Conservation LEAFs (43 of 54) as high-quality habitat for fisher.
- Maintenance of at least 50 percent of the existing Mixed land class.
- Identification and maintenance of habitat elements important to fishers.

To achieve the maintenance of 80 percent of the Conservation LEAFs, SPI will evaluate its proposed operations and, where necessary, exclude certain areas, organize timber harvest units in slightly different locations to preserve habitat, and leave different types and amounts of habitat in timber harvest units.

In addition, under alternative 2, SPI would undertake the same timber harvest and associated activities as under alternative 1, with the following differences:

1. Harvesting will proceed at a rate that ensures fisher habitat is maintained as described above (80 percent of the Conservation LEAFs, and 50 percent of Enrolled Lands in the Mixed land class).
2. The number of trees meeting the Wildlife Tree definition that will be retained will double from 2 to 4 per 20 acres harvested.
3. Additional small hardwoods and conifers will be retained in regeneration harvest units in order to limit the distance between Wildlife Trees, Legacy Trees, hardwoods, HRAs, or a forested edge to a maximum of 150 feet.
4. All hardwood trees 36 inches dbh or larger will be retained wherever they occur.
5. All known fisher den trees will be marked and retained.
6. On substantially damaged timberlands, snags, wildlife trees, and HRAs will be retained. Fire-killed hardwood trees will be retained at a rate of one per 2 acres where they exist.
7. Currently these actions are voluntarily applied by SPI in some circumstances but not in others; under alternative 2 these conservation actions would become mandatory. Furthermore, there is currently no monitoring program in place that evaluates the implementation or effectiveness of these activities when they are applied. Overall, the methods used on the ground to maintain additional habitat for fisher would increase and become mandatory performance standards as compared to alternative 1.

Inclusion in the proposed CCAA of the existing Stirling Management Area Fisher CCAA means that the existing CCAA would no longer be needed because it would be redundant with the larger CCAA. Once the proposed CCAA is in place and the associated ESP is issued, SPI would surrender the Stirling Management Area Fisher CCAA ESP to the Service. This action would also change the conservation measures for the Stirling Management Area in the following ways:

- The retention of fisher habitat structures in timber harvest units would increase as described above.
- CCAA reporting would include all the items described in the proposed CCAA, rather than the current CCAA reporting, which only documents HF4 habitat increases.

Other activities that may occur on Enrolled Lands would not be covered under the proposed permit and would require separate ESA compliance if the fisher is federally listed. These other activities not covered by the CCAA include:

- Wind power facilities—if a wind power facility were to be located on Enrolled Lands, it would be evaluated as an individual project, and would require separate ESA compliance if the fisher is federally listed.

CCAA implementation would be monitored through annual reporting by SPI. For the purposes of providing the Service the necessary notice relating to potential take by harm, SPI will provide the Service a list of all harvest units and other covered activities that are planned for operations in the current calendar year that intersect a TO and are projected to cause harm, beginning February 28, 2016, or as soon thereafter as the CCAA/ESP is signed, and on or before February 28 of each year thereafter.

Monitoring of conservation measures will be done systematically and efficiently, and utilize methods and timing that provide accurate and reliable information. The timing for monitoring will vary depending on the measure being evaluated. Some monitoring will be conducted by third party certification entities already conducting audits of SPI practices, and some will be done by CAL FIRE during THP administration.

Biological monitoring will be accomplished through a sampling system. To sample the Occupied Range as defined in this CCAA, SPI anticipates using a non-invasive survey strategy presently being developed by the Stirling Fisher Translocation project, if it is determined to be both reliable and cost-effective. Alternatively, SPI will conduct detection sampling per Zielinski and Kucera (1995, Appendix P) to monitor the presence of fisher on its ownership. The initial survey will be initiated by the spring of 2021.

In the unoccupied range, SPI will sample portions of the leading edges of the extant populations on the Enrolled Lands prior to the end of the 10-year term of the CCAA/ESP to help determine if the current populations are expanding. The reporting for this sample of the population distribution will begin within 5 years of the date of CCAA/ESP signing and be completed prior to the end of the 10-year term.

The parties will meet 2 years in advance of selecting the methodology and locations for these sampling efforts to discuss which methodology should be used to monitor fisher populations and to discuss the most appropriate interpretation of the results of this sampling.

SPI would include the retention standards and other CCAA conservation measures as operational requirements in THPs submitted to CAL FIRE. Because the conservation measures would be incorporated into THPs, any measure not fulfilled would generate a CAL FIRE Notice of Violation during THP administration. Any such notice would be provided to the Service within 1 week of its receipt by SPI. Additionally, the retention standards would be incorporated into the third-party certification requirements of SPI operations conducted by the Sustainable Forestry Initiative (SFI), and SFI's annual reports would be provided to the Service by June 30 of each year. SFI audits one-third of the SPI land base each year.

Conservation Measures 1 and 2 would require that SPI maintain a substantial amount of the existing fisher habitat on SPI lands for the duration of the 10-year term of the CCAA/ESP. Conservation Measure 3 would require that SPI maintain important fisher habitat elements within actual timber harvest units. Importantly, the maintenance of the 50-percent Mixed land class acreage requirement (about 700,000 acres) is a fixed acreage requirement and applies even if wildfire depletes the total available Mixed land class acreage. The only way this 700,000 acres of habitat would be reduced is if more than 700,000 acres of Mixed land class were burned over the 10-year term.

The number of fishers that would be taken under the ESP was estimated through the use of a model of habitat change, as described in the CCAA, resulting from projected amounts and locations of timber harvesting and the calculation of the probability of harvesting an occupied den site or den stand. The amount of actual take, primarily as measured by habitat modification, would be evaluated through actual changes in HF2hv and HF4 in TOs within LEAFs provided in annual reports by SPI on or before February 28 of each year and verified by the Service.

2.1.3 Alternative 3—Issue the 10-Year Permit Based on Applicant's Proposed CCAA but Exclude the Existing SPI Fisher CCAA for the Stirling Management Area

Under alternative 3, the Service would issue the permit to SPI under the same CCAA conditions as described for alternative 2, but the amount of Enrolled Lands would be reduced by approximately 10 percent, because the Stirling Management Area would not be included in the Enrolled Lands. The Stirling Management Area is 159,966 acres and straddles the boundaries of Butte, Plumas, and Tehama Counties. The Enhancement of Survival Permit and CCAA for the Stirling Management Area were approved on May 15, 2008, with a 20-year duration. At that time, fishers did not occupy this area. The intent of the Stirling CCAA (2008) was to increase the capability of the Stirling Management Area to support fishers so that they could disperse into the area naturally or from future planned reintroduction efforts. SPI was to maintain a minimum level of 20 percent fisher denning and resting habitat at any given time and, through tree growth, to have that habitat increase to approximately 33 percent by the end of the permit period.

In 2008, SPI, California Department of Fish and Wildlife, the Service, and North Carolina State University began a reintroduction project on the Stirling Management Area. A total of 40 fishers (24 females and 16 males) were translocated from source populations to the Stirling Management Area between 2009 and 2011. As of 2015, reproductive fishers and their offspring continue to inhabit SPI and adjacent forest lands on the SPI Stirling Management Area and the minimum number of fishers known to be alive on the project area was reported as 49 in 2015 (Kevin Smith pers. communication).

Under alternative 3, the proposed CCAA would apply on all SPI lands considered under alternative 2 except for the Stirling Management Area, where the existing CCAA and the associated ESP would continue until it expires in 2028.

2.2 Alternatives Considered but Eliminated from Further Consideration

The following alternatives were considered by the Service but eliminated from further consideration in this EA. These alternatives are divided into two categories, those developed by SPI and those developed by the Service.

2.2.1 SPI Alternatives Considered but Eliminated From Detailed Consideration

SPI proposed a CCAA that considered maintaining 50 percent in the Mixed land class but only as a percent of the existing Mixed land class acreage at a given time. That is, if wildfire reduced the acreage of Mixed land class, the 50 percent would be calculated on the new, reduced acreage. This alternative was rejected because it did not provide sufficient acreage in that forest land class for fisher habitat continuity and because this approach did not provide sufficient certainty for fisher conservation to meet the 10a(1)(A) issuance criteria and the CCAA standard as stated in 64 FR 116 (June 17, 1999, *Announcement of Final Policy for Candidate Conservation Agreements with Assurances. Fish and Wildlife Service, National Marine Fisheries Service*). Thus, this alternative did not meet the purpose and need for the proposed action.

SPI originally proposed a 40-year CCAA. The Service rejected this alternative because of concern as to whether current or future Even-aged land class stands will support fishers adequately. Because ongoing fisher research is likely to provide important new information over the next 10 or more years regarding fisher use of various habitats, a 40-year CCAA commitment based on present knowledge was considered inadvisable, and thus would not meet the purpose and need for the proposed action.

2.2.2 U.S. Fish and Wildlife Service Alternatives Considered but Eliminated from Detailed Consideration

During development of the SPI CCAA, the Service proposed various alternatives. SPI considered these alternatives infeasible because they did not comply with SPI's approved Option A demonstration of MSP (14 CCR 933.11) or did not meet current SPI management objectives. These alternatives are listed in Table 2-3. Because these possible alternatives were considered infeasible and therefore would not meet the purpose and need for the proposed action, they were eliminated from detailed consideration in this EA.

Table 2-3. U.S. Fish and Wildlife Service Proposed Alternatives Rejected by Sierra Pacific Industries as Infeasible

Proposed alternative	*Reason for rejection*
Delay harvest in highest quality habitat	Infeasible due to Option A schedule, and because SPI harvest unit adjacency constraints specify the harvest of the average acre which is calculated based on soil productivity and stand volume. Also infeasible because of difficulties in having SPI reliably identify high-quality habitat within the Mixed land class.
Establish reserves in some portion of the occupied range and focus harvesting in the unoccupied areas	Infeasible due to current management objectives and need to manage all portions of the ownership to achieve projected maximum sustained yield of high-quality timber products.
Switch to uneven-aged management	Infeasible due to current management objectives and failure to meet SPI's timber yield requirements. Could cause SPI to fail to meet economic needs.
Spread out harvest units rather than cluster them	Infeasible due to Option A harvest schedule, SPI adjacency constraints, and financial feasibility.
Modify management to retain, rather than regenerate, hardwoods and apply a 10-percent, rather than a 2-percent, standard for habitat retention areas	Rejected due to reduced commercial tree growth rates as a result of increased hardwood presence. Could cause SPI to fail to meet its timber yield requirements and economic needs.

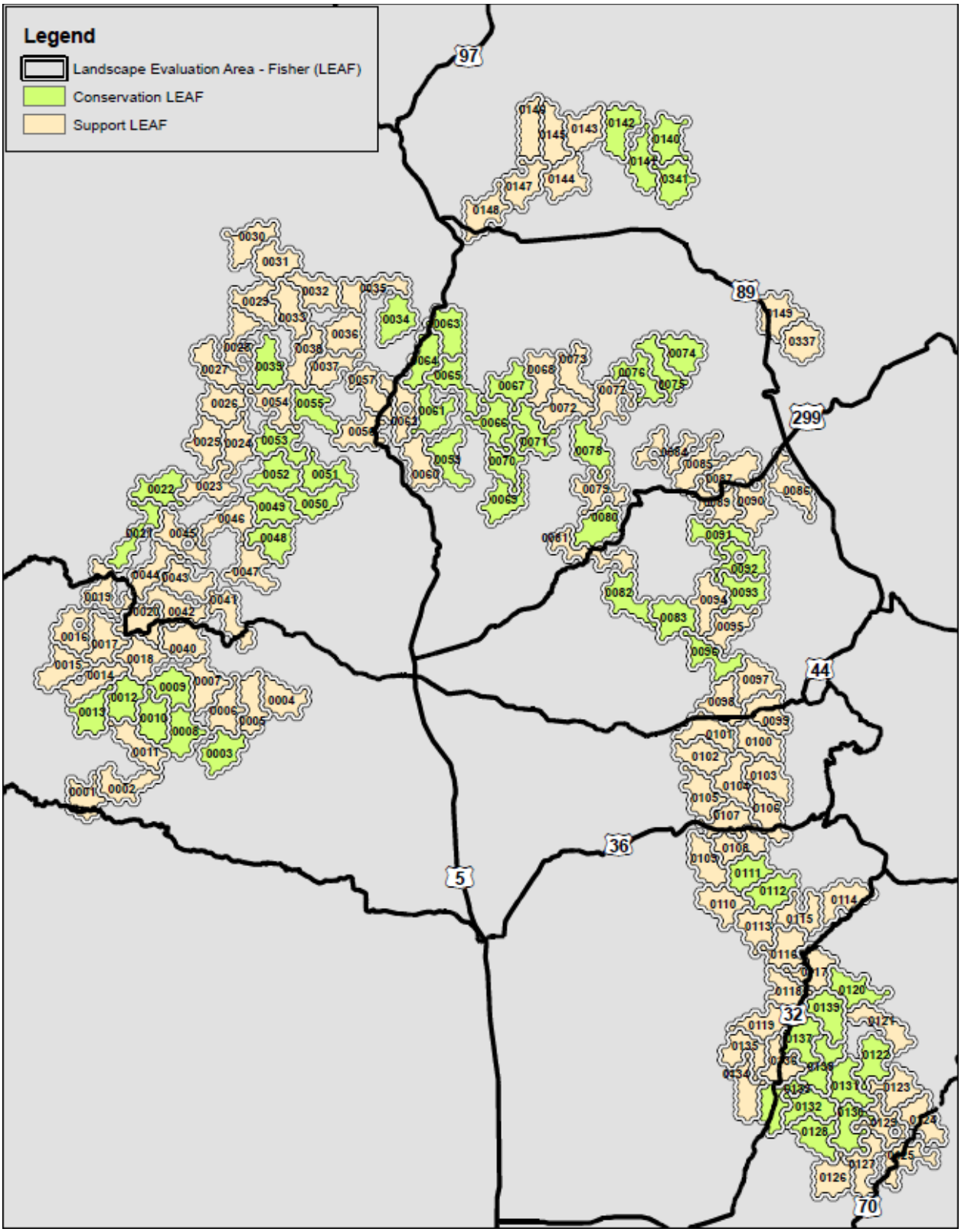

Figure 2-1. Conservation LEAFs and Support LEAFs on Enrolled Lands within the Occupied Range. Support LEAFs would not meet the Conservation LEAF criteria but still provide some level of fisher habitat. Source: SPI CCAA, Appendix E.

Chapter 3—Affected Environment

3.1 Physical Environment

3.1.1 Air Quality and Climate Change

Environmental Setting

The SPI timberlands extend over 16 counties (see Table 1-1, Chapter 1) from the central Sierra Nevada, to the southern Cascade Mountains, to the western Klamath Mountains. The lands are primarily at elevations from 2,000 feet through 5,000 feet. Although there are local variations in meteorological conditions across the area, in general this broad area has warm to hot, dry summers and rainy to snowy winters. Stagnant air conditions (with increased air pollutant concentrations) are most common in the summer period. The winter period is commonly affected by storm systems entering the region from the west and dispersing air pollutants although stagnant air periods also occur in winter. Regional wind patterns also direct air from more populated areas into these more rural areas (California Air Pollution Control Officers' Association 2015).

The federal and state governments have established national ambient air quality standards (NAAQS; 40 CFR 50) and California ambient air quality standards (CAAQS; 17 CCR 70200), respectively, for six criteria air pollutants: ozone, carbon monoxide (CO), lead (Pb), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), and particulate matter (PM) which consists of particulate matter 10 microns in diameter or less (PM10) and 2.5 microns in diameter or less (PM2.5). Except for Pb, forestry equipment and operations can contribute emissions of all of these criteria air pollutants. Additionally, the California Air Resources Board identified PM from diesel-fueled engines (or diesel particulate matter [DPM]) as a toxic air contaminant. Forestry equipment and operations also contribute emissions of greenhouse gases (GHGs), which contribute to climate change. The primary greenhouse gases are carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O).

Poor air quality can affect people's health; especially vulnerable are children, seniors, and sick persons at residences, hospitals, and schools. Although the SPI timberlands are in rural to relatively remote settings numerous smaller towns are on the peripheries of the Enrolled Lands.

California state-level management of air quality is done through local air pollution districts and considers air quality in specific air basins. California is divided into Air Pollution Districts (APCDs) and Air Quality Management Districts (AQMDs), also called air districts. These districts are county or regional governing authorities that have primary responsibility for controlling air pollution from stationary sources. In the area of the SPI timberlands most of these air districts are at the county level except for three multi-county districts. These three multi-county districts are the Northern Sierra District (Nevada, Sierra and Plumas Counties), the Feather River District (Nevada County), and the North Coast District (Trinity County) (only counties with SPI timberlands are listed).

California is also divided into 15 air basins for managing air quality on a regional basis. There are four primary air basins covering the Enrolled Lands. These are (only counties with SPI timberlands are listed): the Mountain Counties Air Basin (Tuolumne, Calaveras, Amador, Placer, Nevada, Sierra, and Plumas Counties); the Northeast Plateau Air Basin (Lassen, Modoc, and Siskiyou Counties); the Sacramento Valley Air Basin (Butte, Yuba, Tehama, and Shasta Counties); and the North Coast Air Basin (Trinity County). A small proportion (approximately 190 acres of the 1,570,964 acres) of the proposed Enrolled Lands are also in the Lake Tahoe Air Basin.

Open outdoor fire used in forest management is considered agricultural burning. The local air districts issue agricultural burning permits, including permits for prescribed burning. Based on air

quality and meteorological conditions, the local air districts or state board identify burn days, no-burn days, and marginal (limited burning for individual projects) burn days to ensure that air quality standards are met. Forest burning is conducted under individual permits and requires burn plans and smoke management plans. Burn and smoke management plans provide site-specific considerations for fire control and minimizing the effects of emitted smoke. Burning is generally done during the fall, winter and spring although air districts can allow burning from April through August for a registered project.

Each air quality district also has regulations for minimizing dust from various activities including forestry operations, primarily use of unpaved forest roads.

In general these air basins are mostly in compliance with NAAQS and CAAQS standards but exceedances do occur. These exceedances are primarily for ozone and PM2.5. The most common reasons for exceedances are wildfires, air blown in from more populated areas to the south, and winter period residential wood burning. However, forestry operations can contribute to these exceedances (California Air Pollution Control Officers' Association 2015).

With respect to GHGs and climate change, the California Air Resources Board (2007) found that California timberlands contribute to a net sequestration of carbon in the state.

3.1.2 Hydrology and Water Resources

Environmental Setting

The SPI timberlands extend over 16 counties from the central Sierra Nevada, to the southern Cascade Mountains, to the western Klamath Mountains (see Table 1-1, Chapter 1). The lands are primarily at elevations from 2,000 feet through 5,000 feet above sea level. Although there are local variations in meteorological conditions across the area, in general this broad area has warm to hot summers and rainy to snowy winters. Winter snow occurs at elevations above 3,500 to 4,000 feet.

Because of the broad distribution of lands, streams on SPI lands drain to most of the major rivers in northeastern California either directly or via tributaries including the Tuolumne River, the Pit River, the Sacramento River both above and below Shasta Dam, and the Trinity River and Klamath River. Impacts to hydrologic and water resources in this portion of California are often considered in light of the potential effects to salmon, steelhead, or both in the West Coast ESUs, most of which are listed under the ESA and have experienced significant declines in their populations over the past several decades. (Distribution and analysis of effects to listed fish is covered in Section 3.2.1, *Biological Resources.)* The listed fish include Chinook salmon, (winter and spring run), northern California/southern Oregon coho salmon, and central valley steelhead. These fish (anadromous salmonids) require cold clear water and clean gravel substrates for spawning and are thus sensitive to degraded water and aquatic habitat conditions. Most of proposed Enrolled Lands (timberlands) are above dams that prevent upstream migration by anadromous salmonids. However, timberlands in southern Shasta County are within the range of Chinook salmon and Central Valley steelhead. Also, some of the Enrolled Lands drain to the Trinity River and Klamath River systems and are within the range of the Chinook salmon, coho salmon and coastal steelhead.

Forestry operations can affect hydrology and water quality parameters that are important to aquatic organisms and geomorphic features (i.e., things related to landslides or flooding and related stream channel stability). These effects can be caused by a variety of mechanisms. Primary mechanisms are:

- Harvest or partial harvest in stream side (riparian) zones – Removal of streamside trees that provide shade, large woody debris input, fine organic debris such as leaves and needles, which support aquatic organisms, and filter sediment, can negatively affect water quality and peak flow effects.
- Tree harvest and post-harvest site preparation involves varying degrees of site and soil disturbance that can temporarily increase soil erodibility and runoff rates until vegetation regrowth and a renewed duff layer protects the soil and ameliorates rapid runoff.
- Trees, like all plants, use soil water (transpiration) and tree harvest can increase the amount of soil water so that more runoff may occur post-harvest than would occur under normal rainfall or snowmelt conditions. The increased water runoff can also increase stream peak flow which can increase stream sediment transport or stream channel instability. Water runoff can also carry fine sediment into the stream system. This fine sediment can affect fish gills. When deposited in stream gravels it can smother fish eggs incubating in those gravels.
- Forest canopy intercepts snowfall and thus limits snow pack depth relative to areas where mature forest trees have been harvested. Some of the snow intercepted by the forest canopy evaporates, thereby reducing the amount of water equivalent available for surface runoff during snow melt or rain-on-snow precipitation events. Recently clearcut timber harvest units accumulate more snow than the adjacent forest, which increases surface runoff particularly from rain-on-snow precipitation events. The effects of rain-on-snow events are also magnified in forests with hydrogically immature vegetation, or areas with reduced canopy cover and organic duff layer, as more bare land area covered with snow is susceptible to direct impact from rain events. This effect lasts for several years until trees form a relatively complete canopy and duff layers accumulate. These higher flows can cause additional soil erosion in a timber harvest unit

and contribute to higher flows that can destabilize stream channels. In the area of the Enrolled Lands the rain-on-snow zone is from approximately 4,500 to 5,500 feet elevation or higher (Kattleman 1997; North Coast Regional Water Quality Control Board 2005).

- Loss of a mature forest overstory canopy and source of organic duff layer accumulation reduces interception of rainfall and water retention potential, resulting in quicker delivery of water to the forest floor that increases peak runoff rates. Removal of the protective organic duff layer and exposure of the underlying soils also increases the potential of soil movement during storms.
- Herbicides (pesticides) applied to control competing vegetation during reforestation of timber harvest units may enter water bodies.
- Forest roads can increase sediment delivery and water runoff to streams.
- Stream crossings by forest roads or equipment crossings can increase sediment delivery to streams.

Water quality requirements in the region are set under the Federal Clean Water Act (CWA) and the State of California Porter-Cologne Water Quality Control Act. Water quality standards include the identification and preservation of beneficial uses as well as pollutant thresholds. Waters that do not meet the standards are identified on the CWA 303(d) list of impaired water bodies compiled by the state and reviewed and approved by the EPA. Many streams, rivers, and lakes are listed within, or downstream of, the SPI ownership. Appendix A presents a list of these impaired water bodies including the pollutant category that is the reason for their inclusion on the list. Many of the pollutant categories are not related to forestry operations. These include metals, metalloids and mercury (from current or former mining operations); pathogens (commonly from leaky septic systems); polychlorinated biphenyls (PCBs); and salinity (total dissolved solids). Pollutant categories that can be affected by forestry activities are sediment, temperature, dissolved oxygen, toxicity (when related to herbicides), and nutrients.

Water quality on timberlands is addressed during the CEQA-equivalent THP process, primarily by the criteria of the California Forest Practice Rules and enforced by CAL FIRE. These rules are very detailed and aim to identify and protect the established "Beneficial Uses of Water" for each watercourse (14 CCR Article 4, Erosion Control, Article 6 Water Course and Lake Protection, Article 12 Logging Roads, Landings, and Watercourse Crossings). These rules limit the amount of harvesting that can take place near watercourses with various characteristics, the amount of residual vegetation that is required to be left undisturbed, the amount of soil disturbance that is permitted, the types of equipment that can enter a Watercourse and Lake Protection Zone (WLPZ) and the types of erosion control measures that must be implemented. More stringent Forest Practice Rules have been established in California where anadromous salmonids may be effected. These anadromous salmonid protection rules are generally more prescriptive than the "standard rules." For activities that can impact the "bed, bank, or channel" of "waters of the State," CDFW administers Fish and Game Code Section 1600-1616 (also referred to as streambed alteration agreements) for stream crossings or diversions, which requires CEQA review. As described in more detail in the Affected Environment section of this EA, existing regulation of pesticides, both under the THP process, and through stand-alone regulations, limit the potential for effects of pesticide use.

