Completed Application Checklist

SNC Reference#: _____

Project Name: Pumpkin Hollow Restoration Project

Applicant: Upper Mokelumne River Watershed Authority

Please mark each box if item is included in the application. Please consult with SNC staff prior to submission if you have any questions about the applicability to your project of any items on the checklist. All applications must include a CD including an electronic file of each checklist item, if applicable. The naming convention for each electronic file is listed after each item on the checklist. (Electronic File Name = EFN: "naming convention". file extension choices)

Submission requirements for all Category One and Category Two Grant Applications

1. [X] Completed Application Checklist *(EFN: Checklist.doc,.docx,.or .pdf)*
2. [X] Table of Contents *(EFN: TOC.doc,.docx, or .pdf)*
3. [X] Full Application Project Information Form *(EFN: SIform.doc, .docx, or .pdf)*
4. [X] CCC/Local Conservation Corps Document *(EFN: CCC.pdf)*
5. [X] Authorization to Apply or Resolution *(EFN: authorization.doc, .docx, or .pdf)*
6. [X] Narrative Descriptions *(EFN: Narrative.doc or .docx)*
   a. [X] Detailed Project Description (5,000 character maximum for section 6a only)
      Project Description including Goals/Results, Scope of Work, Location, Purpose, etc.
   b. [X] Workplan and Schedule
   c. [X] Restrictions, Technical/Environmental Documents and Agreements
      [X] Restrictions / Agreements *(EFN: RestAgree.pdf)*
      [X] Regulatory Requirements / Permits *(EFN: RegPermit.pdf)*
   d. [X] Organizational Capacity
   e. [X] Cooperation and Community Support
      [X] Letters of Support *(EFN: LOS.pdf)*
   f. [X] Tribal Consultation Narrative *(EFN: tribal.doc, docx)*
   g. [X] Long Term Management and Sustainability
      [X] Long-Term Management Plan *(EFN: LTMP.pdf)*
   h. [X] Performance Measures
7. Budget documents
   a. [X] Detailed Budget Form (EFN: Budget.xls, .xlsx)
8. Supplementary Documents
   a. Environmental Documentation
      [X] California Environmental Quality Act (CEQA) documentation *(EFN: CEQA.pdf)*
      [X] National Environmental Policy Act (NEPA) documentation *(EFN: NEPA.pdf)*
   b. Maps and Photos
      [X] Project Location Map *(EFN: LocMap.pdf)*
      [ ] Parcel Map showing County Assessor's Parcel Number(s) *(EFN: ParcelMap.pdf)*

- [X] Topographic Map *(EFN: Topo.pdf)*
- [X] Photos of the Project Site *(10 maximum) (EFN: Photo.jpg, .gif)*

c. Additional submission requirements <u>for Fee Title Acquisition applications only</u>
- [ ] Acquisition Schedule *(EFN: acqSched.doc,.docx or .pdf)*
- [ ] Willing Seller Letter *(EFN: WillSell.pdf)*
- [ ] Real Estate Appraisal *(EFN: Appraisal.pdf)*

d. Additional submission requirements <u>for Site Improvement / Restoration Project applications only</u>
- [X] Land Tenure Documents *(EFN: Tenure.pdf)* *MASTER STEWARDSHIP AGREEMENT*
- [ ] Site Plan *(EFN: SitePlan.pdf)*
- [ ] Leases or Agreements *(EFN: LeaseAgmnt.pdf)*

I certify that the information contained in the Application, including required attachments, is accurate, and that I have been authorized to apply for this grant.

February 29, 2016

Signed *(Authorized Representative)* Date

Karen Quidachay
<u>Associate and Lead Preparer (Designee of the UMRWA Executive Officer)</u>
Name and Title *(print or type)*

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3. PROJECT INFORMATION FORM

SIERRA NEVADA CONSERVANCY
PROPOSITION 1 – Watershed Improvement Program Project Information Form

SNC REFERENCE #

PROJECT NAME Pumpkin Hollow Restoration Project

APPLICANT NAME *(Legal name, address, and zip code)*
Upper Mokelumne River Watershed Authority
5883 East Camanche Parkway
Valley Springs, CA 95252

AMOUNT OF GRANT REQUEST $500,000

TOTAL PROJECT COST $827,499

PROJECT LOCATION *(County with approx. lat/long, center of project area)*
Calaveras County, California. The approximate latitude is 120º9'31.703 and longitude is 38º25'14.08N. Elevations within the 971 acre project area range between 6,100 feet and 7,300 feet.

SENATE DISTRICT NUMBER	**ASSEMBLY DISTRICT NUMBER**
8th Senate District	Assembly District 5

PERSON WITH MANAGEMENT RESPONSIBILITY FOR GRANT CONTRACT
Name and title: Ms. Karen Quidachay, UMRWA Associate and Lead Preparer
Phone: (530) 295-8124 *Email Address:* karenq@innercite.com

TRIBAL CONTACT(S) INFORMATION

Name:	***Phone Number:***	***Email address:***
Calaveras Band of Miwok	Ph (209) 419-0017	(no email)
Washoe Tribe of Nevada and California	Ph (702) 265-4191	darrel.cruz@washoetribe.us
California Valley Miwok Tribe	Ph (209) 487-9519 / Fax (209) 487-8579	s.burley@californiavalley
Chicken Ranch Tribal Council	Ph (209) 984-4806 / Fax (209) 984-5606	sseuss@crtribal.com
Tuolumne Band of Me-Wuk Indians	Ph (209) 928-3475 / Fax (209) 928-1677	vstone@mewuk.com

COUNTY ADMINISTRATOR OR PLANNING DIRECTOR CONTACT INFORMATION
Name: Peter N. Maurer *Phone Number:* (209) 754-6394
Email address: *http://planning.calaverasgov.us/*

NEAREST PUBLIC WATER AGENCY CONTACT INFORMATION
Name: *Dave Eggerton* *Phone Number:* (209) 751-3001
Email address: *davee@ccwd.org*

Please identify the appropriate project category below and provide the associated details *(Choose One)*	
☑ Category One Site Improvement ☐ Category One Acquisition	☐ Category Two Pre-Project Activities
Site Improvement/ Acquisition Project Area (for Category One Projects Only) Total Acres: 971 SNC Portion (if different): **Acquisition Projects Only For Acquisitions Only** ☐ Appraisal Included	**Select one deliverable (for Category Two Projects Only)** ☐ Permit ☐ CEQA/NEPA Compliance ☐ Appraisal ☐ Condition Assessment ☐ Biological Survey ☐ Environmental Site Assessment Plan

4. CCC/LOCAL CONSERVATION CORPS DOCUMENT

The SNC Watershed Improvement Program requires consultation with representatives of the California Conservation Corps (CCC) AND CALCC (the entity representing the certified community conservation corps)(collectively, “the Corps”) to determine the feasibility of the Corps participation. Unless otherwise exempted, applicants that fail to engage in such consultation are not eligible to receive Proposition 1 funds. The Corps have developed a five step consultation process for Proposition 1 projects as summarized below.

Step 1: Prepare a Project Review document (see below) for submission to both the California Conservation Corps (CCC) and CALCC (who represents the certified community conservation corps).
Step 2: Submit the forgoing information via email concurrently to the CCC and CALCC representatives:

California Conservation Corps representative:
Name: CCC Prop 1 Coordinator
Email: Prop1@ccc.ca.gov
Phone: (916) 341-3100
California Association of Local Conservation Corps representative:
Name:Crystal Muhlenkamp
Email: inquiry@prop1communitycorps.org
Phone: 916-426-9170 ext. 0

Step 3: The CCC and CALCC representatives will review the submitted information, contact the applicant if necessary, and respond to the applicant with a Corps Consultation Review Document informing them whether or not it is feasible for them to be used as part of the project work force.
Step 4: Applicant submits application to the SNC that includes the Corps Consultation Review Document.
Step 5: SNC reviews applications.

The following email correspondence serves as documentation of consultation with the Corps per Step 2 above.

From: Prop1 Community Corps [mailto:inquiry@prop1communitycorps.org]
Sent: Monday, January 04, 2016 12:50 PM
To: Karen Quidachay
Cc: Prop 1@CCC; Pickard, Michael@SNC; rob alcott; Teressa McClung
Subject: Re: Consultation for an SNC Grant Application
Hello Karen,
Nick of the San Joaquin Regional Conservation Corps has responded that they are able to assist with the Pumpkin Hollow Restoration Project if it receives funding. Please include this email with your application as proof that you reached out to the Local Conservation Corps. Additionally, please feel free to contact Nick Mueller (nmueller@sjcoe.net) directly if your project receives funding.
Thank you,
Dominique

California Association of Local Conservation Corps
Proposition 1 – Water Bond
Consultation Review Document

Applicant has submitted the required information by email to the Local Conservation Corps (CALCC):
✓Yes (applicant has submitted all necessary information to CALCC)
After consulting with the project applicant, the CALCC has determined the following:
✓It is feasible for CALCC to be used on the project (deemed compliant)
APPLICANT WILL INCLUDE THIS DOCUMENT AS PART OF THE PROJECT APPLICATION.

On Mon, Dec 21, 2015 at 3:17 PM, Karen Quidachay <kareng@innercite.com> wrote:
Hello CCC and CALCC Representatives:
Per my telephone messages, I am assisting the Upper Mokelumne River Watershed Authority with a grant application for the Sierra Nevada Conservancy for a fuels management project on the Stanislaus National Forest. Per Appendix E of the SNC grant application packet, the attached Word document includes the information items required to consult with the CCC and CALCC. I understand it is the Holiday season and you likely need more than 5 business days to respond, but we appreciate if you can review the attached information and respond by letting us know if it is feasible for the CCC to be used in the project and, if so, which aspects of the project could be accomplished by the Corps. Please let me know if you need any additional information or if you have any questions as well. We will need to attach your response to our application which is due March 1, 2016.

Thank you for your assistance.
Sincerely,
Landmark Environmental, Inc.
Karen Quidachay

From: Prop 1@CCC [mailto:Prop1@CCC.CA.GOV]
Sent: Tuesday, December 22, 2015 3:13 PM
To: Karen Quidachay; Prop 1@CCC; inquiry@prop1communitycorps.org
Cc: Pickard, Michael@SNC; 'rob alcott'; 'Teressa McClung'; Hsieh, Wei@CCC; Lussier, Brian@CCC; Mijares, Marie@CCC
Subject: RE: Consultation for an SNC Grant Application

Hi Karen,

Brian Lussier, the Conservation Supervisor at our CCC Greenwood location has responded to the partnership for your project: Pumpkin Hollow Restoration Project. CCC can assist with the "hand" treatment in task #3 and possibly #7 of this project.

Please include the Consultation Review Document below with your project application as proof that you reached out to the CCC. Feel free to contact Brian Lussier Brian.Lussier@ccc.ca.gov directly if you have project-specific questions and when your project receives funding.

California Conservation Corps
Proposition 1 - Water Bond
Consultation Review Document

Applicant has submitted the required information by email to the California Conservation Corps (CCC):

☐ Yes (applicant has submitted all necessary information to CCC)

After consulting with the project applicant, the CCC has determined the following:

☐ It is feasible for the CCC to be used on the project and the following aspects of the project can be accomplished (deemed compliant).

☐ CCC can assist with the "hand" treatment in task #3 and possibly #7 of this project.

APPLICANT WILL INCLUDE THIS DOCUMENT AS PART OF THE PROJECT APPLICATION.

Thank you,

Wei Hsieh, Manager
Programs & Operations Division
California Conservation Corps
1719 24th Street
Sacramento, CA 95816
(916) 341-3154
Wei.Hsieh@ccc.ca.gov

From: Karen Quidachay [mailto:kareng@innercite.com]
Sent: Monday, December 21, 2015 3:18 PM
To: Prop 1@CCC <Prop1@CCC.CA.GOV>; inquiry@prop1communitycorps.org
Cc: Pickard, Michael@SNC <michael.pickard@sierranevada.ca.gov>; 'rob alcott' <robalcott@aol.com>; 'Teressa McClung' <tmcclung@fs.fed.us>
Subject: Consultation for an SNC Grant Application

Hello CCC and CALCC Representatives:
Per my telephone messages, I am assisting the Upper Mokelumne River Watershed Authority with a grant application for the Sierra Nevada Conservancy for a fuels management project on the Stanislaus National Forest. Per Appendix E of the SNC grant application packet, the attached Word document includes the information items required to consult with the CCC and CALCC. I understand it is the Holiday season and you likely need more than 5 business days to respond, but we appreciate if you can review the attached information and respond by letting us know if it is feasible for the CCC to be used in the project and, if so, which aspects of the project could be accomplished by the Corps. Please let me know if you need any additional information or if you have any questions as well. We will need to attach your response to our application which is due March 1, 2016.

Thank you for your assistance.

Sincerely,

Landmark Environmental, Inc.
Karen Quidachay
Environmental Planning and Regulatory Compliance
2864 Ray Lawyer Drive, Suite 205
Placerville, California 95667
Phone: (530) 295-8124
Cell: (530) 903-0116

The following Corps Consultation Review Document was submitted as an attachment to the email correspondence above.

CORPS CONSULTATION REVIEW DOCUMENT (Submitted December 21, 2015)

PROJECT APPLICANT: Upper Mokelumne River Watershed Authority

PROJECT TITLE: Pumpkin Hollow Restoration Project

PROJECT DESCRIPTION: The Pumpkin Hollow Restoration project is located on the Calaveras Ranger District of the Stanislaus National Forest in Calaveras County, California in the Mokelumne and Stanislaus watersheds. Elevations within the 972 acre project area range between 6,100 feet and 7,300 feet. The purpose of the Pumpkin Hollow Restoration Project is to improve water quality and ecological resilience of forested communities within the project landscape. The Pumpkin Hollow Restoration Project reestablishes more resilient forest species composition, structure, and patterns on the landscape, as well as ecological processes (e.g., hydrologic function, fire regime) necessary for the long-term sustainability of terrestrial and aquatic ecosystems. An ecologically sustainable and resilient watershed would have a greater capacity to adapt and thrive in the face of natural disturbances and large-scale threats, such as; fire, drought, and insect and disease infestations which may be exacerbated by current and future climate warming.

The SNC has already funded two projects in the vicinity of Pumpkin Hollow in the last five years. The first was a detailed Archaeological Survey just east of the project area and the second was a relatively small fuels management program. This proposed project would build on and work in conjunction with these existing projects.

The Pumpkin Hollow project is a subset of the 14,075 acre Hemlock Landscape Restoration project (Hemlock) which is in turn a component of the even larger Cornerstone Collaborative Forest Landscape Restoration Program (CFLRP) (390,904 acres). The project spans both previously managed and wild stands. The Cornerstone Program was developed in collaboration with over 30 stakeholders that make up the Amador Calaveras Consensus Group (ACCG, see description below). The Pumpkin Hollow project is designed to implement a portion of the Hemlock project, which is considered a high priority area for implementation due to dense, overstocked, homogeneous conditions resulting in forest structures that are susceptible to mortality from drought, pests, pathogens, and catastrophic wildfire.

A number of large-scale environmental stressors (or drivers of change) that affect the entire Sierra Nevada, helped to define the overall objectives and restoration needs of the Hemlock and Pumpkin Hollow project area. These include 1) climate change and shifting hydrologic patterns; 2) increasingly dense and unhealthy forests; and, 3) California's human population pressure on public lands. These stressors are resulting in dramatic increases in disturbance events (e.g., uncharacteristic and large-scale wildfires, floods, insect and disease outbreaks, and the spread of invasive species), a reduction of ecosystem services (e.g., wood, water, scenic landscapes, wildlife habitat, biodiversity, and carbon sequestration and storage), and a growing need to revitalize rural economies in California.

The objectives and purpose for the Pumpkin Hollow project help protect water supply infrastructure and water quality by:

1. Reducing future fire intensity and severity to federal land and adjacent private land and by reducing surface fuels, increasing the height to canopy, decreasing crown density, and retaining large fire-resistant tree species.

2. Increasing tree, stand, and landscape resiliency and sustainability by producing different stand structures and densities across the landscape. Enhancing the general health of forested stands by reducing susceptibility to insect, diseases, and drought-related mortality by improving and promoting stand and individual tree growth and vigor.
3. Maintaining or enhancing the hydrologic, geomorphic, and biological characteristics of special aquatic features (springs, seeps, meadows, and fens). Implement restoration actions to maintain, restore or enhance water quality and habitat for riparian and aquatic species.
4. Improving and maintaining soil productivity, limiting gully erosion, and rebuilding surface organic layers where necessary.
5. Improving watershed condition by reducing sediment generated by the road and trail system through improvement of road and trail drainage features.
6. Maintaining and enhancing the extent and connectivity of aspen stands by reducing encroaching conifers.
7. Enhancing and maintaining the visual character of the Ebbetts Pass Scenic Corridor.
8. Maintaining and enhancing important wildlife habitat, mature forest ecosystem values, and connectivity of mature forest stands (e.g., late seral with closed canopies, California Wildlife Habitat Relationship (CWHR) size classes of 4-6, and density classes of M and D).
9. Improving aquatic organism passage at road-stream crossings by replacing or removing culverts that do not provide sufficient passage.
10. Improving resource conditions at dispersed recreation sites by stabilizing areas of erosion, restricting vehicle access to streams and other sensitive areas, and managing foot access to streams.

The project has a high level of collaboration, which is one of the cornerstones of SNC's Watershed Improvement Program (WIP). As described in the Hemlock EA, the project is proposed in an area of high importance and in need of vegetation management which is in line with the WIP's mission to implement projects in the most strategic locations possible. The project will provide data in an ESRI shapefile format to the WIP program.

The project aligns with the State planning priorities referred to in the 2013 Sierra Nevada Conservancy Strategic Plan amendment including the Sierra Nevada Forest and Community Initiative (SNFCI) because it fosters "collaboration locally and regionally to support a cohesive, economically viable and sustainable approach to reducing fire risk, creating jobs, and restoring and protecting watershed health." (page 8). The Pumpkin Hollow project is supported by and stems from the locally based collaborative known as Amador Calaveras Consensus Group (ACCG). A key component of the project is to actively manage the forests and create local jobs.

The Pumpkin Hollow project also aligns with the primary goal outlined in the California Water Action Plan (2014) of "Reliability, Restoration and Resilience including the restoration of important species and habitat, and a more resilient, sustainably managed water resources system (water supply, water quality, flood protection, and environment) that can better withstand inevitable and unforeseen pressures in the coming decades" (page 3). Restoration treatments would include hand, mechanical, silviculture, prescribed fire, watershed or other actions employed to promote ecosystem stability by improving landscape resilience and watershed conditions, and by modifying fuel characteristics to lessen fire behavior or burn severity. Vegetation treatments were strategically designed using guidelines discussed in the General Technical Report (GTR) 220 by North et al. (2009) and GTR 237 by North, ed. (2012). These guidelines stress the ecological importance of forest heterogeneity. The authors offer suggestions on how to design treatment areas to meet diverse forest objectives, retain existing

large trees, promote recruitment of more large structures and provide for forest sustainability. Forest "structures" can be either live or dead trees that make up the forest environment at a particular location. The proposed treatments would result in a landscape matrix of forest structure and densities that aim to: 1) modify fuel characteristics; 2) improve forest resiliency; 3) reduce susceptibility to insect and diseases; 4) improve watershed condition; 5) improve meadow function and water sequestration; and 6) maintain wildlife and ethno-botanical connectivity and diversity.

PROJECT MAP:
See attached.

PROJECT IMPLEMENTATION/TIMELINE:

Task 1: Administration
Major Tasks: This task is designed to keep the work funded within the grant on schedule and within budget, keep all participants informed of project progress and status of deliverables, establish and maintain reliable and accurate billing and record keeping ensuring that all requirements of the agreement with the SNC are met, and generally ensure smooth project implementation. In addition, work will comprise project administration activities performed throughout the duration of the grant and will include: development and completion of contractual paperwork, maintenance and reporting of expense documentation, oversight of project scheduling and contract/agreement compliance, preparation of monthly invoices, and completion of the final invoice. Work under this task will involve development of internal controls and systems to support invoicing and reporting and direct work with contractors to support their establishment of compatible reporting and invoicing systems.

Milestones: This task supports associated administrative work as needed and upon notification of award.

Task 2: Reporting
Major Tasks: Work for this task will include all activities necessary to support preparation of quarterly progress reports and submittal of the draft and Final Project Report. These activities will include providing regularly updated information regarding project status, costs, scheduling, and the anticipated activities going into the next quarter.

Milestones: UMRWA staff (and/or a qualified consultant) will submit all reports as scheduled.

Task 3: Wildlife Restoration
Major Tasks: Hand treatment of smaller diameter fuels (10 in. or smaller). Hand thinning of trees less than 10” diameter in stands, based on USFS descriptions of priorities for removal and desired tree spacing. Slash shall either be lopped and scattered or piled per USFS specifications. The partner would provide tools and equipment suitable for the job and equipped with USFS approved spark arrestors, as applicable.

Milestones: Decrease in trees per acre stand densities by 50%, on average.

Task 4: Aspen and Meadow Restoration
Major Tasks: Removal of conifers less than 30” dbh (diameter at breast height) within the boundaries of the meadow. Sawlogs would be decked on site and non-commercial material would be chipped or piled for future burning by USFS crews. The partner would provide tools

and equipment suitable for the job and equipped with USFS approved spark arrestors, as applicable.

Milestones: Removal of conifers encroaching on meadows and aspen stands and increase the meadow's water sequestration potential.

Task 5: Forest Restoration
Major Tasks: Removal of trees up to 29.9 inches DBH based on silviculture prescriptions and marking guides. Residual slash resulting from restoration activities will be piled and burned, lopped ad scattered, or masticated.

Milestones: Reduction of canopy cover to 40%, 50% or 60% depending on unit location in order to restore forests patterns while improving residual tree vigor and reducing tree mortality from drought, pests, and other pathogens. Trees less than 10 inches DBH will be thinned to a 20 by 20 foot spacing, In gaps, trees less and slash resulting from restoration activities will be lopped and scattered, masticated, or piled and burned.

Task 6: Plantation Thinning
Major Tasks: Mechanical removal of merchantable timber to a 20 by 20 foot spacing. Removal and small diameter (less than 10 inches DBH) as biomass or by mastication.

Milestones: Reduction of tree densities in plantation areas in order to improve residual tree vigor, increase growth, and reduce fire severity.

Task 7: Fuel Breaks
Major Tasks: Construct a 300'-wide shaded fuelbreak. Within this area, cut and pile all dead and down woody material that is between 1" and 18" diameter, and limb and pile dead and down material greater than 18". Cut and pile all brush. Cut and pile green trees up to 8" dbh. Reduce residual canopy cover to 40% by thinning overstory trees in shaded fuel break areas outside of roadside fuel breaks. The partner would provide tools and equipment suitable for the job and equipped with USFS approved spark arrestors, as applicable.

Mechanical thinning of merchantable timber less than 30 inches DBH to a residual canopy cover of 40%. Removal of small diameter (less than 10 inches DBH) trees using hand thinning or mastication. Reduction of overstory tree density to improve tree vigor and reduce potential fire severity while maintaining a "natural" looking forest through gap and clump creation using amorphous shapes and patterns.

Reduce forest density near the WUI in order to create defensible space around private property. Major Tasks: Mechanically thin merchantable timber below 30 inches DBH to 40% canopy cover. Remove small diameter trees using mastication and hand thinning to reduce ladder fuels and tree densities. Process excess slash produced from treatments using lop and scatter, mastication, or pile and burn methods.

Milestones: Lines of defense for fighting wildfire.

TASK	TASK DESCRIPTION	DETAILED PROJECT DELIVERABLES	TIMELINE
1	Administration	• Executed Agreement • Invoices and backup documentation • Wet-signed Invoice Forms	Ongoing
2	Reporting	• Quarterly Progress Reports • Draft Project Report • Final Project Report	Ongoing
3	Wildlife Restoration	Hand thinning of trees less than six inches diameter at breast height (DBH) 161 acres Hand thinning of trees less than ten inches DBH 160, Understory and pile burning operations on 246 acres. Total Acres Treated: 322	Layout: Fall of 2016 (14 person days). Hand Thinning Implementation: Spring, Summer, Fall of 2017, Spring of 2018 (107 crew days). Understory Burn Implementation: Fall 2017 (4 crew days).
4	Aspen and Meadow Restoration	Mechanical removal of encroaching conifers up to 40 inches DBH 70 acres, understory and pile burning operations 70 acres. Total Acres Treated: 70	Layout: Fall of 2016 (3 person days). Conifer Removal Implementation Summer, Fall of 2017(15 crew days). Understory burn implementation Fall 2017 (2 crew days).
5	Forest Restoration	Mechanical thinning of trees below 30 inches DBH: 81 Acres	Layout: Spring 2016 (6 person days). Marking: Spring, Summer 2017 (5 crew days), Implementation: Summer 2018 (17 crew days).
6	Plantation Thinning	Mechanical thinning of merchantable timber from 10-<30 inches DBH, 9 acres. Removal of small diameter trees using biomass or mastication, 221 acres. Total Acres Treated 230 Acres.	Layout: Summer, Fall 2017 (11 person days). Implementation Summer, Fall 2018 (47 crew days).
7	Fuel Break	Creation of roadside fuel beaks (28 Acres), and shaded fuel breaks (44 Acres). Total Acres 72. Mechanical, and hand treatment of Ebbetts Pass area 101 acres Mechanically and hand thin trees below 30 inches DBH in the WUI, 88 acres	Layout: Fall 2016 (4 person days). Implementation Summer, Fall 2017 (24 crew days) Layout (Ebbett's Pass): Spring 2018 (6 person days) Implementation: Summer, Fall 2018 (25 crew days) WUI Layout: Fall 2016 (4 person days), Implementation Spring, Summer 2017 (23 crew days)

*This is a previous version of the timeline as is dated December 21, 2015.

5. AUTHORIZATION AND RESOLUTION TO APPLY

Applicants are required to provide a copy of documentation authorizing them to submit an application for grant funding to the SNC. Following is a project-specific governing board resolution from the Upper Mokelumne River Watershed Authority.

UPPER MOKELUMNE RIVER WATERSHED AUTHORITY

RESOLUTION 2016 - 1

APPROVING THE APPLICATION FOR GRANT FUNDS FOR THE SIERRA NEVADA WATERSHED IMPROVEMENT PROGRAM PROPOSITION 1 GRANT PROGRAM AND AUTHORIZING THE EXECUTIVE OFFICER TO EXECUTE AND ADMINISTER THE GRANT AGREEMENT

WHEREAS, the Legislature and Governor of the State of California have provided Funds for the program shown above; and

WHEREAS, the Upper Mokelumne River Watershed Authority (UMRWA) is a Joint Powers Agency formed in 2000 to address water quality, water supply and environmental resource issues in the Upper Mokelumne River watershed and the Mokelumne-Amador-Calaveras (MAC) Integrated Regional Water Management Region; and

WHEREAS, the Sierra Nevada Conservancy (SNC) has been delegated the responsibility for the administration of a portion of these funds through a local assistance grants program, establishing necessary procedures; and

WHEREAS, said procedures established by the SNC require a resolution certifying the approval of an application by the UMRWA's governing board before submission of said application to the SNC; and

WHEREAS, UMRWA has identified the Pumpkin Hollow Restoration Project as valuable toward meeting its mission and goals and if selected will enter into an agreement with the SNC to carry out the project.

BE IT HEREBY RESOLVED by the UMRWA Board of Directors that this Board:

- Approves the submittal of an application for the Pumpkin Hollow Restoration Project; and
- Certifies that it understands the assurances and certification requirements in the application; and
- Certifies that it will have sufficient funds to operate and maintain project resources consistent with the long-term benefits described in support of the application, or will secure the resources to do so; and
- Certifies that it will comply with all legal requirements as determined during the application process; and
- Appoints the UMRWA Executive Officer, or designee, as agent to conduct all negotiations, execute and submit all documents, including, applications, agreements, payment requests, and so on, as necessary for project completion.

ADOPTED this 22nd day of January 2016

BY: _____ ATTEST: _____

Board Chair Authority Secretary

6. Narrative Descriptions

A. DETAILED PROJECT DESCRIPTION

The Pumpkin Hollow Restoration Project is located on the Calaveras Ranger District of the Stanislaus National Forest (SNF) in Calaveras County, California. The majority of project activities are planned in the upper headwaters of Blue Creek which flows into the Mokelumne River with a small area near Big Meadow Creek which flows into the North Fork Stanislaus River. The Pumpkin Hollow project is a subset of the 14,075 acre Hemlock Landscape Restoration project (Hemlock) which is in turn a component of the even larger Cornerstone Collaborative Forest Landscape Restoration (CFLR) Project (390,904 acres).

The primary purpose of the Pumpkin Hollow Restoration Project (Pumpkin Hollow) is to improve ecological resilience of forested communities within the project landscape. This will be accomplished through forest, meadow and aspen restoration and fuels management treatments designed to increase resistance to catastrophic wildfire. The project area is in close proximity to recent large stand replacing wildfires (Butte and Rim fires) and it contains forested conditions that are at high risk of catastrophic wildfire. As such, proposed thinning strategies would increase fire resiliency which would reduce the potential threat of catastrophic wildfire and create a long-term carbon storage sink in the restored forestland. Similarly, the proposed forest management practices reduce the threat of greenhouse gas emissions caused by catastrophic wildfire.

In alignment with Proposition 1, the project would prevent threats to water quality caused by catastrophic wildfire. Secondary potential benefits include water supply increases through snowpack accumulation and persistence into the summer months. Thinned forests with the appropriate tree stem density per acre (or basal area) have been shown to increase water supply through prolonged and increased density of snowpack accumulation (Kittredge 1953 and Lundquist et.al., 2013). The project will enhance the entire watershed that supports the forested environment and protect the soil structure needed to filter nutrients and thereby protect water quality. Secondary benefits also include overall improved conditions and adaptations to climate change as well as improved habitat conditions for a variety of species. The project will utilize the local work force to the extent possible.

The objectives and purpose for the Pumpkin Hollow project help protect water supply and water quality. Major beneficiaries of these protections are residents within Amador and Calaveras County who largely depend on Mokelumne River surface water supply and many of which live in disadvantaged communities. In addition, all of East Bay Municipal Utility District's (EBMUD) 1.3 million customers in Alameda and Contra Costa Counties depend on Mokelumne River water. Listed below are the primary objectives of the proposed project:

1. Reduce future fire intensity and severity to federal land and adjacent private land.
2. Increase tree, stand, and landscape resiliency and sustainability.
3. Enhance snowpack density and accumulation and thereby water supplies as well as the general health of forested stands.
4. Maintain or enhance the hydrologic, geomorphic, and biological characteristics of special aquatic features (springs, seeps, meadows, and fens).
5. Improve and maintain water quality soil productivity, limit gully erosion, and rebuild surface organic layers where necessary, and,
6. Maintain and enhance the extent and connectivity of aspen stands by reducing encroaching conifers.

As discussed below, the project has a high level of collaboration and it is proposed in the most strategic location possible. These are cornerstones of SNC's Watershed Improvement Program (WIP). The project aligns with the State planning priorities referred to in the 2013 Sierra Nevada Conservancy Strategic Plan amendment and is supported by and stems from the locally based collaborative known as Amador Calaveras Consensus Group (ACCG). The project also aligns with the primary goals outlined in the California Water Action Plan (2014) of "Reliability, Restoration and Resilience", which include a more resilient, sustainably managed water resources system that can better withstand inevitable and unforeseen pressures in the coming decades."

Task 6, described below in the Work Plan, aligns with California's 2012 Bioenergy Action Plan by utilizing, to the extent possible, biomass or the small woody material that will be generated from the proposed restoration project. The biomass will be used to create energy that can help the state meet environmental mandates such as reducing greenhouse gas (GHG) emissions. The proposed implementation strategy will help create jobs in rural regions while simultaneously protecting air quality from wildfire emissions. The project also aligns with California Natural Resources Agency's strategies identified in *Safeguarding California* by helping the region adapt to climate change.

B. WORKPLAN AND SCHEDULE NARRATIVE

A number of large-scale environmental stressors (or drivers of change) that affect the entire Sierra Nevada, helped to define the overall objectives and restoration needs of the Hemlock and Pumpkin Hollow project area. These include 1) climate change and shifting hydrologic patterns; 2) increasingly dense and unhealthy forests; and, 3) California's human population pressure on public lands. These stressors are resulting in dramatic increases in disturbance events (e.g., uncharacteristic and large-scale wildfires, floods, insect and disease outbreaks, and the spread of invasive species), a reduction of ecosystem services (e.g., wood, water, scenic landscapes, wildlife habitat, biodiversity, and carbon sequestration and storage), and a growing need to revitalize rural economies in California.

The Pumpkin Hollow Restoration Project reestablishes more resilient forest species composition, structure, and patterns on the landscape, as well as ecological processes (e.g., hydrologic function, fire regime) necessary for the long-term sustainability of terrestrial and aquatic ecosystems and water supply. An ecologically sustainable and resilient watershed would have a greater capacity to adapt and thrive in the face of natural disturbances and large-scale threats, such as; fire, drought, and insect and disease infestations which may be exacerbated by current and future climate warming. As discussed above, Kittredge (1953) and Lundquist (2013) demonstrated that a thinned forest with reduced canopy cover allows for more snow accumulation. This is because a dense canopy cover with high basal area, traps the snow in pine needles where it evaporates more quickly than from the ground.

This project builds off of two other projects the SNC has already funded in the vicinity of Pumpkin Hollow over the last five years. The first was a detailed Archaeological Survey within the Hemlock Landscape Project area in Thompson and Big Meadow. Treatments in Big Meadow are included in the Pumpkin Hollow project area. The second project was a planning grant for a plantation thinning project (West Calaveras Plantation Thinning) which occurs at the western boundary of the Pumpkin Hollow project area, adjacent to the Forest Restoration units. The Pumpkin Hollow project would work in conjunction with these two previously funded projects.

The project spans both previously managed and wild stands. The Cornerstone Project was developed in collaboration with over 30 stakeholders that make up the Amador Calaveras Consensus Group (ACCG, see description below). The Pumpkin Hollow project is designed to implement a portion of the Hemlock project, which is considered a high priority area for implementation due to dense, overstocked, homogeneous conditions resulting in forest structures that are susceptible to mortality from drought, pests, pathogens, and catastrophic wildfire. A key component of the project is to actively manage the forests and create local jobs. As part of the potential local social/economic benefits provided by this project, ACCG is committed to providing economic opportunities to Calaveras, Amador, Alpine and Tuolumne counties. As described in the Hemlock EA, the project is proposed in an area of high importance and in need of vegetation management which is in line with the WIP's mission to implement projects in the most strategic locations possible. The project will also provide data in an ESRI shapefile format to the WIP program.

Also within the Hemlock project area, the Sierra Nevada Research Institute at the University of California, Merced proposes to conduct real-time hydrological monitoring of snowpack, snow melt, and soil moisture to assess how forest restoration actions in the Sierra Nevada mixed-conifer influences the water-cycle. The results will inform land managers as to the multi-year impacts of landscape-scale vegetation treatments and it would inform water managers of the quantitative benefits of watershed management.

Various studies have assessed the effects of forest management practices and forest thinning on water supply and specifically snowpack accumulation and water density

levels within the snowpack. A 1953 study conducted on the SNF and headed by Joseph Kittredge, documents that more snow accumulates on the ground in less dense forests and this same study showed snow persistence into summer months was greatest in areas with canopy gaps. This study also found that the amount of water stored in the snow increases for some years in proportion to forest thinning and within a 20 foot radius around the remaining trees. Similarly, a more recent study conducted by Lundquist et al., 2013, shows that snowpack persistence is greater with an open canopy even where mean temperature for December-February is warmer than freezing or greater than -1 degree Celsius.

Restoration treatments would include hand, mechanical, silviculture, prescribed fire, watershed or other actions employed to promote ecosystem stability by improving landscape resilience and watershed conditions, and by modifying fuel characteristics to lessen fire behavior or burn severity. Vegetation treatments were strategically designed using guidelines discussed in the General Technical Report (GTR) 220 by North et al. (2009) and GTR 237 by North, ed. (2012). These guidelines stress the ecological importance of forest heterogeneity. The authors offer suggestions on how to design treatment areas to meet diverse forest objectives, retain existing large trees, promote recruitment of more large structures and provide for forest sustainability. Forest "structures" can be either live or dead trees that make up the forest environment at a particular location. The proposed treatments would result in a landscape matrix of forest structure and densities that aim to: 1) modify fuel characteristics; 2) improve forest resiliency; 3) reduce susceptibility to insect and diseases; 4) improve watershed condition and potentially snowpack density; 5) improve meadow function and water sequestration; and 6) maintain wildlife and ethno-botanical connectivity and diversity.

The following paragraphs describe the work plan and schedule proposed for treatments. Refer to Table 1 for detailed deliverables.

Task 1: Administration

Purpose: This task supports associated administrative work as needed.

Major Tasks: This task is designed to perform basic office functions such as copying, telephone and computer support in order to ensure the work funded within the grant is on schedule and within budget and to keep all participants informed of project progress. This task involves preparation of handouts and meeting notes, and coordinating the team status of deliverables. This task will ensure that all requirements of the agreement with the SNC are met and allow for a smooth transition to project implementation.

Task 2: Procurement Accounting

Purpose: This task is designed to establish and maintain reliable and accurate bidding and procurement strategies and contracts.

Major Tasks: Work associated with this task will involve project activities performed throughout the duration of project implementation and will include: development and completion of contractual paperwork, oversight of project scheduling and contract/agreement compliance.

Milestones: Draft and final Bid Specifications and contractual materials.

Task 3: Grant Invoicing and Reporting on Performance Measures

Purpose: This task is designed to establish and maintain reliable and accurate invoicing and record keeping and complete final reporting of Performance Measures.

Major Tasks: Work under this task will involve development of internal controls and systems to support invoicing and reporting. Work under this task will include direct work with contractors to support their establishment of compatible reporting and invoicing systems as well as maintenance and reporting of expense documentation.

Work for this task will include all activities necessary to support gathering information for and preparation of the Performance Measures report submittals. These brief reports will be submitted at the end of the project and the performance measures to be reported are described further in Section H below. The performance measures submittals will be designed to meet the objectives of the SNC for reporting on the restoration accomplishments funded through this grant program. However, the preference is to restore as much land on-the-ground as possible. Therefore a minimalist and highly efficient approach will be taken to serve this reporting objective.

As part of monitoring and reporting, a preliminary qualitative assessment of the relationship between forest density and snowpack density will be explored and assessed.

Milestones: UMRWA staff (and/or a qualified consultant) will submit all invoices and reports as scheduled.

Task 4: Hand Treatments

Purpose of Treatment: Hand treatments in California spotted owl and northern Goshawk protected activity centers and home range core areas were designed to reduce the risk of catastrophic wildfire while maintaining existing habitat quality.

Major Tasks: Hand thinning of trees less than 10” diameter in stands, based on USFS descriptions of priorities for removal and desired tree spacing. Slash shall either be lopped and scattered or piled per USFS specifications.

Milestones: Reduction of ladder fuels and a decrease in trees per acre.

Task 5: Aspen and Meadow Restoration (conifer removal)

Purpose of Treatment: Aspen and meadow restoration treatments were designed to achieve an environmental context of ethno-botanical diversity similar to indigenous stewardship conditions and enhance the hydrologic, geomorphic, and biological characteristics of these important ecological communities. These treatments are proposed most efficiently as part of other fuels management programs. They require similar equipment and expertise as other proposed fuels management programs. Therefore it makes sense to conduct this work as part of a longer fuels management program.

Major Tasks: Removal of conifers less than 30” DBH (diameter at breast height) within meadow boundaries. Within 50 feet of meadows and aspen stands, conifers 30-40” dbh may be thinned where basal areas of conifers exceed 120 ft^2/ acre (at least 3 trees >30” dbh per acre would be retained). Sawlogs would be decked on site and non-commercial material would be chipped or piled for future burning by USFS crews.

Milestones: Removal of conifers encroaching on meadows and aspen stands and increase the meadow’s water sequestration potential.

Task 6: Forest Restoration

Purpose of Treatment: Forest restoration treatments were strategically designed using guidelines discussed in the General Technical Report (GTR) 220 by North et al. (2009) and GTR 237 by North, ed. (2012). These guidelines stress the ecological importance of forest heterogeneity. Treatments are expected to transition the landscape to a matrix of forest structure and densities that aim to: 1) modify fuel characteristics; 2) improve forest resiliency; 3) reduce susceptibility to insect and diseases; and 4) improve watershed condition.

Major Tasks: Removal of trees less than 30” DBH based on silvicultural prescriptions and marking guides. Residual slash resulting from restoration activities would be piled and burned, lopped and scattered, masticated, or the biomass removed. Trees < 10”, other woody debris, and brush would be masticated (shredded), piled and burned (hand or grapple piles), lopped and scattered, or removed as biomass. Additional use of non-merchantable material may include firewood, shavings, small log removal, and pulpwood use.

Milestones: Reduction of canopy cover to 40%, 50% or 60% depending on unit location in order to restore forest patterns while improving residual tree vigor and reducing tree mortality from drought, pests, and other pathogens.

Task7: Plantation Thinning

Purpose of Treatment: Plantation treatments are focused on reducing plantation stocking conditions that have led to suppressed tree growth and health, an increased susceptibility to insect outbreaks, drought related mortality, and high risk of increased wildfire severity, intensity, and frequency.

Major Tasks: Plantations would be mechanically thinned to approximately 20x20 foot spacing, on average. Brush and trees less than 10” dbh would be mechanically thinned through mastication, biomass removal, and/or hand piling and burning. Trees 10-16” dbh could be removed as biomass or other forest products.

Milestones: Reduction of tree densities in plantation areas in order to improve residual tree vigor, increase growth, and reduce fire severity.

Task8: Fuel Breaks

Purpose of Treatment: Fuel break treatments were designed to reduce the cumulative buildup of dead and down surface fuels, the dense understory ladder fuels, and reduce overstory tree density and canopy closures that exhibit high risk of stand replacing, high intensity fires. Fuel breaks will also provide for safer fire suppression areas. In addition, fuel treatments near the Wildland Urban Interface (WUI) would create defensible space around private property.

Major Tasks: Construct 300’-wide shaded fuel break along ridge tops, private property, and highway 4. Trees less than 30” dbh would be thinned to 40% canopy cover by ground based mechanical thinning or hand thinning, piling, and burning. Trees less than 10” dbh and brush would be treated through mastication, biomass removal, or hand cutting, piling and burning. Brush and small trees less than 10” dbh would be removed or masticated within 25 feet of designated roads. Excess fuels may be removed mechanically or through hand thinning, piling, and burning. Tree species retention would vary depending on site capacity, topographic position, and elevation. In general, firs and cedars would be targeted for removal. Prescribed fire activities may occur after fuel treatments by Forest Service staff.

Milestones: Lines of defense for fighting wildfire and a reduced risk of catastrophic wildfire.

Table 1. Project Deliverables Timeline

TASK	TASK DESCRIPTION	DETAILED PROJECT DELIVERABLES (see Task Descriptions Above)	TIMELINE[1, 2, 3]
1	Administration	• Meeting notes/ handouts. • Team coordination	Years 1, 2 and 3
2	Procurement Accounting	• Executed Agreement • Bid Specifications • Contracts	Years 1, 2 and 3
3	Invoicing, Performance Measures Reporting	• Invoices and backup documentation • Brief Performance Measures Reports	Years 1, 2 and 3
4	Hand Treatments	Hand thinning, Hand Pile & Slash: 321 acres	Years 1, 2 and 3
5	Aspen and Meadow Restoration	Mechanical thinning: 78 acres.	Year 2
6	Forest Restoration	Mechanical thinning: 81 acres.	Year 2
7	Plantation Thinning	Mechanical thinning: 230 acres	Preliminary work in Year 1 Years 2 and 3
8	Fuel Breaks	Mechanical thinning: 261 acres	Years 1, 2 and 3

[1] Actual implementation dates are subject to funding streams, weather conditions and contract obligations.
[2] Assume start date is 60 days after SNC Board authorization in September 2016.
[3] Implementation Year 1=Fall 2016 through Summer 2017
Implementation Year 2=Fall 2017 through Summer 2018
Implementation Year 3=Fall 2018 through Summer 2019

C. RESTRICTIONS, TECHNICAL/ENVIRONMENTAL DOCUMENTS AND AGREEMENTS NARRATIVE

Restrictions/Agreements

There are no property restrictions and/or encumbrances that could adversely impact project completion. In 2003 Congress authorized the Forest Service and the Bureau of Land Management to enter into stewardship contracts and agreements “to achieve land management goals for the national forests that meet local and rural community needs.” The primary focus of this legislation is to achieve land management goals through stewardship projects awarded under contracts or agreements. Unique to the legislation is the ability to exchange goods for services that meet the land management objectives.

The UMRWA and the USDA Forest Service are scheduled to sign a Master Stewardship Agreement (MSA, see attached document entitled "RestAgree") in April 2016 or shortly thereafter. The MSA is a signed agreement which allows UMRWA access to the NFS lands for at least 10 years. If awarded, the treatments implemented with this grant money will continually be managed for up to ten years after the grant is awarded. The area addressed in the Master Stewardship Agreement is known as the Cornerstone Collaborative Forest Landscape Restoration Project area on the Calaveras and Amador Ranger District and falls within the borders of the State of California. The Pumpkin Hollow Restoration Project falls within the larger Cornerstone Collaborative Forest Landscape Project Area.

Regulatory Requirements/Permits

Included in a tab below in 6c and on the electronic document entitled "RegPermit" is a complete list of existing and required permits for the project. Explanations are provided for those permits that are not applicable. As described in the Hemlock EA, the Pumpkin Hollow project complies with Federal, State and local laws or requirements imposed for the protection of the environment (i.e., National Forest Management Act, Endangered Species Act, National Historic Preservation Act, Federal Clean Water Act, Executive Order 11988 for Floodplain Management, and the Clean Air Act). The Hemlock EA is included electronically as a document entitled "LTMP". The Forest Service obtained concurrence with SHPO. The proposed action would not affect any terrestrial Federally listed species or critical habitat (see Hemlock EA 3.11 Sensitive Plants; 3.16 Wildlife). Consultation with the USFWS determined that the actions may affect, and are likely to adversely affect the Yosemite toad and the Sierra Nevada yellow-legged frog. The USFWS concluded that the project is consistent with the Forest Plan, and that if fully implemented with appropriate conservation measures it is not likely to jeopardize the continued existence of these species (see Hemlock EA 3.02 Aquatics).

D. ORGANIZATIONAL CAPACITY NARRATIVE

The UMRWA is the regional water management group for the MAC (Mokelumne-Amador-Calaveras) region. It is a Joint Powers Agency comprised of six water agencies and the counties of Amador, Calaveras and Alpine. The six water agencies are Amador

Water Agency, Calaveras County Water District, Calaveras Public Utility District, East Bay Municipal Utility District, Jackson Valley Irrigation District and Alpine County Water Agency. The Authority was formed in the year 2000 to address then existing and emerging issues related to water quality, water supply and the environment. During its fifteen-year existence the Authority has served as a venue for developing constructive, community supported solutions to water and watershed issues.

UMRWA's activities are focused on water supply and water quality issues, watershed projects and cooperative regional water resource planning initiatives. Major accomplishments are listed below.

- Completed $1.3M Upper Mokelumne River Watershed Assessment and Planning Project funded for by UMRWA ($317,500) and Prop 50 and 84 grants ($950,000) (2005).
- Received $250,909 IRWM Planning Grant (2011) and adopted the updated MAC IRWM Plan (2012)
- Received $878,605 Interregional Planning Grant (2013)
- Received $10,228,091 in three rounds of Prop 84 Implementation Grants (Round 1, Round 2 and Drought Round 2014) to fund 9 capital projects constructed in Amador and Calaveras Counties. Under grant agreements with DWR, UMRWA ensured all project work conformed to the scope, schedule and budget requirements and administered all aspects of the grants. The local projects that were implemented under these three grants were:
    - West Point WTP and Transmission Line
    - Camanche Tank and Laterals (Phase 1 and 2)
    - Amador Water System Leak Detection and Repair
    - Camanche Area Regional Water Supply System
    - Vintage Home Retrofit for Disadvantaged Camanche Communities
    - Ponderosa Way Restoration Project
    - Amador Canal Raw Water Pipeline
    - Ione Water Treatment Plant Backwash Recovery Project

UMRWA is governed by an eight member Board of Directors. It is supported by a part time Executive Officer and part time Contract Associate. Amador County Counsel serves as Authority Counsel. An EBMUD staff member serves as Authority Secretary and its Finance Director serves as Treasurer and Controller. UMRWA will complete the Pumpkin Hollow Restoration Project work plan as follows:

- An UMRWA – USFS Project Committee will be established and will meet regularly to coordinate project work and resolve project-related issues.
- UMRWA and USFS staff will prepare project bid package(s) and vet bidders. Authority Counsel will review project-related contracts and agreements and the UMRWA Board will approve all contracts.
- A qualified professional will be hired by UMRWA to serve as Project Manager and will oversee the work performed by contractors. The Project Manager will be supervised by UMRWA staff (Executive Officer or Contract Associate).
- UMRWA staff, in coordination with the hired Project Manager and USFS personnel, will prepare progress reports, SNC grant payment requests, and contractor invoices.

- UMRWA's Treasurer and Controller (EBMUD) will perform all accounting functions.
- UMRWA staff will be responsible for all coordination with SNC.

E. COOPERATION AND COMMUNITY SUPPORT NARRATIVE

Two letters were received showing whole-hearted support for this project (LOS1 and LOS2). One is from the Stanislaus National Forest and the other from the Amador-Calaveras Consensus Group (ACCG) which represents over 30 separate organizations as described below.

Collaborative Forest Landscape Restoration (CFLR) Program

In 2009, Congress established the CFLR program with Title IV of the Omnibus Public Land Management Act. The purpose of the CFLR program is to encourage the collaborative, science-based ecosystem restoration of priority forest landscapes. The ACCG Cornerstone project is a CFLPR project and the Pumpkin Hollow Restoration Project is a smaller component of the Cornerstone project.

ACCG is a community based local collaborative that works to create healthy forests and watersheds, fire-safe communities, and sustainable local economies. ACCG fosters partnerships among private, nonprofit, state, and federal entities with a common interest in health and well-being of the landscape and communities in the Mokelumne and Calaveras watersheds. The group is advancing an all-lands strategy to create a heightened degree of environmental stewardship, local jobs, greater local economic stability, and healthy forests and communities. ACCG's principles reflect the group's emphasis on its triple bottom line for balancing environmental, social, and economic goals (see https://acconsensus).

ACCG members include diverse members such as county organizations, federal and State agencies including the Sierra Nevada Conservancy and others such as:

- Amador County Veterans Organization
- Amador Firesafe Council
- Amador-Calaveras Cooperative Association for Biomass Utilization (ACCABU)
- Blue Mountain Community Renewal Council
- Blue Mountain GIS
- Buena Vista Biomass Power
- CA Department of Fish and Game
- CA Indian Manpower Consortium
- Calaveras Foothills Firesafe Council
- Calaveras Healthy Impact Product Solutions (CHIPS)
- CALFAUNA
- CalFire
- Central Sierra Environmental Resource Center
- Central Sierra Resource Conservation and Development Council
- Ebbetts Pass Forest Watch
- Foothill Conservancy
- Heissenbuttel Natural Resource Consulting

- John Hoffmann
- Mary Boblet
- Motherlode Job Training
- Pacific Gas and Electric Company
- Sierra Forest Legacy
- Sierra Nevada Conservancy
- Smith's Grinding
- Steve Wilensky
- Supervisor Chris Wright, Calaveras County District 2
- Supervisor Terry Woodrow, Alpine County District 4
- The Nature Conservancy
- Trout Unlimited Sac/Sierra Chapter
- USDA Forest Service – El Dorado NF
- USDA Forest Service – Stanislaus NF
- USDA Natural Resource Conservation Service
- USDOI Bureau of Land Management
- Vicini Brothers Green Material Recycling
- West Point Fire District

F. TRIBAL CONSULTATION NARRATIVE

The Stanislaus National Forest Archaeologist informed five federal and state recognized tribes regarding the scope of this project. The Miwok and Washoe still actively use Stanislaus National Forest for gathering traditional food and medicine plants, hunting, and conducting ceremonies. In addition to public scoping efforts made to the general public, the scoping package for this project was mailed to the Calaveras Band of Miwok, Washoe Tribe of Nevada and California, California Valley Miwok Tribe, Chicken Ranch Tribal Council, and the Tuolumne Band of Me-Wuk Indians with cover letters dated June 16, 2015. This project was presented at the Annual Tribal Consultations with Tuolumne Me-Wuk Tribe and Stanislaus National Forest on May 2, 2013, on May 9, 2014 and also on June 1, 2015. Presentations were made to describe and solicit information regarding the actions being considered at each of these meetings and Forest Service contact information was provided. Copies of a public scoping package were provided to all tribal participants at the 2015 meeting. Representatives from Tuolumne Band of Me-Wuk Indian cultural resources group attended a site visit on July 29, 2015 to discuss the Hemlock Landscape Restoration and other projects from the June 1, 2015 meeting. Representatives from the Washoe Tribe of Nevada and California attended a site visit on August 10, 2015. Consultation site visits included trips to campgrounds, meadow habitats, and significant viewsheds within the proposed area. Heritage site preservation and traditional gathering areas were discussed, especially in regards to proposed recreation site enhancements, trail construction, and interpretive exhibits. No written comments have been received but project discussions during meetings, site visits, and phone calls have been documented and incorporated into protective measures within the scope of this project.

The following individuals were contacted though the June 9, 2015 letter or by telephone.

Other tribal members were also provided with this information in more casual discussions, but their contact information is not included below.

Silvia Burley
California Valley Miwok Tribe
10601 N. Escondido Pl.
Stockton, CA 95212
(No response to letter)

Vicki Stone
Cultural Coordinator
Tuolumne Band of Me-Wuk Indians
P.O. Box 699, Tuolumne, CA 95379
209-928-5311
vstone@mewuk.com
(Site Visit 7/29/2015)

Lloyd Mathiesen
Chicken Ranch Tribal Council
P.O. Box 1159
Jamestown, CA 95327
(Letter sent by SO, no response)

Darrel Cruz
Tribal Historic Preservation Office
Washoe Tribe of Nevada and California
919 Highway 395 South
Gardnerville, NV. 89410
775-265-8600 Ext. 10714
darrel.cruz@washoetribe.us<mailto:darrel.cruz@washoetribe.us
(Site visit 8/10/2015)

Charles Wilson
Calaveras Band of Miwuk Indians
546 Bald Mountain Road
West Point CA 95255
209-419-0017
(In-person discussion with maps and plans since no tribal members were available to attend site visits)

G. LONG-TERM MANAGEMENT AND SUSTAINABILITY NARRATIVE

The Stanislaus National Forest has been in existence since 1887, and the USFS will continue to manage this landscape in perpetuity. The UMRWA and the USDA Forest Service are scheduled to sign a Master Stewardship Agreement (MSA, see attached draft document entitled "RestAgree") in April 2016 or shortly thereafter. The MSA is a signed agreement which allows UMRWA access to the NFS lands for at least 10 years and SNC access to monitor the site for at least 25 years.

The Stanislaus National Forest “Forest Plan Direction” (USDA 2010) presents the current Forest Plan management direction, based on the original Forest Plan as amended. The Forest Plan Direction includes forest wide standards and guidelines (p. 33-64) and applicable management area direction for General Forest (p. 161-164) and Wildlife (p. 123-127), Developed Recreation or Administration Site (p. 165-182), Near Natural (p. 119-122), and Scenic Corridor (Retention and Partial Retention) (p. 155-160).

The Pumpkin Hollow project falls within the Cornerstone Collaborative Forest Landscape Restoration Project area on the Calaveras Ranger District which was originally funded in 2012 for 10 years. The Cornerstone (CFLR) project area encompasses approximately 390,904 acres, which represents lands within both the Calaveras and Amador Ranger Districts. The Cornerstone project includes projects designed to address issues related to fire regime, restoration, fish and wildlife habitat, watershed improvement, and invasive species on Forest Service administered lands.

The Hemlock Landscape Restoration Project EA (Hemlock EA) is designed as a component of the larger and long-term Cornerstone initiative. The Hemlock EA serves as the long-term management plan for the Pumpkin Hollow Restoration Project and is provided on the accompanying CDRom and entitled LTMP.pdf.

H. PERFORMANCE MEASURES

As described on the SNC website, there are four Performance Measures (PMs) common to all grants. These include "Number and Type of Jobs Created", "Number and Value of New, Improved or Preserved Economic Activities", "Number of People Reached", and "Resources Leveraged for the Sierra Nevada". The Pumpkin Hollow Restoration Project will track and provide a means to measure and report all four of these outcomes. The effectiveness of the project in achieving SNC's programmatic goals will also be measured and reported using the established methods identified in the SNC Performance Measures descriptions. In addition, the PM entitled "Acres of Land Improved or Restored" is a project-specific Performance Measure that will be described and reported as described above in the Work Plan and Schedule section and using a table format provided by SNC as shown below:

Reporting: The total number of acres improved or restored will be categorized by importance/priority rating and treatment purpose. Note: one acre may be counted more than once if improvement/restoration of that acre meets more than one purpose.

Table 2. Project Acres Improved

Acres treated	Site importance or priority rating	Source of prioritization or importance rating	Purpose (from list provided in PM description)

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6. NARRATIVE DESCRIPTIONS

c. Restrictions and Agreements

The UMRWA and the USDA Forest Service are scheduled to sign a Master Stewardship Agreement (MSA, see document below) in April 2016 or shortly thereafter. The MSA is a signed agreement which allows UMRWA access to the NFS lands for at least 10 years. If awarded, the treatments implemented with this grant money will continually be managed for up to ten years after the grant is awarded. The area addressed in the Master Stewardship Agreement is known as the Cornerstone Collaborative Forest Landscape Restoration Project area on the Calaveras and Amador Ranger District and falls within the borders of the State of California. The Pumpkin Hollow Restoration Project falls within the larger Cornerstone Collaborative Forest Landscape Project Area.

FS Agreement No. _____ - _____ - _____

Cooperator Agreement No. _____

DRAFT

MASTER
STEWARDSHIP AGREEMENT
Between The
Upper Mokelumne River Watershed Authority
And the
USDA FOREST SERVICE, Eldorado and Stanislaus National Forests

This Master Stewardship Agreement is hereby made and entered into by and between the Upper Mokelumne River Watershed Authority, hereinafter referred to as "UMRWA," and the USDA Forest Service, Eldorado and Stanislaus National Forests, hereinafter referred to as the "Forest Service," under the provisions of the Consolidated Appropriations Resolution, 2003, Public Law 108-7, sec 323, amending Public Law 105-277, sec. 347 (Stewardship Authority).

Background: In 2003 Congress authorized the Forest Service and the Bureau of Land Management to enter into stewardship contracts and agreements "to achieve land management goals for the national forests that meet local and rural community needs." The primary focus of this legislation is to achieve land management goals through stewardship projects awarded under contracts or agreements. Unique to the legislation is the ability to exchange goods for services that meet the land management objectives.

The area addressed in this Master Stewardship Agreement is known as the Cornerstone Collaborative Forest Landscape Restoration Project area on the Amador Ranger District, Eldorado National Forest and the Calaveras Ranger District, Stanislaus National Forest and lies within the borders of the State of California. This area includes an un-estimated number of acres to be treated during the term of this Master Stewardship Agreement.

The Mokelumne River Watershed is an important ecological, social, and economic resource whose value extends from the crest of the Sierra Nevada to the San Francisco Bay Area. The watershed produces high-quality water for agricultural, industrial and urban domestic use, including more than 1.4 million East Bay Area residents. In addition, the watershed provides habitat for several State and Federally listed threatened, endangered, sensitive and candidate plant and animal species. Several thousand people live in the wildland urban interface areas and the area includes historic and active Miwok and Washoe cultural sites as well as world-class recreation opportunities.

This forested mountain landscape has served as the region's socio-economic foundation for hundreds of years. The native Miwok and Washoe people were stewards of this land as they moved seasonally through the watershed and lived on its rich abundance of plants, fish, and animals. The miners of the 1849 California Gold Rush displaced tons of ore in search of gold. As the Gold Rush faded, cattle and sheep ranchers moved in to graze these forested slopes.

Settlement expanded, fire was excluded from the landscape and the desire for merchantable timber dominated forest management practices. Today, the forests of the Mokelumne Watershed have become overgrown and less resilient to fire while the number, type and values of resources at risk has grown. Many of the meadows have been encroached by conifers or dried out and no longer store the amount of water they historically did. Overly dense forested stands use more water that would otherwise flow downstream.

Many residents of the small communities of this watershed struggle with poverty since the near-collapse of the local timber industry. Local residents have deep ties to the land. They include Native American people who have called this area home for thousands of years, descendants of early miners and ranchers, families who made their living in the forest for generations. After all the various types of land management, these lands remain rich in forest products, clean water, fish, wildlife and recreation opportunities. These plentiful resources provide abundant opportunities for sustainable environments, communities, and economies.

The Upper Mokelumne River Watershed Authority (UMRWA) is a Joint Powers Authority whose member agencies include Alpine, Amador, and Calaveras Counties and Amador Water Agency, Calaveras County Water District, Calaveras Public Utility District, East Bay Municipal Utility District, and Jackson Valley Irrigation District. Each member agency is is vitally interested in securing dependable and affordable sources of water for its inhabitants and protecting the quality of water provided them, as well as the environment of the Upper Mokelumne River Watershed.

UMRWA's goals to enhance water supply and protect water quality and the environment are fulfilled in a variety of ways. Serving as the regional water management group for the Mokelumne-Amador-Calaveras Region, UMRWA has developed the MAC Plan, a state approved integrated regional water management plan. UMRWA also supports the Youth Watershed Stewardship Program, a public education program lead by Stewardship through Education, an organization of teachers. Looking inter-regionally, UMRWA is working with the Eastern San Joaquin Region on a Mokelumne watershed resource plan called MokeWISE to address resource issues in both the Upper and Lower watersheds.

I. PURPOSE:

The purpose of this Master Stewardship Agreement is to document the cooperative effort between the parties for landscape restoration activities within the Amador and Calaveras Ranger Districts in accordance with the following provisions and the hereby incorporated Template for Stewardship Supplemental Project Agreement (SPA), attached as Exhibit A.

II. STATEMENT OF MUTUAL BENEFIT AND INTERESTS:

The Forest Service is a land management agency dedicated to the wise use and management of National Forest System (NFS) lands, including the responsibility for maintaining and improving resource conditions.

UMRWA's objectives include enhancement of watershed environmental values, water quality protection, increased water supply reliability, additional consumptive water supply and improved recreational opportunities.

The stewardship projects developed under this Master Stewardship Agreement are for the purpose of restoring the Mokelumne River Watershed and bringing economic opportunities to the local area including, but not limited to: thinning for hazardous fuels treatments and timber stand improvement; vegetation management to enhance habitat conditions through slashing, hand piling, and burning; meadow, stream, and riparian area restoration and protection; water quality enhancement; cultural site restoration and protection; removal and utilization of forest byproducts; noxious weed control; road maintenance, reconstruction, and/or removal; and improvement of recreational opportunities (e.g. trails and campgrounds)

This Master Stewardship Agreement will provide an opportunity for the parties to seek funding to expand partnership opportunities, and to garner new and additional support from partners, including but not limited to the timber industry, Federal and non-Federal entities, tribal entities, and UMRWA's members and volunteers. Mission accomplishment for both parties will be furthered by the restoration of natural resources across the landscape.

All projects conceived under this Master Stewardship Agreement will undergo a collaborative process to determine specific habitat improvements. The collaborative process will ensure that the benefits of undertaking restoration activities are mutually beneficial to UMRWA and the Forest Service as well as being beneficial to a wide diversity of interests involved in collaboration.

Both parties share an interest in improving the ecosystem condition and function of the landscape. A healthy landscape provides a variety of benefits beyond the needs of a single species, and therefore benefits both parties.

It is therefore mutually beneficial for the parties to work together to implement landscape restoration and enhancement projects.

In consideration of the above premises, the parties agree as follows:

III. THE PARTNER SHALL:

A. LEGAL AUTHORITY.

B. UMRWA shall have the legal authority to enter into this Master Stewardship Agreement, and the institutional, managerial, and financial capability to ensure proper planning, management, and completion of the project, which includes funds sufficient to pay the nonFederal share of project costs, when applicable.

C. In its discretion, explore opportunities for additioanl support from other parties for projects associated with this Master Stewardship Agreement.

D. Coordinate with the Forest Service to develop Supplemental Project Agreements (SPAs) under this master agreement.
E. Provide qualified personnel or contractors to implement tasks identified in SPAs under this master agreement.
F. Provide a Project Liaison who can act as UMRWA's representative and main contact for the Forest Service for project work conducted under this agreement. The Project Liaison should have the ability to direct UMRWA's contractors to ensure that projects are completed to Forest Service specifications, that projects are being completed in a safe manner and that quality and quantity of work are acceptable.

IV. THE U.S. FOREST SERVICE SHALL:

A. Have the Regional Forester or authorized designee approve all stewardship project proposals.

B. Complete all necessary National Environmental Policy Act (NEPA) requirements.

C. Inform UMRWA of any changes in stewardship policy, law and regulations.

D. Recognize UMRWA's contribution, in a manner acceptable to both parties, in news releases, interpretive signs, photographs, or other media as appropriate.

E. Coordinate with UMRWA to develop SPAs under this master agreement.
F. Provide a Project Liaison who can act as the representative and main contact for the Forest Service for all project work conducted under this agreement.
G. Coordinate design, layout, and preparation as required for projects occurring on National Forest system lands including, but not limited to property boundary surveys and designating treatment unit boundaries.
H. Explore opportunities for additional support for projects associated with this master agreement.

V. IT IS MUTUALLY AGREED AND UNDERSTOOD BY AND BETWEEN THE PARTIES THAT:

A. PRINCIPAL CONTACTS. Individuals listed below are authorized to act in their respective areas for matters related to this Master Stewardship Agreement.

Principal U.S. Forest Service Contacts:

U.S. Forest Service Stewardship Coordinator	U.S. Forest Service Grants & Agreements Contact

Name: Address: City, State, Zip: Telephone: FAX: Email:	Name: Address: City, State, Zip: Telephone: FAX: Email:

Principal Partner Contacts:

Partner Stewardship Coordinator	Partner Administrative Contact
Name: Address: City, State, Zip: Telephone: FAX: Email:	Name: Address: City, State, Zip: Telephone: FAX: Email:

B. ASSURANCE REGARDING FELONY CONVICTION OR TAX DELINQUENT STATUS FOR CORPORATE ENTITIES. This agreement is subject to the provisions contained in the Department of Interior, Environment, and Related Agencies Appropriations Act, 2012, P.L. No. 112-74, Division E, Section 433 and 434 regarding corporate felony convictions and corporate Federal tax delinquencies. Accordingly, by entering into this agreement UMRWA acknowledges that it: 1) does not have a tax delinquency, meaning that it is not subject to any unpaid Federal tax liability that has been assessed, for which all judicial and administrative remedies have been exhausted or have lapsed, and that is not being paid in a timely manner pursuant to an agreement with the authority responsible for collecting the tax liability, and (2) has not been convicted (or had an officer or agent acting on its behalf convicted) of a felony criminal violation under any Federal law within 24 months preceding the agreement, unless a suspending and debarring official of the United States Department of Agriculture has considered suspension or debarment is not necessary to protect the interests of the Government. If UMRWA fails to comply with these provisions, the Forest Service will annul this agreement and may recover any funds UMRWA has expended in violation of sections 433 and 434.

C. AVAILABILITY FOR CONSULTATION. Both parties will make themselves available at mutually agreeable times, for continuing consultation to discuss the conditions covered by this Master Stewardship Agreement and agree to actions essential to fulfill its purposes.

D. ANNUAL MEETING. At a minimum, the parties will meet annually to discuss potential stewardship projects and jointly review the active stewardship project proposal list.

E. SUPPLEMENTAL PROJECT AGREEMENTS. Nothing in this Master Stewardship Agreement obligates either party to offer or accept any project proposals under this Master Stewardship Agreement. Any projects added to this Master Stewardship Agreement must be by mutual consent of the parties through a specific SPA. At a minimum, an SPA must:

1. Include language stating that the SPA will be made a part of this Master Stewardship Agreement thereby subjecting it to the terms of this Master Stewardship Agreement.
2. Include a map and description of the project area, treatment activities and corresponding treated acres, and other activities which may include other resource related projects.
3. Specify a method of designating trees for removal.
4. Describe the desired end result of the project(s).
5. Specify the exchange of goods for services. The Forest Service may apply the value of timber or other forest products removed as an offset against the cost of services received by UMRWA.
6. Designate a Forest Service and UMRWA official to monitor their respective responsibilities outlined in the SPA.
7. Include a Financial Plan to identify each parties contributions for projects identified in the SPA.
8. Identify appropriate bonding requirements.
9. Include any necessary forest restrictions and closure dates to allow UMRWA to implement and complete the project(s) within the specified timeframes.
10. Provide necessary direction to UMRWA to ensure compliance with appropriate laws and regulations to fulfill the terms of the SPA.
11. Identify any reporting requirements.
12. Be reviewed and approved by a delegated timber contracting officer when forest products will be disposed.
13. Be reviewed and approved by a Forest Service Grants & Agreements Specialist.
14. Be mutually agreed to, in writing, by both parties and executed by the designated Forest Supervisor.

F. PERFORMANCE. The parties will perform in accordance with the approved SPAs.

G. EXCHANGE OF GOODS FOR SERVICES. SPA(s) may be completed where Forest Service goods are exchanged for UMRWA's services; Forest Service funds are exchanged for UMRWA's services; or a combination thereof.

H. TECHNICAL AND COST EVALUATION. Best approach determination is the evaluation method used by the Forest Service to approve stewardship agreement technical proposals. Such consideration shall primarily consider criteria other than cost. These non-price criteria include, but are not limited to:

1. The extent of mutual interest and benefit.
2. The advantages and effectiveness of mutual participation.
3. Joint expertise.
4. Past performance.
5. Technical approach
6. Factors relevant to cost such as volunteer participation, contribution from other parties, cost sharing, etc.
7. Ability to utilize, educate and/or train a local workforce.

8. Benefits to the local community
9. Ability to complete work in a timely manner.
10. Experience in performing similar work.
11. Ability to conduct work in an environmentally sound manner.

I. METHODS OF APPRAISAL: The value of timber and other forest products shall be determined using Forest Service standard guidelines, methods and techniques.

J. NOTICES. Any communications affecting the operations covered by this agreement given by the Forest Service or UMRWA is sufficient only if in writing and delivered in person, mailed, or transmitted electronically by e-mail or fax, as follows:

To the Forest Service Program Manager, at the address specified in this Master Stewardship Agreement.

To UMRWA, at UMRWA's address shown in this Master Stewardship Agreement or such other address designated within this Master Stewardship Agreement.

Notices will be effective when delivered in accordance with this provision, or on the effective date of the notice, whichever is later.

K. PARTICIPATION IN SIMILAR ACTIVITIES. This Master Stewardship Agreement in no way restricts the Forest Service or UMRWA from participating in similar activities with other public or private agencies, organizations, and individuals.

L. ENDORSEMENT. Any of UMRWA's contributions made under this Master Stewardship Agreement do not by direct reference or implication convey Forest Service endorsement of UMRWA's products or activities.

M. USE OF FOREST SERVICE INSIGNIA. In order for UMRWA to use the Forest Service insignia on any published media, such as a Web page, printed publication, or audiovisual production, permission must be granted by the Forest Service's Office of Communications (Washington Office). A written request will be submitted by Forest Service Region/Station/Area to the Office of communication Assistant Director, Visual Information and Publishing Services prior to use of the insignia. The Forest Service Region/Station/Area will notify when permission is granted.

G. NON-FEDERAL STATUS FOR PARTNER PARTICIPANT LIABILITY.

N. UMRWA agree(s) that any of UMRWA's employees, volunteers, and program participants shall not be deemed to be Federal employees for any purposes including Chapter 171 of Title 28, United States Code (Federal Tort Claims Act) and Chapter 81 of Title 5, United States Code (OWCP), and UMRWA hereby willingly agree(s) to assume these responsibilities.

H. Further, UMRWA shall provide any necessary training to UMRWA's employees, volunteers, and program participants to ensure that such personnel are capable of performing tasks to be completed.

UMRWA shall also supervise and direct the work of its employees, volunteers, and participants performing under this Master Stewardship Agreement.

O. MEMBERS OF U.S. CONGRESS. Pursuant to 41 U.S.C. 22, no member of, or delegate to, Congress shall be admitted to any share or part of this Master Stewardship Agreement, or benefits that may arise therefrom, either directly or indirectly.

P. DRUG-FREE WORKPLACE.

I. 1.

UMRWA agree(s) that it will publish a drug-free workplace statement and provide a copy to each employee who will be engaged in the performance of any project/program that receives Federal funding. The statement must

a. Tell the employees that the unlawful manufacture, distribution, dispensing, possession, or use of a controlled substance is prohibited in its workplace;

b. Specify the actions UMRWA will take against employees for violating that prohibition; and

c. Let each employee know that, as a condition of employment under any award, the employee:

(1) Shall abide by the terms of the statement, and

(2) Shall notify you in writing if he or she is convicted for a violation of a criminal drug statute occurring in the workplace, and must do so no more than five calendar days after the conviction.

J. 2.

UMRWA agree(s) that it will establish an ongoing drug-free awareness program to inform employees about

a. The dangers of drug abuse in the workplace;

b. The established policy of maintaining a drug-free workplace;

c. Any available drug counseling, rehabilitation and employee assistance programs; and

d. The penalties that you may impose upon them for drug abuse violations occurring in the workplace.

3. Without the Program Manager's expressed written approval, the policy statement and program must be in place as soon as possible, no later than the 30 days after the effective date of this Master Stewardship, or the completion date of this Master Stewardship Agreement, whichever occurs first.

K. 4.

UMRWA agree(s) to immediately notify the Program Manager if an employee is convicted of a drug violation in the workplace. The notification must be in writing, identify the employee's position title, the SPA number of each project which the employee worked. The notification must be sent to the Program Manager within ten calendar days after UMRWA learn(s) of the conviction.

5. Within 30 calendar days of learning about an employee's conviction, UMRWA shall either:

   a. Take appropriate personnel action against the employee, up to and including termination, consistent with the requirements of the Rehabilitation Act of 1973 (29 USC 794), as amended, or

   b. Require the employee to participate satisfactorily in a drug abuse assistance or rehabilitation program approved for these purposes by a Federal, State or local health, law enforcement, or other appropriate agency.

Q. NONDISCRIMINATION. The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or a part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means for communication of program information (Braille, large print, audiotape, and so forth.) should contact USDA's TARGET Center at (202) 720-2600 (voice and TDD). To file a complaint of discrimination, write to USDA, Director, Office of Civil Rights, 1400 Independence Avenue, S.W., Washington, D.C. 20250-9410 or call (800) 795-3272 (voice) or (202) 720-6382 (TDD). USDA is an equal opportunity provider and employer.

R. TRIBAL EMPLOYMENT RIGHTS ORDINANCE (TERO). The Forest Service recognizes and honors the applicability of the Tribal laws and ordinances developed under the authority of the Indian Self-Determination and Educational Assistance Act of 1975 (PL 93-638).

L. ELIGIBLE WORKERS.

M. UMRWA shall ensure that all employees complete the I-9 form to certify that they are eligible for lawful employment under the Immigration and Nationality Act (8 USC 1324a).