3.2 Ecological Systems

3.2.1 Biological Resources

For the proposed CCAA, SPI's Enrolled Lands cover roughly 1.6 million acres. An area of this size encompasses a wide range of habitat types but consists primarily of forested land at mid-elevation (2,500 to 6,000 feet above sea level). The forests owned by SPI are variously aged but most have been managed for commercial timber to some extent. Depending on the forest type, the management history and forest age, the density of a particular timber stand or forested area may vary widely. Though managed for commercial timber production, these forested habitats can still be utilized by many different species of wildlife. This includes both yearlong residents and migratory species. Several of these species are economically valuable as game animals such as; American black bear (*Ursus americanus*), black-tailed deer (*Odocoileus hemionus columbianus*) mule deer (*Odocoileus hemionus hemionus*), Roosevelt elk (*Cervus canadensis roosevelti*), sooty grouse (*Dendragapus fuliginosus*) and mountain quail (*Oreortyx pictus*). Many more species inhabit or migrate through SPI lands but are neither protected as listed or special status species nor harvested as game species.

Environmental Setting

Timber harvest and associated operations can affect local wildlife, including listed and non-listed wildlife species. Sometimes management practices or mitigation measures can be used to minimize these effects. Effects can include but are not limited to:

- Habitat destruction and modification from timber harvesting, road building and site preparation
- Inadvertently killing, injuring, or harassing wildlife during a variety of timber harvest related activities that remove vegetation or cause ground disturbance
- Habitat fragmentation from timber harvests (clearcuts) and associated road networks
- Indirect degradation of aquatic ecosystems from increased sediment loading due to soil disturbance and the removal vegetation during timber harvesting

The SPI timberlands analyzed in this EA extend from the central Sierra Nevada, north to the southern Cascade Mountains and from the Modoc plateau west to the Klamath Mountains (Figure 3.2.1-1).

The lands are primarily at elevations from 2,500 feet through 6,000 feet above sea level. The soils within this northern portion of California are quite variable but are largely of volcanic origin. The climate is generally Mediterranean in character but tends to be colder and with more snow (*http://www.dfg.ca.gov/biogeodata/atlas/article_Sierra_climate.asp*). Much of the precipitation comes during the winter and snow packs at higher elevations can last into the mid-summer months. The combination of soil type and precipitation regime often influences the dominant vegetation type. North facing slopes often are wetter and cooler than south facing slopes and can be much more densely vegetated. The SPI ownership typically includes the mid-elevation areas dominated by commercial conifer species and rarely includes higher alpine areas or lower valley zones that do not support commercial coniferous forest vegetation types.

Most of the Enrolled Lands are in what SPI refers to as the Mixed land class which currently comprises about 74.2 percent of the Capable Land. Capable Lands are those that can grow forest vegetation (e.g., excluding rocky areas, meadows) and that are suitable (accessible and manageable) with soils that can grow forest vegetation to the HF4 class (see Table 2-1). In most cases, these forests contain a mix of trees in various sizes and ages. The management history of the Mixed land class is generally that of repeated entries that selectively removed trees with the greatest economic value but did not clearcut the entire stand. These previously entered stands rarely contain conifers ≥40 in. dbh, because those commercially valuable trees were harvested in past decades. The Mixed

land class often includes stands of trees which are larger than 80 acres. Few previously un-entered stands exist within the landscape.

Within the Enrolled Lands, forests include a wide variety of habitat conditions, including the presence of hardwoods, large snags, and down logs, most of which exist as legacies left during past harvests. The amount of understory brush also varies substantially. In addition to the Mixed land class, most of the remainder of the Enrolled Lands are in the Regen land class, which presently comprises roughly 25.8 percent of SPI's Capable Lands. The Regen land class trees are typically all the same age and similar in height, except in cases where older trees were left as individuals or in small groups (Habitat Retention Areas or HRAs) during previous clearcut harvest activities. Brush species may be treated with herbicides to assist the establishment and growth of young trees leading to decreased undergrowth compared to natural forests.

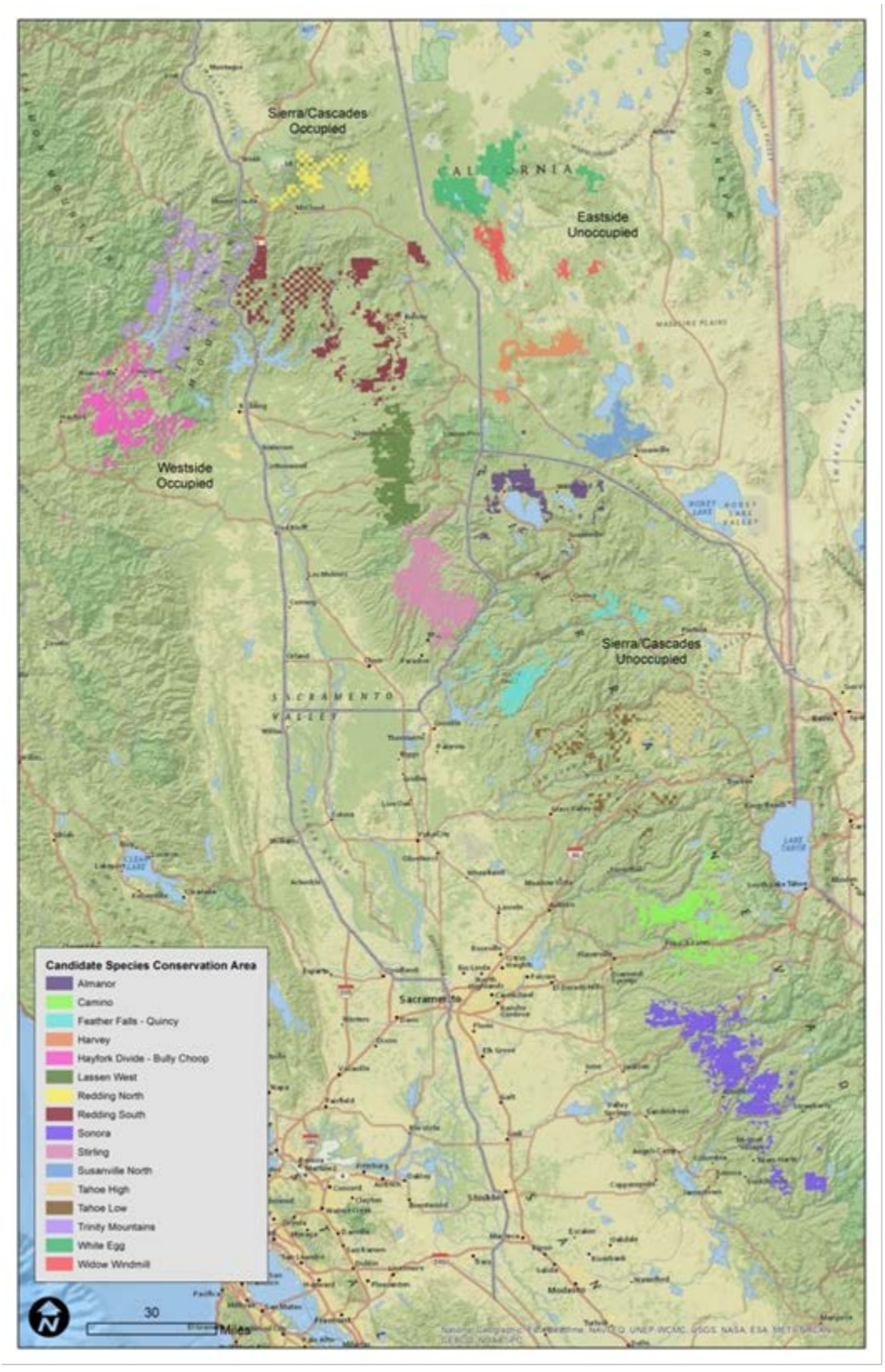

Figure 3.2.1-1. Map of SPI Enrolled Lands in California

The Enrolled Lands in the proposed CCAA occur within portions of 16 California counties. These 16 counties are known to have populations and/or Critical Habitat for 36 animals, one conifer tree, and 29 plant species listed under the ESA. The majority of these species occur in locations that are not within the Enrolled Lands. Many of the listed plant species within the Enrolled Lands occur in habitat types that are not affected by SPI timber operations (e.g., vernal pools, chaparral). The whitebark pine (*Pinus albicaulis*) occurs at the highest elevations (9,000 to 12,000 feet above sea level) on poor timber sites and is highly unlikely to be encountered in timber harvests. The full list of federally protected animal species within the affected counties is accounted for in Table 3.2.1-1 along with their location with regards to the Enrolled Lands.

Table 3.2.1-1. Local Federally Listed Species and Relation to Enrolled Lands

Common Name	*Scientific Name*	*Federal Status*	*Distribution within SPI Lands*
Invertebrates			
Conservancy fairy shrimp	*Branchinecta conservatio*	FE	Occurs at elevations below SPI lands (<1,000 feet) Critical habitat designated Does not occur on Enrolled Lands
Vernal pool fairy shrimp	*Branchinecta lynchi*	FT	Occurs at elevations below SPI lands (<1,000 feet) Does not occur on Enrolled Lands
Valley elderberry longhorn beetle	*Desmocerus californicus dimorphus*	FT	Occurs at elevations below SPI lands (<1,000 feet) Does not occur on Enrolled Lands
Vernal tadpole shrimp	*Lepidurus packardi*	FE	Occurs at elevations below SPI lands (<1,000 feet) Does not occur on Enrolled Lands
Shasta crayfish	*Pacifastus fortis*	FE	No critical habitat designated; Species known only from Pit River watershed; highly unlikely to be impacted by SPI timber harvest activities Does not occur on Enrolled Lands
Carson wandering skipper	*Pseudocopaeodes eunus obscurus*	FE	Species believed to be restricted to Honey Lake area on alkali substrate outside of SPI lands in Lassen County Does not occur on Enrolled Lands
Fish			
Cui-ui	*Chasmistes cujus*	FE	Occurs in areas outside of SPI lands; not known to occur in California but occupies Truckee River in Nevada Does not occur on Enrolled Lands
Green sturgeon	*Acipenser medriostris*	FE	Does not occur on Enrolled Lands
Shortnose sucker	*Chasmistes brevirostris*	FE	Not known to occur on SPI lands Critical habitat designated
Lost River sucker	*Deltistes luxatus*	FE	Not known to occur on SPI lands Critical habitat designated
Warner sucker	*Catostomus warnerensis*	FT	Not known to occur on SPI lands Critical habitat designated

Common Name	*Scientific Name*	*Federal Status*	*Distribution within SPI Lands*
Tidewater gobi	*Eucyclogobius newberryi*	FE	Occurs at elevations below SPI lands (<1,000 feet) Not known to occur on Enrolled Lands
Delta smelt	*Hypomesus transpacificus*	FT	Occurs at elevations below SPI lands (<1,000 feet) Does not occur on Enrolled Lands
Longfin smelt	*Spirinchus thaleichthys*	C	Occurs at elevations below SPI lands (<1,000 feet) Does not occur on Enrolled Lands
Lahontan cutthroat trout	*Oncorhynchus clarki henshawi*	FT	Possibly on SPI lands
Paiute cutthroat trout	*Oncorhynchus clarki seleniris*	FT	Elevation range (>7,800 feet in Sierra Nevada from Alpine Co. south) well above SPI ownership. Does not occur on Enrolled Lands
Coho salmon	*Oncorhynchus kisutch*	FT	Possibly on SPI lands; Critical habitat designated Can occur on Enrolled Lands
Central Valley steelhead	*Oncorhynchus mykiss*	FT	Possibly on SPI lands; Critical habitat designated Can occur on Enrolled Lands
Northern California steelhead	*Oncorhynchus mykiss*	FT	Does not occur on Enrolled Lands
California coastal Chinook salmon	*Oncorhynchus tshawytscha*	FT	Likely not on SPI lands Does not occur on Enrolled Lands
Central Valley spring-run environmentally significant unit (ESU) of Chinook salmon.	*Oncorhynchus tshawytscha*	FT	Possibly on SPI lands; Critical habitat designated Can occur on Enrolled Lands
Winter-run Chinook salmon, Sacramento River	*Oncorhynchus tshawytscha*	FE	Does not occur on Enrolled Lands
Amphibians			
Yosemite toad	*Anaxyrus canorus*	C	Generally occur at elevations above SPI lands (>6,200 feet); Critical habitat proposed Does not likely occur on Enrolled Lands
California tiger salamander, central population	*Ambystoma californiense*	FT	Occur at elevations below SPI lands (<1,000 feet) Not associated with coniferous forested habitats Does not occur on Enrolled Lands
California red-legged frog	*Rana draytonii*	FT	One known occurrence on SPI land in El Dorado County Critical habitat designated Known to occur on Enrolled Lands
Oregon spotted frog	*Rana pretiosa*	C	Considered extirpated (locally extinct) from California (U.S. Fish and Wildlife

Common Name	*Scientific Name*	*Federal Status*	*Distribution within SPI Lands*
			Service 2008b) but likely occurred historically within the Pit River system (northeastern California) (Hayes and Pearl 2008). Does not occur on Enrolled Lands
Sierra Nevada mountain yellow-legged frog	*Rana sierrae*	FE	Found on SPI in one watershed in Tuolumne County; Critical habitat proposed Known to occur on Enrolled Lands
Reptiles			
Giant garter snake	*Thamnophis gigas*	FT	Occur at elevations below SPI lands (<1,000 feet) Not associated with coniferous forested habitats Does not occur on Enrolled Lands
Birds			
Marbled murrelet	*Brachyrampus marmoratus*	FT	Enrolled Lands occur east of any known breeding sites Critical habitat designated Does not occur on Enrolled Lands
Western snowy plover	*Charadrius alexandrinus nivosus*	FT	Enrolled Lands occur east of any known breeding sites Does not occur on Enrolled Lands
Western yellow-billed cuckoo	*Coccyzus americanus occidentalis*	FT	Occurs south and west of SPI lands and typically at lower elevations Not associated with coniferous forest habitat types; Critical habitat proposed Not known to occur on Enrolled Lands
California brown pelican	*Pelecanus occidentalis californicus*	FE	SPI lands occur east of any known breeding sites Not associated with coniferous forested habitats Does not occur on Enrolled Lands
Northern spotted owl	*Strix occidentalis caurina*	FT	Numerous occurrences on SPI lands in Shasta, Trinity, Siskiyou, and Modoc Counties; Critical habitat designated Known to occur on Enrolled Lands
Greater sage grouse	*Centrocercus urophasianus*	C	Adjacent to SPI lands in extreme NE California Not associated with coniferous forested habitats Does not occur on Enrolled Lands
Mammals			
Sierra Nevada bighorn sheep	*Ovis canadensis californiana*	FE	Occurs at high elevations (>10,000 feet) east of Enrolled Lands in Amador and Calaveras Counties Critical habitat designated Does not occur on Enrolled Lands

Common Name	*Scientific Name*	*Federal Status*	*Distribution within SPI Lands*
San Joaquin kit fox	*Vulpes macrotis mutica*	FE	Occurs at elevations below SPI lands. Not associated with coniferous forested habitats Does not occur on Enrolled Lands
Fisher	*Martes pennanti*	C	Known to occur on Enrolled Lands
Gray wolf	*Canus lupus*	FE	Range currently expanding Recently observed in northern California near SPI lands in Siskiyou County (the Shasta pack) Has potential to expand range to include more Enrolled Lands.

Most of proposed Enrolled Lands are above dams with no anadromous salmonid presence. However, timberlands in southern Shasta County, eastern Tehama County, and northeastern Butte County are within the range of the Central Valley winter run and spring-run Chinook salmon ESU. Some SPI timberlands drain to the Trinity River system and are within the range of the Southern Oregon/Northern California coho salmon ESU. Steelhead within the Central Valley ESU occupy the main stem Sacramento River and undammed tributaries.

3.3 Human Environment

3.3.1 Socioeconomics and Environmental Justice/Land Use

U.S. Executive Order 12898 directs federal agencies to "make…achieving environmental justice part of its mission" and to identify and address "disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority and low-income populations."

Environmental Setting, Socioeconomics and Environmental Justice

The affected area covers very large portions of the 16 counties as shown in Table 3.3.1-1 below. Primarily included are those portions of the counties that are in the foothill and mountain areas, which are less populated than the valley portions of those counties.

Table 3.3.1-1. SPI Enrolled Lands

County	*Enrolled Lands (acres)*
Amador	28,037
Butte	137,190
Calaveras	72,864
El Dorado	137,702
Lassen	164,055
Modoc	98,624
Nevada	48,264
Placer	31,715
Plumas	96,303
Shasta	257,727
Sierra	52,985
Siskiyou	61,356
Tehama	116,644
Trinity	191,378
Tuolumne	72,829
Yuba	3,291
Total	1,570,964

Socioeconomic information is provided in Table 3.3-1-2. Unemployment information is provided in Figure 3.3-1-1. Timber production is considered an essential part of the economy of the region, contributing jobs and economic activity. In addition, as described in the general plans of the affected counties cited in Table 3.3.1-3 , timber lands are part of the character of the region. Continued maintenance of the affected area in timber production supports, promotes, and preserves the character of the region.

Table 3.3.1-2. Individuals in Poverty in the Affected Area

County	*Percent Individuals in Poverty*
Amador	21.8
Butte	25.6
Calaveras	28.4
El Dorado	22.7
Lassen	15.9
Modoc	22.4
Nevada	24.6
Placer	25.4
Plumas	16.4
Shasta	22.7
Sierra	41.6
Siskiyou	20.8
Tehama	25.6
Trinity	17.8
Tuolumne	26.2
Yuba	16.9

Source: U.S. Census Bureau 2009–2013 5-Year American Community Survey

Environmental Setting, Land Use

Existing land uses in the affected areas consist of timber production and related activities. General plan land use policies for counties that overlap at least some portion of the Enrolled Lands designate lands for timber production, as shown on Table 3.3.1-3 below. Policy language in this table is taken directly from the general plans cited.

Table 3.3.1-3. Timber General Plan Designation in the Affected Area

County	*Timber General Plan Designation*	*TPZ Zoning?*
Amador	*Page 28*: "GF", General Forest This classification is applied to lands which are both in public and private ownership which have been identified as having significant timber production resources. Because forestry is an essential and basic segment of the Amador County economy, its continued protection is considered to be of the utmost importance. Conversion to other uses and any encroachment of incompatible land uses which might adversely impact timber production shall be discouraged. Sound forestry practices which will maintain the long-term timber productivity of this lands shall be encouraged. The support of timber harvesting on a sustained yield basis shall be promoted by the County. Consistent Zoning: AG, A-40, O-S, RIA, MR, TPZ	Yes

County	*Timber General Plan Designation*	*TPZ Zoning?*
Butte	Timber Mountain This designation allows forest management and the harvesting and processing of forest products. Lands zoned Timber Preserve are located in this designation. Alternative energy facilities are allowed in the Timber Mountain designation, subject to permit requirements. Residential uses are limited to one single-family dwelling per legal parcel. The minimum parcel size is 160 acres, although existing parcels smaller than that minimum may remain as legal parcels.	No
Calaveras	2.0 Natural Resource Lands Natural Resource Lands are those lands identified as containing resources for utilization and conservation. Policies relating to these lands are discussed in more detail in the Conservation and Open Space Elements. The land use designations identified on the Future Land Use Map as Natural Resource Lands include Wildlife, Botanical, Agriculture Preserve, Timber Lands, Dam Inundation, Mineral Resource 2A, and Mineral Resource 2B. GENERAL PLAN RECOMMENDATIONS Natural Resource Lands: Wildlife, Botanical One dwelling unit per forty acres Agriculture Preserve One dwelling unit per twenty acres when not in a Williamson Act contract One dwelling unit per fifty acres when in a Williamson Act contract Timber Lands One dwelling unit per twenty acres Dam Inundation One dwelling unit per twenty acres Mineral Resource 2A One dwelling unit per five acres, when consistent with Conservation Element Implementation Measure IV-7A-2 from page IV-14. Mineral Resource 2B One dwelling unit per five acres, when consistent with Conservation Element Implementation Measure IV-7A-2 from pp II-5, II-6.	Yes
El Dorado	Natural Resource (NR): The purpose of the Natural Resource (NR) designation is to identify areas that contain economically viable natural resources and to protect the economic viability of those resources and those engaged in harvesting/processing of those resources including water resources development from interests that are in opposition to the managed conservation and economic, beneficial use of those resources. The important natural resources of the County include forested areas, mineral resources, important watershed, lakes and ponds, river corridors, grazing lands, and areas where the encroachment of development compromise these natural resource values. Land under both public and private ownership that contain these resources, including wilderness areas and other lands managed for resource values and multiple use, are included in this category. This designation shall be applied to those lands which are 40 acres or larger in size and contain one or more important natural resource. Compatible uses on private land may include agriculture, rangeland, forestry, wildlife management, recreation, water resources development, and support single-family dwellings. The maximum allowable density for this designation is one	Yes

County	*Timber General Plan Designation*	*TPZ Zoning?*
	dwelling unit per 160 acres or larger outside the National Forest Service lands and within "timber production" areas and one dwelling unit per 40 acres within river canyons outside of the "timber production" areas. This designation is considered appropriate only in the Rural Regions. Isolated parcels outside the National Forest Service lands and below 3,000 feet elevation may be exempt from the one dwelling unit per 160 acre parcel size. If it is determined that such lands are unsuitable for "timber production," one dwelling unit per 40 acres maximum density can be considered. Any modifications of this land use designation shall require one of the following findings: (1) No important natural resource exists on the property; or (2) If a project is proposed, it will significantly enhance the long-term production and preservation of the on-site resources through the application of development strategies such as fuels management plans, timber management plans, self-imposed setbacks buffers, and open space.	
Lassen	11. ISSUE: Timberland GOAL L-18: Healthy forest environments which will continue to provide resources for multiple uses and timber production in sustainable quantities which will benefit the local economy. LU41 POLICY: It is recognized by the County that the timber industry has historically been and continues to be a major economic and social component of Lassen County and therefore represents a vital factor in the fundamental culture and customs of the community. LU42 POLICY: The County supports the conservation and management of timber production areas for the production of timber and other multiple uses compatible with timber production and shall, within the County's authority, protect these areas from land uses (e.g., residential development) and factors which would significantly restrict their capacity for production. Implementation Measures: LU-Z The County will Continue to support the use of timber production zones (TPZ) and related programs to promote the productive management of timber resource lands. LUM Land with significant forest resources should, unless identified and designated for unique and specific development opportunities, be zoned by the County as: TPZ, Timber Production Zone District; U-C, Upland Conservation District; or U-C-2, Upland Conservational Resource Management District. LU43 POLICY: The County supports the balancing of policies for the conservation of natural resources including abundant, diverse, and sustainable wildlife populations in forested areas with the need to produce timber products at abundant, sustainable levels as an economic resource. NOTE: Refer to the Natural Resources Element and other relevant sections of the General Plan for additional policies and implementation measures related to forest and timberland resources.	Yes

County	*Timber General Plan Designation*	*TPZ Zoning?*
Modoc	*Pages 33, 34:* Timber Preserve This land use category is applied to lands zoned timber production (TP). These lands are privately held lands with commercial timber value and quality for special property tax exemptions. The population density is approximately 10 persons per square mile. Lot coverage may not exceed 5%, but there is no building height limitation. Minimum parcel size is 160 acres.	Yes
Nevada	Forest (FOR) is intended to provide for production and management (including timber harvesting and related operations) of timber resources, and compatible recreational and low density residential uses. Within the Forest designation, the minimum parcel size should be 40+ acres, in order to provide for preservation of the timber resource and protection of resource management needs and opportunities.	Yes
Placer	Timberland (T) (10, 20, 40, 80-640 acre minimum) This designation is applied to mountainous areas of the county where the primary land uses relate to the growing and harvesting of timber and other forest products, together with limited, low-intensity public and commercial recreational uses. Typical land uses allowed include: all commercial timber production operations and facilities; agricultural operations where soil and slope conditions permit; mineral and other resource extraction operations; recreation uses such as incidental camping, private, institutional and commercial campgrounds (but not recreational vehicle parks); and necessary public utility and safety facilities. Allowable residential development in areas designated Timberland includes one principal dwelling and one secondary dwelling per lot and caretaker/employee housing.	Yes
Plumas	*Page 12:* TIMBER RESOURCE AREAS Diagram Directive Identify "important timber resource areas." These shall be those areas classified as Site I, II and III under the Dunning Timber Site Classification System. Timber Sites IV and V may be identified as important timber resource areas if they are part of a timber management unit. Timber Site III may be identified as an opportunity area if it is not part of a timber management unit, not in TPZ, and if it is accessible by a maintained year-round public road and if it can be shown that the economic, social and environmental benefits of development are greater than the benefit that would be derived from leaving the land in timber production. Timber Site I, II and III lands, which are within on mile of an area serviced by all the services required for prime opportunity areas and are not designated TPZ, may be designated opportunity areas. If the majority of a land ownership is within the above reference mile, the remained of the property may be included in the opportunity area.	Yes

County	*Timber General Plan Designation*	*TPZ Zoning?*
Shasta	6.2.1 Introduction The Shasta County Timberlands Element is a combination of planning requirements from the mandated Land Use, Conservation, and Open Space Elements. Portions of these mandatory elements relevant to timberlands are cited below. A land use element which designates the proposed general distribution and general location and extent of the use of land for...natural resources...The diagram for the land use element shall designate those parcels of real property for timberland production which have been so zoned pursuant to the California Timberland Productivity Act of 1982, Chapter 6.7 (commencing with Section 51100) of Part 1 of Division 1 of Title 5 (Government Code Section 65302(a). A conservation element for the conservation, development and utilization of natural resources including...forests...the conservation element may also cover...protection of watersheds.... (Government Code Section 64302(d). Open space for the managed production of resources, including...forest lands.... (Government Code Section 65560(b)(2). Parcels zoned as timberland preserve shall be zoned so as to restrict their use to growing and harvesting and to compatible uses and shall be entered as a timber preserve element of the County General Plan. (Government Code Section 51115).	Yes
Sierra	Forest 14. The County shall provide for protection of its forest lands within the Forest designation in order to: a. Ensure the continued availability of private timber lands; b. Ensure the continued viability of timber production; c. Allow for the managed production of forest lands; d. Retain the open space and scenic values these lands provide. e. Prevent conversion to residential uses and other incompatible land uses. Allowed Timber production and appurtenant uses Large acreage estate residential on non-TPZ lands Low intensity outdoor recreation, including scenic, historic and cultural areas; low intensity park and recreation purposes, including access to lake shores, and rivers and streams; and links between major recreation and open-space reservations, including utility easements, banks of rivers and streams, trails, and scenic highway corridors. Conditionally Allowed / Approval Criteria A limited range of small scale, ancillary activities related directly to timber harvest and processing. Compatible ancillary uses shall not create significant visual, noise, or other nuisance for neighboring residents beyond those inherent in timber harvest activities. Any of the following characteristics will define a use as incompatible: Recreation of low intensity Use of or construction of structures which do not have a traditional ranch or cabin appearance	Yes

County	*Timber General Plan Designation*	*TPZ Zoning?*
	Use of brightly colored awnings, multiple signs, or other features conveying a retail or "circus" appearance on-site or off-site. Outside, unscreened storage of more than five non-timber harvest vehicles, resembling a storage, repair, or dismantling business. Regular use of purchased non-timber harvest materials exceeding 30% of those used in processing or sales. Bright and unshielded night lighting. Hazardous material storage. Prominent, unscreened non-timber harvest activity parking and storage facilities. Quasi-public uses and public service uses Manufacturing and packaging plants TPZ lands: Because the Timberland Productivity Act focuses on timber cultivation and harvest, and because it confers special tax benefits on affected lands, ancillary uses on these lands shall also: Enhance timberland viability. Enhance timber activities. Exclude urban development on timber lands. Generate revenues characteristic of timber production operations while continuing to receive State subventions. Maintain existing parcel sizes or create larger parcels. Not be a use for which a suitable alternative site is available outside of Timber Productivity Act contracted lands. Location Criteria Outside Community Areas Lands currently in timber production; All TPZ lands shall receive this designation; Forested lands. Density/Intensity Standards <u>Maximum Building Lot Coverage</u> Less than 1 acre 2400 square feet 01 to <10 acres 8000 square feet 10 to <40 acres 14000 square feet 40 acres and up 28000 square feet	
Siskiyou	*Page 28:* Map 11. Woodland Productivity Policy 31. The minimum parcel size shall be one acre on 0-15% slope, and 5 acres on 16-29% slope. The permitted density will not create erosion or sedimentation problems. Policy 32. Single family residential, light commercial, light industrial, open space, non-profit and non-organizational in nature recreational uses,	Yes

County	*Timber General Plan Designation*	*TPZ Zoning?*
	commercial/recreational uses, and public or quasi-public uses only may be permitted. The permitted uses will not create erosion or sedimentation problems. Policy 33. All land uses and densities shall be designed so as not to destroy timber productivity on large parcels of high suitability woodland soils. (Class I and II.)	
Tehama	*Timber:* Definition and Purpose. Tehama County recognizes the value of its timber resources by affording protection through the use of Timberland Production Zoning (TPZ). Virtually all of the County's timber resources are protected from conversion to other uses and from adjacent land use conflict under the TPZ provisions. The Timber Land Use Designation is intended to apply to those properties and lands having Timber Preserve Contracts. General Uses. Uses permitted under this designation include: uses integrally related to the growing, harvesting and processing of forest products; management for watershed; fire and erosion control; management for fish and wildlife habitat; grazing; campgrounds; outdoor recreation; and dwellings subject to a conditional use permit. Additional uses may be determined by the County to be consistent and compatible with the foregoing uses and the Timberland Productivity Act of 1982, as amended. Minimum Parcel Size. 160 gross acres. Maximum Dwelling Density. Only those dwelling units that existed on the parcel prior to being identified in a TPZ district are allowed, or new dwellings determined by the County to be compatible with the management, growing, harvesting or processing of forest products.	Yes
Trinity	Resource Land Resource lands are those areas designated for the production of the variety of natural resources that occur within Trinity County. Natural resources include timber production, mineral production, and important grazing areas. Activities necessary for the production of the various resources are encouraged in this area, and can include industrial development sited adjacent to the resource base being used (timber, ore, etc.) if adequate transportation facilities and access are available and if an acceptable low level of environmental impact can be maintained.	Yes
Tuolumne	Timber Production - Purpose- The TPZ designation provides for the growing and harvesting of timber and other forest products in concert with limited, low-intensity public and private commercial recreational uses. This designation is found primarily in the eastern part of the County at elevations above 3,000' and is interspersed with federally owned land within the Stanislaus National Forest and Yosemite National Park. General Uses - Typical land uses allowed in this designation include all commercial timber production operations and facilities, agricultural operations, mineral and other resource extraction operations, recreation uses such as public utility and safety facilities. Allowable	Yes

County	*Timber General Plan Designation*	*TPZ Zoning?*
	residential development in areas designated TPZ include one single family dwelling per parcel and additional single family dwellings at a maximum density of one dwelling unit per thirty-seven (37) acres. Minimum Parcel Size - 160 gross acres. The minimum parcel size may be reduced in accordance with the Z'Berg-Warren-Keene-Collier Forest Taxation Reform Act of 1976, as amended. [Resolution 117-06 adopted September 19, 2006] Building Intensity - One (1) dwelling per thirty-seven (37) acres is the maximum building intensity under this designation; however, additional units are possible through a density bonus for the provision of affordable/achievable housing in accordance with the California Government Code or the Tuolumne County Ordinance Code. The maximum FAR for buildings is 0.05. The maximum FAR may be exceeded for affordable/achievable housing units in accordance with the Tuolumne County Ordinance Code. [Resolution 117-06 adopted September 19, 2006]	
Yuba	Timber Production - Definition and Purpose: The Timber Production classification is used to protect and preserve the forest resources and timberlands of Yuba County for the production of timber, recreational opportunities, watershed protection and maintenance of fisheries and wildlife; to protect and preserve the forest resources and timberlands from encroachment of unrelated uses; and to identify privately held parcels within the county which are subject to the Z'berg-Warren-Keene-Collier Forest Taxation Reform Act of 1976. Permitted Uses: Examples of uses which are considered appropriate under this classification include the growing and harvesting of timber and forest products; uses and facilities which are integrally related to the growing, harvesting and processing of forest products; watershed management; fish and wildlife habitat management; exploration and extraction of mineral resources; limited active and passive recreational uses; and public utility. Limited residential development is permitted for the property owner or caretaker of the property when such dwellings are necessary for timber management operations.	Yes

Sources: Counties as listed below together with the Adoption Date of their General Plan as cited

Amador	1973
Butte	2012
Calaveras	1996
El Dorado	2004
Lassen	1999
Modoc	1988
Nevada	2014
Placer	2004
Plumas	1981
Shasta	1984
Sierra	1996
Siskiyou	1980
Tehama	2009
Trinity	1988
Tuolumne	1996
Yuba	1996

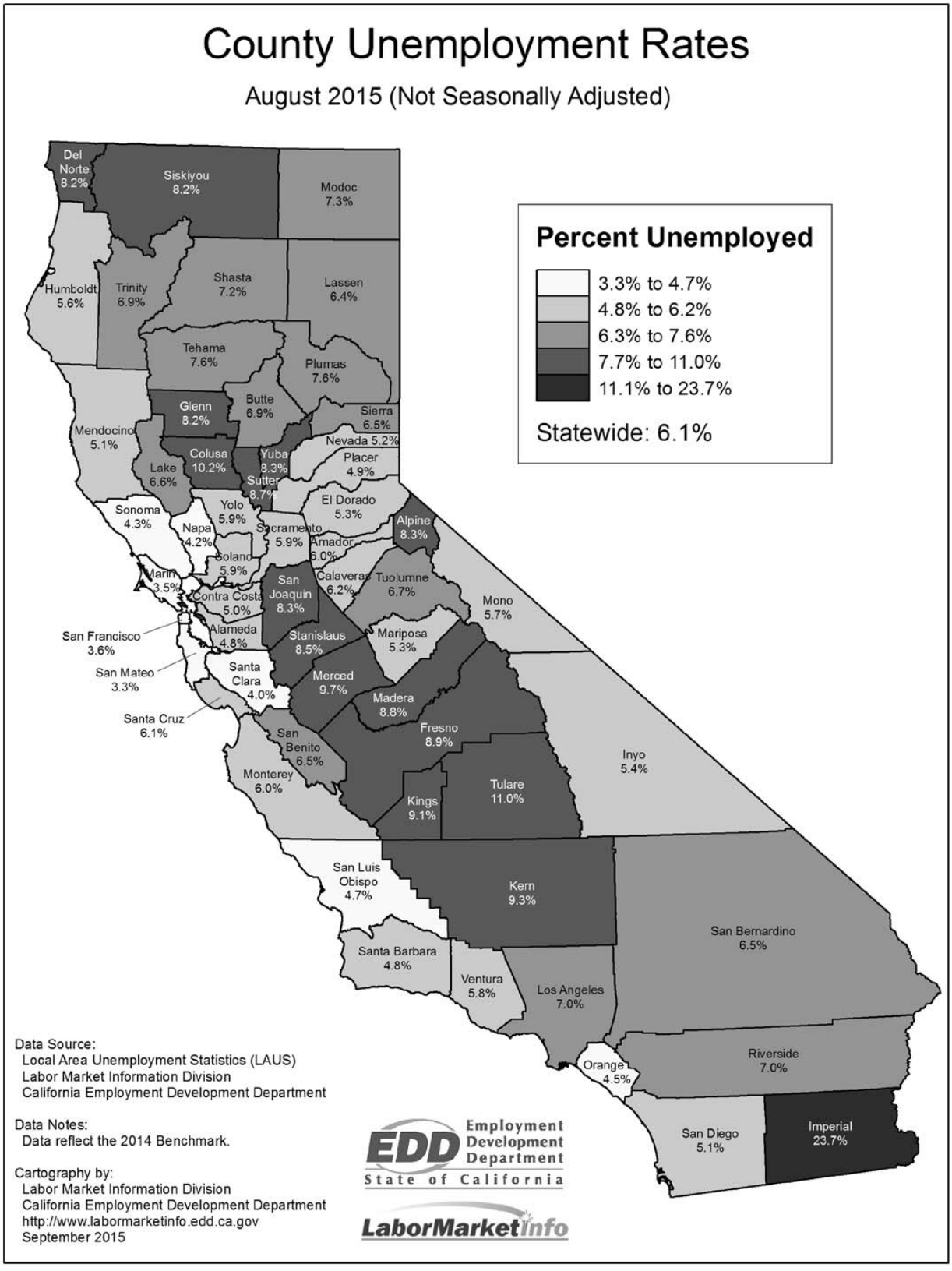

Figure 3.3.1-1. Unemployment Information in the Affected Area

3.3.2 Cultural Resources

Environmental Setting

The CCAA area encompasses 16 counties from the central Sierra Nevada, to the southern Cascade Range, and to the eastern Klamath Mountains. The CCAA timberlands are generally at moderate elevations of 2,000 to 5,000 feet above sea level. The landscape is generally forested with stream and river valleys and occasional meadows. The northeastern area (western Modoc County) is somewhat drier with intermingled shrublands. This entire area has been occupied since approximately 11,000 years before present (BP) by Native Americans and then by Euroamericans beginning in the 18th century A.D. At Euroamerican contact, at least nine Native American tribes occurred in this broad area (Central Sierra Miwok, Northern Sierra Miwok, Nisenan, Konkow, Maidu, Yana, Atsugewi, Achumawi, and Wintu). There was not much development in the CCAA area during the Spanish and Mexican period (18th century through the mid-1800s). However, during and after the 1849 gold rush, substantial numbers of Euroamericans arrived; results included the rapid development of towns, mining camps, water diversions and timber harvesting throughout the area.

The FPRs require cultural resource surveys during THP development. When cultural resources are identified they are protected via the FPR requirements specified in 14 CCR, Article 14. Each THP must contain a Confidential Archeological Addendum that adheres to the CEQA equivalent requirements of the FPRs. Previously unrecorded sites that are discovered are recorded and a significance determination is made in consultation with a professional archeologist when necessary. In this manner, significant cultural resource sites are protected during future activities.

Numerous local to regional surveys have been conducted over the CCAA area by various entities over the last 30 years. On the Proposed Enrolled lands, approximately 30 percent has been surveyed intensively and approximately 50 percent has been surveyed extensively[1]. The CCAA area's Native American archaeological resources are quite varied, reflecting the large area, the diverse terrain and vegetation, and the greater than 10,000 years of activity in the region. Historic built environment resources are also quite varied reflecting the land use and development history. Native American tribal groups' current use of SPI timberlands is infrequent and limited in the number of places visited. Their use of SPI timberlands usually results from specific requests for a specific use.

[1] Known archaeological sites or areas with a high likelihood of cultural resources are surveyed intensively using transects of a particular width. Areas with a moderate or low likelihood of archaeological resources are investigated using an intuitive directed survey, which is considered an extensive survey approach. The low, moderate, or high likelihood categories are determined by a professional archaeologist based on a review of known archaeological sites, geography and historical settlement patterns, contacting Native American tribal groups, contacting federal archaeologists, reviewing aerial photographs, and reviewing topographic maps.

Chapter 4—Environmental Consequences

4.1 Approach to the Analysis

Resource effects are discussed in the context of their intensity, extent, duration, and type. The intensity and type of effect is described as negligible, minor, moderate, or major. In some cases no effect is identified. Major effects are considered to be significant effects, whereas negligible, minor, and moderate effects are not. Beneficial effects are discussed where applicable. Effects can be direct, indirect, or cumulative. Direct effects are caused by an action and occur at the same time and place as the action. Indirect effects caused by the action occur later or farther away (https://ceq.doe.gov/nepa/regs/ceq/1508.htm). With respect to forestry and related activities, effects occur at the time of the action and over the time it takes for forests to regrow and develop the forest characteristics that existed prior to the action (succession). Consequently, the effects discussions in this EA generally address direct and indirect effects together in terms of the effects' duration. Cumulative effects consider the incremental effects of the action when added to other past, present, and reasonably foreseeable actions. These effects are discussed in the Section 4.5, *Indirect and Cumulative Impacts*.

Internal scoping identified the following resources and topics for which the alternatives would have the potential to cause substantial change to their resources or values; these topics are addressed in this EA:

- Biological Resources (terrestrial and aquatic)
  - Vegetation (as it pertains to terrestrial and aquatic biological resources)
- Hydrology and Water Quality
- Air Quality
- Socioeconomic Impacts and Environmental Justice
- Cultural Resources
- Consistency with Land Use Plans and Policies

4.1.1 Criteria for Evaluating Impacts under NEPA

The criteria for evaluating the significance of identified effects also relates to the intensity and context of the potential effect and the resource effected. In determining significance, attention is focused on potential effects to:

- Unique resources or characteristics of a particular resource.
- The controversy surrounding a particular resource.
- The level of uncertainty regarding the potential effect or outcome of the action on the resource.
- The potential for establishing a precedent by considering or failing to consider a particular resource or effect.

4.1.2 Environmental Topics Not Discussed in the EA

Effects topics were dismissed from further analysis if it was determined that the alternatives will not affect these resources or their values. The following topics are not discussed in this EA:

- Soils
- Geology
- Paleontology
- Indian Trust Resources
- Floodplains
- Visual quality

4.2 Physical Environment

4.2.1 Air Quality and Climate Change

Alternative 1—No-Action Alternative

Under the no-action alternative SPI would continue its normal timber operations and land management activities as they have over the past several decades; no change in the status quo related to air quality would occur. Under alternative 1, SPI is expected to harvest a timber volume consistent with its Option A long-term demonstration of Maximum Sustained Production and a 10-year rolling average that does not exceed that volume level. Similarly, the related forestry support operations necessary to conduct this timber harvest would continue over that 10-year period. SPI's direct forestry related activities that affect air quality include forest vehicle operations (cars, pickup trucks, diesel tractor trailer trucks, bulldozers, feller bunchers, and excavators); water trucks for road dust suppression; chain saws for tree harvest and thinning; the burning of wood slash piles in timber harvest units; broadcast burning as part of site preparation; controlled burns as part of fuel break construction; and fire suppression activities (primarily use of cars, pickup trucks, fire trucks, bulldozers). All of these activities and operations contribute emissions of criteria pollutants, toxic air contaminants, and GHGs.

While all of the above activities affect air quality, the equipment used is required to meet federal and California emission regulations and standards. Further, forest burning is done under permits from local air quality management districts in accordance with burn plans and smoke management plans. Burning is done as allowed by the State Air Resources Board or the local air districts, during periods that are identified for broad meteorological conditions that allow smoke and air pollutant dissipation. Additionally, a site-specific meteorological prescription (i.e., burn condition requirements) is identified that provides for smoke dispersion and fire control. All appropriate agencies are contacted prior to a burn project's commencement for coordination and to ensure that the burn versus no burn day condition is followed. Consequently, the burning also meets air quality regulations and standards. By meeting these standards, the forestry activities are expected to have minimal effects on sensitive human populations. The equipment use and the activities are done primarily in the non-winter period, although some winter activity occurs. Prescribed burning is also conducted outside the declared fire season.

Under the no-action alternative, the forestry and related actions will continue to be conducted over the wide area of the SPI Enrolled Lands and for a period of 10 years. Air quality effects are considered to be of low to moderate intensity at the air basin scale based on the meeting of regulatory emission requirements. Although the activities will be conducted for a period of 10 years, the duration of effects is considered short because meteorological conditions change over short (daily, weekly) and seasonal time periods. With respect to climate change, timber harvesting and associated activities would generate CO_2 from the vehicles and other equipment using internal combustion engines as well as from burning forest slash and prescribed burning. Climate change effects on the affected lands over a 10-year period are expected to be minimal. However, the forests on SPI timberlands would continue providing a net carbon sequestration over the 10-year period, as well as the 100-year Option A period, and would therefore be beneficial with respect to climate change.

Alternative 2 (Proposed Action)—Issue the 10-Year Permit Based on Applicant's Proposed CCAA

Under alternative 2, SPI operations that affect air quality would not change from those occurring under the no-action alternative and their effects would be the same as under the no-action alternative. Under the Proposed Action alternative SPI is expected to harvest the same total forest volume from approximately the same acreage over the 10-year permit period as they would under the no-action alternative. Similarly, the related forestry support operations would be essentially the same over the 10-year permit period as under the no-action alternative. Therefore, with respect to air quality and the Enrolled Lands' air basins (North Coast, Northeast Plateau, Sacramento Valley, and Mountain Counties), these activities would not change in amount, scale, duration, or intensity from those activities that would occur under the no-action alternative. There could be minor changes in the location of timber harvest activities because of the limits on harvesting within 43 Conservation LEAFs that might be necessary to maintain their function (Conservation Measure 1). Some additional selection harvest (removing individual trees or trees in small groups sized from 0.25 to 2.5 acres) may replace even-aged harvesting in order to maintain the approximately 700,000 acres of the Mixed land class (Conservation Measure 2) within the Enrolled Lands. However, the timber harvest location changes required by Conservation Measures 1 and 2 would be minor and no actual harvest volume changes within the associated air basins are expected.

Conservation Measure 3 would slightly increase the acreage of habitat retention and number of elements in timber harvest units compared to the no-action alternative. However, with respect to air quality, the activities associated with the retention of these habitat areas and elements would not be different from those under the no-action alternative. That is, the same timber harvesting activities would occur within these timber harvest units under both alternatives and there would be no change in the intensity, duration, or type of effects associated with these activities. Similarly, with respect to air quality, SPI activities under the remaining Conservation Measures (4 through 8) would not be different in duration, intensity, or type of effect from those conducted under the no-action alternative.

Conservation Measure 8 seeks to reduce the risk of catastrophic wildfire through construction of a network of fuel breaks. Such fuel breaks can be successful in reducing the extent and intensity of wildfires. Consequently, Conservation Measure 8 has the potential for beneficial impacts on air quality by reducing the total amount of air pollutant emissions from a given wildfire as well as reducing the amount of time that the emissions are produced because fires might be suppressed more quickly than without the fuel breaks.

Conservation Measure 3 (identify and maintain habitat elements important to fishers), Conservation Measure 4 (mitigation of substantially damaged timberlands), Conservation Measure 5 (reduce potential impacts on reproductive sites), Conservation Measure 6 (minimize risk of fishers drowning in water tanks), and Conservation Measure 7 (reduce impacts from illegal marijuana cultivation and firewood cutting) would have no effect on air quality.

Based on the above evaluation, no quantifiable change in air quality is expected between the No Action and the Proposed Action and no additional effect is expected over the 10-year permit term, although some beneficial effects are expected from Conservation Measure 8. Although the activities will be conducted for a period of 10 years, the duration of effects at any given location is considered short because meteorological conditions change over short (daily, weekly) and seasonal time periods. With respect to climate change, timber harvesting and equipment would generate CO_2 from the vehicles and other equipment using internal combustion engines as well as burning forest slash and prescribed burning. However, because CO_2 emissions are generally offset by carbon sequestration on the Enrolled Lands, and there would be no change in the type, amount, scale, duration, or intensity of forestry and related activities, and only minor changes in the locations of those activities, there would be no effect to negligible effect on air quality and climate compared to the no-action alternative. The net carbon sequestration of SPI timberlands over the 10-year permit period, as well as the 100-year Option A period, would be similar to that under the no-action alternative and would be beneficial with respect to climate change.

Alternative 3—Issue the 10-Year Permit Based on Applicant's Proposed CCAA but Exclude the Existing SPI Fisher CCAA for the Stirling Management Area

Under alternative 3 the effects with respect to air quality and carbon sequestration would be no different than discussed under alternative 2. Under alternative 3 the ESP issued for Enrolled Lands would exclude the existing 20-year fisher ESP for the 159,966-acre Stirling Management Area in Butte, Plumas, and Tehama Counties. Overall, SPI conducts timber harvest activities in this management area in the same manner as elsewhere on its timberlands except that it voluntarily committed to harvesting at a rate that allows forest growth to increase the amount of HF4 present from 23 percent to 33 percent. Under the Stirling CCAA, SPI also leaves additional fisher habitat elements in the timber harvest units as indicated in the Stirling Management Area ESP. With respect to air resources the conservation measures in the Stirling CCAA create effects similar to Proposed Action Conservation Measure 1 and there would be no difference in effects between alternative 2 and alternative 3. Additionally, SPI would not apply proposed Conservation Measures 2, 3, 4 in the Stirling Management Area. The retention of important fisher habitat elements during SPI actions under the Stirling Management Area ESP is voluntary. With respect to air resources, not implementing these Conservation Measures would have no discernible effect compared to alternative 1 or alternative 2. While SPI might institute the remaining proposed Conservation Measures on the Stirling Management Area, they would not be committed to doing so and these measures would be applied by SPI at their discretion.