S. UMRWA shall comply with regulations regarding certification and retention of the completed forms. These requirements also apply to any contract or supplemental agreement awarded under this Master Stewardship Agreement.

T. STANDARDS FOR FINANCIAL MANAGEMENT.

1. Financial Reporting

N.

UMRWA shall provide complete, accurate, and current financial disclosures of the project or program in accordance with any financial reporting requirements, as set forth in the financial provisions.

2. Accounting Records

O.

UMRWA shall continuously maintain and update records identifying the source and use of funds. The records shall contain information pertaining to the agreement, authorizations, obligations, unobligated balances, assets, outlays, and income.

3. Internal Control

P.

Q. UMRWA shall maintain effective control over and accountability for all Forest Service funds.

UMRWA shall keep effective internal controls to ensure that all United States Federal funds received are separately and properly allocated to the activities described in the agreement and used solely for authorized purposes.

4. Source Documentation

R.

UMRWA shall support all accounting records with source documentation. These documentations include, but are not limited to, cancelled checks, paid bills, payrolls, contract documents. These documents must be made available to the Forest Service upon request.

5. Advance Payments

When applicable, UMRWA shall establish and maintain specific procedures to minimize the time elapsing between the advance of Federal funds and their subsequent disbursement.

U. OVERPAYMENT. Any funds paid to in excess of the amount entitled under the terms and conditions of this agreement constitute a debt to the Federal Government. The following must also be considered as a debt or debts owed by the Cooperator to the Forest Service:

1. Any interest or other investment income earned on advances of agreement funds; or

2. Any royalties or other special classes of program income which, under the provisions of the agreement are required to be returned.

If this debt is not paid according to the terms of the bill for collection issued for the overpayment, the Forest Service may reduce the debt by:

1. Making an aministrative offset against other requests for reimbursement.

2. Withholding advance payments otherwise due to .

3. Taking other action permissed by statute (31 U.S.C. 3716 and 7 CFR, Part 3, Subpart B).

Except as otherwise provided by law, the Forest Service may charge interest on an overdue debt.

S. AGREEMENT CLOSEOUT.

V. UMRWA Within 90 days after expiration or notice of termination the parties shall close out the award/agreement.

Any unobligated balance of cash advanced to the Recipient/Cooperator must be immediately refunded to the Forest Service, including any interest earned in accordance with 7CFR3016.21/2CFR 215.22.

Within a maximum of 90 days following the date of expiration or termination of this grant, all financial performance and related reports required by the terms of the agreement must be submitted to the Forest Service by the Recipient/Cooperator.

If this agreement is closed out without audit, the Forest Service reserves the right to disallow and recover an appropriate amount after fully considering any recommended disallowances resulting from an audit which may be conducted later.

T. RETENTION AND ACCESS REQUIREMENTS FOR RECORDS.

U. UMRWA shall retain all records pertinent to this Master Stewardship Agreement for a period of no less than three years from the expiration or termination date. As used in this provision, records include books, documents, accounting procedures and practice, and other data, regardless of the type or format.

W. UMRWA shall provide access and the right to examine all records related to this Master Stewardship Agreement to the Forest Service Inspector General, or Comptroller General or their authorized representative. The rights of access in this section must not be limisted to the required retention periond but must last as long as records are kept.

If any litigation, claim, negotiation, audit, or other action involving the records has been started before the end of the 3-year period, the records must be kept until all issues are resolved, or until the end of the regular 3-year period, whichever is later.

Records for nonexpendable property acquired in whole or in part, with Federal funds shall be retained for 3 years after its final disposition.

X. FREEDOM OF INFORMATION ACT (FOIA). Public access to Master Stewardship Agreement records must not be limited, except when such records must be kept confidential and would have been exempted from disclosure pursuant to "Freedom of Information" regulations (5 U.S.C. 552).

Public access to culturally sensitive data and information of Federally-recognized Tribes may also be explicitly limited by P.L. 110-234, Title VIII Subtitle B §8106 (2008 Farm Bill).

Y. TEXT MESSAGING WHILE DRIVING. In accordance with Executive Order (EO) 13513, "Federal Leadership on Reducing Text Messaging While Driving," any and all text messaging by Federal employees is banned: a) while driving a Government owned vehicle (GOV) or driving a privately owned vehicle (POV) while on official Government business; or b) using any electronic equipment supplied by the Government when driving any vehicle at any time. All cooperators, their employees, volunteers, and contractors are encouraged to adopt and enforce policies that ban text messaging when driving company owned, leased or rented vehicles, POVs or GOVs when driving while on official Government business or when performing any work for or on behalf of the Government.

V. PUBLIC NOTICES. It is Forest Service's policy to inform the public as fully as possible of its programs and activities.

Z. UMRWA is/are encouraged to give public notice of the receipt of this award/Master Stewardship Agreement and, from time to time, to announce progress and accomplishments. Press releases or other public notices should include a statement substantially as follows:

" of the Forest Service, Department of Agriculture, ."

W.

X. UMRWA may call on Forest Service's Office of Communication for advice regarding public notices.

UMRWA is/are requested to provide copies of notices or announcements to the Forest Service Program Manager and to Forest Service's Office Communications as far in advance of release as possible.

AA. RIGHT TO TRANSFER EQUIPMENT AND SUPPLIES. Equipment approved for purchase under this Master Stewardship Agreement is available only for use as authorized. The Forest Service reserves the right to transfer title to the Federal government of any equipment with a current per-unit fair market value of $5,000 or more purchased with Forest Service funding. Upon expiration of this Master Stewardship Agreement, UMRWA shall forward an equipment inventory to the Forest Service, listing all equipment purchased with Forest Service funding throughout the life of the project. Disposition instructions must be issued by the Forest Service within 120 calendar days from termination date of this Master Stewardship Agreement.

BB. FUNDING EQUIPMENT AND SUPPLIES. Federal funding under this Master Stewardship Agreement are not available for reimbursement of UMRWA's purchase of equipment and supplies. Equipment is defined as having a fair market value of over $5,000 per unit and a useful life of over one year.

CC. PROPERTY IMPROVEMENTS. Improvements placed on National Forest System land at the direction or with approval of the Forest Service becomes property of the United States. These improvements are be subject to the same regulations and administration of the Forest Service as would other National Forest improvements of a similar nature. No part of this Master Stewardship Agreement entitles UMRWA to any interest in the improvements, other than the right to use and enjoy them under applicable Forest Service regulations.

DD. CONTRACT REQUIREMENTS. Any contract under this agreement must be awarded following UMRWA's established procedures, to ensure free and open competition, and avoid any conflict of interest (or appearance of a conflict). UMRWA shall maintain cost and price analysis documentation for potential Forest Service review. UMRWA is encouraged to utilize small businesses, minority-owned firms and women's business enterprises.

Y. GOVERNMENT-FURNISHED PROPERTY .

Z. UMRWA may only use Forest Service property furnished under this Master Stewardship Agreement for performing tasks assigned in this Master Stewardship Agreement.

EE. UMRWA shall not modify, cannibalize, or make alterations to Forest Service property. A separate document, Form AD-107, must be completed to document the loan of Forest Service property. The Forest Service shall retain title to all Forest Service-furnished property. Title to Forest Service property must not be affected by its incorporation into or attachment to any property not owned by the Forest Service, nor must the property become a fixture or lose its identity as personal property by being attached to any real property.

Partner Liability for Government Property.

1. Unless otherwise provided for in the Master Stewardship Agreement, UMRWA shall not be liable for loss, damage, destruction, or theft to the Government property furnished or acquired under this contract, except when any one of the following applies—

a. The risk is covered by insurance or UMRWA is/are otherwise reimbursed (to the extent of such insurance or reimbursement).

AA. b. The loss, damage, destruction, or theft is the result of willful misconduct or lack of good faith on the part of UMRWA's managerial personnel.

UMRWA's managerial personnel, in this clause, means UMRWA's directors, officers, managers, superintendents, or equivalent representatives who have supervision or direction of all or substantially all of UMRWA's business; all or substantially all of UMRWA's operation at any one plant or separate location; or a separate and complete major industrial operation.

BB. 2.

CC. UMRWA shall take all reasonable actions necessary to protect the Government property from further loss, damage, destruction, or theft.

UMRWA shall separate the damaged and undamaged Government property, place all the affected Government property in the best possible order, and take such other action as the Property Administrator directs.

DD. 3.

UMRWA shall do nothing to prejudice the Government's rights to recover against third parties for any loss, damage, destruction, or theft of Government property.

4. Upon the request of the G&A Specialist, UMRWA shall, at the Government's expense, furnish to the Government all reasonable assistance and cooperation, including the prosecution of suit and the execution of Master Stewardship Agreements of assignment in favor of the Government in obtaining recovery.

FF. PURCHASE OF ASSETS. Any assets (such as equipment, property, or improvements) purchased by the Forest Service with Cooperator contributions must become the property of the Forest Service.

GG. OFFSETS, CLAIMS, AND RIGHTS. Any and all activities entered into or approved by this Master Stewardship Agreement will create and support afforestation/ reforestation efforts within the National Forest System without generating carbon credits. The Forest Service does not make claims of permanence or any guarantees of carbon sequestration on lands reforested or afforested through UMRWA's assistance. The Forest Service will provide for long-term management of reforested and afforested lands, according to applicable Federal statute regulations and forest plans.

EE. FOREST SERVICE ACKNOWLEDGED IN PUBLICATION AND AUDIOVISUALS.

HH. UMRWA shall acknowledge Forest Service support in any publications, audiovisuals, and electronic media developed as a result of this Master Stewardship Agreement.

FF. NONDISCRIMINATION STATEMENT – PRINTED, ELECTRONIC, OR AUDIOVISUAL MATERIAL.

II. UMRWA shall include the following statement, in full, in any printed, audiovisual material, or electronic media for public distribution developed or printed with any Federal funding.

"In accordance with Federal law and U.S. Department of Agriculture policy, this institution is prohibited from discriminating on the basis of race, color, national origin, sex, age, or disability. (Not all prohibited bases apply to all programs.)

To file a complaint alleging discrimination, write USDA, Director, Office of Civil Rights, 1400 Independence Avenue, SW, Washington DC 20250-9410 or call toll free voice (866) 632-9992, TDD (800)877-8339, or voice relay (866) 377-8642. USDA is an equal opportunity provider and employer."

If the material is too small to permit the full statement to be included, the material shall, at minimum, include the following statement, in print size no smaller than the text:

"This institution is an equal opportunity provider."

JJ. REMEDIES FOR COMPLIANCE RELATED ISSUES. If UMRWA materially fail(s) to comply with any term of the Master Stewardship Agreement, whether stated in a Federal statute or regulation, an assurance, the Master Stewardship Agreement, the Forest Service may take one or more of the following actions:

1. Temporarily withhold cash payments pending correction of the deficiency by UMRWA or more severe enforcement action by the Forest Service;

2. Disallow (that is, deny both use of funds and matching credit for) all or part of the cost of the activity or action not in compliance;

3. Wholly or partly suspend or terminate the current Master Stewardship Agreement for UMRWA's program;

4. Withhold further awards for the program, or

5. Take other remedies that may be legally available, including debarment procedures under 2 CFR part 417.

KK. TERMINATION BY MUTUAL AGREEMENT. This Master Stewardship Agreement may be terminated, in whole or part, as follows:

- When the Forest Service and UMRWA agree upon the termination conditions, including the effective date and, in the case of partial termination, the portion to be terminated.

- By 30 days written notification by UMRWA to the Forest Service setting forth the reasons for termination, effective date, and in the case of partial termination, the portion to be terminated. If the Forest Service decides that the remaining portion of the Master Stewardship Agreement must not accomplish the purpose for which the Master Stewardship Agreement was made, the Forest Service may terminate the award upon 30 days written notice in its entirety.

Upon termination of an Master Stewardship Agreement, UMRWA shall not incur any new obligations for the terminated portion of the Master Stewardship Agreement after the effective date, and shall cancel as many outstanding obligations as possible. The Forest Service shall allow full credit to UMRWA for the Forest Service share of obligations that cannot be canceled and were properly incurred by UMRWA up to the effective date of the termination. Excess funds shall be refunded within 60 days after the effective date of termination.

LL. ALTERNATE DISPUTE RESOLUTION – PARTNERSHIP AGREEMENT. In the event of any issue of controversy under this Master Stewardship Agreement, the parties may

pursue Alternate Dispute Resolution procedures to voluntarily resolve those issues. These procedures may include, but are not limited to conciliation, facilitation, mediation, and fact finding.

GG. DEBARMENT AND SUSPENSION.

MM. UMRWA shall immediately inform the Forest Service if they or any of their principals are presently excluded, debarred, or suspended from entering into covered transactions with the Federal government according to the terms of 2 CFR Part 180. Additionally, should UMRWA or any of their principals receive a transmittal letter or other official Federal notice of debarment or suspension, then they shall notify the Forest Service without undue delay. This applies whether the exclusion, debarment, or suspension is voluntary or involuntary.

HH. COPYRIGHTING.

NN. UMRWA is/are granted sole and exclusive right to copyright any publications developed as a result of this Master Stewardship Agreement. This includes the right to publish and vend throughout the world in any language and in all media and forms, in whole or in part, for the full term of copyright and all renewals thereof in accordance with this Master Stewardship Agreement.

No original text or graphics produced and submitted by the Forest Service must be copyrighted. The Forest Service reserves a royalty-free, nonexclusive, and irrevocable right to reproduce, publish, or otherwise use, and to authorize others to use the work for Federal government purposes. This right must be transferred to any subcontracts.

This provision includes:

1. The copyright in any work developed by UMRWA under this Master Stewardship Agreement.
2. Any right of copyright to which UMRWA purchase(s) ownership with any Federal contributions.

II. PUBLICATION SALE.

OO. UMRWA may sell any publication developed as a result of this Master Stewardship Agreement. The publication may be sold at fair market value, which is initially defined in this Master Stewardship Agreement to cover the costs of development, production, marketing, and distribution. After the costs of development and production have been recovered, fair market value is defined in this Master Stewardship Agreement to cover the costs of marketing, printing, and distribution only. Fair market value must exclude any in-kind or Federal government contributions from the total costs of the project.

JJ. When UMRWA is seeking bids for product removal and/or stewardship items, both parties agree that the product rates and stewardship item costs used at the approval of the SPA may be based upon tentative value and planned costs. Both parties agree to establish actual rates for both product and stewardship items prior to commencement of operations.

PP. UMRWA will notify the Forest Service in writing days in advance to request appraisal prior to seeking formal bids. Both parties agree to modify the SPA with these

actual values and costs. Modified product values shall be greater than or equal to the reappraised rates and value.

Post commencement of work, if there is a change from the established stewardship item rates, the SPA will be modified to increase or decrease the amount of services provided by UMRWA, accordingly. Post commencement of work product value rate redeterminations are subject to authorizing regulation.

QQ. MODIFICATION. Modifications within the scope of this Master Stewardship Agreement must be made by mutual consent of the parties, by the issuance of a written modification signed and dated by all properly authorized, signatory officials, prior to any changes being performed. Requests for modification should be made in writing, at least days prior to implementation of the requested change. The Forest Service is not obligated to fund any changes not properly approved in advance.

RR. COMMENCEMENT/EXPIRATION DATE. This Master Stewardship Agreement is executed as of the date of the last signature and is effective through 12/31/2026 at which time it will expire. The expiration date is the final date for completion of all work activities under this agreement.

SS. AUTHORIZED REPRESENTATIVES. By signature below, each party certifies that the individuals listed in this document as representatives of the individual parties are authorized to act in their respective areas for matters related to this Master Stewardship Agreement. In witness whereof, the parties have executed this Master Stewardship Agreement as of the last date written below.

_____

, Date

_____

, Date

U.S. Forest Service,

The authority and format of this Master Stewardship Agreement have been reviewed and approved for signature.

_____

Date

U.S. Forest Service Grants Management Specialist

Burden Statement

According to the Paperwork Reduction Act of 1995, an agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a valid OMB control number. The valid OMB control number for this information collection is 0596-0217. The time required to complete this information collection is estimated to average 4 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.

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Agency Permit Requirements (List is NOT inclusive. It is the applicant's responsibility to comply with all applicable permits.)		
Permitting Agency	**Type of Requirement**	**Explanation**
Local		
City / County Planning Department	Planning Permits (use, subdivisions, lot line adjustments, etc.) Discretionary permits subject to CEQA Ministerial Permits Remediation/Reclamation Plan	**Not Applicable.** This project does not involve any subdivisions or lot line adjustments and it does not require any planning-related permits from the City or County.
City / County Building	Building Permits	**Not Applicable.** This project does not involve building any structures and therefore it does not require any building permits from the City or County.
City / County Public Works	Grading Permits	**Not Applicable.** This project does not involve building any structures or grading and therefore it does not require any grading permits from the City or County.
City / County Environmental Health Department	Hazardous materials, Septic systems, Water quality	**Not Applicable.** This project is not located on lands under the jurisdiction of City or County and no septic systems are proposed. Therefore no water quality or hazardous materials permits are required from City or County officials.
Flood Control Districts	Floodway and Hydrological (stream permits, easement, etc.)	**Not Applicable.** This project is not located on lands under the jurisdiction of City or County, nor is it located in a floodway or stream.
Local Air Districts	Burn Permits	**Not Applicable.** Prescribed burning is not proposed as part of this project.

Agency Permit Requirements (List is NOT inclusive. It is the applicant's responsibility to comply with all applicable permits.)		
Permitting Agency	**Type of Requirement**	**Explanation**
Local Resource Conservation District	Voluntary Consultation	**Not Applicable.** The Central Sierra Resource Conservation Development Council is a member organization of the ACCG. Representatives were consulted as part of this project.
State		
CA Department of Fish and Game	Streambed Alteration Agreement (Sec. 1600) Incidental Take Permit (State listed threatened and endangered species – CESA)	**Not Applicable.** The Fish and Game Code, Section 1600 et seq., Streambed Alteration Agreement does not apply because the Forest Service does not meet the definition of "Entity".
Caltrans	Encroachment Permit	**Not Applicable.** This project will not encroach on any areas administered by CalTrans.
CA Regional Water Quality Control Board	401 Water Quality Certification or Waste Discharge Requirement (Check with Army Corps of Engineers first)	**Not Applicable.** The Stanislaus National Forest has a Clean Water Act, Section 401, Water Quality Certification NPDES "Waiver Permit" for roads used for forestry, farming and silvicultural activities on National Forest System lands. Detailed Best Management Practices will be implemented in compliance with this permit and will be monitored annually and reported by the Stanislaus National Forest.
State Water Resources Control Board	Water Rights Permit General Industrial Storm Water Permit	**Not Applicable.** No water rights are being requested or impacted by the proposed project.
State Lands Commission	Permit required if using State owned property	**Not Applicable.** This project is not proposed on any State owned land.

Agency Permit Requirements (List is NOT inclusive. It is the applicant's responsibility to comply with all applicable permits.)		
Permitting Agency	**Type of Requirement**	**Explanation**
State Office of Historic Preservation	Cultural Resources- Submission of Findings to State Historic Preservation Officer (National Historic Preservation Act. Section 106)	Section 106 of National Historic Preservation Act was completed as part of Hemlock EA NEPA process. All consultation documentation is included in NEPA Administrative Record which is on-file at the Calaveras Ranger District and is available on a need-to-know basis only. This information is Exempt from the Freedom of Information Act.
Federal		
U.S. Fish and Wildlife Service (USFWS)	Incidental take - Endangered Species Act, Section 7 consultation if federal nexus (see ACOE), or Section 10 Permit	Endangered Species Act, Section 7 Consultation, Fish and Wildlife Coordination Act was completed as part of Hemlock EA NEPA Process. The full documentation is included in the NEPA Administrative Record for the Hemlock EA.
Army Corps of Engineers (ACOE)	Wetlands & Water bodies Clean Water Act, Section 404 Permit, will consult w/ USFWS & NMFS Section 7 Rivers and Harbors Act, Section 10 Permit	**Not Applicable.** Nationwide Permit Section 404 under Clean Water Act does not apply. The Forest Service has an NPDES Waiver Permit for roads used for forestry for farming activities and silvicultural activities. Detailed Best Management Practices are implemented and monitored annually and reported through the USFS in compliance with the Waiver Permit.
U.S. National Resources Conservation Service	Voluntary Consultation (assistance with agriculture owner permitting)	**Not Applicable.** The USDA Natural Resource Conservation Service is a member organization of the ACCG. Representatives were consulted as part of this project.

E. Community Support

Two letters were received showing whole-hearted support for the Pumpkin Hollow Restoration Project. One is from the Stanislaus National Forest and the other from the Amador-Calaveras Consensus Group (ACCG) which represents over 30 separate organizations. These letters are on official letterhead and are listed below:

- Letter of Support from Jeanne Higgins, Forest Supervisor, Stanislaus National Forest to Jim Branham dated February 24, 2016 (entitled LOS1).

- Letter of Support from the Amador-Calaveras Consensus Group (c/o Kimberly Grissom, Administrator) to Rob Alcott, Executive Officer of the Upper Mokelumne River Watershed Authority dated February 18, 2016 (entitled LOS2).

USDA United States Department of Agriculture
Forest Service
Pacific Southwest Region
Stanislaus National Forest
19777 Greenley Road
Sonora, CA 95370
209-532-3671
TDD: 209-533-0765
FAX: 209-533-1890

File Code: 1500
Date: February 24, 2016

Jim Branham
Executive Officer
Sierra Nevada Conservancy
11521 Blocker Drive, Suite 205
Auburn, CA 95603

Dear Mr. Branham:
On behalf of the Stanislaus National Forest I wholeheartedly support the Upper Mokelumne River Watershed Authority's (UMRWA) application for a Proposition 1 Watershed Improvement Program grant to implement the Pumpkin Hollow Restoration Project.

In 2012, the Stanislaus and Eldorado National Forests' Cornerstone Project was awarded federal recognition as a Collaborative Forest Landscape Restoration (CFLR) Project. The Cornerstone project is designed to increase the pace and scale of much needed watershed restoration activities across over 300,000 acres of National Forest land on the two forests, while improving the economic and social environments of the local area.

The Pumpkin Hollow Restoration Project represents a suite of activities that will implement the larger Cornerstone CFLR Project. The primary purpose of the Pumpkin Hollow Restoration Project is to improve ecological resilience of watersheds within the project landscape. This will be accomplished through forest, meadow and aspen restoration and fuels management treatments designed to increase resistance to catastrophic wildfire. Federal CFLR funds available for Pumpkin Hollow restoration activities will be used to match and leverage grant funds that UMRWA would receive through your Proposition 1 grant program, if awarded.

Restoration projects such as this one will occur on public lands managed by the STF under the Stanislaus National Forest Plan Direction 2010 which presents the current Forest Plan management direction, based on the original Forest Plan (1991) as modified by several amendments to include the 2004 Sierra Nevada Forest Plan Amendment (SNFPA) Record of Decision (ROD). These plans direct long-term management of public lands on the Stanislaus National Forest in perpetuity.

This project is consistent with the applicable Forest Plan Direction. Past experience with this type of restoration project has shown an improvement or restoration of forest, meadow and aspen restoration and fuels management stands for a minimum of 10 years if

not longer. It is the STF's desire to manage and maintain the project area as forest, meadow and aspen restoration and fuels management stands. Sierra Nevada Conservancy would have the authorization to monitor the Reed Creek project site for twenty-five years or more.

We support this request for grant funds from the SNC Proposition 1 Watershed Improvement Grant Program to help UMRWA assist the Stanislaus National Forest in achieving the watershed restoration goals of the Pumpkin Hollow Restoration project. On behalf of the Stanislaus National Forest, thank you for considering this proposal.

Sincerely,

JEANNE M. HIGGINS
Forest Supervisor

cc: Teresa McClung; Karen Quidachay

Amador Calaveras Consensus Group

c/o Blue Mountain GIS PO Box 216 Mokelumne Hill, CA 29245
209-754-5743

February 18, 2016

Rob Alcott, Director
Upper Mokelumne River Watershed Authority
Attn: Pumpkin Hollow Restoration Project
5883 East Camanche Parkway
Valley Springs, CA 95252

CC: Teresa McClung: tmmclung@fs.fed.us
Kendal Young: kyoung@fs.fed.us

Re: Support for of Pumpkin Hollow Restoration Project -DRAFT

The Amador-Calaveras Consensus Group (ACCG) provides this collective letter of support for the 'Pumpkin Hollow Restoration Project'. The ACCG is a community-based coalition of public agencies, nonprofit organizations, businesses and individuals that collaborate to create fire-safe communities, healthy forests and sustainable economies in the Mokelumne and Calaveras River watersheds. There are representatives from a broad diversity of interests -- from the timber industry to local citizens to environmental advocacy organizations. The Group's Cornerstone Project was selected and funded under the Collaborative Forest Lands Restoration (CFLR) Act. The Pumpkin Hollow Restoration Project is intended to increase forest resiliency across 972 acres within the Cornerstone area of the Mokelumne watershed.

The ACCG recognizes that the Pumpkin Hollow Restoration project would improve forest health, an important component of any project that ACCG supports. The project emphasizes a goal of increasing the ecological resiliency of the area, focusing on reducing threats from catastrophic wildfire. Given these factors, ACCG is supportive of finding critical funding for the implementation of this project. Our collaborative group looks forward to partnering with the Calaveras Ranger District to implement the Pumpkin Hollow Restoration project and other projects within the Cornerstone area.

/s/Kimberly Grissom
Administrator, Amador Calaveras Consensus Group

for
Amador Calaveras Consensus Group
Approved: 17 February 2016

F. TRIBAL CONSULTATION NARRATIVE

The Stanislaus National Forest Archaeologist informed five federal and state recognized tribes regarding the scope of this project. The Miwok and Washoe still actively use Stanislaus National Forest for gathering traditional food and medicine plants, hunting, and conducting ceremonies. In addition to public scoping efforts made to the general public, the scoping package for this project was mailed to the Calaveras Band of Miwok, Washoe Tribe of Nevada and California, California Valley Miwok Tribe, Chicken Ranch Tribal Council, and the Tuolumne Band of Me-Wuk Indians with cover letters dated June 16, 2015. This project was presented at the Annual Tribal Consultations with Tuolumne Me-Wuk Tribe and Stanislaus National Forest on May 2, 2013, on May 9, 2014 and also on June 1, 2015. Presentations were made to describe and solicit information regarding the actions being considered at each of these meetings and Forest Service contact information was provided. Copies of a public scoping package were provided to all tribal participants at the 2015 meeting. Representatives from Tuolumne Band of Me-Wuk Indian cultural resources group attended a site visit on July 29, 2015 to discuss the Hemlock Landscape Restoration and other projects from the June 1, 2015 meeting. Representatives from the Washoe Tribe of Nevada and California attended a site visit on August 10, 2015. Consultation site visits included trips to campgrounds, meadow habitats, and significant viewsheds within the proposed area. Heritage site preservation and traditional gathering areas were discussed, especially in regards to proposed recreation site enhancements, trail construction, and interpretive exhibits. No written comments have been received but project discussions during meetings, site visits, and phone calls have been documented and incorporated into protective measures within the scope of this project.

The following individuals were contacted though the June 9, 2015 letter or by telephone. Other tribal members were also provided with this information in more casual discussions, but their contact information is not included below.

Silvia Burley
California Valley Miwok Tribe
10601 N. Escondido Pl.
Stockton, CA 95212
(No response to letter)

Vicki Stone
Cultural Coordinator
Tuolumne Band of Me-Wuk Indians
P.O. Box 699, Tuolumne, CA 95379
209-928-5311
vstone@mewuk.com
(Site Visit 7/29/2015)

Lloyd Mathiesen
Chicken Ranch Tribal Council
P.O. Box 1159
Jamestown, CA 95327
(Letter sent by SO, no response)

Darrel Cruz
Tribal Historic Preservation Office
Washoe Tribe of Nevada and California
919 Highway 395 South
Gardnerville, NV. 89410
775-265-8600 Ext. 10714
darrel.cruz@washoetribe.us<mailto:darrel.cruz@washoetribe.us
(Site visit 8/10/2015)

Charles Wilson
Calaveras Band of Miwuk Indians
546 Bald Mountain Road
West Point CA 95255
209-419-0017
(In-person discussion with maps and plans since no tribal members were available to attend site visits)

United States Department of Agriculture

Hemlock Landscape Restoration (45690)

Environmental Assessment

Forest Service

Pacific Southwest Region

Stanislaus National Forest

September 2015

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To file a program discrimination complaint, complete the USDA Program Discrimination Complaint Form, AD-3027, found online at http://www.ascr.usda.gov/complaint_filing_cust.html and at any USDA office or write a letter addressed to USDA and provide in the letter all of the information requested in the form. To request a copy of the complaint form, call (866) 632-9992. Submit your completed form or letter to USDA by (1) mail: U.S. Department of Agriculture, Office of the Assistant Secretary for Civil Rights, 1400 Independence Avenue SW, Washington, D.C. 20250-9410; (2) fax: (202) 690-7442; or, (3) email: program.intake@usda.gov.

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Hemlock Landscape Restoration (45690)
Environmental Assessment

Stanislaus National Forest
Calaveras Ranger District
Calaveras County, California

1. Introduction

The Forest Service prepared this Environmental Assessment (EA) in compliance with the National Environmental Policy Act (NEPA) and other relevant Federal and State laws and regulations. This EA discloses the direct, indirect, and cumulative environmental effects that would result from the action alternatives and the No Action alternative. Additional documentation, including more detailed analyses of project-area resources, may be found in the project planning record located at the Calaveras Ranger District Office in Hathaway Pines, California.

1.01 BACKGROUND

Ecological Restoration, Regional Direction

The mission of the Forest Service is to sustain the health, diversity and productivity of the Nation's forests and grasslands to meet the needs of present and future generations. The Forest Service's goal for Region 5 is to retain and reestablish ecological resilience of National Forest System (NFS) lands to achieve sustainable ecosystems that provide a broad range of services to humans and other organisms. Ecologically healthy and resilient landscapes would have greater capacity to survive and adapt following natural disturbances and large scale threats to sustainability, especially under changing and uncertain future environmental conditions such as those driven by climate change and increasing human use.

At least three environmental stressors that occur in the Sierra Nevada help to define our restoration needs: 1) climate change and shifting hydrologic patterns; 2) increasingly dense and unhealthy forests; and, 3) California's human population pressure on public lands. These stressors (or drivers of change) are resulting in a dramatic increase in disturbance events (e.g., uncharacteristic, large-scale wildfires, floods, insect and disease outbreaks, and the spread of invasive species), a reduction of ecosystem services (e.g. wood, water, scenic landscapes, wildlife habitat, biodiversity, and carbon sequestration and storage), and a growing need to revitalize rural economies in California.

Collaborative Forest Landscape Restoration Program

Congress established the Collaborative Forest Landscape Restoration Program (CFLRP) with Title IV of the Omnibus Public Land Management Act of 2009. The purpose of the CFLRP is to encourage the collaborative, science-based ecosystem restoration of priority forest landscapes. The Amador-Calaveras Consensus Group (ACCG) Cornerstone program is a CFLPR project.

ACCG is a community based local collaborative that works to create healthy forests and watersheds, fire-safe communities, and sustainable local economies. ACCG fosters partnerships among private, nonprofit, state, and federal entities with a common interest in health and well-being of the landscape and communities in the Mokelumne and Calaveras watersheds. The group is advancing an all-lands strategy to create a heightened degree of environmental stewardship, local jobs, greater local economic stability, and healthy forests and communities. ACCG's principles reflect the group's emphasis on its triple bottom line for balancing environmental, social, and economic goals. The Hemlock Landscape Restoration (Hemlock) project is a component of the Cornerstone Program, and was developed in collaboration with the ACCG.

Location

The Hemlock project is located on the Calaveras Ranger District of the Stanislaus National Forest in Calaveras County, California (Figure 1.01-1). The project area is northeast of Arnold and southwest of the Village of Bear Valley, to the north of the North Fork Stanislaus River. The project area includes portions of Township 6N, Range 16E, Sections 1-5, 8-12, Township 6N, Range 17E, Sections 5 and 6, Township 7N, Range 16E, Sections 12 – 14, 23 – 27, 33 – 36, and Township 7, Range 17E, Sections 15 – 22, 26 – 35 and is contained within the Tamarack and Calaveras Dome USGS 7.5 minute quadrangle maps. Elevations within the 14,075 acre project area range between 5,400 feet and 7,920 feet.

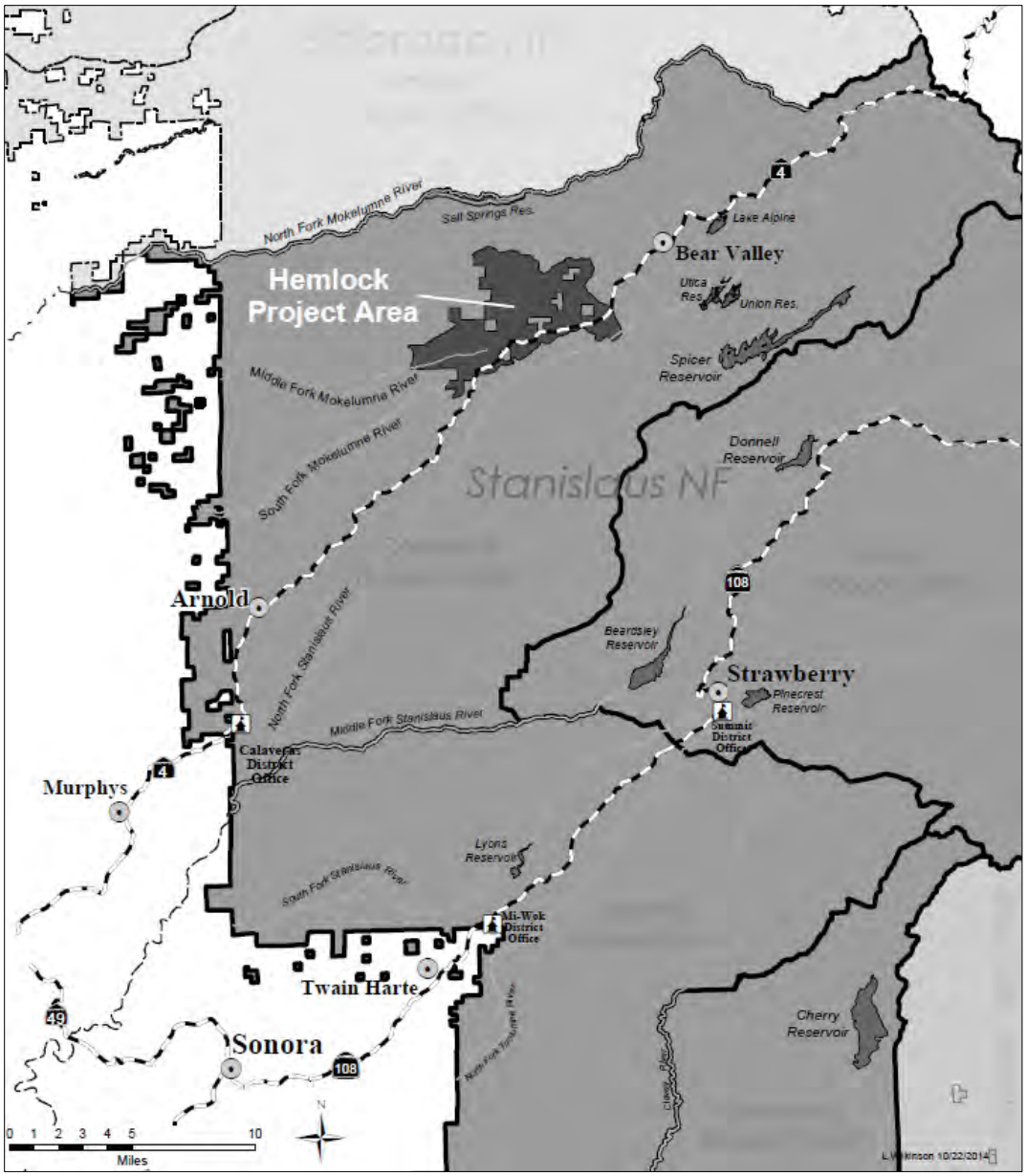

Figure 1.01-1 Vicinity Map

Forest Plan Direction

The Stanislaus National Forest "Forest Plan Direction" (USDA 2010) presents the current Forest Plan management direction, based on the original Forest Plan as amended. The Forest Plan Direction includes forest wide standards and guidelines (p. 33-64) and applicable management area direction for General Forest (p. 161-164) and Wildlife (p. 123-127), Developed Recreation or Administration Site (p. 165-182), Near Natural (p. 119-122), and Scenic Corridor (Retention and Partial Retention) (p. 155-160).

Sierra Nevada Framework Land Allocations as defined in the Forest Plan occurring in the project area include: General Forest, Old Forest Emphasis Areas, California Spotted Owl Protected Activity Centers (PAC), Northern Goshawk PAC, California Spotted Owl Home Range Core Areas (HRCA), Wildland Urban Intermix (WUI): Defense and Threat Zones, and Riparian Conservation Areas (RCA). The Forest Plan Direction includes desired conditions, management intents, and management objectives for each land allocation (p. 183-196).

1.02 Purpose and Need For Action

Existing Conditions

Nearly a century of fire exclusion policies and land management practices in the project area resulted in a trend toward homogeneous and overstocked forest stands. These altered forest conditions led to an increased susceptibility of forest stands to insect outbreaks, disease infestation, drought related mortality, and a departure in severity, intensity, and frequency for wildfires compared to historic conditions. In some areas of the project area, there is a cumulative buildup of dead and down surface fuels, along with dense understory ladder fuels. In addition, overstory tree density and canopy closure increases the risk of stand replacing, high intensity fires. Areas along ridges and around subdivisions, where shaded fuel-breaks are needed for safe fire suppression, have high densities of brush and ladder fuels that would not deter fire behavior.

In addition to non-resilient forest conditions, other forest uses and values have been affected. For example, areas around archaeological sites are congested with dead trees, dense brush, and thick duff. Because of these conditions, many heritage sites can no longer be seen in their original context. Plants that were traditionally gathered are less available in these densely vegetated areas.

Wildlife PACs and HRCAs have areas of excessive surface and ladder fuels that increase the risk of habitat loss through catastrophic wildfire. Tenuous connectivity between suitable mature forest habitats (late seral, closed canopy) reduces the viability and resiliency of populations of mature forest associated species. Likewise, streams, riparian areas, meadows, seeps, springs and fens (special aquatic features (SAF)), and aspen stands in the project area have been degraded by a number of factors, including conifer encroachment, channel incision, disturbance related to livestock grazing, recreational activities, and motorized vehicle use. Several culverts at road/stream crossings are restricting upstream/downstream movement of aquatic organisms.

Soil conditions in the project area have been impacted by management activities and forest use. In many of the plantations, soil cover and surface organic matter are reduced, leading to high erosion hazard, gully formation, soil heating, and reduced vegetation productivity. User created OHV trails contribute to erosion and sedimentation. Illegal OHV use is occurring on some roadways because of a disconnected trail system. Likewise, motorized use in many of the popular dispersed camp and recreation sites has led to soil compaction, erosion, and other impacts to sensitive riparian areas, SAF, lava caps, and heritage resource sites.

Numerous roads within the project area are in need of maintenance or reconstruction. Some routes are contributing fine sediment and runoff to stream networks. Official designations of motorized routes are not consistent with long-term management objectives for the road system. In addition, along State

Highway 4, a designated National Scenic Byway (Ebbetts Pass), panoramic vistas and views of interesting geological features and large trees are blocked by dense conifers, reducing the visual quality.

Greater detail on existing and desired resource conditions, and the need for change was presented in the Project Scoping document, and is available in the Project Record.

Project Objectives

The purpose of the Hemlock project is to improve the ecological resilience of forested communities across the project landscape. The Hemlock project focuses on reestablishing forest species composition, structure, and pattern on the landscape, as well as ecological processes (e.g. hydrologic function, fire regime) necessary for the long-term sustainability, resilience, and health of terrestrial and aquatic ecosystems. An ecologically sustainable and resilient landscape would have a greater capacity to adapt and thrive in the face of natural disturbances and large scale threats, such as; fire, drought, and insect and disease infestations which may be exacerbated by current and future changes in climate.

As directed by the management goals and strategies, desired conditions, management intents, and management objectives outlined in the Stanislaus National Forest Land and Resource Management Plan and the 2004 Sierra Nevada Forest Plan Amendment (USDA 2004), the objectives for the Hemlock project are as follows:

- Increase tree, stand, and landscape resiliency and sustainability by producing different stand structures and densities across the landscape. Enhance the general health of forested stands by reducing susceptibility to insect, diseases, and drought-related mortality by improving and promoting stand and individual tree growth and vigor.
- Maintain and enhance the extent and connectivity of aspen stands by reducing encroaching conifers.
- Improve and maintain soil productivity, limit gully erosion, and rebuild surface organic layers where necessary.
- Enhance and maintain the visual character of the Ebbetts Pass Scenic Corridor.
- Reduce future fire intensity and severity to federal land and adjacent private land by reducing surface fuels, increasing the height to canopy, decreasing crown density, and retaining large fire-resistant tree species.
- Maintain and enhance important wildlife habitat, mature forest ecosystem values, and connectivity of mature forest stands (e.g., late seral with closed canopies, California Wildlife Habitat Relationship (CWHR) size classes of 4-6, and density classes of M and D).
- Achieve an environmental context of ethno-botanical diversity similar to indigenous stewardship conditions on and around archaeological sites by managing vegetation and woody debris, and reducing the risk of fire damage.
- Improve aquatic organism passage at road-stream crossings by replacing or removing culverts that do not provide sufficient passage.
- Maintain or enhance the hydrologic, geomorphic, and biological characteristics of special aquatic features (springs, seeps, meadows, and fens). Identify and implement restoration actions to maintain, restore or enhance water quality and habitat for riparian and aquatic species.
- Remove user-created trails and rehabilitate areas that suffered resource damage associated with these trails.
- Improve resource conditions at dispersed recreation sites by stabilizing areas of erosion, restricting vehicle access to streams and other sensitive areas, and managing foot access to streams.
- Improve watershed condition by reducing sediment generated by the road and trail system through improvement of road and trail drainage features.
- Maintain the road system in a manner that allows sustainable public and administrative access while limiting adverse resource effects.

1.03 PROPOSED ACTION

The Hemlock project would implement forest restoration treatments on 9,756 acres within the 14,118 acre project planning area (Figure 1.01-1).

All proposed actions are designed consistent with the applicable Forest Plan Direction. The actions respond to the goals and objectives for Air Quality, Heritage Resources, Diversity, Fish and Wildlife, Forest Pests, Riparian, Timber, Transportation, and Water (USDA 2010, p. 5-9) and help move the project area towards desired conditions for Protected Activity Centers (p. 183-186), Home Range Core Areas (p. 188-189), Wildland Urban Intermix (p. 189-190), Old Forest Emphasis Area (p. 190), General Forest (p. 191) and Riparian Conservation Areas (p. 191-195).

Alternative 1 (Proposed Action) is explained in detail in Chapter 2. In summary, the proposed action includes the following groups of treatments and features:

1. Forest Restoration

- Mechanical ground based thinning of 3,920 acres of merchantable timber in forest, riparian, aspen, meadow, and wildlife habitat areas.
  - Variable density thinning and gaps dependent on topographic position.
  - Replanting gaps in mixed-conifer stands on up to 202 acres.
- Thinning of 28.5 acres in 4 plantations isolated from other natural stand units.
- Mastication and/or biomass of 800 acres of plantation.
  - Treatments of 302 acres focused on increasing ground cover, retaining brush, or repairing gully erosion in plantations.
- Conifer removal on 234 acres around meadows and aspen stands.

2. Scenic Corridor

- Thinning of 421 acres of forest within the Highway 4, Ebbetts Pass National Scenic Byway corridor.

3. Fuels Reduction

- Roadside fuelbreaks along 7.1 miles (74.1 acres) of road.
- Shaded fuel breaks on 557 acres within the WUI and shaded fuel breaks on 336 acres outside of the WUI.
- Prescribed fire on 4,286 acres. Pile and burn excess slash from timber harvest operations.
- Thinning of 93.1 acres of trees less than 10” dbh (hand piled and burned, mechanically masticated, or removed as biomass).
- Hand thinning with hand piling and burning of 717 acres of trees less than 10” dbh.
- Hand thinning with hand piling and burning of 1,497 acres of trees less than 6” dbh.

4. Mature Forest Wildlife Habitat Restoration

- Mechanical thinning of 2,344 acres in HRCAs
- Fuel reduction treatments of 2,765 acres in HRCAs
- Hand thinning and prescribed fire on 1,656 acres in California spotted owl PAC
- Hand thinning and prescribed fire on 172 acres in northern goshawk PAC

5. Heritage Resources

- Removal of encroaching conifers around heritage sites.
- Pruning of oaks and thinning of vegetation adjacent to traditional plant gathering sites.
- Felling of trees in strategically located places to stabilize or protect heritage sites and reduce site erosion.

- Posting of educational, interpretive, or regulatory signs within the vicinity of some heritage resources.

6. Aquatic Organism Passage Restoration

- Replacement or removal of 8 culverts at the stream / road crossings.

7. Streams, Riparian Areas, and Special Aquatic Features Restoration

- Removal of 234 acres of encroaching conifer at meadows and 35 aspen sites (acres and methods described in Forest Restoration section).
  - Monitoring of treated aspen stands to determine the need for additional management.
- Treatment of 16 locations with soil instability, eroding head-cuts, streambanks, and/or incised channels.
  - Monitoring of treatment locations to determine the need for additional management.
- Armoring of culvert outlets in Big Meadow.
- Barrier placed around 2 special aquatic features and one campsite.
- Monitoring up to 47 Special Aquatic Features
  - If monitoring indicates that desired conditions are not being achieved, barriers or troughs would be installed.
  - If monitoring indicates that desired conditions are being met, barriers or troughs would be removed.
- Installation of 4 rangeland water developments (troughs).

8. Recreation

- Improved delineation of 21 dispersed campsites using rocks, logs, or other materials.
- Improvement of Horse Gulch dispersed campsite.
  - Amend the Forest Plan to allocate this site to the developed recreation site management area.
  - Relocate campsite footprint to accommodate up to ten campsites and a vault toilet.
  - Delineate motorized use area and parking area by grading and hardening with gravel, and using rocks or other materials to designate parking areas.
  - An exterior fence would delineate the campground area. Additional exclosures may be installed within the fence line if sensitive resources become impacted by human activities.
  - Fire rings and picnic tables would be constructed.
  - A motorized route would be added to the National Forest Transportation System (NFTS), with a cattle guard installed at the campsite entrance along Road 07N09.
  - An OHV loading ramp would be constructed.
- Rehabilitate three dispersed camping sites.
- Add 0.36 miles of motorized access routes to the existing NFTS to authorized access to eight dispersed campsites.
- Decommission 1.1 miles of non-system user created trails.
- Enhance the OHV staging area at the intersection of 6N62 and 7N23 to accommodate 10 to 15 vehicles with trailers and provide an OHV loading ramp.
- Add 1.02 miles of new trails to the NFTS allowing recreational user access to dispersed campsites and managing OHV use.
- Reconstruct a 1.5 mile segment of trail 16EV190 and constructing two small bridges over stream crossings.
- Reconstruct 0.75 mile segment of trail 17EV152 located between 7N11 and 7N72 to accommodate UTV use.
- Construct a parking area to accommodate 4-5 vehicles for the Ganns Meadow non-motorized trail.

- Decommission 0.57 miles of Trail 17EV21 (Ganns Meadow) and construct 0.5 mile non-motorized trail east and parallel to the former trail.
- Constructing 0.20 mile length of non-motorized trail to connect Liberty Vista Point to 6N79.

9. Transportation

- Decommissioning 15.77 miles of routes.
- Closing of 8.93 miles of road.
- Gating 3.90 miles of road.
- Reconstructing 34.83 miles of routes.
- Realigning of 1.11 miles of road.
- Watershed rehabilitation (reconstruction) on 2.51 miles of road.
- Maintaining 60.16 miles of routes.
- Designating roads open to all vehicles (highway legal vehicles and green sticker OHVs) or open to highway legal vehicles only, depending on the road standard.
- Designating most maintenance level 3 roads, which are subject to the California Vehicle Code, as open to highway legal vehicles only.
- Designating a season of use of 4/15 through 12/15 for all routes that are open to the public.
- Reassigning 1.07 miles of system road and 2.08 miles of non-system routes as system trail.
- Reassigning 5.21 miles of system trail and 2.19 miles of non-system routes as system road.

10. Management Requirements

- Management requirements as described in Chapter 2.05.

Updates to the Proposed Action

Several updates were made to the proposed action subsequent to the November 13, 2014 scoping letter. Updates were based on data corrections, refined information from the field reconnaissance, and edits to clarifying actions proposed. The updated proposed action is consistent with the scoping letter, and includes the following changes:

- The document was edited, reorganized, and treatment categories were merged or modified to clarify project actions, reduce redundancy, and create a more concise proposed action. Some terminology was modified or expanded for ease of interpretation.
- Proposed actions were provided an identification number (ID) to allow for tracking in this EA. This ID number is interchangeable with other similar terms (i.e., “unit”, “unit number”, “treatment unit”, or “EA Number”) used in this document and/or other project record documents.
- Boundaries of areas proposed for treatments were refined by merging treated areas < 1 acre with adjacent units and removing overlapping treatments. These refinements resulted in slight changes in treatment acreage by land management category.
- Actions related to SAFs were reorganized to better display project intentions at each SAF.
- Acres and numbers of SAFs were updated.
  - Barrier placement was placed as a monitoring and adaptive management strategy, with the exception of three locations.
  - Barrier maintenance responsibility was removed, and would be determined with consultation with permittees prior to barrier construction.
- Number of dispersed campsites with proposed actions, and miles of trails, were verified and updated.
- Miles of road and trail actions were verified and updated.
- Management requirements were edited to reduce redundancy and improve clarity. Additional requirements were added to reduce the potential effects of project actions.

1.04 DECISION FRAMEWORK

As the Responsible Official, the Forest Supervisor will make a decision based on review of this EA and resource reports. Given the purpose and need, the Responsible Official reviews the proposed action and may decide to: (1) select the proposed action; (2) select one of the alternatives after modifying the alternative with additional requirements; or (3) select the no action alternative, choosing to take no action at this time. In making this decision, the Forest Supervisor will consider such questions as: (1) How well does the selected alternative meet the purpose and need; (2) How well does the selected alternative move the project area toward the desired conditions established in the Forest Plan; and (3) Does the selected alternative minimize potential adverse effects?

The Responsible Official also determines whether the selected alternative would have a significant impact on the quality of the human environment. If a determination is made that the impact is not significant, then a "Finding of No Significant Impact" (FONSI) would be prepared and the decision would be documented in a Decision Notice (FSH 1909.15, 43.2). Significant impacts on the quality of the human environment would require the preparation of an EIS (40 CFR 1501.4).

Project-Level Pre-decisional Administrative Review (Objection) Process

This project is subject to comment pursuant to 36 CFR 218, Subparts A and B. Only those who submit timely project specific written comments during a public comment period are eligible to file an objection. Individuals or representatives of an entity submitting comments must sign the comments or verify identity upon request. Comments received, including the names and addresses of those who comment, will be considered part of the public record on this proposal and will be available for public inspection.

1.05 PUBLIC INVOLVEMENT

The Hemlock project appeared on the online Stanislaus National Forest NEPA project page on October 28, 2014 and appeared in the hardcopy January 1, 2015 Stanislaus National Forest Schedule of Proposed Actions. The Forest issued a news release to the public on November 13, 2014 that initialized the formal public scoping comment period that occurred between November 13 and December 15, 2014. In addition, the West Point News published details on the proposed action in the December 2014 edition.

The Forest sent a scoping letter to 320 individuals, organizations, businesses, agencies, and Tribes interested in this project, including the Calaveras Band of Miwok, Washoe Tribe of Nevada and California, California Valley Miwok Tribe Chicken Ranch Tribal Council, and the Tuolumne Band of Me-Wuk Indians. In addition, the project was discussed at the Annual Tribal Consultations with Tuolumne Me-Wuk Tribe and Stanislaus National Forest on May 2, 2013, on May 9, 2014 and also on June 1, 2015.

A public meeting was held on November 20, 2014 in Hathaway Pines, California. Six members of the public attended the meeting. No relevant or specific comments were provided by the public during this meeting. There was general support expressed for the project. Representatives from Tuolumne Band of Me-Wuk Indian cultural resources group attended a site visit on July 29, 2015, and a site visit was conducted on August 10, 2015 with the Tribal Historic Preservation Officer for the Washoe Tribe of Nevada and California.

The Forest Service received comments from 20 private individuals or organizations, including the Amador Calaveras Consensus Group, Central Sierra Environmental Resource Center, California Forestry Association, livestock permittee and private landowners in the project area. Ten individuals provided comments in support of the Hemlock project proposed actions. One comment letters was received (November 12, 2014) before the formal public comment period. Two comment letters were received (January 13, 2015 and January 30, 2015) after the formal comment period ended.

Chapter 1.06 (Issues) provides further details regarding the development of issues identified through public involvement and scoping, and Chapter 3.17 (Effects Relative to Issues) provides a summary of effects relative to the issues.

1.06 ISSUES

The Forest reviewed the purpose and need, proposed action and scoping comments in order to identify issues (Scoping Summary, project record). An issue is a point of discussion, dispute, or debate with the Proposed Action; an issue is an effect on a physical, biological, social, or economic resource; an issue is not an activity; instead, the predicted effects of the activity create the issue. Issues are then separated into two groups: relevant and non-relevant issues.

Relevant issues are defined as those directly or indirectly caused by implementing the proposed action. Issues are relevant because of the extent of their geographic distribution, the duration of their effects, or the intensity of interest or resource conflicts. Relevant issues are used to formulate or compare alternatives, prescribe requirements, or analyze environmental effects.

Non-relevant issues are those identified as: 1) outside of the scope of the proposed action; 2) already determined through law, regulation, Forest Plan, or other higher level decision; 3) irrelevant to the decision to be made; 4) conjectural and not supported by scientific fact; 5) a comment, opinion, or position statement; or, 6) a question for clarification or information.

As described above, issues are relevant because of the extent of their geographic distribution, the duration of their effects, or the intensity of interest or resource conflicts. Based on specific comments received by the public, new information, the Settlement agreement with Region 5 over the 2004 Framework litigation, and the potential for a University of California sponsored snow retention study; the Forest Service Interdisciplinary Team identified the following relevant issue.

Forest Canopy Structure

Declining population trends of spotted owls on National Forest Service lands in the Sierra Nevada suggest the need for a careful approach to management of California spotted owls and their habitats. Studies of spotted owl habitat associations consistently reinforce the importance of stands with large trees and high canopy cover at the stand, core area, home range, and landscape scales. As such, reductions in canopy cover in spotted owl home range core areas (HCRAs) near protected activity centers (PACs) may alter the species use of these areas.

Likewise, vegetation thinning practices may yield greater snow retention in the Sierra Nevada. A heterogeneous forest structure, density, and canopy cover across watersheds may provide an insight into actions to enhance water retention.

2. Alternatives

This Chapter describes and compares the alternatives considered for the Hemlock project. It presents the alternatives in comparative form, defining the differences between each alternative and providing a clear basis for choice among the options for the Responsible Official. It includes the action alternative or the proposed action (Alternative 1), the no action alternative (Alternative 2), and an additional action alternative (Alternative 3). The no action alternative serves as a baseline for comparison purposes (73 Federal Register 143, July 24, 2008; p. 43084-43099). Some of the information used to compare the alternatives is based on the design of the alternative, and some of the information is based upon the environmental, social and economic effects of implementing each alternative.

2.01 How the Alternatives were Developed

The action alternatives represent a wide range of perspectives designed to address the issues identified through scoping and described in the purpose and need (Chapter 1). The planning area includes NFS lands in the Hemlock project area. It does not include any private, state or other federal lands.

Restoration treatments would include hand, mechanical, silviculture, prescribed fire, watershed or other actions employed to promote ecosystem stability by improving landscape resilience and watershed conditions, and by modifying fuel characteristics to lessen fire behavior or burn severity. Vegetation treatments were strategically designed using guidelines discussed in the General Technical Report (GTR) 220 by North et al. (2009) and GTR 237 by North, ed. (2012). These guidelines stress the ecological importance of forest heterogeneity. The authors offer suggestions on how to design treatment areas to meet diverse forest objectives, retain existing large trees, promote recruitment of more large structures and provide for forest sustainability. The proposed treatments would result in a landscape matrix of forest structure and densities that aim to: 1) modify fuel characteristics; 2) improve forest resiliency; 3) reduce susceptibility to insect and diseases; 4) improve watershed condition; 5) improve meadow function and water sequestration; and 6) maintain wildlife and ethno-botanical connectivity and diversity.

GTR-220 proposed that heterogeneity in forest structure be based on landscape topographic characteristics, particularly slope position and aspect. In general, GTR-220 desired outcomes result in stem density and canopy cover highest in drainages and riparian conservation areas (RCA), decreasing over the mid-slope to their lowest values near ridge-tops (North et al. 2009, p 20). Likewise, stem density and canopy cover would be higher on NE aspects compared to SW aspects (p. 21). Ridge-tops would have the lowest stem densities and highest percentages of pine in contrast to riparian areas (drainages). Mid-slope forest density and composition would vary with aspect, as density and fir composition increase on northern aspects and flatter slope angles.

As such, the project area was first delineated into four landscape slope categories using the GIS Landscape Management Unit (LMU) tool as described in Chapter 10 of GTR-237: ridges, drainages, northeast (NE) facing mid-slopes, and southwest (SW) facing mid-slopes. Applying the GTR-220 desired outcome concepts, the ID Team was able to formulate proposed actions that would simultaneously achieve forest restoration and fuels objectives while maintaining wildlife habitat connectivity for California spotted owls and northern goshawks.

In contrast to this approach, younger plantations in the project area do not always meet characteristics of a general forest. Their size, density, and heterogeneity require initial treatments that would transition them towards a forest condition conducive to applying the GTR-220/ GTR-237 concepts.

Fuels treatment areas and types proposed were not directed at excluding future fire events, but rather at improving landscape resilience to future fire events. A driving emphasis with fuel treatment designs was to have fuel levels restored to a level within the natural range of variability for the site and to allow for

safe and effective wildfire suppression. Likewise, treatments focused on meadows, aspens, watershed, soil productivity, and recreation activity aim at increasing the resilience of these natural systems, while balancing social and economic forest related benefits.

Action Alternatives

Action alternatives include the restoration activities described below. Within each alternative, the acres and distances shown are estimates; in some cases, total acres treated reflect several treatments that overlap on the same piece of ground.

1. **Forest Restoration**: mechanical thinning, hand thinning, biomass removal, mastication, planting, provisions for soil productivity (Maps 1 and 2).
2. **Scenic Corridor**: mechanical thinning, hand thinning, biomass removal, mastication, piling and burning (Maps 1 and 2).
3. **Fuels Reduction**: mechanical thinning, hand thinning, piling and burning, mastication, roadside fuel-breaks, shaded fuel-breaks, and prescribed fire (Maps 1, 2 and 3).
4. **Mature Forest Wildlife Habitat Restoration**: mechanical thinning, hand thinning, biomass removal, mastication, planting, and prescribed fire (included in Maps 1 and 2).
5. **Heritage Resources**: hand thinning, conifer removal, road decommissioning or blocking, barrier installation, interpretive signage installation, and recreation area relocation.
6. **Aquatic Organism Passage Restoration**: culvert replacement or removal (Map 4).
7. **Streams, Riparian Areas, Special Aquatic Feature and Aspen Restoration**: encroaching conifer removal, monitoring/adaptive management, SAF barrier installation, stream channel restoration, head-cut stabilization, and trough installation (Map 4).
8. **Recreation**: motorized and non-motorized trail improvement, maintenance, reconstruction, rerouting and construction; road designation changes, dispersed campsites enhancement or rehabilitation, and trailheads and parking areas development (Maps 5 and 6).
9. **Transportation**: roads and motorized trails maintenance, reconstruction, decommissioning, and construction needed to accomplish restoration objectives, and identification of rock quarry sites and water sources to accommodate road needs during implementation as well as for long-term resource needs (Maps 7 and 8).
10. **Management Requirements**: include requirements related to protecting resources while implementing other actions.

Map Package

Identification (ID)[1] numbers displayed in this EA correspond to unit numbers displayed on these 8 maps available by request in a separate Map Package:

- Map 1 Alternative 1: Forest Restoration, Scenic Corridor, and Fuels Reduction
- Map 2 Alternative 3: Forest Restoration, Fuel Reduction, and Wildlife Restoration
- Map 3 Alternatives 1 and 3: Prescribed Fire
- Map 4 Alternatives 1 and 3: Special Aquatic Features and Aquatic Organism Passage Restoration
- Map 5 Alternative 1: Recreation Actions
- Map 6 Alternative 3: Recreation Actions
- Map 7 Alternative 1: Transportation Actions
- Map 8 Alternative 3: Transportation Actions

[1] ID = the "Identification" number used for tracking in this EA is interchangeable with other similar terms (i.e., "unit", "unit number", "treatment unit", or "EA Number") used in this document and/or other project record documents for the Hemlock Landscape Restoration project.

2.02 ALTERNATIVE 1 (PROPOSED ACTION)

1. Forest Restoration

Under Alternative 1, forest restoration actions would include: mechanical thinning of merchantable timber, tree planting, plantation thinning, conifer removal at meadows and aspen stands, and provisions for soil productivity. In general:

- Forest restoration actions would adhere to the Stanislaus National Forest "Forest Plan Direction" (USDA 2010) while implementing the landscape strategy presented in the GTR-220 (North et al. 2009).
- Only trees less than 30" dbh would be selected for removal, unless they pose a safety hazard and designated as a hazard tree (USDA 2012a), are within road/landing construction limits, or are within or adjacent to aspen stands.
- Pre-existing canopy cover would not be reduced by more than 30% within treatment units, and at least 40% of the existing basal area would be retained (USDA 2010, p 36).

The specific actions are as follows:

Merchantable Timber

The Proposed Action would conduct 3,920 acres of mechanical ground based thinning of merchantable timber (10-30" dbh) in forest, riparian, aspen, meadow, and wildlife habitat areas. An additional 28.5 acres would be thinned in four plantations (Appendix B; Map 1).

- Firs and incense cedar would be prioritized for removal and healthy Jeffrey pine (*Pinus jeffreyi*) and rust-resistant sugar pine (*Pinus lambertiana*) would be prioritized as leave trees (seed trees), especially adjacent to SW mid-slope gaps.
- Canopy cover (CC) retention would vary by topographic position category (Table 2.02-1).The tops and limbs of trees, trees < 10", other woody debris, and brush would be masticated (shredded), piled and burned (hand or grapple piles), lopped and scattered, or removed as biomass.
- Additional use of non-merchantable material may include firewood, shavings, small log removal, and pulpwood use.
- Masticated material would not exceed a depth of 6 inches.
- Lopped and scattered pieces would not exceed a depth of 18 inches.

Mechanical thinning would incorporate the creation of gaps created throughout units, with size and density varying by topographic position (Table 2.02-1).

- Gaps would be located in areas with disease (root rot), adjacent to aspen stands, or adjacent to other natural gaps.
- A higher density of trees would be maintained next to gaps.
- Gaps in units that have prescribed fire proposed may have dozer or hand lines created around the gap to exclude fire once tree regeneration is established.
- Gaps on ridges would be created where the topology is generally flat.
- Gaps within SW mid-slopes would be located where historic levels of pine exist but regeneration is deficient or suppressed.
- Gaps in drainages and RCAs would be created only around hardwood vegetation and would not exceed 1.5 acres in size.

Table 2.02-1 Merchantable timber thinning acres, canopy cover retention, gap size and density, and planting acres by topographic position - Alternative 1

Topographic Position	Acres	Canopy Cover (%)	Gap Size (Acres)	% Gaps	Planting Acres
Ridge	793	40	0.25-1.5	2	16
Mid-slope NE	540	50	0.1-0.5	2-5	27
Mid-slope SW	1873	50	0.25-1.5	5-10	187
Drainage	302	50	0-1.5	0-2	0
RCA	413	60	0-1.5	0-2	0

Planting

Replanting would occur on up to 202 acres in gaps created in mixed conifer forest (Table 2.02-1).

- Jeffrey pine and rust-resistant sugar pine would be planted at an average spacing of 15 x 15 feet.
- No planting would occur in gaps created in red fir dominated stands, drainages, or RCAs. Natural regeneration would be relied upon in these areas.
- Site preparation for planting would include one or a combination of the following methods : 1) tractor piling and burning of brush and concentrations of slash, 2) hand thinning, piling and burning small trees, brush, and slash, 3) subsoiling, if the area is heavily compacted or has dense brush, or 4) broadcast burning to reduce fuel concentrations.
- Mechanical thinning or hand grubbing of small trees and brush would occur as needed after planting.

Plantation Thinning

- Approximately 800 plantation acres would be mechanically thinned to achieve 20 x 20 foot spacing (Appendix B; Map 1).
- Mechanical thinning of brush and trees less than 10” dbh could be conducted through mastication and/or hand piling and burning.
- Trees 10” to 16” dbh could be removed as biomass or other forest products.
- Materials created through mastication would not exceed 6” depth.

Conifer Removal

Conifers encroaching on 109 acres of meadows and 125 acres of meadow/aspen stands would be thinned (Appendix B; Map 1).

- Conifers less than 30” dbh would be removed within 1.5 tree lengths (100 ft. average) of meadows and aspen stands.
  - Within 50 feet of aspen stands, conifers 30-40” dbh may be thinned where basal areas of conifers exceed 120 ft^2/ acre, retaining at least 3 trees >30” dbh per acre.
- Root ripping may occur in thinned aspen stands to isolate roots and stimulate sprouting.
- Conifers removed would include sawlog and biomass products; non-commercial material would be chipped, piled and burned, or used in restoration treatments (e.g., barriers).

Soil Productivity

Approximately 302 acres (occurring primarily in 22 plantations) would be treated by increasing ground cover, retaining brush, or repairing gully erosion (or a combination of these treatments). In some cases, the Forest Restoration treatments would achieve the soil productivity ground cover objectives and no further treatment would be necessary.

- Ground Cover: Ground cover would be increased to 50% on 256.4 acres within young plantations using a mastication treatment or with hand treatments to spread slash, forest floor material, or masticated chips on eroded areas (IDs 85, 96, 103,107, 118, 126, 149, 157, 160, 161, 162, 171, 173, 182, 184, 185, 631, and 632).

- Brush Retention: On 210 acres, clumps of brush greater than 20 feet away from leave tree drip-lines would be retained during mastication or thinning operations. Treatment would only be needed in portions of units with sparse vegetation (less than 70 % canopy cover), and where it poses limited fire threat to overstory (IDs 96, 112, 113, 118, 127, 157, 160, 171, 173, 180, 182, 184, and 631).
- Gully Repair: On 45.6 acres, gullies in need of repair would be treated by stabilizing actively eroding areas, diverting water into established channels, or repairing road drainages (IDs 126, 183, and 631).

2. Scenic Corridor

The Proposed Action would thin 421 acres within 300 feet of either side of Highway 4 through a combination of mechanical ground based thinning, mastication, hand thinning, biomass removal, slash piling and burning (Appendix B; Map 1).

- Trees less than 30” dbh and designated hazard trees (USDA 2012a) would be thinned while retaining 40% canopy cover.
- Unthinned pockets would be retained to screen unnatural structures (e.g. power lines, campgrounds, and other structures) and heritage resource sites.
- Healthy, wind throw resistant trees and groups of trees would be favored for retention.
- Trees (less than 10” dbh) and brush may be masticated in some areas.
- Stumps would be cut to less than 6” in height.
- Created openings would not be heterogeneous in shape and size; straight lines and right angles would be avoided. Edges of thinning units would be softened by gradually transitioning the thinning to the surrounding tree density.
- Created openings would resemble the size and shape of those found in the surrounding natural landscape. Treatments would be designed to follow natural topographic breaks and changes in vegetation.

3. Fuels Reduction

The proposed action includes fuel reduction treatments that include fuel-breaks, prescribed fire, small diameter thinning and piling and burning (Maps 1 and 3):

Roadside Fuel-breaks

Roadside fuel-breaks would be created along 7.1 miles of road encompassing roughly 74.1 acres.

- Brush and small trees less than 10” dbh would be removed or masticated within 25 feet of designated roads.
- Hazard trees would be felled within 1.5 tree lengths of the road. Some hazard trees would be felled and retained on site to provide wildlife habitat.
- Excess fuels may be removed mechanically or through hand thinning, piling, and burning.

Shaded Fuel-breaks

Shaded fuel-breaks would be created at the wildland urban interface (WUI) and along prominent ridge tops.

- Within the WUI, 557 acres of shaded fuel break would be created.
- Outside of the WUI, 336 acres of shaded fuel break would be created.
- Trees less than 30” dbh would be thinned to 40% canopy cover by ground based mechanical thinning or hand thinning, piling, and burning.
- Trees less than 10” dbh and brush would be treated through mastication, biomass removal, or hand cutting, piling and burning.

Prescribed Fire

Approximately 4,286 acres would be treated with prescribed fire.

- Prescribed fire would follow mechanical or hand treatments and fireline construction, or may be employed as an independent treatment (jackpot burning).
- Prescribed fire would be conducted in compliance with all applicable Calaveras County Air Pollution Control District (APCD), state, and federal regulations.

Piling and Burning

Slash from timber harvest operations and pockets of dead small trees and heavy fuel concentrations would be piled using mechanical (grappling) or hand means and then burned after vegetation activities are completed.

- All piles would be placed to minimize resource concerns, tree scorch, and mortality to remaining trees in the surrounding area.
- Fire lines may be constructed around piles down to bare mineral soil using hand tools or machinery. If machinery is utilized it would be conducted with minimal ground disturbance.
- All burning would comply with all applicable Calaveras County Air Pollution Control District (APCD), state, and federal regulations.

Hand or Mechanical Thinning (<10" dbh, Retain 50% CC)

Approximately 93.1 acres of thinning (hand or mechanical) would be conducted.

- Trees less than 10" dbh would be hand thinned, hand piled and burned, mechanically masticated, or removed as biomass.
- 50% canopy cover would be retained in areas thinned mechanically.

Hand Thinning

Trees would be hand thinned where mechanical treatment is not feasible (e.g. steep terrain, slope conditions) or desirable due to other resource concerns (e.g. cultural/heritage resources, wildlife) (Appendix B; Map 1).

- Hand thinning of trees less than 10" dbh would occur on 717 acres.
- Hand thinning of trees less than 6" dbh would occur on 1,497 acres.
- Hand cut trees would be piled and burned.

4. Mature Forest Wildlife Habitat Restoration

Mechanical thinning, hand thinning, biomass removal, mastication, planting, and prescribed fire as described in the Forest Restoration, Scenic Corridor, and Fuels Reduction sections would occur within PACs and HRCAs. The total extent of these treatments is described in the previous sections, and the extent within wildlife habitats shown in Table 2.02-2.

- Less than 30% of a PAC would be treated during a calendar year.
- Prescribed fire in PACs would occur after hand treatments are conducted, including hand line construction, tree pruning, and cutting of small trees (less than 6" dbh).

Table 2.02-2 Acres of proposed treatments within wildlife habitat - Alternative 1

Treatment	CSO HRCA	CSO PAC	NGO PAC
Forest Restoration Merchantable Timber Thinning			
Drainage – retain 50% CC	203	0	0
Mid-slope NE- retain 50% CC	282	0	0
Mid-slope SW – retain 50% CC	1,170	0	0
RCA – retain 60% CC	203	0	0
Ridge – retain 40% CC	435	0	0
Plantation: Mastication / Biomass	23	0	0

Treatment	CSO HRCA	CSO PAC	NGO PAC
Meadow/Aspen Conifer removal	15	0	0
Scenic Corridor	102	0	0
Fuels Reduction			
Roadside Fuel-break	21	0	0
Shaded Fuel-break	28	0	0
Shaded Fuel-break- WUI	26	0	0
Prescribed Fire	1,819	314	66
Hand Treat (<10”) or Mechanical – retain 50% CC	88	0	0
Hand Thinning (<10”)	647	0	0
Hand Thinning (<6”)	136	1342	106

5. Heritage Resources

The Proposed Action includes vegetation treatments, recreation management, meadow habitat restoration, and interpretation designed to protect and enhance heritage resources.

- Encroaching conifers less than 30” dbh may be thinned within selected heritage sites.
- Culturally significant oaks and other traditional plants within Native American gathering sites would be cultivated and pruned in accordance with traditional methods.
- Trees would be felled in strategic locations to stabilize or protect heritage sites and reduce site erosion.
  - Felling of selected trees would be directed by a qualified heritage staff.
  - Selected trees would not be removed during project implementation and would be flagged and/or tagged for avoidance.
- Educational, interpretive, and regulatory signs may be posted within the vicinity of heritage resources as needed to promote heritage resource protection.
- A subset of approximately 100 cultural sites would be monitored to ensure project objectives are met.

6. Aquatic Organism Passage Restoration

Eight culverts have been identified for aquatic organism passage restoration. Four culverts would be replaced or removed at the stream / road crossing intersection listed in Table 2.02-3 (Map 4). Culvert replacement may include temporary dewatering of streams, removal of existing fill material and culverts, replacement of footings and other structures, placement of new culvert, replacement of fill material, and other techniques as needed. An additional four culverts would be removed as a component of road decommissioning.