Overall, with respect to air resources the types, intensities, and duration of effects described under alternative 2 would apply to alternative 3. That is, there would be no effect or negligible effect on air quality and climate compared to the no-action alternative. The net carbon sequestration of SPI timberlands over the 10-year permit, as well as the 100-year Option A period, would be similar to that under alternative 3 and would be beneficial with respect to climate change.

4.2.2 Hydrology and Water Quality

Alternative 1—No-Action Alternative

Timber Harvest

Under the no-action alternative SPI would continue to conduct its normal timber operations and land management activities as they have over the past several decades under a variety of state and federal regulations; no change in the status quo would occur. The Maximum Sustained Production and harvest on SPI timberlands is directed by their CAL FIRE-approved Option A forest plan. The Option A plan is applied over a 100-year planning horizon and the 10-year rolling average of timber volume harvested cannot exceed the demonstrated long-term sustained yield. While timber harvest itself is a state-regulated activity, federal laws and regulations also apply through the ESA (e.g., for listed salmonids and northern spotted owl) and the Federal Water Pollution Control Act (33 U.S.C. 1251–1376; Chapter 758; P.L. 845, June 30, 1948; 62 Stat. 1155, as amended) (Clean Water Act) via California State Water Quality Control Board regulations. The primary timber harvest activities are performed under individual THPs that are functional equivalents of a CEQA EIR. THPs evaluate soil, vegetation, wildlife, timber, water quality, recreation, visual, and archaeological resources and apply avoidance and mitigation measures to minimize impacts to a CEQA determination of less-than-significant impact. Violating a Basin Plan Standard, for example, would be considered a significant impact under CEQA.

The Forest Practice Rules (FPRs) require that with respect to water quality, the beneficial uses of water and the beneficial functions of riparian zones (many of which affect water quality) must be addressed in THP development and agency review and approval. Specifically, the FPRs require these functions be maintained where they are in good condition, protected where they are threatened, and restored where they are impaired. The FPRs also require protection of impaired 303 (d) listed water bodies.

THPs are reviewed by natural resource specialists of CAL FIRE, California Department of Fish and Wildlife (CDFW), the appropriate California Regional Water Quality Control Board (RWQCB), and the California Geological Survey to determine their adherence to applicable regulations and that applied mitigation meets the CEQA less-than-significant impact standard. Their review includes both document and in-field, site-specific review. These reviews commonly result in additional mitigation measures identified by these agencies that must be incorporated into the final THP. Additionally, THPs are designed using the Board of Forestry (BOF) anadromous salmonid protection rule package in stream systems with federal- or state-listed salmonids. The rules do not apply to upstream watersheds where permanent dams block anadromous salmon and downstream sediment transport or temperature effects.

With respect to water quality, the Central Valley RWQCB also considers that the THP process addresses water quality requirements on nonfederal timber lands by applying erosion control best management practices. Monitoring for implementation and effectiveness is required (e.g., Central Valley Regional Water Quality Control Board 2010). It also designates the BOF and CAL FIRE as joint management agencies for water quality management plan implementation on these lands (Order No. R5-2014-0144 adopted December 4, 2014 for Conditional Waste Discharge Requirements related to timber harvest activities). For forestry, these best management practices also include both point and non-point source pollution. Point sources are commonly discharge points such as pipes. Non-point sources are more diffuse and are commonly derived from the broader landscape. Many forestry-related sediment sources are non-point. These sources include sediment contained in runoff from timber harvest units and road systems. With respect to water quality, the THPs and covered activities also consider sediment, water temperature, organic debris, and chemical contamination as potential sources of pollution, the delivery of which must be minimized or mitigated.

The BOF anadromous salmonid protection rules recognize potential effects on anadromous salmonids through sedimentation and impacts to riparian zones that shade streams and contribute large woody debris. Large woody debris in streams provides a variety of benefits to salmonids (e.g.,

habitat diversity, deep pools, sediment retention). These rules increase watercourse and lake protection zone (WLPZ) width and protection requirements, protect flood prone areas and channel migration zones on larger streams, and have additional protection for small streams to enhance their ability for sediment retention and to reduce thermal loading (i.e., increased water temperature). Riparian zones provide different functions and contributions to streams depending on the distance to streams. The specific functions are also related to stream size and biological community (*i.e.*, fish-bearing versus non-fish-bearing streams). Consequently, the width of WPLZ varies by watercourse classification and in many cases, some timber harvest is allowed in outer portions of WLPZs as long as riparian functions are maintained along with the beneficial uses of water for that specific watercourse. Roads also have special use considerations during wet periods. Site-specific investigation and application of the rule package is required in THPs where timber operations may affect anadromous salmonids.

To avoid potential adverse impacts to water quality, the FPRs require that new timber harvest units cannot be placed next to older units until those units are at least 5 years old. This adjacency requirement helps reduce rain-on-snow effects somewhat because sufficient new growth is present in 5 year old plantations to intercept snow and allow for evaporation. Reducing rain-on-snow effects is also assisted by the requirement that soil erosion hazard ratings be calculated for each specific timber harvest unit, which then require site-specific best management practices be applied to limit sediment transport or erosion. Sediment-related rain-on-snow effects are further addressed through the FPR cumulative impacts assessment of sediment within each watershed affected by the implementation of a specific THP. The peak flow component of the cumulative impacts assessment in every THP requires consideration of management activities that reduce vegetative water use or produce openings where rain-on-snow events can lead to extreme stream flow conditions.

Roads that cross streams are also located, designed and constructed under review and criteria of the CDFW-administered Fish and Game Code Section 1600-1616 (also referred to as streambed alteration agreements) which requires CEQA review. This process and resulting agreements apply site-specific mitigation to avoid and minimize impacts to riparian zones, water quality, and aquatic species.

Common BMPs used in THPs include water breaks on roads to limit runoff and sediment transport, WLPZs hat establish buffers near streams, wetlands and lakes, equipment exclusion zones, felling trees away from wet areas, watercourses, and lakes, limitations on tractor and heavy equipment operating on steep slopes, limits on operations during the winter period or in saturated soil conditions, and restricting equipment servicing to locations that do not allow grease, oil, or fuel to pass into lakes or watercourses.

Other SPI activities on their timberlands include: rock pit development and rock processing, transport of aggregate products and heavy equipment, road maintenance, road right-of-way mastication, placement and use of water tanks, timber cruising, timber harvest preparation, pre-commercial thinning, construction and operation of communication sites, and research.

Rock pit development and rock processing has the potential to cause water quality effects through water runoff from the site during initial excavation and during the generally multi-year operational period. Under the California Surface Mining and Reclamation Act of 1975 (SMARA) rock pit development requires slope stability control and erosion control BMPs during development and operation; these BMPs minimize the potential for water and sediment runoff from these sources. Rock pit closure requires site revegetation, which minimizes any long-term sediment and water runoff.

Road use for transporting aggregate products, and by timber cruising crews, timber harvest preparation crews, pre-commercial thinning crews, water trucks accessing previously placed water tanks, and research personnel, and the other activities have the potential to degrade the road condition. Degraded roads can have increased sediment transport rates and accelerated water runoff affecting water quality.

The California Board of Forestry and Fire Protection (BOF) enacted a revised CFPR pursuant to 14 CCR § 923 *et seq.* [943 *et seq.*, 963 *et seq.*] in 2015. These road rules describe and limit timber operations on logging roads, landings, and logging road watercourse crossings. These rules require

an assessment of all appurtenant roads, identification of associated potential erosion sites, and prescription of corrective measures prescribed in the THP.

The BOF Technical Rule Addendum No. 5 (TRA 5) also was enacted in 2015. This technical rule addendum provides guidance on hydrologic disconnection, road drainage, minimization of diversion potential and high risk crossings. The purpose of TRA 5 is to provide guidance to resource professionals and timberland owners on hydrologic disconnection of road segments and logging road drainage, as required by 14 CCR § 923 *et seq.* [943 *et seq.,* 963 *et seq.*]. As defined in 14 CCR § 895.1, hydrologic disconnection means the removal of direct routes of drainage or overland flow of road runoff to a watercourse or lake. The goal of hydrologic disconnection is to minimize sediment delivery to watercourses.

The CFPRs require that road drainage practices and facilities (outsloping, rolling dips, stream crossings) are functioning while the THP is active and for 3 years following its completion date. THP monitoring indicates that compliance with FPRs' best management practices is generally high and that these practices are effective in preventing erosion, sedimentation, and sediment transport to stream channels (e.g., Brandow and Cafferata 2014).

The primary purpose of road maintenance is to ensure that roads are properly draining water and not discharging sediment to watercourses or contributing to excess erosion. Maintenance also keeps the roads safe for driving use. Consequently, although there is some road disturbance associated with maintenance, road maintenance minimizes and mitigates for the possible water quality impacts related to roads. Road right-of-way mastication directly impacts vegetation along the roadway but has almost no effect on water runoff or erosion because it does not remove the plant roots or ground cover.

Timber cruising, timber harvest preparation (including cultural, wildlife, and botanical surveys), and research activities generally involve walking rather than driving with no direct soil erosion or water quality effects due to ground disturbance.

Small-scale clearing of up to a few hundred square feet may occur when weather stations are installed. However, weather stations are situated on ridge tops and are not installed near watercourses. Basic erosion control practices at these small sites reduce the potential to increase soil erosion or affect water quality. The construction and operation of communication sites has the same small-scale effects as those associated with weather stations although with larger areas of up to 1 acre may be treated. Again, the use of standard erosion control practices at these locations reduces the small potential to increase soil erosion or affect water quality.

Pre-commercial thinning is the felling and lopping in place of small trees that have no economic value. This treatment is done to allow the remaining trees to grow more rapidly by reducing crowding and competition for soil moisture, nutrients and sunlight. Pre-commercial thinning usually occurs within planted stands but may sometimes occur in stands that have naturally regenerated. Pre-commercial thinning involves crews walking the unit with chainsaws and cutting trees designated for removal. No heavy equipment is used and the felled trees are cut into pieces (lopped) and scattered in place. When this material is placed on otherwise bare soil it reduces the potential for soil erosion and runoff. Consequently, there is a small beneficial effect on soil erosion and water runoff.

The use of off-channel water tanks can provide benefits relative to drafting water directly from flowing streams. Water tanks have to be placed close enough to water courses (streams) to effectively be filled. Consequently, there is potential for some disturbance of riparian vegetation and minor grading to make a flat surface for tank placement. In circumstances where riparian vegetation is disturbed (the bed, bank, or channel of the stream is modified), the tank placement would require a Streambed Alteration Agreement (1600 permit) issued by CDFW. As previously discussed, that permit requires avoidance and minimization measures including erosion control.

The consideration and application of regulatory requirements; use of the BOF's anadromous salmonid protection rules, the direct consideration of potential impacts to water quality in THP preparation, review and monitoring; the updated roads, landings, and logging road watercourse crossing rules, and the application of the site-specific erosion control and mitigation measures for the above activities ensure that the intensity of impacts to water quality are minor to moderate.

Many individual forestry activities are locally intense (e.g., clearcut or even-aged timber harvest, timber harvest site preparation by bulldozers, road building, prescribed burning). The effects of individual timber harvest units on water quality are of moderate duration as trees are replanted and regrow over a period of years. As such, the regenerating timber stand progressively reduces the potential local soil erosion, hydrologic, and water quality effects as planted trees mature and the site become hydrologically stable. Because subsequent timber harvest occurs over time, however, the intensity and duration of timber harvest unit impact is maintained across the landscape at a moderate intensity and duration. While many roads are permanent features, their effects are considered of moderate duration if they are maintained to minimize runoff and erosion. Further, the use of an existing and well-maintained road network with controlled access (strategic gates) has advantages over building new roads during subsequent timber operations.

Pesticide applications outside the context of the THP regulatory framework are not covered by the individual THPs but are covered by several other regulatory frameworks including the California Department of Pesticide Regulation (DPR) regulations, the U.S. Environmental Protection Agency (EPA) pesticide registration process, and the local county Agricultural Commissioner's pesticide use reporting requirements. Post-harvest pesticide (herbicide) application in timber harvest units under THPs may be done by aerial application or by hand. Pesticide use is described in the individual THPs, although specifics cannot be known until the post-harvest regrowth of competing vegetation is observed. Pesticides approved for uses in California undergo CEQA certification through the DPR registration process. The registration of pesticides limits their use to specific circumstances and includes requirements that reduce their impacts to less than significant under CEQA. These requirements include mitigation measures incorporated into the individual herbicides label instructions (such as maximum wind speeds for aerial application, exclusion zones along streams). A California Certified Pest Control Advisor must supervise the application, and a California Qualified Applicator must conduct the application. These measures minimize the potential for applied herbicides to enter WLPZs, thereby minimizing the potential for direct herbicide entry to surface waters. As such, the impact to water quality from herbicide applications is considered to be of minor intensity with a moderate duration since some residual material may be transported by surface runoff for a short period following applications. Because new timber harvest occurs over time, with subsequent post-harvest herbicide application, the intensity and duration of this effect is maintained across the landscape at a moderate intensity and duration.

Overall, therefore, the water quality effects of SPI forestry activities are considered to be of minor to moderate intensity and of moderate duration.

Alternative 2 (Proposed Action)—Issue the 10-Year Permit Based on Applicant's Proposed CCAA

Covered Activities

Under the Proposed Action, SPI operations that affect water quality would not change from those occurring under the no-action alternative. Under the Proposed Action alternative, SPI is expected to harvest the same total forest volume from approximately the same acreage over the 10-year term of the CCAA/ESP as they would under the no-action alternative. Similarly, the related forestry support operations (covered activities) would be the same over the 10-year term as under the no-action alternative. Therefore, with respect to the Enrolled Lands, the effects of the covered activities on soil erosion, hydrological response, and water quality would be the same as those that would occur under the no-action alternative.

Conservation Measures

Conservation Measure 3 would leave very small additional areas of timber or leave trees (Habitat Retention Areas or HRAs) in timber harvest units for future fisher habitat and to provide contemporaneous benefits to other wildlife. These areas are small (on the order of 0.1 or 0.2 acres) and would have minimal beneficial effect on soil erosion or water runoff. However, at the landscape scale there is a commitment to limiting harvest such that 43 Conservation LEAFs (Conservation Measure 1) within the currently occupied fisher range would maintain their functional condition as

suitable habitat that allows occupancy by a territorial female fisher and her offspring. This condition is characterized by a 10,000 acre landscape with at least 50 percent dense forest and less than 20 percent in a non-forested condition.

The modelled amount and location of SPI's projected operations over the next 10 years were used to evaluate the landscape conditions that will persist through the 10 year term of the CCAA/ESP. However, there might be subtle timber harvest location changes or additional harvest units required by Conservation Measures 1 and 2, but these would be small. Any "relocated" or additional timber harvest units would be evaluated for the same direct and cumulative watershed effects within the THP development and multi-agency review process with appropriate site-specific mitigation measures developed. If in some specific cases, appropriate mitigation to reduce these effects could not be demonstrated, there might be some unknown acreage reduction in some locations for short periods.

Under Conservation Measure 4, SPI would provide additional snags, wildlife trees, and HRAs for fishers on substantially damaged timberlands as done within timber harvest units. Depending on the level of damage, these habitat elements could range from burned trees in an intense wildfire area to less damaged trees within an area of low or moderate intensity wildfire or insect outbreak. From the soil erosion, hydrology, and water quality perspective these retained areas and trees would have no effect or a potentially small beneficial effect in comparison to impacts from the original event that caused the substantially damaged timberlands and the treatments that would occur under the no-action alternative.

Under Conservation Measure 7, SPI would reduce illegal access and associated effects from illegal firewood cutting and illegal marijuana cultivation. In general, illegal firewood cutting affects one to a few individual trees so its effect on water quality would generally be very minor and of short duration. Illegal marijuana growing, however, commonly covers one to several cleared acres, is close to streams to provide irrigation water, uses substantial amounts of water, may block streams by constructing water capture dams, and uses large amounts of pesticides and herbicides, which may contaminate adjacent water bodies. Identifying and remediating these locations will have a beneficial effect on water quality. Curtailing illegal or unauthorized road use that might occur during wet periods and result in sediment delivery or the rutting of roads will create a potentially beneficial effect to water quality if these conservation measures are increased relative to the no-action alternative.

Conservation Measure 8, reduction of potential for catastrophic wildfire, involves commercial thinning in timber harvest units and development of fuel breaks. Commercial thinning reduces the number of trees per acre in a regenerating timber harvest unit, which has the potential for some soil erosion and hydrologic effects. However, this thinning produces minor ground disturbance and the removal of trees and understory vegetation in WLPZs is limited and must comply with FPRs and other requirements designed to protect water quality. Heavy equipment is prohibited in WLPZs during thinning operations. Further, thinning generally maintains an adequate amount of overstory tree canopy, and ground cover to ameliorate excessive runoff or the effects of rain-on-snow events that may be more severe in clearcuts. Consequently, the water quality effects are minor and of short duration. Fuel breaks affect larger contiguous areas where trees are removed to provide wide spacing between live trees and ladder fuels (e.g., small trees and low limbs that allow a ground fire to climb into the tree canopy). These larger areas have some potential for soil erosion, hydrology, and water quality effects. The generally linear nature of fuel breaks along roads and ridge tops serves to reduce any potential effects. Moreover, the same erosion control measures would be applied in them as in timber harvest units. Consequently, the water quality effects would be minor and of moderate duration. However, if these measures reduce wildfire acreage they would have substantial beneficial effect by reducing the effects that such fires have on receiving waters (e.g., destroyed riparian zones, high water temperatures, substantial amounts of soil erosion and sediment delivery to streams, increases in water runoff, and stream peak flows, which affect channel stability).

Conservation Measure 5 (reduce potential impacts on reproductive sites) and Conservation Measure 6 (minimize risk of fishers drowning in water tanks) do not disturb the ground or limit

ground disturbance during other activities and as such would have no effect on soil erosion, hydrology or water quality.

Consequently, except for the minor exceptions for Conservation Measures 3, 4, 7, and 8 discussed above, the types, intensity and duration of effects described under the no-action alternative would apply to the Proposed Action. However, because there would be no change in the type, amount, scale, duration, or intensity of forestry and related activities, and only minor changes in the location of these activities, there would be no effect to negligible effect on soil erosion, hydrology, and water quality compared to the no-action alternative.

Alternative 3 —Issue the 10-Year Permit Based on Applicant's Proposed CCAA but Exclude the Existing SPI Fisher CCAA for the Stirling Management Area

Under alternative 3, the effects with respect to soil erosion, hydrologic response and water quality would generally be the same as discussed under alternative 2. Under alternative 3, SPI is expected to harvest the same total forest volume, from approximately the same acreage over the 10-year term of the CCAA/ESP as they would under the no-action alternative. The related alternative 3 forestry support operations (covered activities) would be the same over the 10-year term as under the Proposed Action. The distribution of these activities across the landscape would also be very similar. Under alternative 3, the ESP issued for the Enrolled Lands would exclude the existing 20-year fisher ESP for the 159,966-acre Stirling Management Area in Butte, Plumas, and Tehama Counties.

Overall, SPI conducts timber harvest activities in this management area in the same manner as elsewhere on its timberlands except that it must allow increased amount of HF4 to develop (in order to receive take authority) and voluntarily leaves additional fisher habitat in the timber harvest units as indicated in the Stirling Management Area ESP. Consequently, with respect to soil erosion, hydrology and water quality, this additional fisher habitat is similar to Proposed Action Conservation Measure 1 and there would be no difference in effects between alternative 2 and alternative 3. Additionally, SPI would not apply Proposed Action Conservation Measures 2, 3, 4 in the Stirling Management Area, which have only minor effects on soil erosion, hydrology, and water quality. With respect to soil erosion, hydrology, and water quality, not implementing these Conservation Measures would have no discernable effect compared to alternative 1 or alternative 2. While SPI might institute the remaining Proposed Action Conservation Measures on the Stirling Management Area, they would not be committed to do so and these actions would be applied by SPI at their discretion.

Overall, with respect to soil erosion, hydrology, and water quality, the types, intensity, and duration of effects of alternative 3 would be the same as described under alternative 2. However, because there would be no change in the type, amount, scale, duration, or intensity of forestry and related activities, and only minor changes in the locations of those activities, there would be a negligible effect or no effect on soil erosion, hydrology, and water quality compared to the no-action alternative.

4.3 Ecological Systems

4.3.1 Biological Resources

There are 10 federally listed animal populations that occur within the planning area and may be affected by the proposed action (Table 4.3.1-1). Several of these species will be directly affected by fisher-oriented management on the Enrolled Lands while others will experience indirect effects. In particular, the northern spotted owl has many of the same habitat requirements as the fisher and will be directly affected by any enhancements or expansion of fisher habitat. The same is also true to a lesser extent for the gray wolf. The amphibian and fish species identified in Table 4.3.1-1 will more likely be indirectly affected by any fisher-oriented management as they do not inhabit the fisher's preferred habitat (dense coniferous forest).

Many aspects of the alternative management practices discussed can be expected to have effects on streams and wetlands within the Enrolled Lands and thus indirectly affect fish and amphibians. Background information on these species is provided in Appendix B.

Table 4.3.1-1. Federally Listed Species within Planning Area

Common Name	*Scientific Name*	*Federal Status*
Lahontan cutthroat trout	*Oncorhynchus clarki henshawi*	Threatened
Coho salmon	*Oncorhynchus kisutch*	Threatened
Central Valley steelhead	*Oncorhynchus mykiss*	Threatened
Central Valley spring-run environmentally significant unit (ESU) of Chinook salmon.	*Oncorhynchus tshawytscha*	Threatened
Yosemite toad	*Anaxyrus canorus*	Candidate
California red-legged frog	*Rana draytonii*	Threatened
Sierra Nevada yellow-legged frog	*Rana sierrae*	Endangered
Northern spotted owl	*Strix occidentalis caurina*	Threatened
Gray wolf	*Canus lupus*	Endangered
Fisher	*Pekania (aka Martes) pennanti*	Candidate

Alternative 1—No-Action Alternative

Under the no-action alternative SPI would continue to conduct its timber harvest and associated activities under a variety of state and federal regulations; no change in the status quo would occur. However, some changes could potentially occur if the listing of a new species under the state or federal ESA or some other regulatory change resulted in new requirements designed to avoid prohibited take or minimize some other environmental impacts resulting from any of the covered activities.

Under alternative 1, management of federally listed and candidate species would continue under guidelines set by the Federal government and the State of California. The potential impacts to wildlife resulting from forest management and the mitigation and avoidance measures applied to reduce these impacts would continue pursuant to the California Forest Practice Rules (FPRs) as administered by CAL FIRE and the multidisciplinary review team. There would be no change to the size and type of impacts to wildlife and listed species, including the fisher, aside from what already exists.

Timber Harvest Planning

SPI conducts its timber harvest and associated activities under a variety of state and federal regulations. Currently, SPI's operations are guided by their CAL FIRE-approved Option A demonstration of Maximum Sustained Production (MSP (14 CCR Section 913.11(a), 933.11(a), 953.11(a)) and individual THPs filed under the Option A document. The Option A plan is applied over a 100-year planning horizon and the 10-year rolling average of timber volume harvested cannot exceed the established and approved the long-term sustained yield (LTSY) value in the Option A. While timber harvest itself is a state-regulated activity, federal laws and regulations also apply through the ESA (e.g., take of listed species is against the law and violators may be prosecuted) and the Clean Water Act (CWA) via California State Water Quality Control Board regulations (discharge of dredged or fill material is prohibited where it impacts water quality). The primary timber harvest activities are performed under individual THPs that are functional equivalents of a CEQA EIR. THPs evaluate potential impacts (including cumulative impacts) to soil, vegetation, wildlife, timber, water quality, archaeological and other resources and apply avoidance and mitigation to minimize impacts to a CEQA determination of less-than-significant impact.

The Registered Professional Forester (RPF) preparing the THP is required to consider how the proposed operation is likely to affect plant and animal species including site-specific field surveys, mitigation measure identification, review by CAL FIRE and other agencies (including the California Department of Fish and Wildlife [CDFW]), and revise the THP as necessary based on agency comments. The reviewing agencies are required to consider public comments during THP review and respond to those that raise substantial concerns. There are 12 actions listed as "Covered Activities" in the CCAA that are associated with SPI's timber management activities. Many of these activities have the potential to negatively impact listed species and other wildlife both directly and indirectly. However, each individual THP is designed to avoid or mitigate any adverse effects, to ensure that the activity is in compliance with existing state and federal laws, and to have a CEQA determination of less than significant impact. The intensity of these actions ranges from low to moderate to high. After timber harvest, forests take decades to regrow. Therefore the duration of individual effects may range from short, to moderate, to long-term.