Table 2.02-3 Summary of AOP restoration actions

ID	Road	Stream	Treatment	Priority
640	17EV501	Water Gulch	Reconstruct Crossing	1
641	07N09	Water Gulch	Reconstruct Crossing	2
642	07N09	Pumpkin Hollow Creek	Reconstruct Crossing	3
643	16EV434	Long Gulch	Reconstruct Crossing	4
644	16EV434	Cottonwood gulch	Decommission Road	1
645	16EV434	Hay Gulch	Decommission Road	1
646	7N69B	Horse Gulch	Decommission Road	1
647	7N55A	Cottonwood Gulch	Decommission Road	1

7. Streams, Riparian Areas, and Special Aquatic Features Restoration

Stressors to streams and SAFs are included in the Special Aquatic Feature Report contained in the project record. The following are proposed restoration actions for streams, riparian areas and special aquatic features (Map 4; Table 2.02-4):

Table 2.02-4 Alternative 1 proposed actions for special aquatic features

ID	Habitat Type	SAF Acres	Conifer Removal[1]	Head-cut/ Channel Restore	Monitor/ Adaptive Mgt (Priority)[2]	Barrier Placement[3]	Recreation Action[4]	Notes
522a	Meadow, Spring	3.96	Yes	Yes	Mod-High	Possible	Yes	Boulders or other material to restrict OHVs
522b	Meadow, Spring	0.48	Yes		Mod-High	Possible		Monitor[5]
522c	Meadow, Aspen	0.64	Yes		Very Low	Possible	Yes	Monitor Aspen[6]; Boulders or other material to restrict OHVs.
523	Meadow, Aspen	3.86	Yes		Very Low	Possible		Monitor Aspen[6]
524	Meadow	0.47			Moderate	Possible		
525	Aspen	2.75	Yes		Very Low	Possible		Monitor Aspen[6]
527	Meadow	3.60	Yes	Yes	Very Low	Possible		Monitor[5]
529a	Meadow	1.39	Yes			No		
529b	Meadow	2.77	Yes			No		
529c	Meadow	3.50	Yes			No		
529d	Meadow	2.35	Yes	Yes	Very Low	Possible		Monitor[5]
530a	Meadow	1.51	Yes			No		
530b	Meadow	0.88	Yes	Yes	Low	Possible		Monitor[5]
532	Meadow	028	Yes			No		
533	Meadow, Spring	2.48	Yes	Yes	Low	Possible		Monitor[5]
534	Meadow	0.32	Yes		Low	Possible		Monitor[5]
535a	Meadow	1.32	Yes			No		
535b	Meadow	0.59	Yes			No		
536	Meadow	0.29				No	Yes	Boulders or other material to restrict OHVs
538	Meadow, Aspen	2.37	Yes		Very Low	Possible		Monitor Aspen[6]
539	Meadow, Aspen	2.43	Yes	Yes	Very Low	Possible		Monitor Aspen[6]; barrier may focus on deterring human traffic.
540	Meadow	1.02	Yes	Yes	Very Low	Possible		Monitor Aspen[6]; barrier may focus on deterring human traffic.
541	Meadow, Aspen	0.58	Yes		Very Low	Possible		Monitor Aspen[6]
542	Meadow, Aspen	0.95	Yes		Very Low	Possible		Monitor Aspen[6]
543	Meadow	1.52	Yes			No		
544	Meadow, Aspen, Spring	3.23	Yes	Yes	Mod-High	Possible		Monitor[5]
545	Meadow	13.48	Yes		Moderate	Possible		Monitor[5]
547	Meadow, Aspen	13.72	Yes	Yes	Very Low	Possible		Skyhigh Meadow: Monitor Aspen[6]; barrier may focus on deterring human traffic.
548	Meadow, Aspen, Stream	14.79	Yes	Yes	Very Low	Possible		Big Meadow: Monitor Aspen[6]; barrier may focus on deterring human traffic.
549a	Meadow, Spring	0.74	Yes		Moderate	Possible		Monitor[5]
549b	Meadow	0.51	Yes	Yes	Moderate	Possible		Monitor[5]
549c	Meadow	0.12	Yes			No		
551	Meadow	1.38	Yes			No		
552	Meadow	2.36	Yes			No		
553	Meadow	0.76	Yes			No		
554	Meadow, Spring	0.76	Yes		Moderate	Possible		Monitor[5]
555	Meadow	1.77	Yes			No		
601	River	1.17			High	Yes	Yes	Sensitive plant considerations in the Middle Fork Mokelumne
602	Seep	0.87			High	Yes		Sensitive plants consideration in the spring/seep area.
603	Spring	0.01			High	Possible		Monitor[5]
604	Meadow	0.49		Yes	Moderate	Possible		Monitor[5]
605	Meadow	0.67			Moderate	Possible		Monitor[5]

ID	Habitat Type	SAF Acres	Conifer Removal[1]	Head-cut/ Channel Restore	Monitor/ Adaptive Mgt (Priority)[2]	Barrier Placement[3]	Recreation Action[4]	Notes
607	Meadow, Spring	0.06			High	Possible		Monitor[5]
610	Meadow, Seep, Spring	1.73			Moderate	Possible		Monitor[5]
611	Meadow, Fen	5.89		Yes	High	Possible	Yes	Hay Gulch: Monitor[5]; Boulders or other material to restrict OHVs
612	Meadow, Fen	1.50		Yes	High	Possible	Yes	Horse Gulch: Monitor[5]; Boulders or other material to restrict OHVs
613	Meadow	0.34			High	Possible		Monitor[5]; Boulders or other material to restrict OHVs
614	Seep	0.01			Low	Possible		Monitor[5]
615	Seep	0.01			Low	Possible		Monitor[5]
616	Spring	0.01			High	Possible		Monitor[5]
617	Meadow, Spring	0.20			Moderate	Possible		Monitor[5]
618	Seep, Spring	0.01			High	Possible		Monitor[5]
619	Meadow, Spring	0.06			High	Possible		Monitor[5]
620	Spring	0.07			High	Possible		Monitor[5]
621	Meadow, Spring	0.68			Moderate	Possible		Monitor[5]
622	Meadow, Spring	1.23		Yes	Moderate	Possible		Monitor[5]
623	Meadow, Seep, Spring	0.50			Moderate	Possible		Monitor[5]
624	Seep, Spring, Riparian	0.13			Mod-High	Possible		Monitor[5]
625	Seep	0.15			Mod-High	Possible		Monitor[5]
627	Meadow, Fens	15.30			Mod-High	Possible		Hay Gulch: Monitor[5]
664	Meadow, Spring	14.85		Yes	High	Yes	Yes	Campsite barrier encompassing meadow and springs.

[1] Acres of conifer removal for each SAF is provided in Appendix B. Acres associated with potential barrier installation may be less.
[2] Priorities were provided for the 47 SAFs where monitoring/adaptive management is proposed. Sites indicated as a high priority would receive immediate post-decision monitoring. Barriers or off-site troughs may be installed or removed depending on if monitoring indicates that desired conditions are being met. Where no priority is listed, there is no current need for monitoring/adaptive management strategy.
[3]Barrier maintenance responsibility will be determined with consultation with the permittee prior to barrier implementation.
[4]Restoration actions are described in the Recreation section.
[5]Monitor = Monitor impacts from stressors; potentially exclude stressors to accelerate recovery.
[6]Monitor Aspen = Barrier would focus on reducing browse (wildlife or livestock) on aspen.

Conifer Removal

Conifers encroaching on 109 acres of meadows and 125 acres of meadow/aspen stands would be thinned as detailed in the Forest Restoration section.

- A subset of aspen stands that have encroaching conifers thinned would be monitored for aspen regeneration using the US Forest Service Region 5 protocol (Jones et al. 2005).
  - Monitoring would begin the year after the stand treatment.
  - Sample plots would be established to set base line data and to track changes in the stand structure.
  - If browse exceeds more than 20% of annual growth on aspen seedlings and advanced regeneration (USDA 2010), then a barrier could be installed. The barrier would be a temporary structure and it would be removed when the vegetation is above browse height (4 ft.).

Head-cut /Channel Restoration

Areas of instability, eroding head-cuts, streambanks, and incised channels would be restored at 16 locations throughout the project area.

- Techniques employed may include placement of fill material within incised channels, installation of channel grade stabilization structures, stream bank re-shaping, riparian planting, subsoiling, and other techniques as needed.

- Restoration treatments would be accomplished using both hand work as well as mechanized equipment.
- Temporary barriers may be used to prevent disturbance until growth of vegetation has adequately stabilized the restored area (five years or longer depending on site recovery as determined by annual monitoring results).
- In addition, culvert outlets in Big Meadow at ID 548 would be armored.

Monitoring/Adaptive Management

Monitoring may occur at a subset of the 47 SAFs with evidence of disturbance.

- SAFs indicated as high priority for monitoring would receive immediate post-decision monitoring.
- Monitoring would be conducted every 1 – 5 years depending on current conditions.
- Monitoring may include a combination of the following indicators: annual utilization, ecological status of meadow vegetation, fen disturbance (% bare peat), proper functioning condition (PFC), meadow hydrologic function, stream bank disturbance, BMP effectiveness evaluation, aspen browse, water quality, stability of hydrologic features (e.g., presence of head-cuts, knick points, incisions), and/or monitoring for threatened and endangered or Forest Service sensitive wildlife/plant species.
- If monitoring indicates that desired conditions (Special Aquatic Feature Report) are not being achieved, barriers (as indicated in Table 2.02-4) or troughs would be installed.
- Likewise, if monitoring indicates that desired conditions are being met, barriers or troughs would be removed.
- The adaptive management strategy, including specific monitoring protocols, quantifiable indicators and adaptive management triggers, would be developed by Rangeland Management Specialist, District Botanist, District Hydrologist, District Archeologist, and other forest staff in consultation with range permittees prior to project implementation.

Barrier Placement

- A barrier would be placed at ID 601 until: 1) at least 5,000 veined aquatic lichen individual plants are quantified in a discrete growing season and 2) a positive trend persists for at least 10 years. If a negative trend is documented after two years following barrier removal, then the barriers would be replaced.
- A barrier would be placed at ID 602 until: 1) at least 250 Mingan moonwort plants are quantified in a discrete growing season and 2) a positive trend persists for at least 10 years. If a negative trend is documented after two years following barrier removal, then the barriers would be replaced.
- At SAF ID 603, 307, 611, 612, 613, 616, 618, 619, and 620 (locations identified as high priority for monitoring), barriers may be placed if post-decision monitoring confirms resource concerns.
- Barrier maintenance responsibility for all SAFs that receive barriers would be determined with consultation with the permittee prior to barrier implementation.
- Barriers may be removed if monitoring indicates desired conditions are being met.
- Barriers may consist of barbed wire, buck and pole, jackstraw material, or boulders, depending on the availability of natural materials, maintenance considerations, and access.

Troughs

- Rangeland water developments (troughs) would be installed at four designated locations.
- Additional troughs may be installed as a component of Monitoring/Adaptive Management.
- The existing trough at ID 554 would be relocated outside of the spring.
- Water troughs would be located away from riparian areas, SAFs, sensitive plants, and heritage resources, as coordinated with the Rangeland Management Specialist, District Botanist, District Hydrologist, District Archeologist, and permittee.
- Water troughs would be equipped with wildlife escape features.

8. Recreation

All recreation Proposed Actions would be implemented following the standards, guidelines, and direction established in the Forest Service Trails Management Handbook (FSH 2309.18), Soil Conservation Guidelines/Standards for Off-Highway Vehicle Recreation Management, Best Management Practice and Stanislaus Forest Plan Direction (USDA 2010). Alternative 1 includes the following recreation actions (Map 5):

Dispersed Recreation

Restoration actions are proposed at 24 dispersed campsites.

- Delineate Recreation Sites: Rocks, logs, or other materials would be installed on the surface or partially buried at 21 dispersed campsites (IDs 650-656, 658-663, 665-668, and 670-673).
- Improve: The following improvements would occur at the Horse Gulch dispersed campsite (ID 664):
  - Amend the Forest Plan to allocate this site to the developed recreation site management area.
  - The full campground footprint would be relocated to the North and would accommodate up to ten campsites.
  - Rocks, logs, or other materials would be installed to delineate motorized use area.
  - An exterior fence would delineate the campground area (14.9 acres). Additional exclosures may be installed within the fence line if sensitive resources become impacted by human activities.
  - Fire rings and picnic tables would be installed.
  - A motorized route would be added to the NFTS, with a cattle guard installed at the campsite entrance along FS road 07N09.
  - A parking area to accommodate 6-8 vehicles with trailers would be constructed. The parking area would be graded and hardened with gravel, and rocks or other materials would be installed to designate parking areas.
  - An OHV loading ramp would be constructed.
  - A vault toilet would be installed.
  - Informational signage would be installed with information, rules, regulations, and interpretation.
- Rehabilitate: Three dispersed camping sites would be decommissioned (IDs 657, 669, and 677).
  - Sites would be blocked with boulders or other materials to prevent motorized vehicle access and augmented with techniques such as camouflaging with brush or slash. .
  - Signs may also be installed to indicate the area is a restoration area.
  - The site at ID 677 may be subsoiled and have mulch or other material added to increase ground cover.

Add Routes to NFTS

Approximately 0.36 miles of motorized access routes would be added to the existing NFTS.).

- Add authorized access to eight dispersed campsites (IDs 650, 651, 654, 658, 664, 670, 672, and 673).

Decommission Non-system User Created Trails

Approximately 1.1 miles of non-system user created trails would be decommissioned.

- A 0.68 mile trail connecting 6N18 to 16EV190 would be decommissioned.
- A 0.5 mile trail providing access to a dispersed campsite (ID 670) from 7N09 would be decommissioned.
- A 0.01 mile trail just southwest of the intersection of 7N69 and 17EV16 would be decommissioned.
- Trails would blocked with boulders or other materials and would be stabilized by subsoiling of compacted areas, planting of vegetation, construction of water bars, and other erosion control measures.

OHV Trailhead / Staging Area

The OHV staging area located at the intersection of 6N62and 7N23 (Black Springs Road) would be enhanced (ID 676).

- A parking area would be constructed to accommodate 10 to 15 vehicles with trailers. The parking area would be graded and hardened with gravel, and boulders and other materials would be installed to delineate motorized use areas.
- An OHV loading ramp would be installed.
- Informational signage would be installed with trail information, rules, regulations and interpretation.

New Routes

New roads and trails would be constructed to allow recreational user access to dispersed campsites and manage OHV use.

- A 0.77 mile OHV trail would be constructed parallel to 07N23 (Black Springs Road) from the intersection of 06N62 to 06N09.
- A 0.02 mile OHV trail would be constructed connecting a dispersed campsite (ID 652) to the 0.77 mile new trail described above, crossing 07N23.
- A 0.07 mile OHV trail connecting 06N62 to a dispersed campsite (ID 650) along 07N23 to the North would be constructed.
- A 0.16 mile trail providing access to the Sand Flat dispersed campsite (ID 674) would be reconstructed and added to the National Forest Road System.

Trail Reconstruction

- A 1.5 mile segment of trail 16EV190 would be reconstructed by repairing the trail surface, establishing outsloping, and constructing rolling dips and drainage ditches. Two small bridges would be constructed over stream crossings.
- A 0.75 mile segment of trail 17EV152 located between 7N11 and 7N72 would be reconstructed by widening the trail to accommodate UTV use.

Hiking Trailhead Parking Areas

- A parking area to accommodate 4 - 5 vehicles would be constructed at ID 675. The trailhead parking area would be graded with rock based material and delineated with rocks, logs, or other material.
- Informational signage would be installed at the parking area to provide visitors with rules and regulations and signs would be installed along Highway 4 to direct recreational users to the parking area.

New Hiking Trails (Non-motorized)

- Approximately 0.57 miles of Trail 17EV21 would be decommissioned and a new 0.5 mile non-motorized trail would be constructed east and parallel to the former trail. This new segment of trail would tie into the existing, undamaged, portion of trail 17EV21.
- A 0.20 mile length of non-motorized trail would be constructed to connect Liberty Vista Point to 6N79.

9. Transportation

The Proposed Action includes both physical actions to roads and trails as well as changes in road and trail designations in the NFTS. The Proposed Actions are based on the criteria for identifying the minimum road system and the criteria for designation of system roads and trails in the Travel Management Rule, 36CFR 212.5(b) and 36CFR 212.55.

Physical Actions

The Proposed Action would implement physical actions on the transportation system related to maintenance, reconstruction, realignment, and decommissioning (Appendix A, Glossary of Terms). The lengths (miles) of each physical action proposed are summarized in Table 2.02-5 and displayed on Map 7. Physical actions by route are detailed in Appendix A of the Transportation Report.

Table 2.02-5 Physical actions to the transportation system under Alternative 1

Physical Actions	Existing System (miles)			
	System Road	System Trail	Unauthorized	Total
All Year Gate	1.23			1.23
Close ML1	1.31			1.31
Construct		1.56		1.56
Decommission	3.98	2.41	9.38	15.77
Maintain	57.91	3.84		61.75
Maintain/Close	0.96	0.74		1.70
Maintain/Gate	1.29			1.29
Realign Road	0.67			0.67
Realign Road/Close	0.41			0.41
Realign Road/Gate	0.03			0.03
Reconstruct/Close	1.83	0.04		1.87
Reconstruct/Gate	1.32			1.32
Reconstruct	31.68	4.21		35.89
Reopen/Close	2.16	1.10		3.26
Roadside Barrier	0.44			0.44
Watershed Rehab	2.10	0.30		2.40
Watershed Rehab/Close	0.38			0.38
Watershed Rehab/Gate	0.03			0.03
Totals	**107.73**	**14.2**	**9.38**	**131.31**

Changes in NFTS Travel Management Designations

Several changes in NFTS travel management designations are proposed that would affect; 1) allowable mode of travel, or vehicle type, 2) allowable season of use, and 3) system. The proposed changes by route number and segment ID are displayed in Appendix A in the Transportation Report and are summarized below:

- The roads that would be maintained or reconstructed and not closed by barrier or gate would be designated open to all vehicles (highway legal vehicles and green sticker OHVs) or open to highway legal vehicles only, depending on the road standard (Table 2.02-6).
- Most maintenance level 3 roads, which are subject to the California Vehicle Code, would be open to highway legal vehicles only (Table 2.02-6).
- All routes open to the public would be designated open from 4/15 through 12/15.
- Approximately1.07 miles of system road and 2.08 miles of non-system routes would be reassigned as system trail.
- Approximately 5.21 miles of system trail and 2.19 miles of non-system routes would be reassigned as system road.
- Approximately 3.98 miles of system roads and 2.41 miles of system trail would be decommissioned and removed from the system.

Table 2.02-6 Changes in NFTS Vehicle Class under Alternative 1

Existing Vehicle Class	Alternative 1 Vehicle Class (miles)					
	ALL	HLO	4WD	OHV	NONE	TOTAL
ALL			1.04		8.42	9.46
HLO	2.94				2.63	5.57
4WD	3.11				3.49	6.60
NONE	3.76	0.02	0.03	1.10		4.91
Totals	**9.81**	**0.02**	**1.07**	**1.10**	**14.54**	**26.54**

ALL – Open to all vehicles;
HLO – Open to highway legal vehicles only; 4WD – Open to 4WD vehicles only;
OHV – Open to Off Highway Vehicles; NONE – Not open to any vehicle.

Rock, Water, and Borrow

Potential rock, water, and borrow sources would be used to accommodate roads needs during the implementation of the actions proposed as well as long-term resource needs.

- Four rock, 17 water, and 4 borrow pit sources are identified in the project area (Map 7).
- These resources would be developed and utilized in accordance with the management requirements specified in Chapter 2.05.

10. Management Requirements

Alternative 1 includes the management requirements described in Chapter 2.05.

2.03 ALTERNATIVE 2 (NO ACTION)

Under Alternative 2 (No Action), no actions would occur. Current management plans would continue to guide management of the project area.

2.04 ALTERNATIVE 3

Alternative 3 responds to the Forest Canopy Structure issue relative to spotted owls and snow retention research (Chapter 1.06 and Chapter 3.17). It addresses the issue while achieving project objectives by proposing the following:

- Retention of ≥60 % canopy cover in HRCAs in strategically located areas.
- Treatment design that enhances dispersal corridors between forest stands that exhibit higher canopy cover and greater vertical structural diversity for mature forest wildlife species
- Reduction of canopy cover in a watershed catchment to 40% outside of HRCAs to facilitate snow retention research objectives.

1. Forest Restoration

Vegetation thinning under Alternative 3 would be conducted as detailed in Alternative 1 with the following modifications:

- Alternative 3 would include 3,965 acres of ground based thinning of merchantable timber (10 to 30” dbh) in forests, riparian areas, aspen stands, and meadows. Canopy cover retention would vary by topographic position as shown in Table 2.04-1 (Map 2).
- Approximately 817 plantation acres would be mechanically thinned.
- Conifers encroaching on 109 acres of meadows and 140 acres of meadow/aspen stands would be thinned.

Table 2.04-1 Merchantable timber thinning acres, canopy cover retention, gap size and density, and planting acres by topographic position - Alternative 3

Topographic Position	Canopy Cover (%)	Acres	Gap Size (Acres)	% Gaps	Planting Acres
Ridge	40	758	0.25-1.5	2	15
Ridge	50	51	0.25-1.5	2	1
Mid-slope NE	50	419	0.1-0.5	2-5	21
Mid-slope NE	60	104	0.1-0.5	2-5	5
Mid-slope SW	40	117	0.25-1.5	5-20	17
Mid-slope SW	50	1,394	0.25-1.5	5-10	138
Mid-slope SW	60	408	0.25-1.5	5-10	41
Drainage	40	36	0-1.5	0-20	0
Drainage	50	88	0-1.5	0-2	0
Drainage	60	178	0-1.5	0-2	0
RCA	50	40	0-1.5	0-20	0
RCA	60	373	0-1.5	0-2	0

2. Scenic Corridor

Alternative 3 includes the same treatments in the Scenic Corridor as described in Alternative 1

3. Fuels Reduction

Fuels Treatments under Alternative 3 would be as described in Alternative 1 with the following adjustments (Maps 2 and 3):

- Roadside fuel-breaks would total 72.6 acres.
- Shaded fuel-breaks within the WUI would total 582 acres.
- Approximately 4769 acres would be treated with prescribed fire.
- Hand or Mechanical Thinning (<10” dbh, Retain 50% CC) would be conducted on 72 acres.
- Hand or Mechanical Thinning (<10” dbh, Retain 60% CC) would be conducted on 21 acres.
- Hand thinning (<10”) would be conducted on 741 acres.

4. Mature Forest Wildlife Habitat Restoration

Under Alternative 3, vegetation treatments as described in the Forest Restoration, Scenic Corridor, and Fuels Reduction sections would occur within wildlife habitats as shown in Table 2.04-2.

Table 2.04-2 Acres of proposed treatments that would occur within wildlife habitat- Alternative 3

Treatment	CSO HRCA	CSO PAC	NGO PAC
Forest Restoration Merchantable Timber Thinning			
Drainage – retain 50% CC	62	0	0
Drainage – retain 60% CC	141	0	0
Mid-slope NE – retain 50% CC	188	0	0
Mid slope NE – retain 60% CC	94	0	0
Mid-slope SW – retain 50% CC	836	0	0
Mid-slope SW – retain 60% CC	334	0	0
RCA – retain 60% CC	203	0	0
Ridge – retain 40% CC	425	0	0
Ridge – retain 50% CC	10	0	0
Plantation: Mastication / Biomass	23	0	0
Meadow/Aspen Conifer removal	18	0	0

Treatment	CSO HRCA	CSO PAC	NGO PAC
Scenic Corridor	102	0	0
Fuels Reduction			
Roadside Fuel-break	21	0	0
Shaded Fuel-break	28	0	0
Shaded Fuel-break - WUI	27	0	0
Prescribed Fire	1,922	314	66
Hand Treat (<10in) or Mechanical – retain 50% CC	68	00	0
Hand Treat (<10in) or Mechanical – retain 60% CC	20	0	0
Hand Thinning (<10in)	648	0	0
Hand Thinning (<6in)	136	1342	106

5. Heritage Resources

Alternative 3 includes the same heritage resource treatments as described in Alternative 1.

6. Aquatic Organism Passage (AOP) Restoration

Alternative 3 includes the same aquatic organism passage treatments as described in Alternative 1.

7. Streams, Riparian Areas, and Special Aquatic Features Restoration

Alternative 3 includes the same streams, riparian areas, and special aquatic features restoration treatments as described in Alternative 1 with the following exception:

- Conifers encroaching on 109 acres of meadows and 125 acres of meadow/aspen stands would be thinned.

8. Recreation

Alternative 3 includes the same recreation treatments as described in Alternative 1 with the following exceptions (Map 6):

- Approximately 0.75 miles of motorized access routes would be added to the existing NFTS).
- The non-motorized trail between Liberty Vista Point and 6N79 would not be constructed.
- The dispersed campsite at Sand Flat would be improved (ID 674).
  - A parking area to accommodate 8-10 vehicles would be constructed parallel to 7N02.
  - Rocks, logs, or other materials would be installed to delineate the parking area.
  - The existing toilets would be decommissioned.
  - A new vault toilet would be placed near the parking area outside of the meadow.
  - A 0.16 mile user created trail into the campsite would be decommissioned.
- A 0.26 mile OHV trail (< 50”) would be constructed from Skyhigh subdivision to 07N11.
  - A constructed stream crossing (bridge, culvert, or other) would be used over the unnamed tributary.

9. Transportation

Physical Actions

Physical actions proposed under Alternative 3 are similar to Alternative 1 with minor modifications. The lengths (miles) of each physical action proposed are summarized in Table 2.04-3 and displayed on Map 8 (Transportation Report Appendix A).

Table 2.04-3 Physical actions to the transportation system under Alternative 3

Physical Actions	Existing System (miles)			
	System Road	System Trail	Unauthorized	Total
All Year Gate	1.23			1.23
Close ML1	1.31			1.31
Construct		1.62		1.62
Decommission	4.02	2.41	9.29	15.72
Maintain	57.91	3.09		61.00
Maintain/Close	0.96	0.74		1.70
Maintain/Gate	1.29	0.75		2.04
Realign Road	0.67			0.67
Realign Road/Close	0.41			0.41
Realign Road/Gate	0.03			0.03
Reconstruct/Close	1.83	0.04		1.87
Reconstruct/Gate	1.32	0.23		1.55
Reconstruct	32.49	3.82		36.31
Reopen/Close	1.35	1.10		2.45
Roadside Barrier	0.44			0.44
Watershed Rehab	2.10	0.30		2.40
Watershed Rehab/Close	0.38			0.38
Watershed Rehab/Gate	0.03			0.03
Totals	**107.77**	**14.10**	**9.29**	**131.16**

Changes in NFTS Travel Management Designations

Alternative 3 contains the same changes to the NFTS Travel Management Designations with the following modifications (Transportation Report Appendix A).

- Approximately 1.07 of system road and 2.23 miles of non-system routes would be reassigned as system trail.
- Changes to NFTS Vehicle Class would be as displayed in Table 2.04-4.
- Approximately 5.21 miles of system trail and 2.19 miles of non-system routes would be reassigned as system road.
- Approximately 4.02 miles of system road and 2.41 miles of system trail would be decommissioned and removed from the system.

Table 2.04-4 Changes in NFTS Vehicle Class under Alternative 3

Existing Vehicle Class	Alternative 3 Vehicle Class (miles)					
	ALL	HLO	4WD	OHV	NONE	TOTAL
ALL			1.04		8.42	9.46
HLO	2.99				2.01	5.00
4WD	2.12				4.47	6.59
NONE	3.61	0.02	0.03	1.61		5.27
Totals	**8.72**	**0.02**	**1.07**	**1.61**	**14.9**	**26.32**

ALL – Open to all vehicles; WOS – Open to ATVs only when 12 inches or more of snow is present;
HLO – Open to highway legal vehicles only; 4WD – Open to 4WD vehicles only;
OHV – Open to Off Highway Vehicles; NONE – Not open to any vehicle.

10. Management Requirements

Alternative 3 includes the management requirements described in Chapter 2.05.

2.05 MANAGEMENT REQUIREMENTS COMMON TO ALL ACTION ALTERNATIVES

Based on review of the actions proposed, resource specialists identified the following management requirements that would be implemented under the action Alternatives (1 and 3) (Table 2.05-1, Table 2.05-2 and Table 2.05-3). Management Requirements are designed to implement the Forest Plan and to minimize or avoid potential adverse impacts. Management Requirements are mandatory components of the action alternatives and would be implemented as part of the proposed activities. Most Management Requirements were utilized in other past project activities and, through monitoring, have shown to be very effective in protecting or enhancing resources.

Aquatics

- The construction of roads and trails will be minimized within the RCA.
- Prescribed fire treatments will be designed to minimize disturbance to ground cover and riparian vegetation in RCA, therefore, hand piles will be kept 50 feet from water.
- No prescribed fire will be ignited within riparian vegetation.
- Low velocity water pumps and screening devices for pumps will be utilized during drafting to prevent mortality of eggs, tadpoles and adults.
- Fuels and other toxic chemicals will be stored outside of RCA, to limit exposure of amphibians to toxic material.
- Disturbance will be limited to 20 percent or less of streambanks to reduce the impacts to cover in aquatic habitats.
- Temporary dry crossings on drainages with defined channels will be constructed and removed when the channels are dry and will be installed such that water flow and fish passage will not be obstructed. Wet stream crossings improvement/re-construction should be constructed in the fall, when the channel is not flowing or at low flow. A water diversion plan may be developed for these crossings.
- Relevant project implementation BMPs provided in the Mountain yellow-legged frog, and Yosemite toad Programmatic BO (December 19, 2014) are incorporated into Table 2.05-1 below. A crosswalk of where each programmatic conservation measure is addressed in the Hemlock project is provided in the Aquatics BA/BE.

Heritage Resources

- All heritage resource sites would be avoided or treated according to Programmatic Agreements with the California State Historic Preservation Office, Tribal Historic Preservation Offices, and Cooperative Agreements between the USDA Forest Service and federally and/or state recognized tribes.
- Restoration actions within selected heritage resource sites would be monitored by Forest or District Archeologist.
- Soil erosion control devices (fiber matting, weed free straw, geotextiles, silt fencing, erosion control logs, woody debris, etc.) may be used within and/or around archaeological site boundaries to protect heritage resources.
- If new heritage resources are discovered during implementation, all work in the vicinity would cease until a Forest or District Archeologist examines and assesses the resource. Appropriate measures would be undertaken to protect the new resource as activities resume.
- No barriers would be installed within 25 feet of the boundaries of heritage resource area without specific approval and an archaeological monitor for installation.
- Heavy equipment, tilling compacted soil, and constructing drainage structures (e.g. mastication, root ripping, water bars, rolling dips) are prohibited within heritage resource sites.
- Slash piling would not be located within the boundaries of known heritage resources unless Forest or District Archeologist approves the location and the work is monitored by heritage resource staff.

Understory vegetation and adjacent felled trees may be piled outside of heritage site boundaries for burning.

- Burn piles would be placed greater than 25 feet from known historic isolates and sites (e.g. arborglyphs, historic inscriptions or cabin sites).
- Dendroglyphs/arborglyphs (culturally inscribed trees) will not be felled and will be avoided during prescribed fire.
- Trees would be felled away from heritage sites unless authorized by the District or Forest Archaeologist.
- Pre-burn site preparation may include removing duff and/or filling bedrock milling feature cups with sterile soil to protect them from rapid heat fluctuations, or the use of temporary protection materials.
- Any heritage resources that may be negatively impacted by the proposed actions would be flagged for hand treatment or avoidance. If flagged for hand treatment, monitoring by Forest or District Archeologist would be required on-site for implementation.
- No ground disturbance or dragging of material would occur within the known boundaries of archaeological features, heritage sites, or historic properties unless authorized by District or Forest Archeologist.

Noxious Weeds

- Standard contract provisions for equipment cleaning will be applied to timber and construction activities, including washing of vehicle prior to arrival at the work site and following completion of work in an area. For all other activities, all equipment that leaves roads or works with soil must be free of soil, mud (wet or dried), seeds, vegetative matter or other debris that could contain seeds. Dust or very light dirt that would not contain weed seed is not a concern.
- Slash may be used in lieu of straw for protection of areas susceptible to erosion. If straw is the only option then it must be certified weed free straw.
- During the reroute of Road 6N58Y ensure that all equipment is thoroughly washed to remove Klamath weed propagules after use. Continue hand pulling efforts after reroute is complete to reduce the negative impact of Klamath weed on native species.

Range

- Avoid damage to rangeland infrastructure (fences, water developments, and cattleguards) during project implementation. Any serviceable infrastructure that is damaged during implementation would be repaired to Forest Service standards.
- Post-harvest road maintenance would include maintenance of existing cattleguards to Forest Service standards.
- When no longer needed, livestock exclosures would be completely removed to reduce the potential for livestock injury and hampered livestock movement.
- Project related livestock barriers must be maintained to Forest Service standards such that livestock cannot become trapped inside the excluded area. All fences would have gates installed.
- Consider seeding to provide for site stabilization in areas adjacent to meadows where project-related disturbance occurs. Use only native, sterile or non-persistent weed-free seed.
- Conifer planting would not occur in meadows or adjacent to meadows where there is natural potential for meadow plant communities.
- Coordinate with range staff during project implementation to ensure proper communication with range permittees on active livestock grazing allotments in the project area. Treatment timing would be coordinated to minimize conflicts with grazing operations.

Recreation

- Treatment timing would be coordinated to minimize conflicts with recreation use.

- Temporary road and/or skid trail crossings across designated forest trails would be kept to a minimum. Any crossings would be perpendicular to designated forest trails.
- Minimize overlaying skid trails/haul roads on non-motorized system trails.
- If trails are used as skid trails/haul roads, trail cleanup/rehabilitation (including returning the trails to pretreatment standard) would be included in the contract.
- Character trees and trees that define the trail corridor (as identified by timber or recreation staff) should be retained where ever feasible.
- Warning signs would be placed on all trail access points and along the trail where activities are occurring.
- When activities are occurring along open trails, slash would be treated within 100' of the corridor within specified timeframes (check with recreation specialist).

Sensitive Plants

- No mechanical operations (e.g. mastication, fuel-break construction/maintenance, driving, temporary roads, skid trails), prescribed burning, or piling and burning would occur on lava caps.
- Surveys to detect the presence of Forest Service sensitive plants would occur prior to any water source development. Surveys would be conducted between April and August. If sensitive plant populations are present, activities would be adapted to minimize mortality or disturbance, or, if possible, transplanting would be conducted.
- Project adherence to the Forest Plan direction for RCAs would be followed for special aquatic features.

Soils

- On slopes less than 25%, maintain well-distributed organic soil cover of 50% after thinning treatment, prescribed fire, or site preparation in gaps. Maintain 60% cover on steeper slopes, and 70% in RCAs. Soil cover consists of basal live plant cover, litter, fine woody debris, and downed logs.
- Retain a minimum of 5 downed logs per acre for soil cover and nutrient cycling as long as this requirement does not exceed fuel management objectives. Desired logs are greater than 20 inch diameter and >10ft long in a variety of decomposition classes.
- Monitor ground-based operations occurring between November 1 and June 1 (test for soil moisture and trafficability) to prevent soil compaction. Ground-based equipment would operate on relatively dry soils of high soil strength, or bearing capacity.
- Subsoil all temporary roads, landings, and main skid trails except where high rock content, slope, moisture content, depth to restricting layer, or erosion hazard would limit subsoiling feasibility. Coordinate with the soil scientist during project implementation to determine final subsoiling needs.
- Subsoiling Provision- Include winged ripper tool design specifications and maximum subsoiling acres in the contract or operating plan. Subsoiling depth requirements: Landings and temp roads, 24 inches; main skid trails, 18 inches. Maximum furrow depth, 8 inches. Common furrows deeper than eight inches on subsoiled terrain would be backbladed to reduce rill and gully erosion potential.
- When excessive soil displacement occurs, the Contracting Officer's Representative (COR) or soil scientist may require replacing or recontouring soil.
- Limit skidding with rubber-tired or fixed track equipment to slopes less than 35%; dozer piling would be limited to less than 25%; and low ground pressure tracked equipment (i.e. masticator/feller-buncher) would be limited to less than 45% slope.
- When the depth of masticated fuels exceeds 4 inches across greater than 25% of the burn area, ensure adequate soil moisture is present (greater than 15% by volume soil water) in the upper 6 inches of the soil profile when burning.
- Dozer piling would be performed with a machine equipped with a brush rake on slopes less than 25%. The blade should be kept about 6 inches above ground level to prevent soil, litter, and duff material

from being piled. Piles should be relatively free of soil (less than 10% soil material), or operator may be required to rebuild piles and re-spread soil.

- Machine piling locations within gaps may need to be reviewed by the soil scientist or sale administrator, if thin soils (less than 25 inches deep) are present.
- In all aspen meadows and special aquatic features with planned mechanical thinning operations, the boundary of the exclusion zone would be reviewed by the soil scientist or hydrologist and mapped with a global positioning system (GPS).
- Tree removal from or around aspen meadows and SAFs would be done with low ground pressure tracked equipment (less than 13 psi) to adequately protect soil and water resources (i.e. equipment that is light on the land, rubber-tired equipment, equipment that operates on a bed of slash, or other innovative technologies that reduce impacts to soils). Operations should occur on dry soil, or by end-lining of trees <100 ft. out of the meadow. Other mechanical removal methods should be approved by soil scientist or hydrologist.

Transportation

- Preserve sufficient road width for the critical vehicle when installing gates or cattle guards.

Visual Quality

- Topsoil would be side cast during temporary road construction to be used for future decommissioning and recontouring.
- Intersect temporary roads and skid trails at a right angle, and where feasible, curve after the junction to minimize the length of route seen from the primary travel route.
- Within scenic corridor treatment areas and areas with a VQO of Retention:
  - Log landings and skid trails would be minimized.
  - Slash would be abated near landing by scattering, chipping, or other techniques.
  - Slash and other debris would be removed, burned, masticated, or lopped to a height of 12 inches or less.
  - Cut trees (as opposed to leave trees) would be marked and species designation would be utilized where appropriate to minimize the amount of marking.

Wildlife

- A limited operating period would be applied to vegetation and fuels treatments, and road reconstruction activities within 0.25 miles of a known spotted owl activity center (or PAC boundary if activity center is unknown) from March 1 through August 15. LOPs may be lifted if surveys conducted to protocol confirm non-presence or non-breeding.
- A limited operating period would be applied to vegetation and fuels treatments, and road reconstruction within 0.25 miles of a known goshawk activity center (or PAC boundary if activity center is unknown), from February 15-September 15. LOPs may be lifted if surveys conducted to protocol confirm non-presence or non-breeding.
- A District Wildlife Biologist would be notified if any Federally Threatened, Endangered, Candidate species or any Region 5 Forest Service Sensitive species are discovered during project implementation.
- Large diameter cull logs located at landings would be returned to units where coarse woody debris in decay classes 1 and 2 are deficient, as determined by the Forest Service.

Watershed

- Mechanized equipment within RCAs would follow guidelines displayed in Table 2.05-1 (adapted from Frazier 2006)

- Operations would follow additional management requirements derived from Regional and National Best Management Practices (BMPs) (USDA 2011, USDA 2012) and Riparian Conservation Objectives (RCOs) (USDA 2004) as displayed in Table 2.05-2.
- BMPs applicable to this project are listed in Table 2.05-2 with site-specific requirements and comments. Project planners and administrators (e.g., layout, Sale Administrator, Contracting Officer Representative) are responsible for consulting with a hydrologist and/or soil scientist prior to or during project implementation for interpretation, clarification, or adjustment of watershed management requirements.