The following Covered Activities will take place regardless of which alternative is considered in this EA. The potential impacts to various associated resources are mitigated under existing regulatory frameworks. Mitigation specific to fisher conservation is not included under the no action alternative because fishers are not currently listed. SPI commits to applying the conservation measures detailed in the CCAA for alternative 2 to mitigate or reduce the potential effects of these activities on fishers.

Covered Activities:

- Timber harvest has the potential to destroy and damage habitat, cause habitat fragmentation and directly take individuals as well as introduce stressors that could impair basic life history functions such as breeding, feeding, and sheltering. Mitigated via THP review process.
- Rock pit development and rock processing has the potential to destroy and damage habitat, cause habitat fragmentation and directly take individuals as well as introduce stressors that could impair basic life history functions such as breeding, feeding, and sheltering. Mitigated via THP review process and the requirements of Surface and Mining Reclamation Act (SMARA).
- Transport of aggregate products and heavy equipment is limited to existing roads and does not involve the removal of vegetation. The potential for adverse impacts to result from this activity is low and can be mitigated by reducing driving speeds.
- Watercourse crossing installation and use have the potential to increase sediment loading in a watershed, degrade water quality, impede fish movements upstream and downstream and otherwise adversely affect fish populations, impair water quality, and degrade riparian habitat by removing vegetation and increasing bare soil conditions adjacent to watercourses. Mitigated via CDFW Streambed Alteration Agreement process (F&G Code Section 1600) as well as THP review process.

- Road maintenance is limited to existing roads, removes only minor amounts of vegetation (small trees and brush) and is restricted in scope and frequency. The potential for adverse impacts to result from this activity is low. Noise associated with road maintenance is transitory; it does not occur in one place for more than a short period.
- Road rights-of-way mastication is limited to existing roads. The potential for adverse impacts to result from this activity is low. Similar to Road Maintenance as described above. Reducing likelihood of a catastrophic fire can be considered a beneficial impact.
- Placement and use of water tanks occurs infrequently on small footprints and therefore limits the likelihood of adverse impacts.
- Timber cruising poses very minor possibility of adverse impacts to listed species.
- Timber harvest preparation poses very minor possibility of adverse impacts to listed species.
- Pre-commercial thinning takes place in young (10 years of age) managed timber stands and poses little likelihood of negatively impacting listed species however there is a possibility of adverse effects if snags or cull trees are felled for safety reasons. There may be effects on prey resources or exposure of fishers to predators such as bobcats by reducing cover. Pre-commercial thinning can improve habitat quality by reducing the time required to grow large trees, and by reducing ladder fuels, which limits forest fire severity.
- Construction and operation of communication sites occurs on small footprints and infrequent need for maintenance (annually) limits the likelihood of adverse impacts.
- Research activities create no adverse impacts to listed species; improved data on forest and resident wildlife could be beneficial.

Fish and amphibian populations depend on relatively unimpaired water quality within occupied watersheds. This is discussed in detail in Chapter 3-1-2, *Hydrology and Water Resources*. The BOF Anadromous Salmonid Protection (ASP) rules recognize potential effects on anadromous salmonids through sediment and the functioning of riparian zones that shade streams and contribute large woody debris. Large wood in forested streams provides a variety of benefits to salmonids (e.g., habitat diversity, deep pools, and sediment retention). The ASP rules increase WLPZ width and protection requirements, protect flood-prone areas and channel migration zones on larger streams, and have additional protection for small streams to enhance sediment retention and to reduce thermal loading (*i.e.,* temperature). Riparian zones provide different functions and contributions to streams depending on the distance to streams. The specific functions are also related to stream size. Consequently, some timber harvest is allowed in outer portions of WLPZs because the outer zone functions are still maintained. Roads also have special use considerations during wet periods. Site-specific investigation and application of the ASP rule package is required in THPs where timber operations may affect anadromous salmonids.

Overall, under the no-action alternative the effects of SPI forestry activities on plants and animals are considered to have the potential to be of minor to moderate intensity and of moderate duration when conducted under the FRPs and other associated regulations.

Alternative 2 (Proposed Action)—Issue the 10-Year Permit Based on Applicant's Proposed CCAA

Covered Activities

Under the proposed action, SPI operations that affect listed species and other wildlife would not change from those occurring under the no-action alternative, except for implementation of conservation measures further discussed below. Under alternative 2, SPI is expected to harvest the same total timber volume and from approximately the same acreage over the 10-year term of the CCAA/ESP as they would under the no-action alternative. Similarly, the related forestry support operations (covered activities) would be the same over the 10-year term as under the no-action alternative. The effects of these covered activities on soil erosion and water quality and the following effects on listed fish and amphibian populations would be the same as those activities that would

occur under the no-action alternative. The proposed action will include an ESP for fishers that would set the maximum amount of take of fishers during the 10-year term of the CCAA/ESP. An ESP would not include provisions for the taking of other federally listed species.

Alternative 2 would implement conservation measures developed to benefit fishers and promote a stable or increasing fisher population on SPI lands such that if all other necessary properties applied similar conservation, the need to list would be precluded. The conservation measures would also facilitate fishers' ability to expand their range on SPI lands and potentially adjacent properties. The conservation measures might also benefit northern spotted owls and to a lesser extent, listed fish and amphibians and non-listed wildlife species relative to the no-action alternative because more habitat elements are retained and large blocks of the landscape are maintained in a dense, mixed aged forest condition. Benefits of alternative 2 on gray wolf would be minimal due to the species' life history as a habitat generalist. The impacts of this alternative to fishers as well as northern spotted owls would be moderate, long-term, and beneficial through the increased retention of important habitat elements and the maintenance of available habitat. The following discussion presents an analysis of the conservation measures' specific effects.

Conservation Measures

The proposed conservation measures for the SPI CCAA and ESP are listed in Table 2-1 in Chapter 2, *Alternatives*. The following list provides some specific information about these conservation measures with respect to fishers and other species. Table 4.3.1-2 below presents their effects on fishers, listed terrestrial species, and listed fish and amphibians.

- Conservation Measure 1: Maintain approximately 80 percent (43 of 54) of existing Conservation LEAFs in a condition that allows them to continue to function as apparently high quality fisher habitat. That is, these areas continue to meet the criteria for inclusion as a Conservation LEAF throughout the 10-year term of the CCAA/ESP. This measure will be beneficial to fisher populations on SPI holdings as well as on adjacent properties by maintaining fairly large areas of high-value fisher habitat that also contain at least one modeled Territory Opportunity as defined in the CCAA. Fishers can inhabit these areas and use them as refugia and breeding areas, which would help maintain fisher populations on and off SPI lands. Other wildlife could also inhabit these areas and the size of the LEAFs (10,000 acres) would reduce the hazards associated with habitat fragmentation for all species. Northern spotted owls in particular could make use of these areas as this species has similar habitat requirements as the fisher. In the absence of the CCAA, the maintenance of these areas would not be required and SPI could alter their rate or spatial arrangement of harvesting in a manner that would reduce the contribution of their lands towards maintaining functional fisher landscapes.
- Conservation Measure 2: Maintain at least 50 percent of existing capable land in the Mixed land class. This measure requires SPI to maintain roughly 700,000 acres of forested land that has not been subject to clearcutting and artificial regeneration. This conservation measure maintains habitat continuity within and between the LEAFs and provides an adequate amount of habitat in a relatively intact condition over the next 10 years. This measure will benefit fishers regardless of how much of their actual territory occurs on SPI holdings and how much might be on adjacent property owned by another party. Other wildlife including spotted owls and gray wolves will also be able to use this land as habitat and as corridors to move between areas of high-value habitat. In the absence of the CCAA, SPI could alter their rate of harvesting such that the conversion of Mixed lands to the Regen- or Even-land classes proceeded at a faster rate under a new or revised Option A plan.
- Conservation Measure 3: Identify and maintain habitat elements important to fishers. By maintaining elements that provide important den sites, rest sites, areas of dense canopy cover, and small mammal habitat, this measure will benefit fishers in both foraging and breeding activities. Many of these benefits will be provided over the long term as regenerated habitat develops around these retained elements. Other wildlife species that rely on cavities in trees, large decadent trees, and downed wood on the forest floor will also benefit from this conservation measure. In the absence of the CCAA, SPI would not be required to consistently retain the types

or numbers of elements described above, particularly in areas where fishers do not currently occur.

- Conservation Measure 4: Mitigation of substantially damaged timberlands (CFPRs 14 CCR 895.1). This measure will help reduce the impact of a catastrophic event (e.g., forest fire) on fishers and other terrestrial animal species. The retention of habitat elements during the treatment of areas that have been substantially damaged will increase the rate at which these areas become suitable for fishers and other forest dependent species. As indicated above, in the absence of the CCAA, the retention of habitat elements in substantially damaged areas would not necessarily occur.
- Conservation Measure 5: Reduce potential impacts on reproductive sites. This measure will improve fisher reproductive success through seasonal restrictions on various activities. The limits of falling potential den trees during the spring reproductive period may benefit other cavity dependent species such as small owls, bats, flying squirrels, etc. This measure would not be required in the absence of the CCAA if fishers were not listed under the ESA or if there was a status change for fishers under CESA (at the time of preparation of this EA, only fishers in the Southern Sierra Nevada region are being considered for protection under the CESA and limits on falling potential den trees in the remainder of the fisher range in California will likely no longer be required).
- Conservation Measure 6: Minimize risk of fishers drowning in water tanks. This measure will reduce an identified risk to fishers and benefit other species that could become trapped in water tanks. In the absence of the CCAA, SPI would not be required to systematically reduce this type of threat to fishers.
- Conservation Measure 7: Reduce potential impacts from illegal marijuana cultivation and firewood cutting. This measure will benefit fishers, all other listed species that potentially occur on the Enrolled Lands, and other wildlife. Fish species will also benefit because illegal marijuana grow sites have been shown to frequently adversely impact aquatic ecosystems. In the absence of the CCAA, SPI would not be required to systematically reduce this type of threat to fishers.
- Conservation Measure 8: Reduce potential for catastrophic fire. While thinning efforts could modify portions of existing habitat, the areas treated are small, and the effects are short-term compared to catastrophic fires that can have very large scale and long-lasting detrimental effects on all wildlife, including listed species such as the fisher, gray wolf and northern spotted owl. Fish populations also suffer from catastrophic fires due to increases in water temperature, loss of riparian habitat, and increased erosion. Reducing the acreage destroyed in wildfires is a net beneficial impact for all species. This conservation measure would not necessarily be implemented in a way that benefits fishers as expeditiously as it will under the CCAA. In the absence of the CCAA, SPI's prioritization of fuel treatments might not consider potential effects on fishers.

Table 4.3.1-2. Effects of Proposed Conservation Measures on Fisher and on Listed Species

	Impacts		
Conservation Measure	*Fisher*	*Listed Terrestrial Species*	*Listed Fish and Amphibians*
CM 1: Maintain roughly 80 percent of existing Landscape Evaluation Areas for Fisher (LEAFs) as Conservation LEAFs.	Beneficial impacts to fisher populations through maintaining areas of high-value fisher habitat at the landscape scale. Fishers can inhabit these areas and establish territories or breeding areas, which would help maintain	Northern spotted owl in particular could make use of portions of these landscape scale areas as that species has similar habitat requirements as the fisher.	Minor beneficial impact through maintenance of existing relatively intact landscapes and potentially decreasing erosion and increasing habitat quality.

Conservation Measure	*Impacts*		
	Fisher	*Listed Terrestrial Species*	*Listed Fish and Amphibians*
	fisher populations on and off SPI lands.		
CM 2: Maintain at least 50 percent of existing Capable Land in the Mixed land class.	This measure provides for 700,000 acres of Mixed land class forest that will continue to grow older and increase overall habitat for fishers. Also maintains continuity within and between the LEAFs and fisher territories that are not on the Enrolled lands.	Northern spotted owls and gray wolves can also use this land as habitat and as corridors to move between areas of high-quality habitat.	Minor beneficial impact through potentially decreasing erosion and increasing habitat quality.
CM 3: Identify and retain habitat elements important to fishers during all forms of timber harvesting and in all areas (landscapes both occupied and currently unoccupied by fishers).	By maintaining elements important as den sites, rest sites, areas of dense canopy cover, and small mammal habitat this measure will benefit fishers in both foraging and breeding activities.	Likely benefit northern spotted owls through providing structural diversity in valuable habitat.	Many of the items retained may also provide habitat for amphibians by increasing large woody material on the forest floor and will also potentially recruit large wood into watercourses over time.
CM 4: Mitigation of substantially damaged timberlands (California Forest Practice Rules [CFPRs] 14 California Code of Regulations [CCR] 895.1).	This measure will help reduce the impact of a catastrophic event (e.g., forest fire) on fisher populations by increasing the retention of habitat elements when treating damaged lands.	Likely benefit northern spotted owls through providing structural diversity as habitat becomes reestablished over time.	Many of the items retained may also provide habitat for amphibians by increasing large woody material on the forest floor and will also potentially recruit large wood into watercourses over time.
CM 5: Reduce potential impacts on reproductive sites.	This measure will improve fisher reproductive success and decrease direct take through seasonal restrictions on various timber harvesting activities.	No likely impact on other terrestrial species.	No likely impact on listed aquatic species.
CM 6: Minimize risk of fishers drowning in water tanks.	This measure will slightly decrease the direct take of fisher and address a potentially chronic source of mortality.	No likely impacts on other terrestrial species.	No likely impact on listed aquatic species.
CM 7: Reduce potential impacts from illegal marijuana cultivation and firewood cutting.	This measure will reduce or eliminate potential sources of exposure to toxic substances,	This measure will reduce or eliminate potential sources of exposure to toxic substances,	This measure will reduce or eliminate potential sources of exposure to toxic substances,

Conservation Measure	*Impacts*		
	Fisher	*Listed Terrestrial Species*	*Listed Fish and Amphibians*
	mortality and habitat degradation.	mortality and habitat degradation.	mortality and habitat degradation.
CM 8: Reduce potential for catastrophic fire.	While thinning efforts could lead to some minor habitat disturbance, catastrophic fires can have substantial detrimental effects on all fisher populations. Therefore, the strategic treatment of areas to reduce the risk of catastrophic wildfires would benefit the fisher by reducing the risk of loss of habitat at the landscape scale decreasing the direct and indirect impacts.	While thinning efforts could lead to some minor habitat disturbance, catastrophic fires can have substantial detrimental effects on northern spotted owls and gray wolves. Therefore, the strategic treatment of areas to reduce the risk of catastrophic wildfires would benefit these species by reducing the risk of loss of habitat at the landscape scale	Listed fish and amphibian species would benefit from a reduction in the likelihood and extent of catastrophic wildfire by reducing direct and indirect impacts including the increases in water temperature, loss of riparian habitat, and increased erosion that can occur following a catastrophic fire.

Alternative 3 —Issue the 10-Year Permit Based on Applicant's Proposed CCAA but Exclude the Existing SPI Fisher CCAA for the Stirling Management Area

This alternative will largely have the same effects and impacts as the proposed action in alternative 2. Though the amount of land excluded from the CCAA would be nearly 160,000 acres in the Stirling Management Area in Butte, Plumas, and Tehama counties, these lands would be operating under another preexisting CCAA that covers fishers. Under the Stirling Management Area CCAA, SPI conducts timber harvest activities but voluntarily leaves additional fisher habitat in the timber harvest units in a manner consistent with Conservation Measures 3 and 5. However, these measures are voluntary rather than required and there are no provisions similar to Conservation Measures 1 and 2, which would promote fisher habitat over a larger scale. Another difference between the two CCAAs is that the Stirling Management Area CCAA was developed in anticipation of an active translocation effort to move fishers from extant populations in other part of California into an area where fishers had historically occurred but had not been present for several decades. No translocation is included in the currently proposed CCAA (alternative 2) but naturally occurring fisher range expansion is expected to occur across the Enrolled Lands while the proposed CCAA is in place. The impacts of alternative 3 would still be moderate, long-term, and beneficial but would have the disadvantage of occurring under two different regulatory and management regimes and rely on voluntary rather than mandatory retention of elements and HRAs. Additionally, the monitoring required under alternative 2 is somewhat more comprehensive than that which is currently being conducted under the Stirling Fisher CCAA.

4.4 Human Environment

4.4.1 Socioeconomics and Environmental Justice and Land Use

The discussion below focuses on environmental consequences from the perspective of socioeconomics and environmental justice. Where land use is concerned, general plan land use policies for counties that overlap some portion of the Enrolled Lands designate lands for timber production, as shown on Table 3.3.1-1. Continued timber production, which would occur at approximately the same rate and in approximately the same areas under all alternatives, would be consistent with land use plans and policies. These local government (county) policies preserve and maintain the regional character of the local communities where the Enrolled Lands occur and thus mitigate potential adverse impacts to the socioeconomics and land uses that could result from the CCAA. While general plan land use designations can be changed, should a local jurisdiction consider changing the land use designation of lands currently designated for timber production to another use, such as residential use, that jurisdiction would be required to perform a CEQA analysis of the environmental impacts that would occur with such a change in land use designation.

The proposed project and the alternatives considered have also been evaluated in the context of potential impacts to environmental justice and neither the proposed project nor the alternatives impact any particular segment of society in ways that are different from any other segment of society.

Alternative 1 – No-Action Alternative

Under alternative 1, no changes in existing conditions would occur. There would be no effects related to socioeconomics and environmental justice.

Alternative 2 (Proposed Action)—Issue the 10-Year Permit Based on Applicant's Proposed CCAA

Under the proposed action, the existing timber production operations would continue to occur. The Conservation Measures would not change the existing conditions related to jobs. No effects would occur as a result of the Conservation Measures that would affect socioeconomic conditions or fall disproportionately on implementation of the CCAA. Including the Conservation Measures as described in the CCAA as part of SPI's existing timber production activities will not cause adverse human health or other environmental effects.

Alternative 3—Issue the 10-Year Permit Based on Applicant's Proposed CCAA but Exclude the Existing SPI Fisher CCAA for the Stirling Management Area

Under alternative 3, the existing timber production operations would continue to occur. The Conservation Measures would not change the existing conditions related to jobs. No effects to socioeconomic or environmental justice conditions would occur as a result of the Conservation Measures included in the CCAA. Including the Conservation Measures as part of existing timber production activities is not expected to cause adverse human health or other environmental effects.

In general, there are multiple other regulatory frameworks that will avoid or reduce to insignificance any potential impacts of otherwise lawful activities conducted under the CCAA or any of the analyzed alternatives with respect to socioeconomic, land use, or environmental justice issues.

4.4.2 Cultural Resources

Alternative 1—No-Action Alternative

Under the no-action alternative SPI would continue to conduct its timber harvest and associated activities under a variety of state and federal regulations; no change in the status quo would occur with respect to cultural resources. The FPRs require that while preparing a THP that the Registered Professional Forester (FPR 2015, page 169-172):

- Shall conduct an archaeological records search at the appropriate Information Center.
- Shall provide written notification to Native Americans of the preparation of a plan.
- Shall provide a professional archeologist who meets Secretary of Interior standards to conduct a field survey for archeological and historical sites within the site survey area.
- Shall ensure that research is conducted prior to the field survey, including review of appropriate literature and contacting knowledgeable individuals and Native American tribes, concerning potential cultural, archaeological, or historical sites occurring on the property.
- Provide notification to Native Americans if a Native American Archeological or Cultural Site is located within the plan area.
- Provide written notice to Native Americans informing them of the presence of Native American cultural resources within the site survey area.
- Shall submit a Confidential Archaeological Addendum for a plan providing methods and results, descriptions of all identified historical and archeological sites, and a description of protection methods.
- Upon submission of the plan also submit completed site records for each site proposed to be a significant archaeological or historical site per the State Office of Historic Preservation Instruction for Recording Historical Resources.
- A determination of significance shall be made for an identified archaeological or historical site within the site survey area of a THP if damaging effects from timber operations cannot be avoided. If agreement on protection measures cannot be reached between the RPF responsible for the THP and Cal Fire then a professional archaeologist shall conduct a survey and prepare a report on the site and potential impacts. The report shall contain recommendations for mitigation, the elimination of impacts, or for the reduction of impacts to avoid or prevent substantial adverse change to significant archaeological or historical resources.
- A variety of protective measures may be utilized to prevent significant impacts. These measures can range from complete site avoidance with 100 foot buffers for a Special Treatment Zone, to limited timber operations with measures such as directional falling of timber away from the site, to extensive archeological surveys, subsurface testing, and data recovery.
- If a person discovers a potentially significant archaeological or historical site after a plan is accepted the following procedures apply:
  - The person who made the discovery shall immediately notify Cal Fire, the licensed timber operator, the RPF, or timberland owner of record
  - The notified person shall immediately notify the other parties that no timber operations shall occur within 100 feet of the site's identified boundaries until the plan submitter proposes and the Director (CAL FIRE) agrees to protection measures.
- If any human remains are discovered, no disturbance of the site or adjacent area shall occur and the local county coroner shall be notified. The county coroner shall determine if an investigation into the cause of death is required. If the remains are determined to be of Native American origin then per California Public Resources Code 5097.98 the coroner will contact the Native American Heritage Commission who would then identify the most likely descendants (MLDs). The MLD must make a recommendation to the landowner or representative on a means of appropriate

treatment of the human remains. California Public Resources Code 5097.98 has additional requirements in a case where no MLD is found or where agreement between MLDs and landowners cannot be reached.

SPI maintains ownership-wide confidential files on all records collected by the California Historic Resources Information System (CHRIS). The CHRIS includes the records maintained and managed by the 12 independent regional information centers (ICs) and the statewide Historical Resources Inventory (HRI) database maintained by the California Office of Historic Preservation (OHP). Appropriate Native American groups and individuals for contact are identified from the Native American Contact List. The list contains all federally recognized Native American tribes and other appropriate contacts. This list is maintained by Cal Fire in consultation with the Native American Heritage Commission (NAHC). Native American tribal groups' current use of SPI timberlands is infrequent and limited in the number of places visited. These records are reviewed during THP development and associated activities.

With respect to CEQA, implementation of the above measures and procedures results in less than significant impacts to cultural resources during timber harvesting and associated activities. Overall, therefore, the cultural resources effects of SPI forestry activities are considered of minor to moderate intensity and of moderate duration because of their on-going nature.

Alternative 2 (Proposed Action)—Issue the 10-Year Permit Based on Applicant's Proposed CCAA

Under the Proposed Action, SPI operations that would affect cultural resources would not change from those occurring under the no-action alternative. Under the Proposed Action alternative SPI is expected to harvest the same total forest volume from approximately the same acreage over the 10-year CCAA period as they would under the no-action alternative. Similarly, the related forestry support operations (covered activities) would be the same over the 10-year CCAA period as under the no-action alternative. Therefore, with respect to impacts to cultural resources on the Enrolled Lands, the proposed action (alternative 2) is the same as the no action alternative (alternative 1) and there is no difference in amount, scale, duration, or intensity from those activities that would occur between the two alternatives. With respect to cultural resources the implementation of Conservation Measures 1 through 8 would not change the amount, scale, duration, or intensity of effects from those that would occur under the no-action alternative. Consequently, the types, intensity, and duration of effects described under the no-action alternative would apply to the Proposed Action. That is, they would be of minor to moderate intensity and moderate duration over the 10-year ESP period.

Alternative 3—Issue the 10-Year Permit Based on Applicant's Proposed CCAA but Exclude the Existing SPI Fisher CCAA for the Stirling Management Area

Under alternative 3 the effects with respect to cultural resources would be no different than discussed under alternative 2. Under alternative 3 the Enrolled Lands would exclude the 159,966-acre Stirling Management Area in Butte, Plumas, and Tehama Counties. Overall, SPI conducts timber harvest activities in this management area in the same manner as elsewhere on its timberlands except that it voluntarily leaves additional fisher habitat elements in the timber harvest units as indicated in the Stirling Management Area CCAA. With respect to cultural resources this additional retention of fisher habitat elements is similar to Proposed Action and there would be no difference in effects between alternative 2 and alternative 3. Additionally, SPI's retention of habitat elements under the Stirling Management Area CCAA is voluntary. With respect to cultural resources, not implementing these Conservation Measures would have no discernible effect compared to alternative 1 or alternative 2. While SPI might institute the remaining Proposed Action Conservation Measures on the Stirling Management Area, they would not be required to do so and these measures would be applied by SPI at their discretion.