Table 2.05-1 Operating requirements for mechanized equipment operations in RCAs

Stream Type[1]	Zone	Width (feet)	Equipment Requirements	Element	Operating Requirements
Perennial/ Intermittent Streams and SAFs[1]	Exclusion	0 - 15	Mechanical Harvesting/ Shredding[2]: Prohibited		
		0 - 50	Skidding[3]: Prohibited		
	Transition	15 - 100	Mechanical Harvesting/ Shredding: Allowed	Soil Strength	Operate only when 90% of total tracked area is rutted less than 4 inches deep
				Soil Cover	Operate only when continuous ground cover is retained in 90% of the total tracked area.
				Streamcourse Debris	Remove activity-created woody debris to above the high water line of stream channels
				Vegetation	Retain obligate riparian shrubs and trees (e.g. willows, alder, aspen)
				Streambanks	Do not damage streambanks with equipment.
		50 - 100	Skidding: Allowed	Soil Cover	Retain a minimum of 50% evenly distributed ground cover in the area traveled by tires or tracks
				Skid Trails	Use existing skid trails except where unacceptable impact would result. Do not construct new primary skid trails within 100 feet of the stream
				Stream Crossings	The number of crossings should not exceed an average of 2 per mile.
	Outer (Perennial/SAFs)	100 - 300	Mechanical Harvesting/ Shredding/ Skidding: Allowed	Skid Trails	Allow skid trail density and intensity to gradually increase with distance from the Transition Zone
	Outer (Intermittent)	100 - 150	Mechanical Harvesting/ Shredding/ Skidding: Allowed	Skid Trails	Allow skid trail density and intensity to gradually increase with distance from the Transition Zone
Ephemeral	Exclusion	0 - 15	Mechanical Harvesting/ Shredding: Prohibited		
		0 - 25	Skidding: Prohibited		
	Transition	15 - 50	Mechanical Harvesting/ Shredding: Allowed		
		25 - 50	Skidding: Allowed	Soil Cover	Retain a minimum of 50% evenly distributed ground cover in the area traveled by tires or tracks
				Stream Crossings	The number of crossings should not exceed an average of 3 per mile

[1] Perennial streams flow year long. Intermittent streams flow during the wet season but dry by summer or fall. Ephemeral streams flow only during or shortly after rainfall or snowmelt. Special aquatic features (SAFs) include lakes, meadows, bogs, fens, wetlands, vernal pools and springs.
[2] Low ground pressure track-laying machines such as feller bunchers and masticators.
[3] Rubber-tired skidders and track-laying tractors.

Table 2.05-2 Additional watershed management requirements incorporating BMPs and Forest Plan S&Gs

Management Requirements	BMPs/Forest Plan[1]/Locations
Erosion Control Plan - Prepare a project area Erosion Control Plan (USDA 2011) approved by the District Ranger prior to the commencement of any ground-disturbing project activities. Prepare a BMP checklist before implementation.	**Regional BMPs** 2-13 Erosion Control Plans (roads and other activities) 1-13 Erosion Prevention and Control Measures During Operations 1-21 Acceptance of Timber Sale Erosion Control Measures before Sale Closure **National Core BMPs** Veg-2 Erosion Prevention and Control **Forest Plan S&Gs** 194 (RCO 4) **Locations**: all areas where ground-disturbing activities occur.
Operations in Riparian Conservation Areas - Delineate riparian buffers along streams and around special aquatic features within project treatment units as described above in Table 2.05-1. - Fell trees harvested within RCAs directionally away from stream channels and SAFs unless otherwise recommended by a hydrologist or biologist. Fall hazards trees that cannot be removed either parallel to the contour of the slope or into the channel, as recommended by a hydrologist or biologist. - Maintain or provide ground cover (e.g., maintain post-fire conifer needle cast; provide logging slash, straw, wood chips, felled or masticated small burned trees) within 100 feet of perennial and intermittent streams and SAFs to the maximum extent practicable to minimize erosion and sedimentation. A minimum of 50% well distributed ground cover is desired. - Minimize turning mechanical harvesters/shredders in the RCA Transition Zone to limit disturbance.	**Regional BMPs** 1-4 Using Sale Area Maps and/or Project Maps for Designating Water Quality Protection Needs 1-8 Streamside Zone Designation 1-10 Tractor Skidding Design 1-18 Meadow Protection During Timber Harvesting 1-19 Streamcourse and Aquatic Protection 5-3 Tractor Operation Limitations in Wetlands and Meadows 5-5 Disposal of Organic Debris 7-3 Protection of Wetlands **National Core BMPs** Aq Eco-2 Operations in Aquatic Ecosystems Plan-3 Aquatic Management Zone Planning Veg-1 Vegetation Management Planning Veg-2 Erosion Prevention and Control Veg-3 Aquatic Management Zones Veg-4 Ground-Based Skidding and Yarding Operations **Forest Plan S&Gs** 193 (RCO 2) 194 (RCO 3) 194 (RCO 4) 195 (RCO 5) **Locations:** All units containing RCAs and SAFs
Road Construction and Reconstruction - Maintain erosion-control measures to function effectively throughout the project area during road construction and reconstruction, and in accordance with the approved erosion control plan. - Stabilize disturbed areas with certified weed free mulch, erosion fabric, vegetation, rock, large organic materials, engineered structures, or other measures according to specification and the erosion control plan. - Set the minimum construction limits needed for the project and confine disturbance to that area. - Adjust surface drainage structures to minimize hydrologic connectivity by: discharging road runoff to areas of high infiltration and high surface roughness; armoring drainage outlets to prevent gully initiation; and increasing the number drainage facilities within RCAs. - Minimize diversion potential by installing diversion prevention dips that can accommodate overtopping runoff. Place diversion prevention dips downslope of crossing, rather than directly over the crossing fill, and in a location that minimizes fill loss in the event of overtopping. Armor diversion prevention dips when the expected volume of fill loss is significant. - Locate and designate waste areas before operations begin. Deposit and stabilize excess and unsuitable materials only in designated sites. Do not place such materials on slopes with a high risk of mass failure, in areas subject to overland flow (e.g., convergent areas subject to saturation overland flow), or within the RCA. Provide adequate surface drainage and erosion protection at disposal sites. - Do not permit side casting in RCAs. Prevent excavated materials from entering	**Regional BMPs** 2-2 General Guidelines for the Location and Design of Roads 2-3 Road Construction and Reconstruction 2-8 Stream Crossings 2-13 Erosion Control Plans (roads and other activities) **National Core BMPs** Road-3 Road Construction and Reconstruction **Forest Plan S&Gs** 62 193 (RCO 2) 194 (RCO 4) **Locations**: all new road construction and reconstruction.

Management Requirements	BMPs/Forest Plan[1]/Locations
water or RCAs. - Schedule operations during dry periods when rain, runoff, wet soils, snowmelt or frost melt are less likely. Limit operation of equipment when ground conditions could result in excessive rutting, soil compaction (except on the road prism or other surface to be compacted), or runoff of sediments directly to streams. - Stabilize project area during normal operating season when the National Weather Service predicts a 50% or greater chance of a 2 inch or greater in a 24 hour period storm event. - Keep erosion-control measures sufficiently effective during ground disturbance to allow rapid closure when weather conditions deteriorate. - Complete all necessary stabilization prior to precipitation that could result in surface runoff. - Scatter construction-generated slash on disturbed areas. Ensure ground contact between slash and disturbed slopes. Windrow slashes at the base of fills to reduce sedimentation. Ensure windrows are placed along contours with ground contact between slash and disturbed slope. - Monitor contractor's plans and operations to assure contractor does not open up more ground than can be substantially completed before expected winter shutdowns, unless erosion-control measures are implemented. - Install erosion-control measures on incomplete roads prior to precipitation or the start of winter (November 16 through March 31) and in accordance with the Erosion Control Plan. Remove ineffective temporary culverts, culvert plugs, diversion dams, or elevated stream crossings leaving a channel at least as wide as before construction and as close to the original grade as possible. Install temporary culverts, side drains, cross drains, diversion ditches, energy dissipaters, dips, sediment basins, berms, dikes, debris racks, pipe risers, or other facilities needed to control erosion. Remove debris, obstructions, and spoil material from channels, floodplains, and riparian areas. Do not leave project areas for the winter with remedial measures incomplete. Provide protective cover for exposed soil surfaces. - Avoid road construction in meadows.	
Road Maintenance and Operations - Clean ditches and drainage structure inlets only as often as needed to keep them functioning. Prevent unnecessary or excessive vegetation disturbance and removal on features such as swales, ditches, shoulders, and cut and fill slopes. - Maintain road surface drainage by removing berms, unless specifically designated otherwise. - Accompany grading of hydrologically connected road surfaces and inside ditches with erosion and sediment control installation. - Divert springs across roads to prevent them from pooling and diverting on or along the road. A layer of coarse rock with geotextile fabric or other treatments may be necessary. - Ensure that after road maintenance activities (i.e., grading/earthwork activities) the final road surface drainage system will remove water from the road surface with the purpose to minimize concentrated runoff to an area. Ensure that existing metal/drain gutters are in working condition and /or install them as needed. - Conduct road watering for road maintenance, dust abatement, and road surface protection using approved existing water sources locations. (Water Sources Development and Use below)	**Regional BMPs** 2-4 Road Maintenance and Operations 2-13 Erosion Control Plans (roads and other activities) **National Core BMPs** Road-4 Road Operations and Maintenance Veg-2 Erosion Prevention and Control **Forest Plan S&Gs** 193 (RCO 2) 194 (RCO 4) **Locations**: all roads with maintenance or project use.
Stream Crossings **Design of New or Reconstructed Crossings** - Design permanent stream crossings (new road construction and replacement culverts) to pass the 100-year flood flow plus associated sediment and debris; armor to withstand design flows and provide desired passage of fish and other aquatic organisms. - Locate and design crossings to minimize disturbance to the water body. Use structures appropriate to the site conditions and traffic. Favor armored fords for streams where vehicle traffic is seasonal or temporary, and where the ford design maintains the channel pattern, profile and dimension. - Install stream crossings according to project specifications and drawings. Design should sustain bankfull dimensions of width, depth and slope, and maintain streambed and bank resiliency. - Construct diversion prevention dips to accommodate overtopping of runoff if diversion potential exists. Locate diversion prevention dips downslope of the crossing rather than directly over crossing fill; armor diversion prevention dips based on soil characteristics and risk. Install cross drains (e.g., rolling dips; waterbars) to hydrologically disconnect the road above the crossing and to	**Regional BMPs** 2-8 Stream Crossings 2-13 Erosion Control Plans (roads and other activities) **National Core BMPs** AqEco-2 Operations in Aquatic Ecosystems Road-7 Stream Crossings Veg-2 Erosion Prevention and Control **Forest Plan S&Gs** 62 193 (RCO 2) 194 (RCO 4) **Locations**: all stream crossings on constructed, reconstructed and maintained roads.

Management Requirements	BMPs/Forest Plan[1]/Locations
dissipate concentrated flows. **Construction, Reconstruction and Maintenance Operations** - Keep excavated materials out of channels, floodplains, wetlands and lakes. Install silt fences or other sediment- and debris-retention barriers between the water body and construction material stockpiles and wastes. Dispose unsuitable material in approved waste areas outside of the RCA. - Inspect and clean equipment; remove external oil, grease, dirt and mud and repair leaks prior to unloading at site. Inspect equipment daily and correct identified problems before entering streams or areas that drain directly to water bodies. Remove all dirt and plant parts to ensure that noxious weeds and aquatic invasive species are not brought to the site. - Remove all project debris from the stream in a manner that will cause the least disturbance. - Minimize stream bank and riparian area excavation during construction. Stabilize adjacent disturbed areas using mulch, retaining structures, and or mechanical stabilization materials. - Ensure imported fill materials meet specifications, and are free of toxins and invasive species. - Divert or dewater stream flow for all live streams or standing water bodies during crossing installation and invasive maintenance.	
Road Closure/ ML 1 Roads - Remove road stream crossings and other culverts identified at high risk of failure and posing a threat to water quality before a road is closed. - Block closed roads to prevent vehicle access. - Road-stream crossings deemed safe to leave in place would be treated to remove the potential for streamflow diversions in the event of a crossing failure or blockage, and, where needed, would have rock armor added to downstream crossing fill to prevent erosion. - Ensure that the road, culvert, and all hydrologically connected drainage structures are cleaned, and sediment and erosion controls are intact and functioning prior to closure. - Ensure road is effectively drained (e.g. waterbars, dips, outsloping) and treated to return the road prism to near natural hydrologic function. - Treat and stabilize road surfaces through subsoiling, scattering slash, and/or revegetation as needed. Reshape and stabilize side slopes as needed. - Where vehicles have previously breached barriers or OHV traffic volume is high, treat the first part of the decommissioned route with greater intensity of traffic elimination techniques such as camouflaging with slash, re-contouring and highly durable barriers.	**Regional BMPs** 2-6 Road Storage 2-7 Road Decommissioning 2-13 Erosion Control Plans (roads and other activities) **National Core BMPs** Road-6 Road Storage and Decommissioning Veg-2 Erosion Prevention and Control **Forest Plan S&Gs** 57 193 (RCO 2) **Locations**: all roads post-project closed or ML1 status.
Road Decommissioning - Ensure road is effectively drained (e.g. waterbars, dips, outsloping) and treated to return the road prism to near natural hydrologic function. - Block road to prevent vehicle access. - Remove crossing structures and restore stream channels and natural hillslope drainage. - Treat and stabilize road surfaces through tilling, ripping, scattering slash, and/or revegetation. Reshape and stabilize side slopes as needed. - Where vehicles have previously breached barriers or OHV traffic volume is high, treat the first part of the decommissioned route with greater intensity of traffic elimination techniques such as camouflaging with slash, re-contouring and highly durable barriers.	**Regional BMPs** 2-7 Road Decommissioning 2-13 Erosion Control Plans (roads and other activities) **National Core BMPs** Road-6 Road Storage and Decommissioning Veg-2 Erosion Prevention and Control **Forest Plan S&Gs** 57 193 (RCO 2) **Locations**: all roads being decommissioned
Log Landings - Landings will be constructed (for new landings) or improved (for existing landings) to provide for proper drainage. - Re-use log landings to the extent feasible. Existing landings within RCAs may be used when sedimentation effects can be mitigated by erosion prevention measures. - Rehabilitating skid trails, landings, and project use areas deemed necessary by a FS Watershed Specialist. - Do not construct new landings within 100 feet of perennial or intermittent streams and SAFs and 50 feet of ephemeral streams. - See the Soils Report for subsoiling requirements.	**Regional BMPs** 1-12 Log Landing Location 1-15 1-16 Log Landing Erosion **National Core BMPs** Veg-6 Landings Veg-2 Erosion Prevention and Control **Forest Plan S&Gs** 194 (RCO 4) **Locations**: all landings.
Skid Trails - Design and locate skid trails to best fit the terrain, volume, velocity, concentrations and direction of runoff water in a manner that would minimize erosion and sedimentation.	**Regional BMPs** 1-10 Tractor Skidding Design 1-17 Erosion Control on Skid Trails **National Core BMPs**

Management Requirements	BMPs/Forest Plan[1]/Locations
- Locate new primary skid trails at least 100 feet from perennial and intermittent streams and SAFs and new secondary skid trails at least 50 feet from perennial and intermittent streams and SAFs. Locate all skid trails at least 25 feet from ephemeral streams. Primary skid trails typically have 20 or more passes and result in detrimental compaction or displacement of soils. Secondary skid trails have fewer passes and result in minor compaction or displacement. - Use existing skid trails wherever possible except where unacceptable resource damage may result. Existing skid trails <100 feet from streams may be used if they are rehabilitated following use to improve infiltration from their current state. - Skid trails within 100 feet of steams would be given priority for subsoiling. - See Soils Report for additional requirements on rehabilitating skid trails	Veg-2 Erosion Prevention and Control Veg-4 Ground-Based Skidding and Yarding Operations **Forest Plan S&Gs** 194 (RCO 4) **Locations**: all ground-based yarding system units.
Water Sources - For water drafting on fish-bearing streams: do not exceed 350 gallons per minute (0.78 cfs) for streamflow greater than or equal to 4.0 cubic feet per second (cfs); do not exceed 20% of surface flows below 4.0 cfs; and, cease drafting when bypass surface flow drops below 1.5 cfs. - For water drafting on non-fish-bearing streams: do not exceed 350 gallons per minute (0.78 cfs) for streamflow greater than or equal to 2.0 cfs; do not exceed 50% of surface flow; and, cease drafting when bypass surface flow drops below 10 gallons per minute (0.02 cfs). Water sources designed for permanent installation, such as piped diversions to off-site storage, are preferred over temporary, short-term-use developments. Locate water drafting sites to avoid adverse effects to in-stream flows and depletion of pool habitat. - Do not allow water drafting from streams by more than one truck at a time. - Do not construct basins at culvert inlets for the purpose of developing a waterhole, as these can exacerbate plugging of the culvert. - Gradually remove temporary dams when operations are complete so that released impoundments do not discharge sediment into the streamflow. - When diverting water from streams, maintain bypass flows that ensure continuous surface flow in downstream reaches, and keep habitat in downstream reaches in good condition. - Locate approaches as close to perpendicular as possible to prevent stream bank excavation. - Treat road approaches and drafting pads to prevent sediment production and delivery to a watercourse or waterhole. Armor road approaches as necessary from the end of the approach nearest a stream for a minimum of 50 feet, or to the nearest drainage structure (e.g., waterbar or rolling dip) or point where road drainage does not drain toward the stream. - Armor areas subject to high floods to prevent erosion and sediment delivery to water courses. - Install effective erosion control devices (e.g., gravel berms or waterbars) where overflow runoff from water trucks or storage tanks may enter the stream. - Check all water-drafting vehicles daily and repair as necessary to prevent leaks of petroleum products from entering RCAs. Water-drafting vehicles would contain petroleum-absorbent pads, which are placed under vehicles before drafting. Water-drafting vehicles would contain petroleum spill kits. Dispose of absorbent pads according to the Hazardous Response Plan.	**Regional BMPs** 2-5 Water Source Development and Utilization 2-13 Erosion Control Plans (roads and other activities) **National Core BMPs** WatUses-3 Administrative Water Developments AqEco-2 Operations in Aquatic Ecosystems Forest Plan S&Gs 193 (RCO 2) 194 (RCO 4) **Locations**: all water drafting sites.
Rock Borrow Pits/Quarries - Limit the area of disturbance to the minimum necessary for efficient operations. - Rehabilitate and stabilize sites after operations are complete to minimize risk of off-site movement. - Where appropriate, install temporary barriers between the extraction area and surface waters to prevent sedimentation. - Obliterate or decommission temporary access roads unless other treatment is required. - Maintain system roads to quarries or borrow pits.	**Regional BMPs** 2-12 Aggregate Borrow Areas 2-13 Erosion Control Plans (roads and other activities) **National Core BMPs** Min-5 Mineral Materials Resource Sites **Locations**: all borrow pits.
Slope and Soil Moisture Limitations - See Soils Report for specific slope limitations for operation of ground-based equipment. - See Soils Report for wet weather operating restrictions.	**Regional BMPs** 5-2 Slope Limitations for Mechanical Equipment Operation 5-6 Soil Moisture Limitations for Mechanical Equipment Operations **National Core BMPs** Veg-2 Erosion Prevention and Control Veg-4 Ground-Based Skidding and Yarding Operations **Locations**: all ground-based equipment units.

Management Requirements	BMPs/Forest Plan[1]/Locations
Servicing, Refueling, and Cleaning Equipment and Parking/Staging Areas - Allow temporary refueling and servicing only at approved sites located outside of RCAs. - Rehabilitate temporary staging, parking, and refueling/servicing areas immediately following use. - A Spill Prevention and Containment and Counter Measures (SPCC) plan is required where total oil products on site in above-ground storage tanks exceed 1320 gallons or where a single container exceeds 660 gallons. Review and ensure spill plans are up-to-date. - Report spills and initiate appropriate clean-up action in accordance with applicable State and Federal laws, rules and regulations. The Forest hazardous materials coordinator's name and phone number would be available to Forest Service personnel who administer or manage activities utilizing petroleum-powered equipment. - Remove contaminated soil and other material from NFS lands and dispose of this material in a manner according to controlling regulations. - Install temporary wash sites only in areas where the water and residue can be adequately collected and either filtered on site or conveyed to an appropriate wastewater treatment facility.	**Regional BMPs** 2-10 Parking and Staging Areas 2-11 Equipment Refueling and Servicing **National Core BMPs** Road-9 Parking and Staging Areas Road-10 Equipment Refueling and Servicing Fac-7 Vehicle and Equipment Wash Water **Forest Plan S&Gs** 193 (RCO 1) **Locations**: designated temporary refueling, servicing and cleaning sites and parking/staging areas.
Prescribed Fire - Avoid damage to obligate riparian vegetation (e.g. willows, alders, cottonwoods). - Retain a minimum of 75% ground cover within 100 feet of perennial streams and 50 feet of intermittent streams. Ground cover is defined as a minimum of one inch of organic litter, slash, duff, or loose rock fragments, as well as living vegetation less than five feet tall. - Avoid direct ignition within RCAs, including ephemeral channels; fire may back into the riparian area as long as ground cover is maintained. - Avoid constructing fire lines within RCAs unless there is no alternative. New dozer lines would not be constructed within 100 feet of perennial and intermittent streams and 50 feet of ephemeral streams. Constructed fire lines would be restored upon completion of prescribed burning and/or prior to each winter. Restoration would consist of water barring hand and dozer lines, re-contouring of benched trails, and subsoiling of detrimentally compacted dozer lines.	**Regional BMPs** 6-2 Consideration of Water Quality in Formulating Fire Prescriptions 6-3 Protection of Water Quality from Prescribed Burning Effects **National Core BMPs** Fire-1 Wildland Fire Management Planning Fire-2 Use of Prescribed Fire **Forest Plan S&Gs** 194 (RCO 4) **Locations**: All RCAs within units with prescribed fire
Burn Piles - Place burn piles a minimum of 50 feet away from perennial and intermittent streams and SAFs and 25 feet from ephemeral streams. Locate piles outside areas that may receive runoff from roads. Avoid disturbance to obligate riparian vegetation. - Minimize effects on soil, water quality, and riparian resources by appropriately planning pile size, fuel piece size limits, spacing, and burn prescriptions in compliance with state or local laws and regulations if no practical alternatives for slash disposal in the RCA are available.	**Regional BMPs** 6-2 Consideration of Water Quality in Formulating Fire Prescriptions 6-3 Protection of Water Quality from Prescribed Burning Effects **National Core BMPs** Fire-1 Wildland Fire Management Planning Fire-2 Use of Prescribed Fire **Forest Plan S&Gs** 194 (RCO 4) **Locations**: all pile burning areas
Water Quality Monitoring - Conduct implementation and effectiveness monitoring using the Best Management Practices Evaluation Program (BMPEP) (USDA 2002) and the National Core Monitoring Protocols (FS-990b) (USDA 2012).	**Regional BMPs** 7-6 Water Quality Monitoring **Locations**: Monitoring locations would be detailed in a project monitoring plan.
Cumulative Watershed Effects (CWE) Analysis - CWE analysis would be conducted for the project.	**Regional BMPs** 7-8 Cumulative Off-Site Watershed Effects **Locations**: All activities within the project watersheds would be analyzed
Watershed Restoration - A site-specific monitoring plan would be prepared prior to implementation of watershed restoration projects in order to assess effectiveness of restoration efforts. Physical, hydrologic, biological or aquatic indicators of deteriorated conditions would be the focus of the monitoring effort. For all projects, photo-point monitoring would be required at a minimum. - All applicable BMPs would be implemented during watershed restoration activities. - All applicable regulatory permits would be acquired before implementation.	**Regional BMPs** 7-1 Watershed Restoration 2-3 Road Construction and Reconstruction 2-4 Road Maintenance and Operations 2-5 Water Source Development and Utilization 2-6 Road Storage 2-7 Road Decommissioning 2-8 Stream Crossings 2-11 Equipment Refueling and Servicing 2-12 Aggregate Borrow Areas 2-13 Erosion Control Plans (roads and other activities) **National Core BMPs**

Management Requirements	BMPs/Forest Plan[1]/Locations
	AqEco-1 Aquatic Ecosystem Improvement and Restoration Planning AqEco-2 Operations in Aquatic Ecosystems AqEco-3 Ponds and Wetlands AqEco-4 Stream Channels and Shorelines Road-6 Road Storage and Decommissioning Road-7 Stream Crossings Veg-2 Erosion Prevention and Control **Forest Plan S&Gs** 193 (RCO 1) 193 (RCO 2) 194 (RCO 3) 194 (RCO 4) 195 (RCO 5) 195 (RCO 6) **Locations:** All watershed restoration sites (e.g. meadow/channel restoration, decommissioning or roads
Recreation - Design and implementation of newly constructed or reconstructed OHV trails would incorporate applicable practices outlined in BMP 4.7.1, 4.7.2, 4.7.3, 4.7.4, and Rec-4. - OHV trails would be operated and maintained in accordance with BMP 4.7.5, 4.7.6, 4.7.7, and Rec-5. - Restoration of user created trails and dispersed sites would incorporate applicable practices outlined in BMP 4.7.8 and Rec-3. - New parking/staging areas would incorporate applicable practices outlined in BMP 2-10, 4.7.9, and Rec-2. - Campsite improvements at DC-30 would be designed and implemented in accordance with applicable practices in BMP 4-4 and Rec-2. - An Erosion Control Plan approved by the District Ranger would be prepared prior to the commencement of any ground-disturbing project activities. - Prepare a BMP checklist before implementation.	**Regional BMPs** 2-10 Parking and Staging Areas 2-13 Erosion Control Plans 4-4 Control of Sanitation Facilities 4-7.1 – 9 OHV Facilities and Use **National Core BMPs** Rec-1 Recreation Planning Rec-2 Developed Recreation Sites Rec-3 Dispersed Use Recreation Rec-4 Motorized and Non-motorized Trails **Forest Plan S&Gs** 193 (RCO 2) 194 (RCO 4) 195 (RCO 6) **Locations**: Dispersed campsites; new parking/staging areas; trails receiving maintenance or reconstruction; user created trails being decommissioned; trails added to transportation system; new trail construction

[1] Forest Plan S&Gs indicate page number from Forest Plan Direction (USDA 2010).

2.06 ALTERNATIVES CONSIDERED BUT ELIMINATED FROM DETAILED STUDY

Federal agencies are required by NEPA to rigorously explore and objectively evaluate all reasonable alternatives and to briefly discuss the reasons for eliminating any alternatives that were not developed in detail (40 CFR 1502.14). The following alternative was considered but eliminated from detailed study in this EA.

a. Interim Recommendations for the California Spotted Owl

One of the elements of the settlement agreement that resolved litigation with the 2004 Sierra Nevada Forest Plan Amendment was that the Forest Service would analyze an alternative consistent with the interim recommendations for the California spotted owl for site-specific, vegetation management projects within the range of the California spotted owl in the Sierra Nevada National Forests. The interim recommendations for the California spotted owl and forest management was not released prior to public scoping of this EA. As such, an alternative that analyzed in detail the interim recommendations was not possible. However, the Forest Service developed Alternative 3 to provide greater amounts of dense forest closer to spotted owl PACs in HRCAs, while still addressing site specific fuels concerns (see Chapter 3.17, Effects Relative to Issues).

2.07 COMPARISON OF ALTERNATIVES

This section compares the alternatives by providing summary tables showing the key differences between action alternatives. Table 2.07-1 compares the alternatives with a summary of proposed activities.

Table 2.07-1 Comparison of Alternatives: Proposed Activities

Treatment Prescriptions	Unit	Alt. 1	Alt. 2	Alt. 3
Forest Restoration				
Ridge				
Mechanically thin to an average of 40% canopy cover: Gaps 0.25 - 1.5 acre in size on 2% of area	Acre	793	0	758
Mechanically thin to an average of 50% canopy cover: Gaps 0.25 - 1.5 acre in size on 2% of area	Acre	0	0	51
Mid-slope NE				
Mechanically thin to an average of 50% canopy cover: Gaps 0.1 - 0.5 acres in size on 2-5% of area	Acre	540	0	419
Mechanically thin to an average of 60% canopy cover: Gaps 0.1 - 0.5 acres in size on 2-5% of area.	Acre	0	0	104
Mid-slope SW				
Mechanically thin to an average of 40% canopy cover: Gaps 0.25 - 1.5 acres in size on 5-10% of area.	Acre	0	0	117
Mechanically thin to an average of 50% canopy cover: Gaps 0.25 - 1.5 acres in size on 5-10% of area.	Acre	1,873	0	1,394
Mechanically thin to an average of 60% canopy cover: Gaps 0.25 - 1.5 acres in size on 5-10% of area.	Acre	0	0	408
Drainage				
Mechanically thin to an average of 40% canopy cover: Gaps 0. - 1.5 acres in size on 0-2% of area.	Acre	0	0	36
Mechanically thin to an average of 50% canopy cover: Gaps 0. - 1.5 acres in size on 0-2% of area.	Acre	302	0	88
Mechanically thin to an average of 60% canopy cover: Gaps 0. - 1.5 acres in size on 0-2% of area.	Acre	0	0	178
RCA				
Mechanically thin to a minimum of 50% canopy cover: Gaps 0. - 1.5 acres in size on 0-2% of area.	Acre	0	0	40
Mechanically thin to a minimum of 60% canopy cover: Gaps 0. - 1.5 acres in size on 0-2% of area.	Acre	413	0	373
Scenic Corridor				
Thin trees less than 30” dbh to 40% canopy cover: Masticate small trees and brush. Create heterogeneous openings and treatments with feathered edges.	Acre	421	0	421
Plantation				
Sawlogs				
Mechanically thin merchantable timber (<30” dbh) from plantations	Acre	29	0	29
Non-commercial				
Mechanically thin trees less than 16” dbh through mastication, biomass removal, and/or hand piling and burning	Acre	800	0	817
Meadows and Aspen				
Remove conifers less than 30” dbh in meadows and aspen stands. Thin conifers 30” to 40” dbh to 120 ft^2/acre basal area around aspen.	Acre	234	0	249
No Vegetation Treatments				
No vegetation treatments are proposed	Acre	5,440	0	5,316
Soil Productivity				
Ground Cover				
Increase ground cover above 50%	Acre	256	0	256
Brush Retention				
Retain all clumps of brush >20 feet away from leave trees where vegetation is sparse and poses limited fire threat to overstory	Acre	210	0	210
Gully Repair				
Stabilize actively eroding areas, divert water into established channels, or repair road drainages	Acre	47	0	47
Fuels Reduction				
Roadside Fuel-Breaks				
Remove or masticate brush and trees < 10” dbh.	Acre	74	0	73
Shaded Fuel-Breaks - WUI				
Thin trees less than 30” dbh to 40% canopy cover Masticate small trees and brush. Located in Wildland Urban Interface	Acre	557	0	582

Treatment Prescriptions	Unit	Alt. 1	Alt. 2	Alt. 3
Shaded Fuel-Breaks				
Thin trees less than 30" dbh to 40% canopy cover Masticate small trees and brush. Located on prominent ridge tops.	Acre	336	0	336
Prescribed Fire				
Burn with jackpot burning or following mechanical or hand treatments	Acre	4,286	0	4,769
Hand Treat (<10") or Mechanical Retain				
Hand or mechanically thin trees less than 10" dbh while retaining 50% canopy cover	Acre	93	0	72
Hand or mechanically thin trees less than 10" dbh while retaining 60% canopy cover	Acre	0	0	21
Hand Thinning				
Hand thin trees less than 10" dbh, pile and burn	Acre	717	0	741
Hand thin trees less than 6" dbh, pile and burn	Acre	1,497	0	1,497
Streams, Riparian Area, SAF, and Aspen Restoration				
Head-cut /Channel Restoration				
Restore areas of instability, eroding head-cuts, streambanks, and incised channels	Sites	16	0	16
Monitoring / Adaptive Management				
Monitor SAF for indicators of long-term degradation; if monitoring indicates that desired conditions are not being achieved, implement barriers, troughs, or watershed improvements	Sites	47	0	47
Barriers				
Install barriers at streams, SAF, and campground	Sites	3	0	3
Water Developments				
Install troughs away from SAFs, riparian areas, and heritage sites	Sites	4	0	4
Recreation				
Dispersed Recreation Campsites				
Delineate campsites	Sites	21	0	21
Rehabilitate campsites	Sites	3	0	3
Improve campsites	Sites	1	0	2
Restore Trails				
Block / Restore (Decommission) Non-system User Created Trails	Miles	1.1	0	1.3
Decommission a portion of 17EV21 (fire damaged)	Miles	0.57	0	0.57
Reconstruct trail	Miles	2.25	0	2.25
Add Routes				
Add route to National Forest Trail System	Miles	0.36	0	0.75
Trailhead / Parking Areas				
Construct OHV trailhead / staging area	Sites	1	0	1
Construct hiking trailhead / parking area	Sites	1	0	1
New Trails				
Construct new OHV trail	Miles	1.02	0	0.86
Construct new non-motorized trail	Miles	0.7	0	0.5
Resource Protection				
Install bridge	Sites	2	0	2
Install fence line (acres; also included in SAF Barriers above)	Acres	14	0	14
Transportation				
Physical Actions				
System Trails				
Construct Trail	Miles	1.56	0	1.62
Decommission	Miles	2.41	0	2.41
Maintain	Miles	3.84	15.48	3.09
Maintain / Close / Gate	Miles	0.74	0	1.49
Reconstruct	Miles	4.21	0	3.82
Reconstruct / Close / Gate	Miles	0.04	0	0.27
Reopen / Close	Miles	1.1	0	1.1
Watershed Rehab	Miles	0.3	0	0.3
System Roads				
All Year Gate	Miles	1.23		1.23
Close ML1	Miles	1.31	5.15	1.31
Decommission	Miles	3.98	0	4.02
Maintain	Miles	57.91	119.10	57.91

Treatment Prescriptions	Unit	Alt. 1	Alt. 2	Alt. 3
Maintain / Close / Gate	Miles	2.25	0	2.25
Realign Road	Miles	0.67	0	0.67
Realign Road / Close / Gate	Miles	0.44	0	0.44
Reconstruct	Miles	31.68	0	32.49
Reconstruct / Close / Gate	Miles	3.15	0	3.15
Reopen/Close	Miles	2.16	0	1.35
Roadside Barrier	Miles	0.44	0	0.44
Watershed Rehab	Miles	2.1	0	2.1
Watershed Rehab / Close / Gate	Miles	0.41	0	0.41
Unauthorized Routes				
Decommission	Miles	9.38	0	9.29
Changes to NFTS				
Changes to Road and Trail System	Miles	16.94	0	17.13
Changes to Vehicle Class	Miles	26.54	0	26.32

Table 2.07-2 provides a summary of the effects of implementing each alternative by indicators related to the relevant issue (Chapter 1.06).

Table 2.07.2 Comparison of Alternatives: Relevant Issues

Issue/Indicator	Alternative 1 (Proposed Action)	Alternative 2 (No Action)	Alternative 3
Canopy retention in mechanically thinned CSO HRCAs	40% - 489 Acres 50% - 1743 Acres 60% - 203 Acres	No mechanical thinning would occur in CSO HRCAs	40% - 479 Acres 50% - 1164 Acres 60% - 793 Acres
Canopy diversity appropriate for snow retention study	Mechanical thinning treatments would not be designed to evaluate snow water retention based on variable treatment types (in terms of CC) among watersheds.	No mechanical thinning treatments would occur. Existing condition could not be used to demonstrate how management actions influence snow water retention	A paired set of watersheds would be thinned leaving 40% to 60% canopy cover, and would be suitable to evaluate how management actions may influence snow water retention.

3. Environmental Consequences

This Chapter summarizes the physical, biological, social and economic environments of the affected project area and the potential changes to those environments due to implementation of the alternatives. It also presents the scientific and analytical basis for the comparison of alternatives presented in Chapter 2.

3.01 INTRODUCTION

The resource topics covered in this Chapter include an "Existing Condition" section which describes the current condition against which environmental effects were evaluated and from which progress toward desired conditions can be measured. Environmental consequences form the scientific and analytical basis for comparison of alternatives. The environmental consequences discussion centers on direct, indirect and cumulative effects which are defined as follows:

- Direct effects are caused by the action and occur at the same place and time as the action.
- Indirect effects are caused by the action and are later in time, or further removed in distance, but are still reasonably foreseeable.
- Cumulative effects are those that result from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions.

Cumulative Effects

According to the Council on Environmental Quality (CEQ) NEPA regulations, "cumulative impact" is the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such actions (40 CFR 1508.7).

In order to understand the contribution of past actions to the cumulative effects of the proposed action and alternatives, this analysis relies on current environmental conditions as a proxy for the impacts of past actions. Existing conditions reflect the aggregate impact of all prior human actions and natural events that affected the environment and might contribute to cumulative effects. This cumulative effects analysis does not attempt to quantify the effects of past human actions by adding up all prior actions on an action-by-action basis for three reasons:

The cumulative effects analysis in this EA is consistent with Forest Service National Environmental Policy Act (NEPA) Regulations (73 Federal Register 143, July 24, 2008; p. 43084-43099), which state, in part:

"CEQ regulations do not require the consideration of the individual effects of all past actions to determine the present effects of past actions. Once the agency has identified those present effects of past actions that warrant consideration, the agency assesses the extent that the effects of the proposal for agency action or its alternatives will add to, modify, or mitigate those effects. The final analysis documents an agency assessment of the cumulative effects of the actions considered (including past, present, and reasonable foreseeable future actions) on the affected environment. With respect to past actions, during the scoping process and subsequent preparation of the analysis, the agency must determine what information regarding past actions is useful and relevant to the required analysis of cumulative effects. Cataloging past actions and specific information about the direct and indirect effects of their design and implementation could in some contexts be useful to predict the cumulative effects of the proposal. The CEQ regulations, however, do not require agencies to catalogue or exhaustively list and analyze all individual past actions. Simply because information about past actions may be available or obtained with reasonable effort does not mean that it is relevant and necessary to inform decision making. (40 CFR 1508.7)"

Forest Plan Amendment

Alternative 1 and Alternative 3 include a Forest Plan Amendment allowing for restoration of the dispersed campsite at Horse Gulch through improvements and conversion to a developed campground. The Horse Gulch Forest Plan Amendment changes the management area allocation on 15 acres from General Forest (managed for a wide-range of uses including recreation) to Developed Recreation Sites (managed to provide developed recreation opportunities for the public).

The effects analysis in Chapter 3 does not specifically identify effects directly related to the Horse Gulch Forest Plan Amendment; however, the analysis discloses the effects for Alternative 1 and Alternative 3 assuming implementation of this Forest Plan Amendment. Since the Forest Plan Standards and Guidelines for General Forest and Developed Recreation Sites are similar (USDA 2010, p. 161-167) and improvements at Horse Gulch provide beneficial resource effects (3.10 Recreation; 3.12 Soils; 3.14 Visual Resources), this Forest Plan Amendment is not expected to cause any significant direct, indirect or cumulative effects.

CEQA and NEPA Compliance

NEPA requires agencies to assess the environmental effects of a proposed agency action and any reasonable alternatives before making a decision on whether, and if so, how to proceed. The California Environmental Quality Act (CEQA) applies to projects of all California state, regional or local agencies, but not to Federal agencies. Its purposes are similar to NEPA. They include ensuring informed governmental decisions, identifying ways to avoid or reduce environmental damage through feasible mitigation or project alternatives, and providing for public disclosure (CEQA Guidelines, 15002, subd. (a)(1)-(4)).

The CEQ regulations for implementing NEPA encourage cooperation with state and local agencies in an effort to reduce duplication in the NEPA process (40 CFR 1506.2). The CEQ regulations further provide agencies with the ability to combine documents, by stating that “any environmental document in compliance with NEPA may be combined with any other agency document to reduce duplication and paperwork” (40 CFR 1506.4). Furthermore, if an existing document cannot be utilized, portions may be incorporated by reference. Like NEPA, CEQA encourages cooperation with Federal agencies to reduce duplication in the CEQA process. In fact, CEQA recommends that lead agencies rely on a Federal NEPA document “whenever possible,” so long as it satisfies the requirements of CEQA (Cal. Pub. Resources Code, 21083.7).

Overall, the resource analysis contained in this EA meets CEQA requirements; however, the following information is provided since this document uses terminology not commonly used in CEQA and vice versa:

- **Management Requirements**: Chapter 2.05 lists management requirements common to all action alternatives which are designed to implement the Forest Plan and to minimize or avoid potential adverse impacts. Management Requirements are mandatory components of the action alternatives and would be implemented as part of the proposed activities.
- **Green House Gas Emissions**: Chapter 3.01 (Air Quality) and Chapter 3.03 (Climate Change) describe and evaluate greenhouse gas emissions.
- **Growth Inducing Impacts and Energy Impacts**: Chapter 3.05 (Economics) describes and evaluates economic growth inducing impacts. No population growth inducing impacts are expected since NFS lands are not available for urbanization. Chapter 3.05 also describes employment and income opportunities related to the alternatives considered in detail.

Resource Reports

All Biological Evaluations (BEs), Biological Assessments (BAs), Management Indicator Species (MIS) Reports and Resource Specialist Reports prepared for this project are incorporated by reference in this EA. Most resource sections in this Chapter provide a summary of the project-specific reports, assessments, and other documents prepared by Forest Service specialists. These reports are part of the project record on file at the Calaveras District Office in Hathaway Pines, California and they are available by request. The following reports, assessments and other documents are incorporated by reference:

- **Aquatic Species**: Aquatic Biological Assessment/Evaluation and MIS Report
- **Climate Change**: Climate Change and Greenhouse Gas Report
- **Cultural Resources**: Heritage Resource Report
- **Economics/Social**: Economic Report
- **Fire and Fuels**: Fire and Fuels Analysis Report
- **Invasive/Noxious Species**: Noxious Weed Risk Assessment
- **Range**: Range Report
- **Recreation**: Recreation Evaluation
- **Sensitive Plants**: Sensitive Plant Species Biological Evaluation, and Special Aquatic Feature Report
- **Soils**: Soil Specialist Report
- **Transportation**: Transportation Report
- **Vegetation**: Forest Vegetation Report
- **Visual Resources**: Visual Resource Report
- **Watershed**: Hydrology Report (Cumulative Watershed Effects and Riparian Conservation Objectives), and Special Aquatic Feature Report
- **Wildlife**: Biological Assessment/Evaluation for Terrestrial Species, MIS Report, Migratory Land Bird Conservation Report

Information on Other Resources

The alternatives considered in detail do not affect the following resources: Air Quality; Inventoried Roadless Areas; Wild and Scenic Rivers; and, Wilderness. A brief summary on why they are not further discussed in Chapter 3 is provided below.

Air Quality

Air emissions are generally managed and analyzed spatially by air basins where topographic features delineate common air quality characteristics. Air quality conditions are highly controlled by short and long-term meteorological and climate conditions. Most of the land in the Stanislaus National Forest is located in the Tuolumne County Air Pollution Control District (APCD). A smaller portion of the Forest is located in the Great Basin (Alpine County), Calaveras and Mariposa County Air Pollution Control Districts. Tuolumne, Calaveras, and Mariposa APCDs are part of the Mountain Counties Air Basin. A Smoke Management Plan and Burn Permit would be required for all prescribed burning activities, in accordance with Title 17, Smoke Management Guidelines for Agricultural and Prescribed Burning as required by the California Air Resources Board. The project would also comply with additional requirements set forth by the Mountain Counties Air Basin and the Great Basin Air Pollution Control Districts and the Forest Plan.

Particulate Matter, Ozone, Nitrogen oxides and natural occurring asbestos may pose a threat to human health and forest ecosystems in the Stanislaus National Forest and Sierra Nevada. Some of the pollutants regulated under the National Ambient Air Quality Standards and the California Ambient Air Standards are created by motorized vehicles and can cause detrimental effects to public health and ecosystems. The air pollutants of concern in this area include particulate matter (PM2.5 and PM10/fugitive dust), ozone, and natural occurring asbestos. Air quality within the project area is within national and state standards for visibility, particulate levels (PM10), and pollutants. Air quality in the project area could be effected by

agricultural, and adjacent private forest activities producing seasonal dust and smoke as well as recreational activities using dirt roads in and around the project area. These effects would generally be short-term (less than 24 hours) and localized. The proposed action of piling activity fuels (machine and hand) and prescribed burning would occur after the completion of thinning harvest. Depending on the amount of activity fuels in the project area, it is estimated that it could take five to ten years to complete all burning activities. Burning would be conducted on permissive burn days for Calaveras County, which should result in a negligible effect to the air quality of the project area, and ensure smoke dispersion to meet air quality standards and minimize short-term or long-term effects.

Inventoried Roadless Areas

A portion of the Carson-Iceberg Inventoried Roadless Areas (IRA) is located on NFS lands within or directly adjacent to the Hemlock project area. The alternatives do not include any activities within or adjacent to this IRA. Nearby short-term road maintenance and other project induced noise is consistent with the Roadless Area Characteristics[2] identified in the 2001 Roadless Rule. Therefore, the alternatives are not likely to result in direct, indirect, or cumulative effects on those characteristics.

Wild and Scenic Rivers

The Hemlock project area does not contain designated or proposed Wild and Scenic Rivers. Just south of the Hemlock project area, a segment of the North Fork Stanislaus River (Highland Creek to McKays Reservoir) is a Proposed Wild and Scenic River (USDA 1991, p. 34) with Scenic, Recreation and Wildlife Outstandingly Remarkable Values (ORVs). The proposed treatments will not affect the free flowing conditions of the North Fork Stanislaus since no treatments occur in the river channel. Chapter 3.15 (Watershed) address effects on water-based (Water Quality) values. The proposed treatments outside the river corridor are of short duration and do not degrade the Scenic, Recreation or Wildlife ORVs and no negative cumulative effects are expected based on the analysis in the EA described below:

- **Scenic**: Chapter 3.14 (Visual Resources) addresses effects on Scenic values. Where approved actions are within sight distance of Wild and Scenic Rivers, distance and geographic features obscure most treatments from the casual observer or users of those areas. Project activities closest to the North Fork Stanislaus River would occur above the visual topographic inflection point (if viewed from the river). Further, treatments closest to the River are associated with the Highway 4 Scenic Byway (Visual Resource Report).
- **Recreation**: Chapter 3.10 (Recreation) addresses effects on Recreation values. Temporary effects on recreational opportunities may occur along roads or trails, or in areas, that are closed during project implementation.
- **Wildlife**: Chapter 3.02 (Aquatics) and Chapter 3.16 (Wildlife) address effects on wildlife values.

Wilderness

The Hemlock project area does not contain areas designated as Wilderness. The Mokelumne Wilderness occurs to the north and northeast of the project area, and the Carson-Iceberg Wilderness occurs to the east and southeast of the project area. The scenic impacts of project activities from key peaks in the Mokelumne Wilderness were analyzed in the Visual Resource Report.

Small portions of the Hemlock project may be visible from Wilderness areas. Most views of the project area would be > 5 miles from the Wilderness visitor, and obstructed by dominant ridges at the edge of the project area. The proposed actions would result in visually heterogeneous forest stands through irregular

[2] Roadless Area Characteristics are: high quality or undisturbed soil, water, and air; sources of public drinking water; diversity of plant and animal communities; habitat for threatened, endangered, proposed, candidate, and sensitive species and for those species dependent on large, undisturbed areas of land; primitive, semi-primitive non- motorized, and semi-primitive motorized recreation opportunities; reference landscapes; natural appearing landscapes with high scenic quality; traditional cultural properties and sacred sites; and, other locally identified unique characteristics. (66 Federal Register 9, January 12, 2001; p. 3245)

spacing of clumps and gaps (3.14 Visual Resources). Treatment units would be of a size and shape which emulate natural occurrences at the landscape level. Unnatural edges, roads and landings would not be a dominant view for the Wilderness visitor. As such, the Hemlock project would not affect values associated with Wilderness experiences.

3.02 AQUATICS

The following analyses related to aquatic species present a summary of the findings from the Aquatic Species Biological Assessment and Aquatic Species Biological Evaluation.

Existing Condition

The project area provides approximately 20 miles of perennial aquatic habitat that sustains some surface flow through the summer. The perennial habitat contains approximately 16.6 miles of fish bearing streams that support self-sustaining populations of non-native trout (rainbow trout, brown trout). The project area has a high variability in fine sediment. The Middle Fork Mokelumne River and Blue Creek watersheds have a low amount of fine sediment (<14%) and have a large capacity to assimilate sediment influx. Big Meadow Creek showed high levels of fine sediment with five out of six stream reaches measuring pool tail fine sediment amounts above 14%. There is no fine sediment threshold for the Sierra Nevada yellow legged frog; however, effects analyses utilized the fine sediment threshold reported for the Foothill yellow-legged frog of 13% (Bryce et al. 2010).

Sierra Nevada yellow legged frogs are strongly associated with montane riparian habitats. The project area contains approximately 20.2 miles of perennial stream channels in Big Meadow Creek, Middle Fork Mokelumne River, Blue Creek, Hay Gulch, Water Gulch, and Pumpkin Hollow. Known localities of Sierra Nevada Yellow Legged Frog are located approximately 1.0 miles from the project area in Moore Creek (4,600 ft.) and Mattley Meadow. No known yellow legged frog localities occur within habitats which could be affected by project activities.

Yosemite toads occupy high elevation montane meadows and surrounding forest upland. On the Stanislaus National Forest, Yosemite toads are known to occur at approximately 110-120 sites, all above 7,000 feet in elevation. Adults breed in meadows and then travel into the surrounding forest upland over-wintering. The nearest known occupied site by the toad is found approximately five miles east of the project area at Wheeler Lake. No known Yosemite toad localities occur within habitats which could be affected by project activities.

In the Stanislaus National Forest, the western pond turtle is associated with low gradient streams and ponds at elevations from 1,520 to 5,360 ft. The highest elevation riverine population of turtles on Forest occurs at an elevation of 3,720 ft. Two of 18 known occurrences are above 4,000 ft. in pond environments. The Middle Fork Mokelumne River has approximately 510 acres of suitable breeding and dispersal western pond turtle habitat in the project area. Although pond turtles may travel further than 980 feet from aquatic habitat for overwintering purposes, these movements appear to be far less frequent. Since most nesting occurs within 328 ft. of aquatic habitat (Holland 1994, Lovich and Meyer 2002), potential for impacts beyond 328 ft. of suitable aquatic habitat is very low and would likely result in negligible effects to the species. Systematic surveys of the project area were not conducted for pond turtles in all potentially suitable aquatic habitats. As such, species presence was assumed for effects analyses.

Federally listed endangered, threatened or proposed aquatic wildlife species, their associated critical habitat, and Forest Service sensitive species considered for analyses are included in Table 3.02-1. Detailed analysis for California red-legged frog, California red-legged frog critical habitat, delta smelt, and Central Valley steelhead, Lahontan cutthroat trout, Limestone salamander, Foothill yellow-legged frog, and hardhead was not conducted because the project area was not within the species' geographic or

elevation range, and suitable habitat was not present in or around the project area. These species are not discussed in greater depth in this EA.

The effects of project proposed activities on the Sierra Nevada yellow-legged frog, Yosemite toad, and Western pond turtle are described below. The effects analysis assumes the effective implementation of all BMPs and Standards and Guidelines outlined in Chapter 2. The Hemlock project area does not contain critical habitat for either the Sierra Nevada yellow-legged or the Yosemite toad. Required consultation with US Fish and Wildlife was completed.

Most literature published up to 2007 pertaining to yellow-legged frogs could refer to either *R. muscosa* or *Rana sierrae* (Mountain yellow-legged frog or Sierra Nevada yellow-legged frog). All of this published literature was considered for effects analyses. *Rana sierrae* is the recognized species that occurs on the Stanislaus National Forest.

Table 3.02-1 Estimated direct, indirect, and cumulative effects with determination for Federally listed endangered, threatened, or candidate aquatic species and Forest Service sensitive species considered in the Hemlock project analyses

Species Name	Status	Project within Species Distribution	Project within Elevation Range	Habitat in or around Project	Species Present	Direct/ Indirect Effects	Determination
California red-legged frog (*Rana draytonii*	Threatened	No	No	No	No	No/No	No Effect
California red-legged frog Critical Habitat	Designated	No	No	No	No	No/No	No Effect
Sierra Nevada yellow-legged frog (*Rana sierrae)*	Endangered	Yes	Yes	Yes	AP[1]	Yes/Yes	MA/LAA[2]
Sierra Nevada yellow-legged frog Critical Habitat	Proposed	Yes	Yes	No	No	No/No	No Effect
Yosemite toad (*Anaxyrus canorus)*	Threatened	Yes	Yes	Yes	AP	Yes/Yes	MA/LAA
Yosemite toad Critical Habitat	Proposed	Yes	No	No	No	No/No	No Effect
Lahontan cutthroat trout (*Oncorhynchus clarki henshawi)*	Threatened	No	No	No	No	No/No	No Effect
Delta smelt (*Hypomesus transpacificus)*	Threatened	No	No	No	No	No/No	No Effect
Central Valley steelhead (*Oncorhynchus mykiss)*	Threatened	No	No	No	No	No/No	No Effect
Limestone salamander (*Hydromantes brunus)*	FS Sensitive	No	Yes	No	No	No/No	No Effect
Foothill yellow-legged frog (*Rana boylii)*	FS Sensitive	Yes	No	No	No	No/No	No Effect
Hardhead (*Mylopharodon conocephalus)*	FS Sensitive	No	No	No	No	No/No	No Effect
Western pond turtle (*Actinemys marmorata)*	FS Sensitive	Yes	Yes	Yes	AP	No/Yes	MA/NL[3]

[1] AP = Assume species presence for effects analyses.
[2] May affect and is likely to adversely affect.
[3] MA/NL = May affect individuals, but is not likely to result in a trend towards Federal listing or loss of viability.

Alternative 1 (Proposed Action)

Direct and Indirect Effects

Forest Restoration, Scenic Corridor, Fuels Reduction, Wildlife, and Heritage Resources

Approximately 483 acres of suitable Sierra Nevada yellow-legged frog habitat are proposed for vegetation treatments. Likewise, approximately 41 acres of Yosemite toad breeding habitat and 4,702 acres of non-breeding habitat are proposed for vegetation treatments (Table 3.02-2). Vegetation treatment acres represent 67% of the suitable yellow-legged frog habitat, and approximately 56% of the Yosemite

toad breeding and dispersal habitat within the project area. In addition, prescribed fire is proposed on 166 acres of suitable frog habitat and approximately 2,106 acres of Yosemite toad dispersal habitat. Only one acre of Yosemite toad breeding habitat is proposed for prescribed fire. There are no planned activities in close proximity to suitable western pond turtle habitat; therefore, there are no direct effects to the western pond turtle.

Potential effects from vegetation treatments include harassment, injury, harm and direct mortality of all amphibian life stages. Individuals can be adversely affected by yarding, skidding, and removal of timber products. Direct mortality of individuals can occur from activities associated with falling trees, piling of slash and prescribed burning or other operations that collapse rodent burrows used by Yosemite toad. Vegetation management equipment could cause disturbance of individuals due to noise, dust, sedimentation and ground vibrations that could cause abandonment or avoidance of habitat. Disturbance of individuals could result in a failure to breed or the redirection of migrating adults.

Sedimentation resulting from stream bank disturbance and mechanical activities in the uplands can influence all life stages of yellow-legged frog (Brown et al. 2014). Increases in erosion and sedimentation can divert water, down-cut stream channels and lower water tables which reduces habitat suitability for the Yosemite toad. Sedimentation to aquatic habitat is expected to increase during project implementation, but it is expected to be minor and short lived. Suitable western pond turtle habitat in the project area currently has a low quantity of fine sediment (< 9%), which suggests that even with a large influx of additional fine sediment the systems would not negatively affect turtle habitat. Vegetation management actions should have no effect on overwintering turtle habitat, because no activities are proposed to occur in these habitats.

The proposed plantation treatment actions focus is to increase ground cover, retain brush and repair gully erosion. The restoration treatments should help areas that exhibit below desired levels of surface organic matter and gulling. The design of the vegetation treatments (Chapter 2) should limit the intensity of ground disturbing activities near stream habitats, and allow adequate riparian buffers to effectively trap and retain sediment. The project design should ultimately reduce surface erosion and sedimentation, minimize the risk of direct mortality, and improve aquatic habitats.

Prescribed fire and pile burning may result in direct mortality to yellow-legged frogs and Yosemite toads due to burning or crushing, although effects of burning to yellow-legged frogs would be minimized due to timing of fire and the ability of individuals to escape fire by taking refuge in burrows, ponds or streams (USFWS 2014). There would be no ignition of prescribed fire in the riparian areas or in close proximity to aquatic habitat; however, fire would be allowed to back into the riparian area. There may be some localized impacts to individual or groups of riparian vegetation, but loss of riparian vegetation is expected to be minimal.

Streams, Riparian Areas, Special Aquatic Features, and Aquatic Organism Passages

Restoration actions focused on aquatic systems (encroaching conifer removal at 35 meadows and aspen sites, head-cut, streambank, and incised channel treatments at 16 locations, monitoring of SAF followed by adaptive management actions, rangeland water troughs installation at four sites, and AOP restoration at eight sites) are proposed in approximately 78 acres of suitable yellow-legged frog habitat, 41 acres in breeding Yosemite toad habitat and 76 acres in Yosemite toad dispersal habitat (Table 3.02-2). These activities would increase sedimentation to the watershed during project implementation, but would yield reduced erosion and sedimentation amounts in the long-term. For actions that require mechanical equipment, sedimentation may persist for several years as the channel stabilizes and vegetation becomes established. Increases in sedimentation from the proposed restoration actions are expected to be minor and short-term (Hydrology Report). In addition to long-term sediment reduction, restoration actions focused on aquatic systems are expected to redirect livestock, vehicle, and recreational traffic away from aquatic habitat and riparian areas, thus reducing the risk of direct contact (and thus disturbance leading towards mortality) with yellow-legged frogs, Yosemite toads, or western pond turtles.

The removal of encroaching conifers may increase available water in aquatic habitats resulting in increased vigor and abundance of riparian, seep and springs, and wet meadow obligate species. Indirectly, an increase in available water may result in a slight increase in water reaching stream systems, thus improving flow. Riparian vegetation may increase with the available water and more open canopy which would be beneficial to the aquatic species by increasing cover and invertebrate production. The removal of encroaching conifers may increase opportunities for direct mortality to frogs and toads by falling trees or equipment operating in or near aquatic habitat during implementation; however, RCA management requirements (Chapter 2) should minimize this risk.

Table 3.02-2 Suitable Sierra Nevada yellow-legged frog and Yosemite toad habitat in vegetation and other restoration management actions for Alternative 1 (Proposed Action) and Alternative 3

Treatment Type	Alternative 1 (Proposed Action)			Alternative 3		
	Yellow-legged Frog	Yosemite Toad		Yellow-legged Frog	Yosemite Toad	
		Breeding	Non-breeding		Breeding	Non-breeding
Forest Restoration and Scenic Strip						
Ridge - retain 40% CC			299			272
Ridge - retain 50% CC						40
Mid-slope NE retain 50% CC			245			242
Mid-slope NE retain 60% CC						3
Mid-slope SW retain 40% CC						107
Mid-slope SW retain 50% CC			883			572
Mid-slope SW retain 60% CC						249
Drainage - retain 40% CC						29.7
Drainage - retain 50% CC	< 1		102			40
Drainage - retain 60% CC				0.1		32
RCA - retain 50% CC				17		38
RCA - retain 60% CC	176	3	262	160	2	223
Scenic corridor	20	2	238	20	2	238
Plantation: Mastication/Biomass	12		495	12	< 1	495
Plantation: Sawlogs			21			21
Meadow/Aspen conifer removal	91	27	201	91	27	220
Fuels Reduction, Wildlife, and Heritage Resources						
Hand treat (< 10in)	47		274	47		298
Hand treat (< 10in)/mechanical (50% CC)	< 1		93	< 1		72
Hand treat (< 10in)/mechanical (60% CC)				< 1		21
Hand treat (< 6in)	60	< 1	788	60	0.3	788
Roadside fuel break	2		54	2		52
Shaded fuel break			233			233
Shaded fuel break - WUI	75	9	514	80	9	538
Total Vegetation Treatments	**483**	**41**	**4,702**	**489**	**40**	**4,824**
Other Restoration Treatments						
Prescribed Fire	166	1	2,106	200	2	2,405
AOP Restoration (100 ft. buffer)	1	0	2	1		2
SAF Restoration	77	41	74	77	40	74
Dispersed Recreation (100 ft. buffer)	2	0	8	2		8
Road and Trail Actions (16 ft. width buffer)	10	1	105	10	1	105
Rock, Water, and Borrow Sources (100ft. buffer)	8	< 1	8	8	< 1	8

The removal of the eight culverts for AOP would reconnect a total of approximately 3.5 miles of aquatic habitat. The culverts have been shown to be a complete barrier to at least one lifestage of aquatic dependent species. Non-native trout are a major stressor of the yellow-legged frog, and their presence

could reduce the quality of the habitat. The four streams with fish proposed for culvert removal already have fish populations above the culverts; however, the removal of these four culverts would result in increased fish dispersal approximately 2 miles which may decrease the quality of habitat for the yellow-legged frog. The other four culvert removals would open up 1.5 miles of higher quality yellow-legged frog habitat.

Recreation and Transportation

The yellow-legged frog and Yosemite toad may be adversely affected from dispersed recreation activities occurring in 12 acres of suitable yellow-legged frog habitat, 1 acre in suitable breeding Yosemite toad habitat, and 113 acres in Yosemite toad dispersal habitat (Table 3.02-2). The yellow-legged frog is small and may exhibit a response of immobilization to danger, which could make them more difficult to avoid while activities are taking place (Andrews et al. 2008). The toad is highly mobile, slowly moving through different habitat types. Direct mortality to individual frogs, and toads related to dispersed recreation activities include trampling by hikers, campers, horseback riders or other activities associated with dispersed recreation (Brown et al. 2009; Brown et al. 2014). Recreational activities along stream banks can increase organic matter, soil nutrient content, soil PH levels (Cole and Fichtler 1983), and sediment entering the watershed from bank trampling and vegetation disturbance (Newcombe and MacDonald 1991). Establishment of trails and campsites can cause disturbance to vegetation and soil structure resulting in increased erosion and sedimentation (Boyle and Samson 1985, Obedzinski et al. 2001).

Dispersed recreation proposed actions should re-direct recreational use away from aquatic habitat and SAFs and improve meadow hydrology, resulting in less near stream disturbances and sedimentation and improved aquatic habitat quality. A short-term decrease in habitat quality may occur during project implementation as a result of soil movement activities.

Road and trail maintenance and reconstruction actions include blading rough and rutted road surfaces, restoring dips and ditches, removing vegetation and cleaning or replacing culverts when needed. The activity of closing and decommissioning roads is designed to make a road more resistant to erosion and may include removal of culverts. These actions are expected to yield short-term increases in fine sediment being delivered to the streams (Hydrology Report), but result in a long-term benefit to aquatic habitats as sedimentation sources are remediated.

The Yosemite toad is vulnerable to effects from road and trail maintenance and construction because it is a small animal that is difficult to detect, and thus difficult to avoid. Further, they are slow moving and cannot avoid oncoming equipment. In addition, the toad moves between multiple habitat types throughout the season, which often requires crossing roads and trails, thus increasing its chance of encountering people or equipment (Lannoo 2005). Likewise, the high road density in watersheds increases the chance of roads intersecting toad migration routes, thereby increasing the opportunity for vehicles to crush or injure individuals. Site-specific project design and management requirements should reduce the impacts from road and trail maintenance and construction, through minimization of erosion and water quality protection and monitoring.

Cumulative Effects

The spatial bounding of the cumulative effects analysis area was restricted to the project area. The project area extends to the top of the watersheds, and this spatial bounding coincides with the Cumulative Watershed Effects Modeling (CWE). The temporal bound of 10 years was chosen because the project Hydrology Report indicated through CWE that the effects of the project would not be detectable after that time. Foreseeable future projects and activities in the cumulative effects analysis area include continued livestock grazing in the Mattley, Lower Blue, Mokelumne and Bear Valley grazing allotments, recreation activities, vegetation management projects in Ramsey Fire Salvage activities, and the introduction of exotic species.

Ongoing vegetation management could affect habitats through sedimentation and modification of dispersal and upland habitats. The impacts of potential sedimentation from relevant vegetation management activities (including private lands) were included in the Cumulative Watershed Effects analysis described in the Hydrology Report (project record). Introduction of non-native fishes, bullfrogs, and crayfish, which are all present in the analysis area, has likely affected herpetofauna populations and distribution. Cattle grazing occur throughout the analysis area both on private lands and on allotments on National Forest lands. Livestock use of meadows and riparian areas can be concentrated disproportionately when compared to upland habitat. Livestock may trample aquatic species and may contribute to sedimentation and habitat modification. Recreational activities may have impacts at a site-specific level. Overall, the limited potential for impacts associated with the proposed project is not expected to result in substantial effects to the Sierra Nevada yellow-legged frog, Yosemite toad, or western pond turtle, or their habitats, and is not expected to contribute to any cumulative effects.

Alternative 2 (No Action)

Indirect Effects

Forest Restoration, Scenic Corridor, Fuels Reduction, Wildlife, and Heritage Resources

Vegetation management and fuels reduction projects would not be implemented under Alternative 2 (No Action). Areas with existing gullies and areas prone to the creation of new gullies would continue to add fine sediment to the watersheds, further degrading the quality of the amphibian habitat.

Streams, Riparian Areas, Special Aquatic Features, and Aquatic Organism Passages

Restoration actions focused on aquatic systems would not be implemented, resulting in continued surface erosion and sedimentation. Vehicle and recreation activities may intensify over time and result in decreased habitat suitability for all three aquatic species. Conifer encroachment into aquatic systems could increase in vigor and extent over time and further reduce the available water to the stream, reducing overall meadow habitat.

Dispersed Recreation and Transportation

Hydrologically connected road and trail segments and erosion from dispersed recreation sites could continue to channel water and sediment into stream systems, adding fine sediment to the watersheds and degrading aquatic habitats.

Cumulative Effects

Ongoing vegetation management projects, livestock grazing, recreation activity, the potential for the introduction of non-native species, and the indirect effects discussed above contribute to the cumulative effects by increasing sedimentation, modifying breeding and upland habitats, and increasing the likelihood of species disturbance and mortality.

Alternative 3

Direct and Indirect Effects

Direct and indirect effects resulting from the implementation of Alternative 3 on the Sierra Nevada yellow-legged frog, Yosemite toad, and western pond turtle are the same as described in Alternative 1 (Proposed Action) with the following exceptions.

Forest Restoration, Scenic Corridor, Fuels Reduction, Wildlife, and Heritage Resources

Approximately 489 acres of suitable Sierra Nevada yellow-legged frog habitat are proposed for vegetation treatments along with approximately 40 acres of Yosemite toad breeding habitat and 4,824 acres of non-breeding toad habitat under Alternative 3 (Table 3.02-2). In addition, approximately 200 acres of yellow-legged frog habitat, 2 acres of Yosemite toad breeding habitat and 2,405 acres of

Yosemite toad dispersal habitat have prescribed fire actions proposed. Acres proposed in western pond turtle habitat are the same as Alternative 1 (Proposed Action). Although there are slight shifts in acres in Alternative 3, direct and indirect effects to Sierra Nevada yellow-legged frog, Yosemite toad, and western pond turtle are the same as described in Alternative 1 (Proposed Action).

Cumulative Effects

Cumulative effects related to Sierra Nevada yellow-legged frog, Yosemite toad, and western pond turtle are the same as described in Alternative 1 (Proposed Action).

3.03 CLIMATE CHANGE

Existing Condition

The Intergovernmental Panel on Climate Change recently finalized the Fifth Assessment Report in 2014 (IPCC 2014). This report synthesizes the science regarding climate change, as well as the impacts, vulnerabilities, and mitigation opportunities of climate change. The report states climate has been changing for the past several decades and that human activities have a clear influence on climate. Furthermore, “anthropogenic emissions of greenhouse gases are at the highest levels in history”, and at the same time “many of the observed climate changes are unprecedented over decades to millennia.” They conclude that anthropogenic drivers are “extremely likely to have been the dominant cause” of observed changes.

Trends suggest that the northern Sierra Nevada may become generally warmer and wetter, with longer periods of prolonged summer drought. While warmer and wetter weather patterns may increase forest growth and carbon sequestration, warmer temperatures in combination with longer periods of prolonged summer drought will likely increase forest insect and disease outbreaks and the occurrence of high severity, large scale crown fires. These disturbances may result in increased carbon emissions to the atmosphere through decomposition and combustion. In addition to the risk of short-term carbon loss, there is the long-term risk associated with forested ecosystems converting to shrubland ecosystems after large disturbances. These shrublands would drastically alter carbon cycles for the area as the carbon storage ability of shrubs differs from trees. The effects of higher atmospheric concentrations of carbon dioxide, critical for photosynthesis, are unclear, but most research suggests declining productivity due to water and climate limitations (Battles et al. 2008).

Alternative 1 (Proposed Action)

Direct and Indirect Effects

Direct effects of forest restoration and fuels reduction treatments include the removal of carbon from the forest carbon cycle in the form of approximately 19.2 million board feet of sawlogs and removed biomass. Carbon from this harvested material would be stored in wood products until they decompose or are burned, ultimately releasing the carbon back to the atmosphere. Additional activity generated fuels may be left in the woods and would slowly emit carbon back to the atmosphere. Other emissions include smoke, dust, and greenhouse gases from prescribed fire, pile burning, and vehicle and equipment use during implementation.

While the project would reduce a long-term store of carbon through vegetation treatments, the stability of the existing stores would be increased by reducing the risk of large wildfire. This trade-off is in agreement with Stephens et al. (2009) and Hurteau and North (2009) who conclude that when weighing the risk of reducing existing carbon stocks in the short-term by thinning forests and reducing fire risk, compared to allowing forests to grow untreated with higher amounts of carbon storage but high risk of wildfire, the more prudent approach is to reduce fire risk. These studies and subsequent studies (Hurteau and North 2009; North and Hurteau 2010) suggest creating a more stabilized, long-term store for carbon in forests

with an active fire regime by emphasizing low density stands dominated by large, fire-resistant trees. Treatments which retain or protect large trees are believed to allow for more rapid recovery of carbon.

These studies also found that initial emissions from fuels treatments could be recovered within a decade or more of growth due to the increase in growth of residual trees. Burning was found to be a large source of emissions, as compared to only mechanical treatment, but was still small compared to high severity wildfire which converted most live carbon stores into decomposing carbon sources (North and Hurteau 2011). Treatments which reduce densities of small diameter trees as well as some intermediate, fire-sensitive trees were found to be most effective in reducing losses during burning and enabling rapid carbon recovery (Millar et al. 2007, Hurteau and North 2010).

Indirect effects of treatments would be beneficial to the landscape in terms of emissions and resilience to climate change impacts. Reduced stand densities would increase residual tree vigor and growth, reducing mortality and increasing carbon storage rates of residual trees. Development of larger trees (critical to long-term carbon storage in forests) would be enhanced, decreasing risk of mortality due to drought, insects, disease, or wildfire. Restoration treatments increase landscape resilience to disturbances and help maintain forested conditions which are essential to the ecosystem carbon cycle. Retention of preferred fire-resistant pine species would increase diversity within stands currently dominated by fire-sensitive fir species. Pine species would be better adapted for expected changes in environmental conditions (warmer and drier) and would help maintain productivity while maladapted species would suffer from increased drought stress, insect outbreaks, disease infestations, and sensitivity to fire (Rehfeldt et al. 2014).

Cumulative Effects

Because greenhouse gases from project activities mix readily into the global pool of greenhouse gases, it is not currently possible to discern the effects of this project from the effects of all other greenhouse gas sources worldwide, nor is it expected that attempting to do so would provide a practical or meaningful analysis of project effects. Potential regional and local variability in climate change effects add to the uncertainty regarding the actual intensity of this project's effects on global climate change. Further, emissions associated with this project are extremely small in the global atmospheric CO_2 context, making it impossible to measure the incremental cumulative impact on global climate from emissions associated with this project. In summary, the potential for cumulative effects is considered negligible for Alternative 1 because it would result in measurable direct and indirect effects on air quality or global climatic patterns.

Alternative 2 (No Action)

Indirect Effects

Under this alternative no actions would occur to address issues of forest structure, composition, and landscape diversity. Carbon sequestration would continue to occur at high levels, but risk of disturbance such as insect infestations, disease outbreaks, and high severity fire would persist and become exacerbated by existing climate change trends. These disturbances may result in unacceptable levels of mortality and loss of carbon back to the atmosphere. No additional greenhouse gas emissions would occur from treatment implementation, but emissions from a wildfire could greatly exceed emissions from treatment implementation (Stephens et al. 2009). Large trees, which are responsible for storing a disproportionate amount of carbon in a forest, would be at risk of mortality from drought, insects, disease, and wildfire (Fellows and Goulden 2008). As the landscape is in the transition zone from lower elevation mixed conifer to higher elevation true fir, species maladaptation to variable environmental conditions would persist, altering productivity and carbon storage rates. Drought tolerant pine species are expected to compete better in higher elevations, and current fir species in high elevations are expected to experience exacerbated forest health concerns (Battles et al. 2008). This may lead to increased mortality of fir species, reduced carbon uptake, and increased risk of fire.

Cumulative Effects

The cumulative effects on climate change are the same as described in Alternative 1 (Proposed Action).

Alternative 3

Direct and Indirect Effects

Effects under Alternative 3 are similar to Alternative 1, except Alternative 3 has somewhat less intensive forest thinning than Alternative 1. Overall approximately 18.4 million board feet of timber would be removed from the forest carbon cycle and stored in wood products. In units with higher canopy cover retention, restricted removal of trees would limit ability to select for drought-tolerant, fire-resistant pine species and create heterogeneous structures. Risk of insects, disease, and wildfire would be reduced slightly, but would rapidly return to current levels. Carbon sequestration within residual trees would continue to be restricted by limited growth and high levels of competition for resources. Within a decade or longer, large trees would be susceptible to mortality, greatly influencing the ability of the forest to store carbon. These effects would be limited to areas altered in Alternative 3 and would not noticeably differ from Alternative 1 within the temporal bounds of this analysis. However, over the longer term, the ability of the entire landscape to absorb and store carbon would be reduced compared to Alternative 1, especially when considering the predicted increase in environmental stressors due to climate change (North et al. 2009; North 2012; Stephens et al. 2010; Millar et al. 2007).

Cumulative Effects

The cumulative effects on climate change are the same as described in Alternative 1 (Proposed Action).

3.04 CULTURAL RESOURCES

Existing Condition

Heritage resource surveys have identified more than 100 archeological sites within the Hemlock project area. Approximately 80% of these sites represent Native American prehistoric land use, represented by seasonal villages, temporary camps, and bedrock mortar milling locations. The Miwok and Washoe still actively use the Forest for gathering traditional food and medicinal plants, hunting, and conducting ceremonies. Thus, some of the proposed landscape and habitat restoration areas included in this analysis are significant heritage resources. The additional 20% of these sites represent historic land uses such as European American emigration, mining, ranching, and forestry practices from ca 1846 to present. These sites represent historic ditches, pits, trails, roads, buildings, camps, arbor-glyphs (tree carvings), and historic inscriptions. Few sites retain evidence of both prehistoric and historic land use. Previous fire suppression activities, forestry practices, and recreational activities have also left a mark on the landscape. Some of these practices have fostered resource preservation, while others have been addressed in this analysis to improve long-term preservation and management of heritage resources within the project area. Heritage sites provide many opportunities for interpretation and public appreciation.