Overall, with respect to cultural resources the types, intensity and duration of effects described under alternative 2 would apply to alternative 3. That is, they would be of minor to moderate intensity and moderate duration over the 10-year term of the CCAA and associated ESP period.

4.5 Indirect and Cumulative Impacts

Cumulative impacts can result from individually minor, but collectively significant activities taking place over a period of time (40 CFR 1508.7). The Service must determine whether the impacts of the proposed action, when taken together with other ongoing activities, would result in a significant environmental impact.

The action is the issuance of the Enhancement of Survival Permit (ESP) and any effects that may result for the implementation of the conservation measures that are required as part of the CCAA. Indirect effects are those effects caused by the action that occur later in time or farther away. As noted in Section 4.1 *Approach to Analysis*, indirect effects are addressed in the individual resource sections. Some additional indirect effects are identified below under Biological Resources and Socioeconomics, Environmental Justice, and Land Use.

4.5.1 Study Area and Methods for Analysis

The analysis area is the Sierra Nevada, southern Cascades and western Klamath Mountains and the associated 16 counties of the proposed Enrolled Lands. The methods approach is to address the effects of the implementation of the conservation measures and ESP issuance on the various resources using analysis similar to that in the individual resource sections with consideration of other actions in the area as well as fisher stressors. With respect to connected actions, there are no other fisher permits being considered within the analysis area at this time.

4.5.2 Affected Environment

The Affected Environment section for each of the resources evaluated provides existing information on the current conditions of resources in the covered area that are the result of past and present actions and constitute the environmental baseline for the analysis of direct, indirect, and cumulative effects. Collectively, these actions have substantially altered the landscape. Some of the more significant ongoing activities include timber harvesting, utility development (transmission lines), roads, agricultural and residential development and changes in land use. Other important past and present actions that have shaped this baseline are considered in the cumulative effects discussions below.

4.5.3 Environmental Consequences and Mitigation

Fisher Stressors

A number of past and ongoing actions have affected, or have the potential to affect, fishers and their habitat. Stressors are the activities or processes that have caused, are causing, or may cause in the future the destruction, degradation, or impairment of West Coast fisher populations or their habitat. Stressors identified by the Service (2014) include the following:

- Loss of late-successional forest from past activities and disturbances.
- Wildfire, emergency fire suppression, and post-fire management.
- Habitat loss and fragmentation due to anthropogenic influences, insects, and disease.
- Climate change.
- Current vegetation management.
- Human development.
- Habitat loss attributed to linear features (highways and other infrastructure).

- Stressors related to trapping and scientific purposes.
- Disease and predation.
- Small population size.
- Other anthropogenic factors.
- Collision with vehicles.

The Service (2014) provides information on the past, ongoing, and future stressors projected over the next 40 years and that information is incorporated here by reference. Some of the identified threats to the fisher West Coast population are toxicants associated with anti-coagulant rodenticides (primarily from illegal marijuana growing), and habitat loss and habitat change associated with wildfire and some timber harvest practices.

Wildfires have affected large areas of federal and private forest lands in the region of SPI timberland ownership (Enrolled Lands), and the number of acres that will likely be burned annually via wildfire is thought to be increasing. Stand-replacing wildfires are the most detrimental to fishers but fires of moderate intensity over large areas may also reduce habitat quality, particularly if aggressive salvage operations remove partially burned trees following the fire and care is not taken to maintain habitat elements important to fishers in both the short term (immediately after fire and post fire treatments) and long term as the burned area recovers and new forest communities develop.

The timber harvest practices that result in habitat loss and habitat change include the reduction in the amount of relatively closed canopy forest with late successional forest elements. Timber harvest practices have the potential to destroy and damage habitat, cause habitat fragmentation and directly take individuals as well as introduce stressors that could lead to significant impairment of life functions such as breeding, feeding, and sheltering. Habitat modification indirectly affects fishers and forest ecosystems by altering successional trajectories and may delay or prevent the development of stands with habitat elements that are important to fishers. Late successional forest elements include old trees, decayed trees, snags, and hardwoods that provide den structures, and woody debris on the ground that provides habitat for prey species. The Service (2014) estimates that when averaged over the term of the permit the annual rate of timber harvesting over time will remain relatively constant.

Illegal marijuana cultivation occurs relatively frequently in the region surrounding the Enrolled Lands. Illegal plantations cover relatively small acreages but may have intense effects of moderate duration where they occur, particularly if pesticides or other potentially hazardous materials are used at the site. Additionally, as plantations are found and destroyed new plantations are established elsewhere so that the effects may increase in distribution over time.

Cumulative Effects of the Alternatives

The potential cumulative effects of the proposed alternatives, when combined with the effects of past, present, and reasonably foreseeable connected or similar actions, are described below. Impacts on resources that would not contribute substantially to cumulative effects are not discussed.

Air Quality and Climate Change

Past, present, and reasonably foreseeable connected or similar actions that may combine with the proposed action and affect air quality and climate include timber harvesting and changes in land use. As discussed in Section 4.2.1, *Air Quality and Climate Change,* SPI timber harvest and associated activities produce minor adverse air quality effects under the no-action alternative. However, the Proposed Action and alternative 3 have negligible effects compared to the no-action alternative. Consequently, while the no-action alternative would contribute some minor adverse effects to overall cumulative effects on air quality, the Proposed Action and alternative 3 would have negligible additional cumulative effects compared to the no-action alternative.

With respect to climate change, the California Air Resources Board (2007) found that California timberlands contribute to a net sequestration of carbon in the state. The timber volume harvested under all three alternatives would be the same as directed by SPI Option A plan. Consequently, with respect to climate change all three alternatives provide minor benefits although long-term adverse

cumulative climate change effects are likely to continue. Implementing the Conservation Measures under the Proposed Action over the 10-year term of the CCAA and associated ESP would not alter the effects with respect to climate change and would not contribute to or result in cumulative effects.

Hydrology and Water Resources

Past, present, and reasonably foreseeable connected or similar actions that may combine with the proposed action and affect hydrology and water resources include timber harvesting, construction and use of roads, and changes in land use. However, the effects of the action alternatives (alternative 2 and alternative 3) are not expected to have any additional effects on water quality than those that would occur under the no-action alternative because the types, intensities, and general locations of the actions would be similar. The no-action alternative would contribute some minor adverse effects on overall cumulative effects on water quality. Consequently, while the no-action alternative would contribute some minor adverse effects to overall cumulative effects on hydrology and water resources, the Proposed Action and alternative 3 would have negligible additional cumulative effects compared to the no-action alternative.

Biological Resources

Past, present, and reasonably foreseeable connected or similar actions that may combine with the proposed action and affect biological resources (local flora and fauna) include timber harvesting, construction and use of roads, and changes in land use. Past, present, and reasonably foreseeable timber harvest in the region of the SPI timberlands, general changes in land use, and climate change are likely to have adverse effects on local flora and fauna including fishers and fisher habitat. Under the no-action alternative, SPI would continue its normal timber harvesting and land management activities but not be required to provide the Conservation Measures detailed in the CCAA across the 1,570,964 acres of Enrolled Lands. Under the no-action alternative SPI would harvest the timber volume indicated in their Option A plan primarily by Even-aged harvest. This timber harvest would substantially alter the existing habitat and the requirements of the California Forest Practice Rules would be applied to avoid or reduce the significance of affects that might otherwise occur as the result of this harvesting.

Under the no-action alternative, the fisher habitat elements retained in these timber harvest units would only be those directed by FPRs. SPI would not leave additional fisher habitat elements when mitigating substantially damaged timberlands. Timber harvest and associated activities would not be constrained by seasonal restrictions reflecting fisher denning periods, special attention to identifying potential den trees would not occur, and potential den trees would not necessarily be protected. SPI may continue some activities beneficial to fishers such as minimizing the risk of fisher drowning in water tanks, reducing impacts from illegal marijuana cultivation and firewood cutting, and reducing potential for catastrophic wildfire. However, these actions would be voluntary and there would be no commitment to addressing fisher concerns nor monitoring the effects of these activities on known or potentially expanding fisher populations. Consequently, ongoing effects to fishers and fisher habitat would continue on these lands and these actions, combined with past, present, and other reasonably foreseeable actions, would contribute to moderate adverse effects over the next 10 years.

Under alternative 2 and alternative 3, SPI would implement Conservation Measures 1 through 8. Under alternative 3, SPI would implement Conservation Measures 1 through 8 but not on the Stirling Management Area, which would remain under an existing 20-year CCAA/ESP for fishers. The timber harvest and other activities conducted under alternative 2 would result in take of fishers; however, because Conservation Measures 5, 6, and 7 are designed to minimize impacts to fishers, that take would likely be less than that which would occur under the no-action alternative. Further, the implemented Conservation Measures 1, 2, 3, and 4 would also provide substantial direct and indirect benefits to fishers and fisher habitat as described in Section 4.3.1, *Biological Resources* and would reduce a number of existing threats to this species that have been identified by the Service. These benefits would occur across the Enrolled Lands covering the majority of SPI's 1.6-million-acre land base in California which is widely distributed and includes a substantial portion of the fisher's

West Coast ESU occupied range. The ESP period is for 10 years and SPI would be under no obligation to maintain Conservation Measure 3 timber harvest unit habitat elements after permit expiration. However, to the extent that any of these elements do remain over the timber harvest cycle of 40 to 50 years or longer, they would provide a cumulative long-term benefit to fishers, While the effects of past, present, and reasonably foreseeable future activities on fisher would be long-term and adverse, the Proposed Action (alternative 2) would contribute moderate benefits, although the broader overall cumulative effects from unrelated activities would remain adverse.

Under alternative 3, the adverse and beneficial effects on fisher would be very similar to those described for alternative 2. The difference is that the habitat retention and monitoring requirements in the existing fisher CCAA for the Stirling Management Area are not as robust as those in alternative 2 and the Stirling habitat retention measures are voluntary. However, alternative 3 would also produce benefits across SPI's 1.6-million-acre land base, which is widely distributed within much of the fisher's California range. These benefits would reduce threats to the fisher. While the effects of past, present and reasonably foreseeable future activities on fisher would be long-term and adverse, alternative 3 would contribute moderate benefits, although the broader overall cumulative effects from unrelated activities would remain adverse.

Socioeconomics, Land Use and Environmental Justice

Past, present, and reasonably foreseeable connected or similar activities have established the existing framework of timberland ownership, infrastructure, and timber harvest activity in the covered area. Listing decisions for sensitive species, including the fisher, have the potential to result in minor to moderate adverse effects on many timberland property owners as increased regulatory uncertainty and new rule changes designed to prevent take may complicate land use and economic activities. Development of timberland Habitat Conservation Plans (HCPs) has reduced those effects by providing some property owners with increased regulatory certainty as they conduct their timberland activities. Overall, the implementation of the no-action alternative is expected to result in minor cumulative adverse effects to socioeconomic and land use conditions in the covered area because there would be less regulatory certainty for SPI compared to the proposed action (alternative 2). Under alternative 2 and alternative 3, SPI would receive regulatory certainty for the 10-year CCAA/ESP term which would result in a minor to moderate socioeconomic and land use benefit for the affected communities. If the CCAA proposed under alternative 2 is used to develop other agreements that likewise provide additional regulatory certainty and promote the socioeconomic stability of the affected communities, the cumulative effect could be beneficial.

Cultural Resources

Cultural resources have been affected by a variety of past and present land development activities, including roads, utilities, residential growth, and timber harvesting. Reasonably foreseeable actions from similar activities are likely to affect cultural resources in the future. With respect to SPI timberlands, cultural resources have the same protections under all three alternatives through compliance with the CEQA-equivalent THP process. Therefore, all three alternatives contribute a minor adverse effect to on-going cumulative effects.

Chapter 5—Coordination and Consultation

5.1 Public and Agency Scoping

Generally CCAAs do not require Environmental Impact Statements because they contribute conservation benefits to candidate species to the extent that the need for protection under the ESA could be precluded. For the SPI CCAA, the preliminary analysis of potentially significant environmental effects indicated that there were few adverse effects that would result from the proposed action of issuing the ESP and implementing the CCAA. There was a potential for some activities covered under the CCAA to result in environmental impacts, especially activities not covered specifically by the California Forest Practice Rules. Of the environmental impacts resulting from the proposed action that were analyzed, none were found to be significant and therefore, an EA is the appropriate NEPA document.

Other public agencies were contacted by the either SPI or the Yreka Fish and Wildlife Office (YFWO) regarding the SPI-proposed CCAA. These agencies include the California Department of Fish and Wildlife (CDFW) and the National Oceanic and Atmospheric Administration, National Marine Fisheries Service (NOAA Fisheries). The YFWO also sent letters to 46 Native American Tribal Leaders informing them that a CCAA was being prepared and requesting their involvement in evaluating the potential effects of the proposed agreement on cultural resources.

Public scoping will take the form of standard publications in the Federal Register per Service procedures and the solicitation of public comments.

5.1.1 Stakeholder Meetings

SPI and staff from the YFWO office met regularly between December 2013 and September of 2014 to negotiate and formulate the components of the CCAA. From September 2014 until December 2015, the draft CCAA underwent edits for organization and the NEPA analysis was conducted with input from ICF International (contracting consultants to SPI with direction from the YFWO). Other stakeholders have been defined as Native American Tribal interests in the vicinity of the Enrolled Lands that may have ties to the lands covered under the CCAA. In-person meetings have not been held but outreach efforts included letters to each identified tribal leader and the development of multiple means of providing input (email, telephone, in writing) and staying informed regarding the progress of this project (*i.e.*, an internet website, requesting hard copies of publically available documents, etc.)

5.1.2 Elected Official Meetings

There have been no meetings with elected officials regarding this project. SPI may have contacted elected officials; however, any such contact is unknown to the YFWO.

5.1.3 Title VI/Environmental Justice Outreach

Outreach to date has been limited to identified tribal leaders (described above).

5.2 Agency Consultation

The Yreka Fish and Wildlife Office contacted both CDFW and NOAA Fisheries to make them aware that SPI had proposed developing a CCAA for fishers and to invite any input that other agencies might feel was appropriate under their authority. As the result, representatives from CDFW attended two meetings; one on December 5, 2013 (Andrew Yarusso) and one on May 12, 2014 (Bob Hawkins). The YFWO has not received any input from CDFW as the result of these meetings. Additionally, the YFWO sent two separate email notifications to CDFW regarding the intent of CDFW to engage in this process and to identify any need that CDFW may have regarding this process. CDFW responded by stating that they would follow their own statutory requirements regarding the potential effects to fishers and other resources that might result from the implementation of the CCAA.

For NOAA Fisheries, the YFWO similarly reached out to the Arcata and Central Valley Offices of NOAA Fisheries to inform them of the intent of the YFWO to engage with SPI in developing a CCAA for fishers and discuss the need for any possible involvement or cooperation between agencies. It was decided through a series of conversations that the proposed Federal Action consisted of the issuance of an Enhancement of Survival Permit (ESP) pursuant to Section 10(a)1(A) of the Endangered Species Act (ESA) and the implementation of the Conservation Measures described in the draft CCAA. The YFWO determined that from the perspective of the need to consult with NOAA Fisheries per Section 7 of the ESA the federal action resulted in "No Effect" to species under the jurisdiction of NOAA Fisheries. At the time of preparation of this EA, the YFWO has not received any input from NOAA Fisheries resulting from these outreach efforts.

5.3 Distribution

A Notice of Availability (NOA) of draft documents (including this EA, the CCAA, and the application for the ESP) is posted in the Federal Register. The draft documents associated with this project are also available online at *http://www.fws.gov/yreka/*. Additionally, hard copies of these documents are available upon request from the Yreka Fish and Wildlife Service Field Office.

The YFWO is prepared to provide information to, or meet with, individuals and organizations (including tribes and tribal leaders as mentioned above) upon request.

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Appendix A—Hydrology

2010 California 303(d) List of Water Quality Limited Segments*

Water quality limited segments requiring a TMDL(5A), being addressed by TMDL(5B), and/or being addressed by an action other than TMDL(5C).

REGION	REGION NAME	WATER BODY NAME	WBID	WATER BODY TYPE	WBTYPE CODE	INTEGRATED REPORT CATEGORY	USGS CATALOGING UNIT*	CALWATER WATERSHED	ESTIMATED SIZE AFFECTED	UNIT	POLLUTANT	POLLUTANT CATEGORY	FINAL LISTING DECISION	TMDL REQUIREMENT STATUS**	EXPECTED TMDL COMPLETION DATE***	EXPECTED ATTAINMENT DATE***	USEPA TMDL APPROVED DATE***	COMMENTS INCLUDED ON 303(d) LIST
1	Regional Board 1 - North Coast Region	Klamath River HU, Scott River HA	CAR105410351998070712041 2	River & Stream	R	4a	18010210	10540000	902	Miles	Sedimentation/Siltation	Sediment	List on 303(d) list (being addressed by USEPA approved TMDL)	5B			9/8/2006	
1	Regional Board 1 - North Coast Region	Klamath River HU, Scott River HA	CAR105410351998070712041 2	River & Stream	R	4a	18010210	10540000	902	Miles	Temperature, water	Miscellaneous	List on 303(d) list (being addressed by USEPA approved TMDL)	5B			9/8/2006	
1	Regional Board 1 - North Coast Region	Trinity Lake (was Claire Engle Lake)	CAL106400742002072044 09	Lake & Reservoir	L	5	18010211	10640000	15985	Acres	Mercury	Metals/Metalloids	Do Not Delist from 303(d) list (TMDL required list)	5A	2019			
1	Regional Board 1 - North Coast Region	Trinity River HU, Lower Trinity HA	CAR106110341999060715023 1	River & Stream	R	4a	18010212	10610000	1256	Miles	Sedimentation/Siltation	Sediment	List on 303(d) list (being addressed by USEPA approved TMDL)	5B			12/20/2001	
1	Regional Board 1 - North Coast Region	Trinity River HU, Middle HA	CAR106310211999060416370 6	River & Stream	R	4a	18010211	10630000	331	Miles	Sedimentation/Siltation	Sediment	List on 303(d) list (being addressed by USEPA approved TMDL)	5B			12/20/2001	
1	Regional Board 1 - North Coast Region	Trinity River HU, South Fork HA	CAR106230201999021611430 8	River & Stream	R	5	18010104	10620000	1161	Miles	Sedimentation/Siltation	Sediment	List on 303(d) list (being addressed by USEPA approved TMDL)	5B			12/20/2001	
1	Regional Board 1 - North Coast Region	Trinity River HU, South Fork HA	CAR106230201999021611430 8	River & Stream	R	5	18010104	10620000	1161	Miles	Temperature, water	Miscellaneous	List on 303(d) list (TMDL required list)	5A	2019			
1	Regional Board 1 - North Coast Region	Trinity River HU, Upper HA	CAR106400031999060710180 7	River & Stream	R	4a	18010211	10640000	570	Miles	Sedimentation/Siltation	Sediment	List on 303(d) list (being addressed by USEPA approved TMDL)	5B			12/20/2001	
1	Regional Board 1 - North Coast Region	Trinity River HU, Upper HA, Trinity River, East Fork	CAR106400302002100323 1112	River & Stream	R	5	18010211	10640000	92	Miles	Mercury	Metals/Metalloids	List on 303(d) list (TMDL required list)	5A	2019			The Trinity River HU, Upper HA, Trinity River, East Fork includes the following Calwater Super Planning Watersheds (SPWs): Mumbo Creek SPW 106.40030 and Blue Ridge SPW 106.40040.
1	Regional Board 1 - North Coast Region	Trinity River HU, Upper HA, Trinity River, East Fork	CAR106400302002100323 1112	River & Stream	R	5	18010211	10640000	92	Miles	Sedimentation/Siltation	Sediment	List on 303(d) list (being addressed by USEPA approved TMDL)	5B			12/20/2001	The Trinity River HU, Upper HA, Trinity River, East Fork includes the following Calwater Super Planning Watersheds (SPWs): Mumbo Creek SPW 106.40030 and Blue Ridge SPW 106.40040.
5	Regional Board 5 - Central Valley Region	Almanor Lake	CAL518410002002041809 4956	Lake & Reservoir	L	5	18020121	51841000	25314	Acres	Mercury	Metals/Metalloids	List on 303(d) list (TMDL required list)	5A	2021			
5	Regional Board 5 - Central Valley Region	American River, North Fork	CAR514550102002061012 5753	River & Stream	R	5	18020128	51421010	71	Miles	Mercury	Metals/Metalloids	List on 303(d) list (TMDL required list)	5A	2019			This listing is from North Fork Dam to Folsom Lake.
5	Regional Board 5 - Central Valley Region	American River, South Fork (below Slab Creek Reservoir to Folsom Lake)	CAR514320602006080815 3403	River & Stream	R	5	18020129	51432060	37	Miles	Mercury	Metals/Metalloids	Do Not Delist from 303(d) list (TMDL required list)	5A	2021			
5	Regional Board 5 - Central Valley Region	Ash Creek, Upper	CAR526640242008082222 3246	River & Stream	R	5	18020002	52664024	19	Miles	Escherichia coli (E. coli)	Pathogens	List on 303(d) list (TMDL required list)	5A	2021			
5	Regional Board 5 - Central Valley Region	Ash Creek, Upper	CAR526640242008082222 3246	River & Stream	R	5	18020002	52664024	19	Miles	pH	Miscellaneous	List on 303(d) list (TMDL required list)	5A	2021			
5	Regional Board 5 - Central Valley Region	Bear River (Lower Bear River Reservoir to Mokelumne River, N Fork, Amador County)	CAR532600502004120916 0741	River & Stream	R	5	18040012	53260050	5.4	Miles	Copper	Metals/Metalloids	List on 303(d) list (TMDL required list)	5A	2021			
5	Regional Board 5 - Central Valley Region	Bear River (from Allen to Upper Bear River Reservoir, Amador County)	CAR532600402008062316 5216	River & Stream	R	5	18040012	53260040	8.4	Miles	pH (low)	Miscellaneous	List on 303(d) list (TMDL required list)	5A	2021			
5	Regional Board 5 - Central Valley Region	Beaver Creek	CAR526410112008082311 2052	River & Stream	R	5	18020003	52641011	23	Miles	Escherichia coli (E. coli)	Pathogens	List on 303(d) list (TMDL required list)	5A	2021			
5	Regional Board 5 - Central Valley Region	Big Chico Creek (Butte and Tehama Counties)	CAR520400002002061013 3629	River & Stream	R	5	18020103	52040000	45	Miles	Mercury	Metals/Metalloids	List on 303(d) list (TMDL required list)	5A	2021			
5	Regional Board 5 - Central Valley Region	Butte Creek (Butte County)	CAR520400002002061013 1525	River & Stream	R	5	18020104	52040000	94	Miles	Mercury	Metals/Metalloids	List on 303(d) list (TMDL required list)	5A	2021			
5	Regional Board 5 - Central Valley Region	Butte Creek (Butte County)	CAR520400002002061013 1525	River & Stream	R	5	18020104	52040000	94	Miles	pH	Miscellaneous	List on 303(d) list (TMDL required list)	5A	2021			
5	Regional Board 5 - Central Valley Region	Canyon Creek (Modoc County)	CAR526510322008082316 5955	River & Stream	R	5	18020002	52651032	18	Miles	Escherichia coli (E. coli)	Pathogens	List on 303(d) list (TMDL required list)	5A	2021			
5	Regional Board 5 - Central Valley Region	Clear Creek (below Whiskeytown Lake, Shasta County)	CAR508100002002061013 5706	River & Stream	R	5	18020112	50810000	18	Miles	Mercury	Metals/Metalloids	List on 303(d) list (TMDL required list)	5A	2021			
5	Regional Board 5 - Central Valley Region	Concow Creek (tributary to West Branch Feather River, Butte County)	CAR518600312008062317 3308	River & Stream	R	5	18020121	51860031	10	Miles	Unknown Toxicity	Toxicity	List on 303(d) list (TMDL required list)	5A	2021			
5	Regional Board 5 - Central Valley Region	Dolly Creek	CAR518540301998081317 4029	River & Stream	R	5	18020122	51854030	1.5	Miles	Copper	Metals/Metalloids	List on 303(d) list (TMDL required list)	5A	2019			All resource extraction sources are abandoned mines.
5	Regional Board 5 - Central Valley Region	Dolly Creek	CAR518540301998081317 4029	River & Stream	R	5	18020122	51854030	1.5	Miles	Zinc	Metals/Metalloids	List on 303(d) list (TMDL required list)	5A	2019			All resource extraction sources are abandoned mines.
5	Regional Board 5 - Central Valley Region	Fall River (Pit)	CAR526410311998081317 5731	River & Stream	R	5	18020003	52641031	8.6	Miles	Sedimentation/Siltation	Sediment	List on 303(d) list (TMDL required list)	5A	2019			The sedimentation is accumulated sand size sediment in the upper Fall River. The historic land management activities include logging, grazing, channelization, roads, and railroads.
5	Regional Board 5 - Central Valley Region	Fall River, tributary to Feather River, Middle Fork (Butte and Plumas Counties)	CAR518320622008091514 3905	River & Stream	R	5	18020123	51832062	22	Miles	Unknown Toxicity	Toxicity	List on 303(d) list (TMDL required list)	5A	2021			
5	Regional Board 5 - Central Valley Region	Feather River, Middle Fork (Sierra Valley to Lake Oroville, Butte and Plumas Counties)	CAR518330502002061014 3011	River & Stream	R	5	18020123	51833050	77	Miles	Unknown Toxicity	Toxicity	List on 303(d) list (TMDL required list)	5A	2021			This listing apples to the reach from Long Valley Creek to Lake Oroville.
5	Regional Board 5 - Central Valley Region	Feather River, North Fork (below Lake Almanor)	CAR518120002002061014 4132	River & Stream	R	5	18020121	51812000	54	Miles	Mercury	Metals/Metalloids	Do Not Delist from 303(d) list (TMDL required list)	5A	2021			This listing is from Poe Reservoir Dam to Lake Oroville.
5	Regional Board 5 - Central Valley Region	Feather River, North Fork (below Lake Almanor)	CAR518120002002061014 4132	River & Stream	R	5	18020121	51812000	54	Miles	PCBs (Polychlorinated biphenyls)	Other Organics	List on 303(d) list (TMDL required list)	5A	2021			
5	Regional Board 5 - Central Valley Region	Feather River, North Fork (below Lake Almanor)	CAR518120002002061014 4132	River & Stream	R	5	18020121	51812000	54	Miles	Temperature, water	Miscellaneous	List on 303(d) list (TMDL required list)	5A	2019			
5	Regional Board 5 - Central Valley Region	Feather River, North Fork (below Lake Almanor)	CAR518120002002061014 4132	River & Stream	R	5	18020121	51812000	54	Miles	Unknown Toxicity	Toxicity	List on 303(d) list (TMDL required list)	5A	2021			This lisitng is for Invertibrate Toxicity. This listing is from Poe Reservoir Dam to Lake Oroville.
5	Regional Board 5 - Central Valley Region	Feather River, South Fork (from Little Grass Valley Reservoir to Lake Oroville, Butte and Plumas Counties)	CAR518110502002050214 3718	River & Stream	R	5	18020123	51811050	33	Miles	PCBs (Polychlorinated biphenyls)	Other Organics	List on 303(d) list (TMDL required list)	5A	2021			
5	Regional Board 5 - Central Valley Region	Feather River, South Fork (from Little Grass Valley Reservoir to Lake Oroville, Butte and Plumas Counties)	CAR518110502002050214 3718	River & Stream	R	5	18020123	51811050	33	Miles	Unknown Toxicity	Toxicity	List on 303(d) list (TMDL required list)	5A	2021			
5	Regional Board 5 - Central Valley Region	Feather River, West Branch (from Griffin Gulch to Lake Oroville)	CAR518600312004121414 5753	River & Stream	R	5	18020121	51860031	37	Miles	Unknown Toxicity	Toxicity	List on 303(d) list (TMDL required list)	5A	2021			
5	Regional Board 5 - Central Valley Region	Hell Hole Reservoir	CAL514450132002041814 4044	Lake & Reservoir	L	5	18020128	51445013	1370	Acres	Mercury	Metals/Metalloids	List on 303(d) list (TMDL required list)	5A	2021			
5	Regional Board 5 - Central Valley Region	Horse Creek (Rising Star Mine to Shasta Lake)	CAR506200101998081410 1128	River & Stream	R	5	18020005	50610000	0.5	Miles	Cadmium	Metals/Metalloids	List on 303(d) list (TMDL required list)	5A	2020			All resource extraction sources are abandoned mines.
5	Regional Board 5 - Central Valley Region	Horse Creek (Rising Star Mine to Shasta Lake)	CAR506200101998081410 1128	River & Stream	R	5	18020005	50610000	0.5	Miles	Copper	Metals/Metalloids	List on 303(d) list (TMDL required list)	5A	2020			All resource extraction sources are abandoned mines.
5	Regional Board 5 - Central Valley Region	Horse Creek (Rising Star Mine to Shasta Lake)	CAR506200101998081410 1128	River & Stream	R	5	18020005	50610000	0.5	Miles	Lead	Metals/Metalloids	List on 303(d) list (TMDL required list)	5A	2020			All resource extraction sources are abandoned mines.
5	Regional Board 5 - Central Valley Region	Horse Creek (Rising Star Mine to Shasta Lake)	CAR506200101998081410 1128	River & Stream	R	5	18020005	50610000	0.5	Miles	Zinc	Metals/Metalloids	List on 303(d) list (TMDL required list)	5A	2020			All resource extraction sources are abandoned mines.
5	Regional Board 5 - Central Valley Region	Horse Creek (Rising Star Mine to Shasta Lake)	CAR506200101998081410 1128	River & Stream	R	5	18020005	50610000	0.5	Miles	pH	Miscellaneous	List on 303(d) list (TMDL required list)	5A	2021			
5	Regional Board 5 - Central Valley Region	Humbug Creek	CAR517320301998081410 2308	River & Stream	R	5	18020125	51732030	2.2	Miles	Copper	Metals/Metalloids	List on 303(d) list (TMDL required list)	5A	2020			All resource extraction sources are abandoned mines.
5	Regional Board 5 - Central Valley Region	Humbug Creek	CAR517320301998081410 2308	River & Stream	R	5	18020125	51732030	2.2	Miles	Mercury	Metals/Metalloids	Do Not Delist from 303(d) list (TMDL required list)	5A	2021			All resource extraction sources are abandoned mines.
5	Regional Board 5 - Central Valley Region	Humbug Creek	CAR517320301998081410 2308	River & Stream	R	5	18020125	51732030	2.2	Miles	Sedimentation/Siltation	Sediment	List on 303(d) list (TMDL required list)	5A	2012			All resource extraction sources are abandoned mines.
5	Regional Board 5 - Central Valley Region	Humbug Creek	CAR517320301998081410 2308	River & Stream	R	5	18020125	51732030	2.2	Miles	Zinc	Metals/Metalloids	List on 303(d) list (TMDL required list)	5A	2020			All resource extraction sources are abandoned mines.
5	Regional Board 5 - Central Valley Region	Kanaka Creek	CAR517420221998081410 3946	River & Stream	R	5	18020125	51742022	10	Miles	Arsenic	Metals/Metalloids	List on 303(d) list (TMDL required list)	5A	2020			All resource extraction sources are abandoned mines.
5	Regional Board 5 - Central Valley Region	Little Cow Creek (downstream from Afterthought Mine)	CAR507330101999012611 2551	River & Stream	R	5	18020118	50733023	1.1	Miles	Cadmium	Metals/Metalloids	List on 303(d) list (TMDL required list)	5A	2020			Resource extraction sources are abandoned mines.
5	Regional Board 5 - Central Valley Region	Little Cow Creek (downstream from Afterthought Mine)	CAR507330101999012611 2551	River & Stream	R	5	18020118	50733023	1.1	Miles	Copper	Metals/Metalloids	List on 303(d) list (TMDL required list)	5A	2020			Resource extraction sources are abandoned mines.
5	Regional Board 5 - Central Valley Region	Little Cow Creek (downstream from Afterthought Mine)	CAR507330101999012611 2551	River & Stream	R	5	18020118	50733023	1.1	Miles	Zinc	Metals/Metalloids	List on 303(d) list (TMDL required list)	5A	2020			Resource extraction sources are abandoned mines.
5	Regional Board 5 - Central Valley Region	Little Grizzly Creek	CAR518540311998081410 4512	River & Stream	R	5	18020122	51854031	9.4	Miles	Copper	Metals/Metalloids	List on 303(d) list (TMDL required list)	5A	2021			
5	Regional Board 5 - Central Valley Region	Little Grizzly Creek	CAR518540311998081410 4512	River & Stream	R	5	18020122	51854031	9.4	Miles	Zinc	Metals/Metalloids	List on 303(d) list (TMDL required list)	5A	2020			
5	Regional Board 5 - Central Valley Region	New Bullards Bar Reservoir	CAL517510112002041811 1348	Lake & Reservoir	L	5	18020125	51751011	3864	Acres	Mercury	Metals/Metalloids	List on 303(d) list (TMDL required list)	5A	2021			
5	Regional Board 5 - Central Valley Region	Oroville, Lake	CAL518120002002043013 5809	Lake & Reservoir	L	5	18020124	51812000	15400	Acres	Mercury	Metals/Metalloids	List on 303(d) list (TMDL required list)	5A	2021			
5	Regional Board 5 - Central Valley Region	Oroville, Lake	CAL518120002002043013 5809	Lake & Reservoir	L	5	18020124	51812000	15400	Acres	PCBs (Polychlorinated biphenyls)	Other Organics	List on 303(d) list (TMDL required list)	5A	2021			
5	Regional Board 5 - Central Valley Region	Oxbow Reservoir (Ralston Afterbay, El Dorado and Placer Counties)	CAL514410102008092215 3913	Lake & Reservoir	L	5	18020128	51441010	65	Acres	Mercury	Metals/Metalloids	List on 303(d) list (TMDL required list)	5A	2021			
5	Regional Board 5 - Central Valley Region	Pit River (from confluence of N and S forks to Shasta Lake)	CAR526610801999012615 0509	River & Stream	R	5	18020003	52661080	123	Miles	Nutrients	Nutrients	List on 303(d) list (TMDL required list)	5A	2013			
5	Regional Board 5 - Central Valley Region	Pit River (from confluence of N and S forks to Shasta Lake)	CAR526610801999012615 0509	River & Stream	R	5	18020003	52661080	123	Miles	Organic Enrichment/Low Dissolved Oxygen	Nutrients	List on 303(d) list (TMDL required list)	5A	2013			
5	Regional Board 5 - Central Valley Region	Pit River (from confluence of N and S forks to Shasta Lake)	CAR526610801999012615 0509	River & Stream	R	5	18020003	52661080	123	Miles	Temperature, water	Miscellaneous	List on 303(d) list (TMDL required list)	5A	2013			
5	Regional Board 5 - Central Valley Region	Rattlesnake Creek (at confluence w Mokelumne River, N Fork)	CAR532600502004121408 4636	River & Stream	R	5	18040012	53260050	0.9	Miles	Escherichia coli (E. coli)	Pathogens	List on 303(d) list (TMDL required list)	5A	2021			
5	Regional Board 5 - Central Valley Region	Rollins Reservoir	CAL516340332001121208 4035	Lake & Reservoir	L	5	18020126	51634033	774	Acres	Mercury	Metals/Metalloids	List on 303(d) list (TMDL required list)	5A	2016			
5	Regional Board 5 - Central Valley Region	Rush Creek (Modoc County)	CAR526640312009010514 2803	River & Stream	R	5	18020002	52664031	10	Miles	pH	Miscellaneous	List on 303(d) list (TMDL required list)	5A	2021			
5	Regional Board 5 - Central Valley Region	Scotts Flat Reservoir	CAL517200112001121208 5852	Lake & Reservoir	L	5	18020125	51720011	660	Acres	Mercury	Metals/Metalloids	List on 303(d) list (TMDL required list)	5A	2016			
5	Regional Board 5 - Central Valley Region	Shasta Lake	CAL506100002008092215 2749	Lake & Reservoir	L	5	18020005	50610000	27335	Acres	Mercury	Metals/Metalloids	List on 303(d) list (TMDL required list)	5A	2021			

2010 California 303(d) List of Water Quality Limited Segments*

Water quality limited segments requiring a TMDL(5A), being addressed by TMDL(5B), and/or being addressed by an action other than TMDL(5C).

REGION	REGION NAME	WATER BODY NAME	WBID	WATER BODY TYPE	WBTYPE CODE	INTEGRATED REPORT CATEGORY	USGS CATALOGING UNIT*	CALWATER WATERSHED	ESTIMATED SIZE AFFECTED	UNIT	POLLUTANT	POLLUTANT CATEGORY	FINAL LISTING DECISION	TMDL REQUIREMENT STATUS**	EXPECTED TMDL COMPLETION DATE***	EXPECTED ATTAINMENT DATE***	USEPA TMDL APPROVED DATE***	COMMENTS INCLUDED ON 303(d) LIST
5	Regional Board 5 - Central Valley Region	Slab Creek Reservoir (El Dorado County)	CAL5143201320080922153345	Lake & Reservoir	L	5	18020129	51432013	242	Acres	Mercury	Metals/Metalloids	List on 303(d) list (TMDL required list)	5A	2021			
5	Regional Board 5 - Central Valley Region	South Cow Creek	CAR5073100020011212122645	River & Stream	R	5	18020118	50731000	7.9	Miles	Fecal Coliform	Pathogens	List on 303(d) list (TMDL required list)	5A	2012			
5	Regional Board 5 - Central Valley Region	Sucker Run (Butte County)	CAR5182202320080731220413	River & Stream	R	5	18020123	51822023	11	Miles	Unknown Toxicity	Toxicity	List on 303(d) list (TMDL required list)	5A	2021			
5	Regional Board 5 - Central Valley Region	Town Creek	CAR5062001019980818104951	River & Stream	R	5	18020005	50620010	1.0	Miles	Cadmium	Metals/Metalloids	List on 303(d) list (TMDL required list)	5A	2020			All resource extraction sources are abandoned mines.
5	Regional Board 5 - Central Valley Region	Town Creek	CAR5062001019980818104951	River & Stream	R	5	18020005	50620010	1.0	Miles	Copper	Metals/Metalloids	List on 303(d) list (TMDL required list)	5A	2020			All resource extraction sources are abandoned mines.
5	Regional Board 5 - Central Valley Region	Town Creek	CAR5062001019980818104951	River & Stream	R	5	18020005	50620010	1.0	Miles	Lead	Metals/Metalloids	List on 303(d) list (TMDL required list)	5A	2020			All resource extraction sources are abandoned mines.
5	Regional Board 5 - Central Valley Region	Town Creek	CAR5062001019980818104951	River & Stream	R	5	18020005	50620010	1.0	Miles	Zinc	Metals/Metalloids	List on 303(d) list (TMDL required list)	5A	2020			All resource extraction sources are abandoned mines.
5	Regional Board 5 - Central Valley Region	Whiskeytown Lake (areas near Oak Bottom, Brandy Creek Campgrounds and Whiskeytown)	CAL5246100019980814123354	Lake & Reservoir	L	5	18020112	52463010	98	Acres	Mercury	Metals/Metalloids	List on 303(d) list (TMDL required list)	5A	2021			
5	Regional Board 5 - Central Valley Region	Willow Creek (Lassen County, Central Valley)	CAR5266107220090110153757	River & Stream	R	5	18020002	52661072	23	Miles	Escherichia coli (E. coli)	Pathogens	List on 303(d) list (TMDL required list)	5A	2021			
5	Regional Board 5 - Central Valley Region	Willow Creek (Lassen County, Central Valley)	CAR5266107220090110153757	River & Stream	R	5	18020002	52661072	23	Miles	pH	Miscellaneous	List on 303(d) list (TMDL required list)	5A	2021			
5	Regional Board 5 - Central Valley Region	Willow Creek (Shasta County, below Greenhorn Mine to Clear Creek)	CAR5246301119980818110732	River & Stream	R	5	18020112	52463010	4.0	Miles	Acid Mine Drainage	Metals/Metalloids	List on 303(d) list (TMDL required list)	5A	2019			All resource extraction sources are abandoned mines.
5	Regional Board 5 - Central Valley Region	Willow Creek (Shasta County, below Greenhorn Mine to Clear Creek)	CAR5246301119980818110732	River & Stream	R	5	18020112	52463010	4.0	Miles	Copper	Metals/Metalloids	List on 303(d) list (TMDL required list)	5A	2019			All resource extraction sources are abandoned mines.
5	Regional Board 5 - Central Valley Region	Willow Creek (Shasta County, below Greenhorn Mine to Clear Creek)	CAR5246301119980818110732	River & Stream	R	5	18020112	52463010	4.0	Miles	Zinc	Metals/Metalloids	List on 303(d) list (TMDL required list)	5A	2019			All resource extraction sources are abandoned mines.
5	Regional Board 5 - Central Valley Region	Yuba River, Middle Fork	CAR5174102220020702105502	River & Stream	R	5	18020125	51751011	45	Miles	Mercury	Metals/Metalloids	List on 303(d) list (TMDL required list)	5A	2021			This listing is from Bear Creek to the North Yuba River.
5	Regional Board 5 - Central Valley Region	Yuba River, North Fork	CAR5175101120020702103628	River & Stream	R	5	18020125	51751011	37	Miles	Mercury	Metals/Metalloids	List on 303(d) list (TMDL required list)	5A	2021			This listing is from New Bullards Bar Reservoir dam to Lake Englebright.
5	Regional Board 5 - Central Valley Region	Yuba River, South Fork (Spaulding Reservoir to Englebright Reservoir)	CAR5173203120020710160332	River & Stream	R	5	18020126	51732031	48	Miles	Mercury	Metals/Metalloids	List on 303(d) list (TMDL required list)	5A	2021			This listing is from Rucker Creek to Lake Englebright.
5	Regional Board 5 - Central Valley Region	Yuba River, South Fork (Spaulding Reservoir to Englebright Reservoir)	CAR5173203120020710160332	River & Stream	R	5	18020126	51732031	48	Miles	Temperature, water	Miscellaneous	List on 303(d) list (TMDL required list)	5A	2021			
6	Regional Board 6 - Lahontan Region	Eagle Lake (Lassen County)	CAL6373200019980806111117	Lake & Reservoir	L	5	18080003	63732000	20704	Acres	Nitrogen	Nutrients	List on 303(d) list (TMDL required list)	5A	2019			
6	Regional Board 6 - Lahontan Region	Eagle Lake (Lassen County)	CAL6373200019980806111117	Lake & Reservoir	L	5	18080003	63732000	20704	Acres	Phosphorus	Nutrients	List on 303(d) list (TMDL required list)	5A	2019			
6	Regional Board 6 - Lahontan Region	Susan River (Headwaters to Susanville)	CAR6372001020080815005311	River & Stream	R	5	18080003	63720010	36	Miles	Mercury	Metals/Metalloids	Do Not Delist from 303(d) list (TMDL required list)	5A	2019			
6	Regional Board 6 - Lahontan Region	Susan River (Headwaters to Susanville)	CAR6372001020080815005311	River & Stream	R	5	18080003	63720010	36	Miles	Total Dissolved Solids	Salinity	List on 303(d) list (TMDL required list)	5A	2021			
6	Regional Board 6 - Lahontan Region	Susan River (Headwaters to Susanville)	CAR6372001020080815005311	River & Stream	R	5	18080003	63720010	36	Miles	Total Nitrogen as N	Nutrients	List on 303(d) list (TMDL required list)	5A	2021			
6	Regional Board 6 - Lahontan Region	Susan River (Headwaters to Susanville)	CAR6372001020080815005311	River & Stream	R	5	18080003	63720010	36	Miles	Unknown Toxicity	Toxicity	Do Not Delist from 303(d) list (TMDL required list)	5A	2019			
6	Regional Board 6 - Lahontan Region	Susan River (Susanville to Litchfield)	CAR6372005020080815013207	River & Stream	R	5	18080003	63720050	16	Miles	Mercury	Metals/Metalloids	Do Not Delist from 303(d) list (TMDL required list)	5A	2019			
6	Regional Board 6 - Lahontan Region	Susan River (Susanville to Litchfield)	CAR6372005020080815013207	River & Stream	R	5	18080003	63720050	16	Miles	Total Dissolved Solids	Salinity	List on 303(d) list (TMDL required list)	5A	2021			
6	Regional Board 6 - Lahontan Region	Susan River (Susanville to Litchfield)	CAR6372005020080815013207	River & Stream	R	5	18080003	63720050	16	Miles	Turbidity	Sediment	List on 303(d) list (TMDL required list)	5A	2021			
6	Regional Board 6 - Lahontan Region	Susan River (Susanville to Litchfield)	CAR6372005020080815013207	River & Stream	R	5	18080003	63720050	16	Miles	Unknown Toxicity	Toxicity	Do Not Delist from 303(d) list (TMDL required list)	5A	2019			
6	Regional Board 6 - Lahontan Region	Tahoe, Lake	CAL6343001019980806120257	Lake & Reservoir	L	5	16050101	63430010	85364	Acres	Nitrogen	Nutrients	List on 303(d) list (TMDL required list)	5A	2010			
6	Regional Board 6 - Lahontan Region	Tahoe, Lake	CAL6343001019980806120257	Lake & Reservoir	L	5	16050101	63430010	85364	Acres	Phosphorus	Nutrients	List on 303(d) list (TMDL required list)	5A	2010			
6	Regional Board 6 - Lahontan Region	Tahoe, Lake	CAL6343001019980806120257	Lake & Reservoir	L	5	16050101	63430010	85364	Acres	Sedimentation/Siltation	Sediment	List on 303(d) list (TMDL required list)	5A	2010			
6	Regional Board 6 - Lahontan Region	Truckee River	CAR6351001019980805112246	River & Stream	R	4a	16050101	63510010	39	Miles	Sedimentation/Siltation	Sediment	List on 303(d) list (being addressed by USEPA approved TMDL)	5B			9/16/2009	

Annotations for Appendix A 303(d) list:

Water quality requirements in the region are set under the Federal Clean Water Act (CWA) and the State of California Porter-Cologne Water Quality Control Act. Water quality standards include the identification and preservation of beneficial uses as well as pollutant thresholds. Waters that do not meet the standards are identified on the CWA 303(d) list of impaired water bodies compiled by the state and reviewed and approved by the EPA. Appendix A is the CWA 303(d) list of impaired water bodies including the pollutant category that is the reason for their inclusion on the list.

The following items provide information on the descriptors in the list.

Integrated Report Category

- Category 5 – 303(d) list requiring development of a TMDL (Total Daily Maximum Load pollutant allocation from various sources for a given water body)
- Category 4A – 303(d) list being addressed by Federal Environmental Protection Agency (EPA) approved TMDL
- Category 3 – California waters with insufficient information to assess beneficial uses
- Category 2 – California waters supporting some California beneficial uses
- Category 1 – California waters supporting all core beneficial uses

TMDL (Total Daily Maximum Load) Requirement Status

- A – TMDL still required
- B – Being addressed by Federal Environmental Protection Agency (EPA)
- C – Being addressed by action other than TMDL

Appendix B—Species Analysis

Fisher (*Martes pennanti*)

The U.S. Fish and Wildlife Service (Service) (2004)(69 FR 18770) found that the fishers in the West Coast distinct population segment (DPS) warranted listing under the Endangered Species Act (ESA), but the listing was precluded by other higher priority actions. In 2011, the Service (2011, 76 FR 66389) assigned this DPS of the fisher to Candidate Category 6. In 2013, as a result of settlement of a lawsuit involving some 900 species, the Service (2013, 78 FR 16828) opened a new status review for the fisher West Coast DPS to analyze whether listing as endangered or threatened was warranted. On October 7, 2014, the Service published FWS–R8–ES–2014–0041, which is a proposed rule to list fishers within the West Coast DPS.

Distribution

At present, fishers occur in scattered, disjunct regions of the historic range, including portions of British Columbia; the Olympic Peninsula of Washington (a recently reintroduced population) (Lewis *et al.* 2012); and the southern Cascade Range in Oregon (the descendants of a reintroduced population) (Aubry and Lewis 2003). The species is apparently absent from its former range in much of the Washington and Oregon Cascades and Coast Ranges.

Fishers remain well distributed in the Klamath-Siskiyou Mountains of northwestern California and southwestern Oregon, and in the north coast ranges of California (California Department of Fish and Game McCamman 2010). This population now occurs in the southern portions of Curry, Josephine, and Jackson Counties in southwestern Oregon; and in Del Norte, Siskiyou, Humboldt, Trinity, Shasta, and northern Mendocino Counties in northwestern California (Zielinski *et al.* 1995; Slauson and Zielinski 2007; Furnas 2013 pers. comm; Yaeger 2012).

An isolated population remains in the southern Sierra Nevada Mountains between Yosemite National Park and northern Kern County, California (Zielinski *et al.* 2005), .and a small population in the northern Sierra Nevada/Southern Cascades was established via translocation efforts between 2009 and 2011. Prior to this translocation, a gap of approximately 244 miles (390 km), which includes large amounts of apparently suitable habitat, existed between the extant populations in the Klamath/Siskiyou Mountains and the extant native population in southern Sierra Nevada. The southern California population appears to have been isolated (using genetic comparisons) from the northwestern California / southern Oregon population for at least 1,000 years (Tucker *et al.* 2012, p.8).

Niche

Fishers are medium sized terrestrial carnivores in the weasel family that inhabit forests and generally feed on small to medium sized mammals, particularly squirrels and other rodents. Fishers are fairly opportunistic with respect to prey and will consume other accessible items such as rabbits and hares, reptiles and amphibians, nestling birds and eggs, arthropods, and carrion. Fishers actively forage on the ground seeking out prey in crevices along downed logs, in brushy tangles, or individual animals they can catch in the open. Fishers are quick and powerful for their size. When

consuming prey or between foraging bouts, fishers rest above the forest floor on a platform or in a cavity in a tree large enough to provide concealment and stability. Fishers may be preyed upon by other forest carnivores such as bobcats, mountain lions, and possibly great horned owls, coyotes or wolves. Fishers compete with other forest predators (including raptors) for some of the same prey items.

Habitat Relationships

Fishers have been shown to select habitat at multiple spatial scales. Home range size varies but in California is thought to be about 4,000 to 5,000 acres for females and about twice that size for males. Fishers typically select large trees with a cavity or other significant deformity for denning and similar trees or trees with large lateral limbs or platforms as rest sites. Den and rest sites are apparently not re-used often and thus fishers need a number of this type of structure within their home range. Selected den or rest sites are generally within a stand (slightly less than 1 acre to several acres in size) of large trees that feature a dense overhead canopy, trees of multiple age classes, shrubs, and large downed wood that form a complex and structurally diverse understory. These dense and structurally complex stands are generally in landscapes that have an overall densely forested composition and relatively few areas that are devoid of forest cover. Thus, fishers require well forested landscapes that feature stands of large trees, within which a variety of decadent trees and large downed wood provide for secure den sites, rest sites, and foraging substrate.

Resting sites are important features of fisher habitat. The structure and micro-structure are the finest scale at which habitat for fisher has been described (Lofroth *et al.* 2010, Ch. 7, p. 81 and Lofroth *et al.* 2011, Ch. 1, p. 6). The types of den and rest stands, sites, and microstructures selected by fishers has been the most studied and most informative component of research aimed at describing habitat relationship for fishers. The selection of these features by fishers has provided the most consistent habitat association results (Raley *et al.* 2012, p. 26). Fishers use a wide variety of arboreal micro-structures for resting, including large limbs, cavities, and platforms such as deformities, mistletoe brooms, and old nests of squirrels and raptors. Raley (2012, p. 8) stated, "…available evidence indicates that the incidence of heartwood decay and cavity development is more important to fishers for denning than is the tree species." SPI has one of the largest data sets available for describing known fisher den and rest sites on managed timber lands in California. On SPI forests, 85 percent of fisher dens discovered were in cavities in black oaks. This is not surprising because black oaks tend to develop the kinds of cavities used by fishers much more readily than the types of conifers typically found in managed forests where large and decadent conifers may be scarce.

Fisher home ranges were characterized by a mosaic of available forest types and seral stages, including relatively high proportions of mid- to late-seral conditions, but low proportions of open or non-forested environments. Patterns of habitat use or selection by fishers were strongest at finer spatial scales rest and den sites rather than forested stands or landscapes and demonstrated that the fisher is a structure-dependent species in western North America. However this may be an artifact of the methods used to collect information about fisher habitat use and the difficulty of using radio telemetry to quantify habitat for an active fisher rather than a denning or resting fisher.

At the broader landscape and home range scales, fishers appear to be relatively flexible in habitat association, as long as basic requirements for extensive dense to moderately dense overstory and sufficient prey are met. Most studies in California have found that fisher home ranges include a broad range of successional stages, but that structurally complex areas (for instance, including greater densities of large live trees and large woody structures such as snags and down logs) are used preferentially, and forests with mast-producing hardwoods are particularly important (Lofroth *et al.* 2010).

The fisher population appears to have declined within the historic range. There are no confirmed estimates of population size; however both the northern and southern California populations have been reported as currently stable (Swiers 2013, p.17; Zielinski *et al.* 2013, p.1).

The Service (2004) concluded that loss of forested habitat throughout the range constituted a threat to fishers, and in the 2011 Candidate Notice of Review (U.S. Fish and Wildlife Service 2011) the Service (76 FR 66389) reiterated some of the threats to the species regarding habitat loss, as follows: "Major threats that fragment or remove key elements of fisher habitat include various forest vegetation management practices such as timber harvest and fuels reduction treatments. Other potential major threats in portions of the range include: Large stand-replacing wildfires, changes in forest composition and structure related to the effects of climate change, forest and fuels management, and urban and rural development."

SPI Enrolled Lands are aggregated for management purposes into blocks. SPI calls these blocks Covered Species Conservation Areas in their CCAA. Fishers currently occur in the Hayfork Divide – Bully Choop, Redding North, Redding South, Lassen West and Stirling CSCAs (Figure 1).

Gray Wolf *(Canis lupus)*

Since 1979 the gray wolf, specifically the Northwestern subspecies (*Canis lupus occidentalis*), has been recolonizing its former range beginning with natural recolonization of northern Montana from populations in Canada. Then in 1995–1996 a reintroduction program was instituted in Yellowstone National Park and locations in Idaho (Montana Fish, Wildlife & Parks 2015, Oregon Department of Fish and Wildlife 2015). From there wolves have spread to several other states and have been observed in Washington, Oregon, Colorado, and, most recently, California (California Department of Fish and Game 2011).

The first confirmed gray wolf occurrence in California was in 2011 along the California/Oregon border in Siskiyou County (California Department of Fish and Wildlife 2015). Though this was an isolated visit by one young male and not considered indicative of long term habitation, it did prompt the California Fish and Game Commission to add the gray wolf to the State's endangered species list in 2014 (CDFWNews 2014). The first evidence of an active wolf pack in California was discovered in 2015 when camera traps in Northern California recorded images of two adult wolves and five pups; this grouping was dubbed to Shasta Pack by California Department of Fish and Wildlife (CDFWNews 2015). Currently, the gray wolf range in California is largely unknown but is thought to be confined to the far northern portion of the state along the Oregon border and primarily in Siskiyou County (California Department of Fish and Wildlife 2015).

Gray wolves show little preference for any particular habitat type and will establish territories in any area that has a large enough ungulate population to serve as a sufficient food source. Wolves have been seen in many different habitat types ranging from open grassland to thick conifer forests to high alpine tundra. The species tends to avoid areas with large amounts of human habitation and disturbance though this trait is not universal (Montana Field Guide 2015). This is likely due to the need for packs and individuals to establish large hunting territories and ensure a steady access to prey. These territories can encompass anywhere from 25 to 1,000 square miles depending on the habitat type and prey conditions (Oregon Department of Fish and Wildlife 2015; California Department of Fish and Game 2011).

Though the gray wolf population in the United States is expanding, it is thought that habitat fragmentation, reduction of prey populations, and direct human influence remain a risk (California Department of Fish and Game 2011). There are no known wolf occurrences on SPI lands. However suitable wolf habitat exists on SPI lands within the vicinity of the Mount Shasta region near the Shasta Pack's territory and as SPI converts mature forest to more open regenerating stands, deer and elk numbers and use of the Enrolled Lands may increase, thereby increasing the likelihood that wolves occupy the Enrolled Lands at some point in the future.

Northern Spotted Owl *(Strix occidentalis caurina)*

The northern spotted owl (*Strix occidentalis caurina*) was listed as threatened under the ESA on June 26, 1990 (55 FR 26114) with revised critical habitat in December 4, 2012 (77 FR 71876). The species listing was a result of declining population numbers attributed to timber harvesting, and loss of habitat caused by fires, volcanoes, and wind storms. In addition, the invasion of barred owls (*Strix varia*) has contributed to the decline of the population. A recovery plan was approved in June of 2011

recommend that land managers follow the guidelines established by the Northwest Forest Plan (NWFP) throughout the range of the northern spotted owl (USFWS 2011).

Northern Spotted Owl (NSO). The NSO is associated with late successional and old growth conifer forest cover types composed of a multi-layered understory with a moderate to high canopy closure dominated by large mature trees (Thomas *et al.* 1990). The U.S. Forest Service (1985) described NSO habitat as old growth forest with multistoried stands of large-diameter conifers (> 91 cm dbh), a hardwood understory component, with trees in various decay classes. Suitable nesting and roosting habitat has been described as mature conifer stands with a multi-layered canopy, canopy closure of > 60 percent, with signs of decadence (Carrothers 2002). Thomas *et al.* (1990) indicated the importance of down-woody debris, large snags, and an open understory for foraging. Blakesley *et al.* (1992) reported that NSO roost and nest sites in northwestern California were found in mature and old growth habitat types disproportionately more than expected. Similar results reported by Solis and Gutierrez (1990) described greater use of mature and old growth forests for foraging and roosting. Approximately 70 percent of foraging and 89 percent of roost sites were found in mature and old growth habitat types (Solis and Gutierrez 1990). Thome *et al.* (1999) found that NSOs used areas on private timberlands with the highest basal area class (>69m2/ha; trees with dbh of 24.87cm to 50.87).

Northern spotted owls are very territorial. They do not migrate but may shift their territory based on snowfall or other environmental factors. Breeding occurs in February or March; gestation occurs for 1 to 2 months and then females incubate the eggs for 30 days. The greatest threats to northern spotted owls are the destruction of old growth forests, habitat fragmentation, and competition with barred owls (USFWS 2011, Defenders of Wildlife 2008).

In 2003, SPI coordinated with the Service to design a comprehensive multi-year survey of NSO, called the Landscape Survey Strategy (LSS). It was designed to survey all suspected spotted owl nesting/roosting habitat within SPI lands and extending out to 0.7 mile from SPI lands and was surveyed for 5 continuous years. Beginning in 2011, new surveys were started using the previous station locations and new stations (to comply with the updated surveys protocol) from 0.7-1.3 miles. These surveys efforts are continuing.

Yosemite Toad *(Bufo [=Anaxyrus] canorus)*

Yosemite toads are endemic to the Sierra Nevada in California, from Ebbetts Pass in Alpine County to the Spanish Mountain area in Fresno County. They are closely related to western toads with are considerably more common. Yosemite toads most frequently occur at elevations from 6,400 to 11,300 feet (1,950 to 3,450 meters), with the majority of sites between 8,500 and 10,000 feet (2,590 to 3,050 meters) (Karlstrom 1962 *in* Davidson and Fellers 2005). Some reports indicate the elevational range for this species as 4,790 to 11,910 (Fed. Reg 78(80:24499). Yosemite toads require habitats that include montane open meadows, willow groves, and subalpine forests of red fir, lodgepole or whitebark pine. They are often found in high elevation areas within 100 meters of a permanent water source (Karlstrom 1962 *in* Davidson and Fellers 2005). Adult toads take refuge in rodent burrows, under surface objects such as logs and boulders, and in dense willow stands. The critical thermal maximum for adults has been documented as between 38˚C to 40˚C, although temperature is assumed to play a minor factor in occupancy since toads have been reported in temperatures between 2˚C to 30˚C with no signs of stress (Karlstrom 1962 *in* Davidson and Fellers 2005).

The causes of declines in Yosemite toads are unclear but may include disease, airborne contaminants, and livestock grazing, meadow degradation (Davidson and Fellers 2005). Other potential factors include the 1980s California drought, fish predation, and increased predation by ravens (*Corvus corax*) (Kagarise-Sherman and Morton 1993 *in* Davidson and Fellers 2005). In the case of fish predation, recent laboratory studies have found that Yosemite toad tadpoles were unpalatable to Brook trout and did not suffer any ill effects from being sampled and released by trout (Grasso 2005), which indicates that predation may not be a contributing factor as previously thought. However, no other life stages were studied for their potential susceptibility to trout predation nor were field studies conducted so the possibility for predation remains uncertain.

Due to the elevational requirements of the Yosemite toad and their reliance on open alpine meadows, , it appears that SPI lands in Alpine and Tuolumne Counties occurs below the known locations for this species and that timber harvesting rarely occurs in most of the commonly types of occupied habitats.

California Red-Legged Frog *(Rana draytonii)*

The California red-legged frog (CRLF) is closely related to the northern red-legged frog (*Rana aurora*). CRLFs are currently common in the San Francisco Bay Area and along the central coast and occur at isolated locations in the Sierra Nevada, on the northern coast, in the Santa Monica Mountains, and in San Fransquito Canyon in Newhall (Hogan pers. comm. *in* Jones & Stokes 2006). CRLFs occur from sea level to about 5,000 feet (1,524 meters) above sea level (U.S. Fish and Wildlife Service 2002). Both adults and tadpoles occur in streams, deep pools, backwaters within streams, creeks, ponds, marshes, sag ponds, dune ponds, and lagoons. Optimal habitat includes still or slow-moving water generally < 2 feet (0.6 m) deep with dense, shrubby riparian or emergent vegetation (Hayes and Jennings 1988). During summer and after breeding, adult CRLFs will disperse to seek out summer habitat which may include shelter such as, boulders, rocks, logs, industrial debris, agricultural drains, watering troughs, abandoned sheds, hayricks, small mammal burrows, incised streamed channels, or areas with moist leaf litter (61 FR 25813; Jennings and Hayes 1994; U.S. Fish and Wildlife Service 2002).

Factors contributing to the decline of CRLFs include degradation, fragmentation, and loss of habitat through development, agriculture, mining, recreation, timber harvesting, nonnative plant invasions, impoundments, water diversions, degraded water quality, introduced nonnative predators, and poorly managed infrastructure maintenance activities such as road construction and repair. Populations isolated due to habitat fragmentation are now more vulnerable to extinction through random environmental events, such as drought or floods, as well as human-caused impacts, such as grazing or contaminant spills (Soulé 1998).

CRLFs are known to occur on SPI lands at one location in El Dorado County. For any THPs that occurs in this region, SPI conducts a desk top review that includes the following: search of the Natural Diversity Data Base and the SPI in-house wildlife sighting database; consultation with individuals with training and expertise (federal, state, or other entity). The review includes both general habitat requirements as well as important habitat elements for the CRLF. Habitat within the THP is compared to the life requisites of the frog. Based on the outcome of the desk top review, surveys may be initiated for THPs that are within the range of CRLF and where habitats have a potential to support breeding populations of the frog. The surveys will use techniques similar to those described in Fellers and Kleeman (2006). It is important to note that Fellers and Kleeman (2006) reported 100% success at detecting CRLF during nighttime surveys with an average 1.6 paired surveys (one day and one night survey conducted on the same day) to a site. If surveys are not conducted then these habitats will be protected as if they were occupied by CRLFs.

Sierra Nevada Yellow-Legged Frog *(Rana sierrae)*

The distribution of the Sierra Nevada yellow-legged frog (SNYLF) ranges from southern Plumas County to southern Tulare County and extends into Nevada in the vicinity of Lake Tahoe and northward to the slopes of Mount Rose (U.S. Fish and Wildlife Service 2003b). The native habitat for the Sierra Nevada yellow-legged frog is almost entirely outside the range of introduced fish (Knapp 1996). Ideal habitat consists of meadows, streams, and lakes (Wright and Wright 1933), usually within 1 m of the water's edge. Both adults and tadpoles are found most frequently in shallow water areas (Bradford 1984). Sierra Nevada yellow-legged frogs will overwinter in various places, including the bottoms of lakes, rocky stream environments (Vredenburg *et al.* 2005), and rock crevices (Matthews and Pope 1999), but the latter behavior may be a response to the presence of fish.

Water of sufficient depth must be present year round for the presence of this species. This water must be either flowing in a creek or river or in its liquid form in some part of the lake or pond to support overwintering. Frogs will not survive in a pond in totally frozen water conditions.

Several factors have been implicated in Sierra Nevada yellow-legged frog declines, including predation and competition with introduced trout (Drost and Fellers 1996; Jennings and Hayes 1994; Knapp 1996; Knapp and Matthews 2000), livestock grazing (U.S. Fish and Wildlife Service 2003b), UV-B radiation, and long-term changes in weather patterns, especially concerning the severity and duration of droughts.

Sierra Nevada mountain yellow legged frogs have been identified on SPI lands in one watershed in Tuolumne County. THPs located within the elevational range of the SNYF are assessed for this species. SPI foresters and/or biologists will search for the SNYF in conjunction with stream channel inventories, watercourse classification, and THP field preparation. Due to the breeding biology, life cycles, and this species' dependence on water, these types of cursory surveys of potential habitats for the SNYF have detected the presence of the species at other locations.

Protection measures inherent in water course and lake protection zones (WLPZs) are expected to provide sufficient safeguards for the SNYF and its habitat. Class I and II streams will receive the required watercourse and lake protections zones according to sections 14 CCR 956.4 and 956.5 of the Forest Practice rules, thereby adequately protecting the beneficial uses of water, including aquatic animals. WLPZ rules and default mitigations ensure that riparian habitats are not significantly altered or fragmented, equipment use is minimized, trees are directionally felled away from watercourses, and canopy cover is maintained. WLPZ protections and practices are sufficient to protect this species and its habitat. Furthermore, the U.S. Fish and Wildlife Service (2003) concluded that timber harvest and road building has not been implicated as an important contributor to the decline of the SNYF. Based on the reported habitat selection by this species (USFWS 2003, Mullally and Cunningham 1956) and observation of known populations occurring on SPI lands, it appears that forest management and/or the opening of the canopy adjacent to water may benefit this frog. Within WLPZ canopy retention rules, some enhancement of sunlight penetrating the canopy will result in increases in forage potential for the tadpoles and basking locations for adults and juveniles.

Where SNYF are observed or thought to occur based on historic observations the following measures are applied, which will avoid take of any SNYF present within the creek during the use or development of waterholes or water sources:

- Requesting a DFW representative be present prior to construction operations;
- Evaluation of stream flow at time of use to determine if a temporary waterhole may be developed with the use of sandbags to impound water;
- If the waterhole is constructed excavation will be conducted in the dry area of the streambed initially with the last step being breaching of the berm allowing water to flow in if feasible;
- Surround constructed waterhole with fence fabric to minimize access to drafting site by SNYF during operations;
- Placement of fine mesh screen over water hose intake to avoid amphibian uptake.
- In addition, water drafting will be conducted in such a manner as to continuously provide aquatic habitat for amphibian species downstream while in use.
- If adult SNYF frogs or their larva are present, the waterhole will never be de-watered.
- No operations are proposed during the winter period.

Lahontan Cutthroat Trout *(Oncorhynchus clarkii henshawi)*

Lahontan cutthroat trout are native to the greater Lahontan basin in eastern California, southern Oregon, and northern Nevada (Trotter 2008 *in* Moyle *et al.* 2008). In the Carson, Walker, and Truckee basins, only a few scattered streams contain Lahontan cutthroat trout (Trotter 2008 *in* Moyle *et al.* 2008). Lahontan cutthroat trout also have been planted and established in a few creeks outside their historic range, including west-slope drainages near the Truckee basin (Moyle *et al.* 2008). Lahontan cutthroat trout primarily occupy streams with well-vegetated and stable stream banks and pools with close proximity to cover, as well as riffle-run complexes for spawning and cover (U.S. Fish and Wildlife Service 1995a).

Factors affecting Lahontan cutthroat trout abundance and habitat are the introduction of nonnative trout, overexploitation, logging, dams and diversions, grazing, mining, loss of genetic diversity, and disease (Moyle *et al.* 2008).

Lahontan cutthroat trout have the potential to occur on SPI lands in Lassen County, near Eagle Lake, and in western Placer and Nevada Counties near the town of Truckee.

Central Valley DPS Steelhead *(Oncorhynchus mykiss irideus)*

The Central Valley steelhead DPS includes all naturally spawned anadromous steelhead below natural and humanmade impassable barriers in the Sacramento and San Joaquin Rivers and their tributaries, excluding steelhead from San Francisco and San Pablo Bays and their tributaries but including two artificial propagation programs: the Coleman National Fish Hatchery, and the California Department of Fish and Wildlife Feather River Hatchery. Estimates of historical and recent mean run abundance are 1–2 million and approximately 3,600, respectively (National Marine Fisheries Service 2008c). Habitat requirements for the steelhead center around water quality during the freshwater residence time with cool, clear, and well oxygenated water needed for maximum survival (Moyle 2002). Juvenile steelhead (ages 1+ and 2+) occupy deeper water than fry and show a stronger preference for pool habitats with ample cover, as well as for rapids and cascade habitats (Dambacher 1991). Juveniles generally occupy habitat with large structures such as boulders, undercut banks, and large woody debris that provide feeding opportunities, segregation of territories, refuge from high water velocities, and cover from predators including piscivorous fish and bird (Moyle *et al.* 2008).

The primary limiting factor for Central Valley steelhead is the inaccessibility of more than 95 percent of its historic spawning and rearing habitat due to major dams (National Marine Fisheries Service 2008c). Other limiting factors include passage barriers on smaller streams, water development and land use activities, levees and bank protection, dredging and sediment disposal, mining, contaminants, fisheries management practices, hatcheries, inadequately screened water diversions, and predation by nonnative species (McEwan 2001; Moyle *et al.* 2008; National Marine Fisheries Service 2008c).

Potentially occupied habitat in the SPI Enrolled Lands includes tributaries to Cow Creek in Shasta County, tributaries to Antelope Creek in Tehama County and Mill Creek, and Deer Creek in Tehama County.

Southern Oregon/Northern California Coast ESU Coho Salmon *(Oncorhynchus kisutch)*

The southern Oregon/northern California coast Coho salmon ESU includes all naturally spawned populations in coastal streams from Cape Blanco in Curry County, Oregon, and Punta Gorda in Humboldt County, California, and three artificial propagation programs: Cole River Hatchery in the Rogue River basin and the California Department of Fish and Wildlife Trinity River Hatchery and Iron Gate Hatchery in the Klamath–Trinity River basin (National Marine Fisheries Service 2008h). The estimated historical and recent mean run abundance are 150,000 and 5,170, respectively (National Marine Fisheries Service 2008h). The Klamath and Trinity River populations are largely maintained by hatchery production. Moyle et al. (2008) found that fish of hatchery origin account for 80 percent of fish returning to Iron Gate Hatchery and 89 to 97 percent of fish returning to Trinity River Hatchery.

Factors contributing to the decline of southern Oregon/northern California coast Coho salmon include land-use practices (especially those related to poorly conducted logging and agriculture), dams and diversions, in-stream structures, gravel mining, suction dredging, substandard or unscreened diversions, overharvest and poaching, water over-allocation and pollution, nonnative species, and urbanization (Brown *et al.* 1994; Moyle *et al.* 2008; National Marine Fisheries Service 2008h).

Potentially occupied habitat on SPI Enrolled Lands includes tributaries to the Trinity River in Trinity County including Grass Valley Creek, Indian Creek, Rush Creek, Brown's Creek, and Weaver Creek.

Central Valley Spring-Run ESU Chinook Salmon *(Oncorhynchus tshawytscha)*

The Central Valley spring-run Chinook salmon ESU includes all naturally spawned populations in the Sacramento River and its tributaries in California, including the Feather River, and one artificial propagation program: the California Department of Fish and Wildlife Feather River Hatchery spring-run Chinook salmon program. There are only three remaining independent populations, Mill, Deer, and Butte Creeks, which are in close geographic proximity to each other. Estimates of historic abundance indicate about 700,000 spawners, which has declined to a current level of 500 to 4,500 spawners (National Marine Fisheries Service 2008j).

According to the National Marine Fisheries Service (2008), there are three primary limiting factors to Central Valley spring-run Chinook:

1. Loss of most historic spawning habitat due to impassable dams
2. Degradation of remaining habitat
3. Genetic threats from the Feather River Hatchery spring-run Chinook salmon program

Other limiting factors include water diversions, unscreened or inadequately screened water diversions, excessively high water temperatures, predation by nonnative species, urbanization and rural development, logging, grazing, agriculture, mining, estuarine alteration, fisheries management, and "natural" factors (Moyle *et al.* 2008; National Marine Fisheries Service 2008j).

Potentially occupied habitat on SPI lands includes Deer Creek in Tehama County.