All heritage resources that have not been evaluated for eligibility to the National Register of Historic Places are being considered eligible for the purposes of this analysis.

Alternative 1 (Proposed Action)

Direct and Indirect Effects

Forest Restoration and Scenic Corridor

Project design and management requirements for Forest Restoration actions were specifically included to eliminate visual demarcation of heritage sites, preserve site integrity, and promote traditionally used plants. Mastication would not be allowed within the known boundaries of heritage resources. Hand

treatments within heritage sites would be directed under the guidance of a Forest or District Archeologist in accordance with Programmatic Agreements between Stanislaus National Forest and the California State Historic Preservation Office. As such, direct effects to heritage resources from Forest Restoration actions would be negligible.

Fuels Reduction

Fuels reduction within the vicinity of heritage resources is intended to reduce the intensity and duration of wild land fires, thus reducing the potential damages to heritage sites. Fuels thinning would be implemented in accordance with established management requirements and pre-burn site preparation as determined appropriate by a Forest or District Archeologist. Pre-burn condition assessments and preparation would guide the implementation process for this proposed action. For example, in sensitive heritage areas vegetation would be carried, not dragged, out of known site boundaries and placed in burn piles. Mastication would not be permitted within the boundaries of known heritage sites. In light of these management requirements, actions proposed for Fuels reduction would have negligible effects.

Mature Forest Wildlife Habitat Restoration

Heritage considerations for Mature Forest Wildlife Habitat Restoration are similar to those proposed for Forest Restoration and Fuels Reduction. Restoration of wildlife habitat and a healthy ecosystem further support heritage values and traditional indigenous lifeways. Due to the nature of heritage resources and natural events that affect traditional gathering practices, Stanislaus National Forest heritage staff would continue to work with tribal members during implementation and monitoring of proposed treatments. Effects of these actions on heritage resources would be negligible.

Heritage Resources

Proposed actions that benefit heritage resources have been incorporated into this project. These actions promote ecological restoration, recreation in areas where participants are less likely to have inadvertent impacts to heritage resources, and reduction of fuels that may contribute to high intensity forest fires. Implementation of several actions would require a pre-treatment determination of eligibility and condition monitoring. These would foster responsible management of heritage resources within the project area. Interpretive signage would be developed to provide information regarding natural processes and heritage values at campgrounds and roadside overlooks. The effects of these actions would be negligible.

Aquatic Organism Passage Restoration

Restoration of waterways and aquatic wildlife supports heritage values and traditional lifeways. Effects of these actions on heritage resources would be negligible.

Streams, Riparian Areas, Special Aquatic Feature and Aspen Restoration

Restoration of waterways and aquatic wildlife supports heritage values and traditional lifeways. Barrier placement has been designed to favor the preservation of heritage features rather than detrimentally impact or bisect them. Watershed restoration and removal of encroaching conifers within meadows further promotes wildlife and traditionally used plant habitats. Additional site specific tribal consultation would be incorporated into project implementation. Effects of these actions on heritage resources would be negligible.

Recreation and Transportation

Proposed campsite improvements would better define areas where people can recreate without inadvertently impacting heritage resources. These actions promote responsible heritage resource management and stewardship. The same is true for trail reconstruction and the establishment of designated parking areas where no heritage resources would be impacted by these recreational uses. Interpretive and regulatory signage would also be installed to provide resource information. Thus, the effects of these actions on heritage resources would be negligible.

Some actions would reduce access to areas where heritage resources show impacts from vehicle/OHV use. Other actions support water quality and habitat restoration. These actions produce a beneficial effect on heritage site preservation and management. Effects of these actions on heritage resources would be negligible.

Cumulative Effects

Ongoing vegetation maintenance treatments at WakaLuu HepYoo Campground and Big Meadow Campground were considered in the cumulative effects analysis. Given the scope of ongoing vegetation maintenance projects, the direct and indirect effects discussed above, no cumulative effects are expected with this project.

Alternative 2 (No Action)

Indirect Effects

Under Alternative 2, restoration actions would not occur. Management of the Hemlock project area would continue under current land management plans. Conifer encroachment within heritage resource areas poses several problems for the management of heritage sites. Current fuel loads increase the risk of high intensity wildfires that can cause irreparable damage to heritage resources. Ecological shifts in wildlife habitat and hydrology are currently occurring within historic meadows. Small changes within these systems can limit the availability of plants that are traditionally gathered by the Miwok and Washoe tribes. Recreational impacts from camping and vehicle use have been documented at several heritage resource sites and would not be addressed if the no action alternative is selected. There is limited interpretive signage within the Calaveras District to inform people regarding resource management and the importance of responsible heritage resource management.

Cumulative Effects

Cumulative effects of Alternative 2 on heritage resources are the same as described in Alternative 1.

Alternative 3

Direct and Indirect Effects

Direct and indirect effects of Alternative 3 on heritage resources are the same as described in Alternative 1.

Cumulative Effects

Cumulative effects of Alternative 3 on heritage resources are the same as described in Alternative 1.

3.05 ECONOMICS

The following analyses present a summary of the findings from the Economic Report.

Existing Condition

The forest products industry is a major economic driver and source of employment in Amador, Calaveras, and Tuolumne counties as compared to the California average. These three Counties have seen a decline in forest product related employment. In Tuolumne County, the number of employers in forestry-related businesses has decreased since 2000. Labor statistics reflect a seasonal labor force with employment up during the warmer months and down as the timber harvesting season stops. Timber industry infrastructure is in place with a mill, a cogeneration plant, two operational biomass power plants, and one biomass power plant in development within a reasonable haul distance.

Alternative 1 (Proposed Action)

Direct and Indirect Effects

The predicted timber volume, value, costs, service treatment costs, and employment opportunities, are summarized in Table 3.05-1. The revenue generated would depend on the availability of logging equipment, haul distances to available mills, lumber prices, defect within trees, and fuel prices at the time of implementation. If material is hauled to a different facility than the closest mill in Standard, CA, hauling costs may change drastically. These values are best considered in a relative sense to compare between alternatives.

Table 3.05-1 Economic summary for Alternatives 1 and 3

Economic Metric	Alternative 1	Alternative 3
Sawlog Volume (mbf)	19,179	18,426
Sawlog Value	$3,035,380	$2,924,280
Sawlog Logging Costs	$1,737,753	$1,704,103
Sawlog Net Value	$1,297,627	$1,220,177
Biomass Volume (thousand tons)	23	23
Biomass Value[1]	$507,808	$509,093
Biomass Costs	$1,700,735	$1,704,131
Biomass Net Value	$(1,192,927)	$(1,195,038)
Sawlog/Biomass Value	$3,543,188	$3,433,373
Sawlog/Biomass Costs	$3,438,488	$3,408,234
Sawlog/Biomass Net Value	$104,700	$25,139
Percent Above Value	3%	1%
Non-Commercial Treatment Costs	$5,975,452	$6,015,034
Total Project Value	$(5,870,752)	$(5,989,894)
Potential Jobs	324	315
Potential Employee Income	$13,672,020	$13,273,362

[1] Alternative 3 includes 8 additional acres of biomass removal, resulting in higher biomass value and costs

Alternative 1 would create additional employment opportunities in service industries (such as logging supply companies, trucking companies, and fuel suppliers) that serve the timber industry. Harvesting and resource improvement treatments would generate 324 direct and indirect jobs. Wages paid to workers would circulate through the local economy for food, housing, transportation, and other living expenses. Income to the local economy would improve stability for the small communities which rely on natural resource management and have experienced decreasing economic activity due to reductions in employment opportunities associated with forest management.

Non-commercial (fuels reduction, forest thinning, and wildlife habitat improvement) contracts are estimated to cost $5,975,452 for Alternative 1. These contracts are expected to be awarded to local contractors, who would benefit directly from employment opportunities and would in turn contribute to the local economy through living expenditures. Non-commercial treatments would not produce revenue but would reduce fuels, improve forest health and wildlife habitat, and create a system of shaded fuel breaks across the landscape.

Although non-commercial treatments often incur high costs, research has shown that treatments are effective tools for fire prevention and suppression and have the potential of saving millions of dollars in fire suppression cost, lost value of timber, and protection of private property (Mason et al. 2006). This does not include non-market benefits of forested landscapes such as clean air, clean water, wildlife habitat, recreation opportunities, and carbon sequestration, which can be lost following high severity fires. In one study that examined effects of fuels treatments on wildfire behavior in the central Sierra Nevada, researchers found that when comparing the benefits to the upfront cost of fuels reduction treatments, “the

total quantified benefits of fuel treatment would very likely exceed the costs of treatment if fires occur over the next few decades, which is a strong possibility" (Buckley et al. 2014).

Alternative 1 would have a positive effect on the overall economic activity in affected Counties. This project would help provide stability and revenue to the manufacturing industry, forest products industry, transportation, and indirect industries (housing, food, education, etc.). Alternative 1 would help sustain employment for families and generate harvest revenues for local businesses and provide the state and county timber yield taxes, estimated to be approximately $88,026. The collection of taxes would help the county provide services such as road maintenance and education programs. Counties would also receive Federal payments under the Receipt Act based on the revenue generated from timber sales, though this may vary widely based on timber sale design and market prices at time of implementation. These counties have experienced a steady reduction in collections in recent years. This project would be beneficial in terms of current year collections as well as helping increase the annual average on which future Federal payments would be based.

Cumulative Effects

Other forest related projects near the Hemlock project area (3.13 Vegetation, Cumulative Effects) would contribute to employment and income to the local economies, but on a much smaller scale. Cumulatively, additional opportunities would improve the technical experience of local contractors and the infrastructure for future forest management treatments. This may reduce the costs of future projects and allow for more efficient treatment completion as contractors grow accustomed to treatment types.

Alternative 2 (No Action)

Direct and Indirect Effects

Under Alternative 2, no treatments would be implemented. There would be no implementation costs, no funds would be generated for the U.S. Treasury or returned to local counties through the receipt tax, and no timber yield taxes would be collected. No additional employment opportunities or wages paid to primary and service industry employees would circulate through the local economy. Present and future projects in the area would still occur under Alternative 2. The limited employment opportunities and related employee income from these projects would continue to benefit the affected counties.

The No Action alternative would continue a negative economic trend on the local industries that depend on service contracts or a steady supply of timber. Local industries would have notably reduced opportunities related to forest management activities such as timber harvesting and forest health projects. Additionally, the local economy would not receive benefits from associated employment, such as in food, lodging, and transportation businesses. The income loss for families may trickle throughout the local economy, negatively affecting many of the local businesses.

Cumulative Effects

There would be no cumulative effects associated with the implementation of Alternative 2 (No Action). The smaller ongoing vegetation restoration projects near the Hemlock project area would not greatly enhance the economic viability of these counties of interest.

Alternative 3

Direct and Indirect Effects

The direct and indirect effects of Alternative 3 would be similar to Alternative 1, although magnitude would differ (Table 3.05-1). Harvesting and resource improvement treatments would generate 315 direct and indirect jobs. Non-commercial contracts are estimated to cost $6,015,034. Alternative 3 would help sustain employment for families and generate harvest revenues for local businesses and provide the state and county timber yield taxes, estimated to be approximately $84,804.

Cumulative Effects

Alternative 3 cumulative effects would be similar to those described in Alternative 1 (Proposed Action).

3.06 FIRE AND FUELS

The following analyses present a summary of the findings from the Fire and Fuels Analysis Report.

Existing Condition

The Hemlock project area is fairly typical of forests in the Sierra Nevada in that logging practices and fire suppression over the past century have resulted in stands which are denser with smaller diameter trees on average, have a higher component of fire intolerant species, and have increased surface fuel loads (Parsons and DeBenedetti 1979, Collins et al. 2011). Only three fires have been documented within the Hemlock project area since 1908 including: the Ramsey fire in 2012 which burned 401 acres in the project area, the Cabbage fire in 1986 which burned 20 acres and SPI # 9 which burned less than an acre in the project area in 2002. In total a little over 422 acres has experienced fire in the past hundred years.

The existing standing and surface fuel conditions create favorable circumstances for large, high severity fires when weather conditions are advantageous. Total fuel loads in the project area average nearly 175 tons/acre. If a wildfire were to occur under 90th percentile weather conditions this could result in 4 ft. flame lengths and 60% basal area mortality (FFE-FVS modelling).

Alternative 1 (Proposed Action)

Direct and Indirect Effects

Under Alternative 1 post-treatment fire behavior under 90th percentile weather conditions is predicted to be reduced to levels that either meet or move towards meeting the objectives stated in the purpose and need for the project. Predicted fire behavior after all treatments are complete would be as follows:

Forest Restoration

As a result of restoration activities total fuel loads would decrease by nearly 20 tons/ acre. Basal area mortality as a result of potential fire would be reduced from 60% to 33%. Surface flame lengths would increase from 4 to 5 feet, as some non-merchantable material may be masticated (< 6” depth), or lopped and scattered (< 18” depth). As surface fuels decay, surface flames lengths would decrease. In addition, prescribed fire or pile and burn treatments would yield a more immediate reduction in surface fuels, and thus surface flame lengths (see Fuels Reduction below). Over the next 30 years, basal area mortality is expected to decrease to 29% and surface flame lengths is expected to increase to 6 ft., due to an expected increase in understory vegetation growth.

Scenic Corridor

Scenic corridor treatments would result in the reduction of total fuels by 10 tons/ acre. Basal area mortality as a result of potential fire would be reduced from 57% to 32%. Similar to Forest Restoration treatments, surface flame lengths would increase from 4 to 5 ft. as the result of mastication and/or lop and scatter treatments. Over the next 30 years basal area mortality as a result of potential fire would increase from 32% to 49%. Surface flame lengths would remain near 5 ft. as the result of increased understory growth.

Fuels Reduction

Fuels reduction treatments would result in the reduction of total fuels by about 15 tons/ acre. Basal area mortality as a result of potential fire would be reduced from 58% to 32% and surface flame lengths would decrease from 4 to 3 ft. as surface fuels are removed from the units. Over the next 30 years basal area

mortality would increase to 42% and surface flame lengths would increase to 5 ft. as the result of increased understory growth.

Mature Forest Wildlife Habitat Restoration

Mature forest wildlife habitat restoration treatments would result in the reduction of fuels by about 13 tons/ acre. Basal area mortality as a result of potential would remain static at 26% as would surface flame lengths at 1 ft. Over the next 30 years basal area mortality as a result of fire would increase to 28%, but surface flame lengths would remain around 1 ft. because forest canopies may limit understory growth.

Meadow and Aspen Restoration

Meadow and aspen restoration would result in a decrease in fire severity and basal area mortality as a result of potential fire.

Heritage Resources; Aquatics Organisms Passage Restoration; Streams, Riparian Areas, and Special Aquatic Features; Recreation; and Transportation

There would be little or no noticeable impact on fire and fuel dynamics as a result of proposed actions for heritage resources; aquatic organisms passage restoration; streams, riparian areas, and special aquatic feature restoration; recreation; or transportation.

Cumulative Effects

The spatial bound for analysis is the Hemlock project area because while forest conditions outside of the project area may affect fire spread and severity; fuel dynamics encountered within the project area in conjunction with the weather would dictate fire behavior within the project area. The temporal bound for cumulative effects analyses is 30 years.

Natural events which may impact fire and fuels in the Hemlock project area include previous fire, extensive mortality due to insect outbreaks, and exceptional drought-caused mortality. During field observations and data collection, no incidences of exceptional insect or drought related mortality were encountered.

In 2012 the Ramsey Fire burned 401 acres of the Hemlock project area in high, moderate and low severity. High severity patches resulted in mortality of the understory and overstory, and consumed fuels on the surface. Following the fire, high severity areas were salvage logged which removed dead standing fuels, and surface fuels were piled and burned resulting in a dramatic decrease of all fuels. This has resulted in conditions which are not conducive for fire to start or spread in this area in the near future. As such, the direct and indirect effects discussed above when considered with natural events are not expected to substantially add to the cumulative effects related to this alternative.

Alternative 2 (No Action)

Indirect Effects

Under Alternative 2, no actions would be taken and current conditions would remain and develop unaltered by management activities. Current conditions are not consistent with the desired conditions as identified in the Forest Plan Direction. Indirect effects of Alternative 2 include an increase in basal area mortality as a result of potential fire from 60% to 65% over the next 30 years, and increased surface flame lengths from 4 to 5 ft. Total fuel loading would also increase from 174 to 219 tons/ acre.

Cumulative Effects

The indirect effects discussed above when considered with natural events are not expected to substantially add to the cumulative effects related to this alternative.

Alternative 3

Direct and Indirect Effects

Direct and indirect effects resulting from the implementation of Alternative 3 on predicted fire behavior are very similar as described in Alternative 1 (Proposed Action) for the Hemlock landscape. Differences occur in units where vegetation treatments were altered or where additional prescribed fire was proposed in Alternative 3 (see Table 2.07-1). Alternative 3 included 124 additional treated acres (change from No Action), approximately 200 acres where canopy cover retention was less than Alternative 1, and approximately 740 acres where canopy cover retention was greater than Alternative 1. In addition, Alternative 3 proposed 483 additional prescribed fire acres than Alternative 1.

Forest Restoration

In the units that differed between Alternative 1 and 3 a reduction of total fuels by 13 tons/ acre is expected. Basal area mortality as a result of potential wildfire is similar to Alternative 1, with an expected reduction to 32%. Surface flame lengths would remain fairly constant at 4 ft. Over the next 30 years basal area mortality would increase slightly to 34% and surface flame lengths would increase slightly from 4 to 5 ft., from an expected increase in understory vegetation.

Scenic Corridor

Vegetation and prescribed fire treatments in Alternative 3 in the Scenic corridor is expected to result in the reduction of total fuels by 22 tons/ acre. Basal area mortality as a result of potential wildfire would be reduced to 26% and surface flame lengths would remain fairly constant at 4 ft. Over the next 30 years, basal area mortality would continue to decrease to 21%, while surface flame lengths remain fairly constant at 4 ft.

Cumulative Effects

Cumulative effects of Alternative 3 on fire and fuel dynamics are the same as described in Alternative 1.

3.07 INVASIVE SPECIES

The following analyses related to aquatic species present a summary of the findings from the Noxious Weed Risk Assessment Report.

Existing Condition

From 2013 to 2014 botany surveys were conducted in the Hemlock project area to determine the presence of sensitive and rare species. An existing population of Klamath weed (*Hypericum perforatum* L.) was monitored and a new infestation of spotted knapweed (*Centaurea stoebe ssp. Micranthos*) was found. Klamath weed is a California Department of Food and Agriculture Class C noxious weed, and spotted knapweed is a Class A weed. The spotted knapweed population was located on the western side of the project area and is still in the introduction stage. The Klamath weed population is larger, occupying a 10 acre portion at the southern end of the project area near Gann’s Quarry. The population is intersected by Road 6N58Y.

Alternative 1 (Proposed Action)

Direct and Indirect Effects

Forest Restoration and Scenic Corridor

Treatments would create the opportunity for establishment of noxious species and their spread. Mechanical equipment used to conduct treatments may harbor hitchhikers (propagules from previous

work sites). In addition, thinning activities open up the canopy and create disturbance on the ground which may create opportunities for establishment and expansion of noxious species.

Treated areas proximate to Highway 4 or Level 2 and 3 Forest roads are at higher risk of noxious plant incursion due to the increased amount of vehicle traffic serving as potential vectors. Noxious weed propagules may already be present in the soil in these areas and they may germinate following thinning treatments as environments become suitable.

Fuels Reduction

These activities could create opportunities for propagules to become established because of disturbance to the soil and open conditions resulting from treatments. Heat from the prescribed fire may enhance germination of some noxious species as well.

Mature Forest Wildlife Habitat Restoration

There is some opportunity for noxious weeds to become established due to possible import of propagules on the clothing and boots of workers, and on the vehicles they use; however, due to the relatively low impact of hand tools and understory treatments on conditions, these actions would not result in conditions that are as open or disturbed as fuels reduction, scenic corridor, or forest restoration treatments.

Recreation

There is some opportunity for noxious weeds to be introduced as a result of management activities associated with recreation projects. Management activities associated with decommissioning trails, creation of trails and campground improvement can promote establishment and spread of noxious weeds via introduction of propagules on machinery, and due to resulting disturbance from activities. Improvements to dispersed campgrounds, the creation of additional OHV trails, and hiking trails with improved signage could result in increased use of the area by forest users. These users may introduce noxious species which can hitchhike on their vehicles, clothes, or boots resulting in noxious weed establishment.

Transportation

Management activities associated with transportation actions may introduce noxious plant propagules on machinery used for construction. Improvement to roads may encourage additional use by the public which would increase the risk of noxious plant introduction and spread because of the greater number of forest users.

A portion of Road 6N58Y proposed for decommissioning coincides with a known Klamath weed population. Activities associated with decommissioning the existing road may have an impact on the Klamath weed population due to disturbance and machinery which would be used. Machinery operating in areas known to have Klamath weed may spread propagules by movement of seeds which become attached to the machinery. In addition, disturbing ground near this known population may create opportunities for the Klamath weed to spread into these areas.

Heritage Resources; Aquatic Organism Passage Restoration; Streams, Riparian Areas and Special Aquatic Features

There would be little or no noticeable impact on the ability of noxious weeds to become established or spread as a result of management activities associated with: heritage resources, aquatic organism passage restoration, streams, riparian areas, and special aquatic features.

Cumulative Effects

The cumulative effects analysis area was bounded by the Hemlock project area. The temporal bounds for cumulative effects analysis is approximately 10 years, which would represent a reasonable time for noxious plants to become established post project implementation disturbances. There are no future

foreseeable land management actions that may contribute to the cumulative effects associated with the Hemlock project.

Ongoing recreation and transportation activities in the project area may encourage additional, increased use of the area by the public resulting in increased risk of noxious weed incursion in the project area. Thus, there may be a short- and long-term increase in the risk associated with noxious plant establishment and spread.

The implementation of management requirements as described in Chapter 2.05, however, would reduce the likelihood of introducing or spreading noxious weeds in the project area; therefore, the implementation of Alternative 1 with the noxious weed management requirements would impart a low risk of noxious weed introduction and spread by the project.

Alternative 2 (No Action)

Indirect Effects

Known populations of noxious weeds in the project area may receive ongoing hand pulling, but project activities would not spread populations or enhance habitat. The occurrence of Klamath weed which is present around road 6N58Y may spread as a result of forest users who inadvertently transport Klamath weed propagules on their vehicles.

Cumulative Effects

The indirect effects discussed above not expected to substantially add to the cumulative effects related to this alternative.

Alternative 3

Direct and Indirect Effects

Direct and indirect effects resulting from the implementation of Alternative 3 on noxious weed establishment and spread would be the same as described in Alternative 1 (Proposed Action) with the following exceptions.

Scenic Corridor

The effects of mechanical management activities on scenic corridor treatments on noxious weed establishment and spread are the same as Alternative 1. Under Alternative 3, the scenic corridor would receive an understory burn following mechanical treatment. Fire may result in increased opportunity for noxious weed establishment and spread due to the resulting open conditions and soil disturbance.

Cumulative Effects

The cumulative effects of management actions on the establishment and spread of noxious weeds are and the same as Alternative 1.

3.08 MANAGEMENT INDICATOR SPECIES

The following analyses present a summary of the findings from the MIS Report. The 2010 Sierra Nevada Forests Bioregional Management Indicator Species (SNF Bioregional MIS) Report (USDA 2010a) presents the current bioregional status and trend of populations and/or habitat (including cumulative effects at the bioregional scale) for each MIS.

Habitats types that are in or adjacent to the project area that are directly or indirectly affected by project activities are listed in Table 3.08-1.

Table 3.08-1 Habitat types and their associated Management Indicator Species potentially affected

Habitat or Ecosystem Component	Sierra Nevada Forests MIS
Riverine/Lacustrine	Aquatic macro-invertebrates
Riparian	Yellow warbler (*Dendroica petechia*)
Wet Meadow	Pacific tree (chorus) frog (*Pseudacris regilla*)
Early Seral Coniferous Forest	Mountain quail (*Oreortyx pictus*)
Mid Seral Coniferous Forest	Mountain quail (*Oreortyx pictus*)
Late Seral Closed Canopy Coniferous Forest	California spotted owl (*Strix occidentalis*)
Late Seral Closed Canopy Coniferous Forest	American marten (*Martes Americana*)
Late Seral Closed Canopy Coniferous Forest	Northern flying squirrel (*Glaucomys sabrinus*)
Snags in Green Forest	Hairy woodpecker (*Picoides villosus)*
Snags in Burned Forest	Black-backed woodpecker (*Picoides arcticus)*

Existing Condition

Riverine/Lacustrine, Riparian, and Wet Meadow

Riverine habitats in the project area are represented by perennial and intermittent streams. The project area contains approximately 20.2 miles of perennial stream channels in Big Meadow Creek, Middle Fork Mokelumne River, Blue Creek, Hay Gulch, Water Gulch, and Pumpkin Hollow. In addition, approximately 8.7 miles of intermittent stream channels occur in Cottonwood Gulch, Horse Gulch, Pumpkin Hollow, unnamed tributary in the Ramsey Fire area, and around Skyhigh subdivision. There is no lacustrine habitat in the project area.

Riparian deciduous habitats such as, cottonwoods, willows, alders, and other small trees and shrubs typical of low, open-canopy riparian woodland are spatially represented in RCAs. There are approximately 2,249 acres of RCA in the project area, although much of the RCAs are represented by conifer species as well. There are approximately 234 acres of wet meadow in the project area, with approximately 33 acres of herbaceous vegetation greater than 12” in height. The remaining 201 acres have herbaceous vegetation less than 12” in height.

Aquatic or benthic macroinvertebrates have been demonstrated to be very useful as indicators of water quality and aquatic habitat condition. They are sensitive to changes in water chemistry, temperature, flow, sedimentation, and water surface shade. The Pacific tree frog requires standing water for breeding and to complete aquatic development. Adult frogs use clumps of vegetation and surface objects near water for cover during the breeding season and, during the remainder of the year, leave their breeding sites and seek cover in moist niches in buildings, wells, rotting logs or burrows. The yellow warbler is usually found in riparian deciduous habitats and is dependent on both meadow and non-meadow riparian habitat in the Sierra Nevada (Siegel and DeSante 1999).

Early and Mid-Seral Coniferous Forest

Early seral coniferous forest habitat is comprised primarily of seedlings (< 1” dbh), saplings (1”-5.9” dbh), and pole-sized trees (6”-10.9” dbh); mid-seral coniferous forest habitat is characterized by small-sized trees (11”-23.9” dbh). There are 1,124 acres of early seral coniferous forest and 9,277 acres of mid-seral coniferous forest in the project area that host a variety of tree canopy closures. Approximately 6,409 acres (62%) would be treated, creating changes in tree size class and/or canopy closure.

Mountain quail are found on steep slopes, in open, brushy stands of conifer and deciduous forest, woodland, and chaparral. Quail are seldom found more than 0.5 mile from water sources in the summer.

Late Seral Closed Canopy Coniferous Forest

Late seral closed canopy coniferous forests are defined by tree sizes > 24” dbh with canopy cover > 40%. There are approximately 2,448 acres of late seral closed canopy coniferous forests in the project area. Restoration actions are proposed on approximately 1,867 acres (76%).

The California spotted owl is associated with forests that have a complex multi-layered structure, large-diameter trees, and high canopy closure. Likewise, American marten prefer coniferous forest habitat with large diameter trees (≥ 24” dbh) and snags, large down logs, moderate-to-high canopy cover (> 40%), and an interspersion of riparian areas and meadows. The northern flying squirrel has very similar habitat requirements, and occurs primarily in mature, dense conifer habitats intermixed with various riparian habitats, using cavities in mature trees, snags, or logs for cover.

Snags in Green Forest and Burned Forest

Approximately 11,450 acres of green forested habitats have the potential of support medium and large snags in the project area. There are approximately 14.1 snags/acre of medium (12-30” dbh) and 1.6 snags/acre of large (> 30” dbh) snags.

The Ramsey Fire burned approximately 1,150 acres north of the North Fork Stanislaus River in August 2012, resulting in approximately 30% of the area burned at a high severity, 6% at a high-to-moderate severity, 27% at a moderate severity, 26% at a moderate-to-light severity, and 11% at a light burn severity. Based on data derived from common stand exam plots within the Ramsey Fire Salvage Project, approximately 67 snags per acre > 15” dbh existed and 15 large snags (> 30” dbh) per acre existed across the burn area. Snags were removed within 200 acres of the Ramsey Fire (20% of the burn area). Snags per acre were decreased from 86.5 to 6.4 snags per acre across the 250 acre treatment area. Post-fire densities of snags were still retained across 80% of the fire area. The Hemlock project area includes approximately 401 acres of burned habitat from the Ramsey fire.

The hairy woodpecker uses stands of large, mature green trees that contain sparse to intermediate density medium and large snags. Conversely, black-backed woodpeckers are dependent on snags created by stand-replacement fires (Hutto 1995, Kotliar et al. 2002, Smucker et al. 2005).

Alternative 1 (Proposed Action)

Direct and Indirect Effects

Riverine/Lacustrine, Riparian, and Wet Meadow

Approximately 1,549 acres (69%) of the RCAs (exclusion, transition and outer zone) in the project area have restoration actions proposed in Alternative 1. Closer to streams, proposed actions occur within 802 acres (71%) in the RCA exclusion and transition zone. Wet meadow habitat in the project area proposed for conifer removal is 171 acres, or 22%.

There is expected to be a negligible increase in the volume and duration of late summer streamflow in perennial streams following removal of upland vegetation, due in part to a reduction of transpiration. Likewise, project actions at seeps, springs, fens, meadows and rivers may result in increases in water volume. Barriers to limit livestock use should result in an increase in herbaceous vegetation height. Project activities were designed to maintain or enhance current water temperatures by maintaining canopy cover over perennial streams.

Mechanical equipment used for vegetation treatments pose a risk for increasing soil compaction, erosion, and sedimentation into aquatic systems. The increase in sediment should be minor and short lived (< 2 years). Likewise, prescribed fire actions (fireline construction, pile burning, and the surface fires) could increase sedimentation by removing surface vegetation and exposing bare mineral soil. The maintenance and improvement of the road system and the removal and replacement of failed culverts (including the eight AOPs culverts) may cause a short-term (1-2 years) increase in sedimentation to the stream channels

within the project area. In the long-term (> 2 years) there should be a significant reduction in sedimentation throughout the project area.

Forest Plan Standards and Guidelines (USDA 2010), BMPs and management requirements for mechanical operations in RCAs would limit project effects on riverine, lacustrine, wet meadow, and freshwater emergent habitats and their associated MIS species.

Early and Mid-Seral Coniferous Forest

Early and mid-seral coniferous forest treatments would shift canopy cover from dense (> 70%) to moderate (40-69%) across approximately 1,380 acres creating the potential to increase understory shrubs and open meadow. Biomass and mastication would restore approximately 800 acres of plantations with an emphasis on 302 acres focusing on increasing ground cover and retaining brush. Conifers encroaching on meadows or aspen habitats would be removed to restore approximately 80 acres.

Direct and indirect effects to mountain quail and early and mid-seral coniferous forest habitat are expected to be minor and short-term. Effects are related to: disturbance from mechanical vegetation treatments; road reconstruction and maintenance; prescribed fire operations that may increase individual movement and displacement; and, habitat alteration, canopy reduction and potential increase in understory canopy vegetation that may modify microclimatic conditions, alter forage availability and influence reproductive success.

Project activities are expected to create heterogeneous early and mid-seral conditions, which would increase the availability of microhabitats available for foraging, nesting, and brooding in adjacent late seral forest stands.

Late Seral Closed Canopy Coniferous Forest

Late seral coniferous forest vegetation treatments would shift canopy cover from dense (> 70%) to moderate (40-69%) across approximately 916 acres (37% of habitat type).

Direct and indirect effects to late seral closed coniferous forest habitat and wildlife species are expected to be minor and short-term. Effects are related to: disturbance from mechanical vegetation treatments; prescribed fire operations that may increase individual movement and displacement; and, habitat alteration, canopy reduction, potential reduction and redistribution of snags and downed woody debris, and potential increase in understory canopy vegetation that may modify microclimatic conditions, alter forage availability and influence reproductive success. Likewise, project activities are expected to create heterogeneous late seral conditions, which may increase the availability of microhabitats available for foraging and denning, and nesting for late seral wildlife species.

Snags in Green Forest and Burned Forest

Alteration of mature forest habitats is expected to occur as a result of project implementation and includes: reduction in small and moderate size trees < 30” dbh; reduction of canopy structures, and the potential reduction and redistribution of snags and downed woody debris on approximately 5,080 acres. Only snags that pose a hazard to people or restoration operations would be removed. The direct and indirect effects related to snags in green forest and hairy woodpeckers include the loss in snags/acre and canopy cover alteration in mature forest stands. Forest Plan direction for snags and down woody material would be implemented, retaining at a minimum four large snags (> 15 inch dbh) per acre in mixed conifer and six large snags per acre in red fir forest types.

No additional direct effects to burned forests are expected from the Hemlock project, as there are no planned vegetation treatments in the burned forest part of the Hemlock project area. Indirect effects (reduction of dead snags) may occur from existing dead snags naturally falling within the burned area.

Cumulative Effects

Riverine/Lacustrine, Riparian, and Wet Meadow

Foreseeable future projects and activities that may influence aquatic habitats include continued livestock grazing in the Mattley, Lower Blue, Mokelumne, and Bear Valley grazing allotments, recreation activities, and ongoing vegetation management projects (Ramsey Fire Salvage, Bailey Plantation Health Improvement, and West Calaveras Thin). Livestock allotments encompass 11,895 acres (85% of the project area), with 2,196 acres of capable range occurring primarily in meadows and riparian areas. Livestock may use meadows and riparian areas disproportionately when compared to upland habitat. Streams with meadows adjacent to them may show localized sources of sediment caused by livestock grazing, but these levels of fine sediment would be considered insignificant when compared to fine sediment introduced from the road system. Recreation activity in the project area may increase as the recreation infrastructure is improved. Cumulative effects related to future recreation activities are expected to be minimal, as project actions are primarily focused on redirecting recreation opportunities to resilient locations. Ongoing vegetation management projects and recreation activity were analyzed in conjunction with project activities in the project's cumulative watershed effects (CWE) using an equivalent roaded area (ERA) method (Hydrology Report). The ERA values for all sub-watersheds were well below thresholds of concern; therefore, Alternative 1 (Proposed Action) would not alter the existing trend for riverine, lacustrine, riparian, or wet meadow habitats or aquatic macro-invertebrates, yellow warbler, or the Pacific tree frog across the Sierra Nevada bioregion.

Early and Mid-Seral Coniferous Forest

Current on-going projects in the vicinity of Hemlock project include Bailey and West Calaveras Thin plantation treatments, logging on private inholdings adjacent to the project area, Ramsey Fire Salvage project, livestock grazing, and recreation activities. Livestock browsing occurs on the shrub understory species and has the potential to increase when the overhead tree canopy cover is reduced, with shrub species subsequently colonizing the openings. Dispersed recreation may increase in these openings from hikers, camping, and off-road vehicular travel. Private inholdings remove or treat a substantial amount of trees and competing brush vegetation, thus greatly reducing canopy cover. The Bailey and West Calaveras Thin plantation thinning projects are also treating 787 acres through mechanical methods. The Ramsey Fire Salvage Sale on 200 acres has been completed with the exception of additional removal of wood from landings through individual use fuelwood permits. Most of these vegetation projects are expected to increase the amount of early and mid-seral habitat in the cumulative effects analysis area; therefore, Alternative 1 (Proposed Action) would not alter the existing trend in early and mid-seral coniferous forest habitat, nor would it lead to a change in the distribution of mountain quail across the Sierra Nevada bioregion.

Late Seral Closed Canopy Coniferous Forest

Current on-going projects in the vicinity of Hemlock project that may influence late seral closed forest conditions include Bailey and West Calaveras Thin plantation treatments, logging on private inholdings adjacent to the project area, fire wood permits, and recreation activities. Private inholdings remove or treat a substantial amount of trees and competing brush vegetation, thus greatly reducing canopy cover. The Bailey and West Calaveras Thin plantation thinning projects are also treating 787 acres through mechanical methods. Plantation treatments are expected to increase the growth rates of trees within the next 40 years to achieve late seral conditions. Timber harvests on private lands are expected to decrease the amount of late seral habitat in the cumulative effects analysis area. However, the amount (acres) of expected harvest is not expected to contribute substantially to cumulative effects. Ongoing activities on the Ramsey Fire Salvage project (200 acres) may remove additional down and woody debris through individual use fuelwood permits. Likewise, dispersed recreation may contribute to loss of snags and large down woody debris for use as fuelwood. Alternative 1 (Proposed Action) would not alter the existing trend in late seral closed canopy coniferous forest habitat, nor would it lead to a change in the distribution

of the California spotted owl, American marten, or northern flying squirrel across the Sierra Nevada bioregion.

Snags in Green Forest and Burned Forest

Current on-going projects in the vicinity of Hemlock project that may influence snags in green and burned forest include Bailey and West Calaveras Thin plantation treatments, and logging on private inholdings adjacent to the project area. During private timber sales, snags are often removed for operational safety; however, the amount (acres) of expected harvest is not expected to contribute substantially to cumulative effects. The 787 treated acres within the Bailey and West Calaveras Thin plantation thinning projects are not expected to reduce the availability of snags. Plantation treatments are expected to increase the growth rates of trees within the next 40 years to achieve late seral conditions, including snag recruitment. There are no additional activities planned on the Ramsey Fire Salvage project, although some snags may be removed through incidental take during individual collection of fuelwood. Likewise, dispersed recreation may contribute to loss of snags for use as fuelwood. Therefore, Alternative 1 (Proposed Action) would not alter the existing trend in snags in green or burned forest habitat, nor would it lead to a change in the distribution of the hairy woodpecker or the black-backed woodpecker across the Sierra Nevada bioregion.

Alternative 2 (No Action)

Indirect Effects

Riverine/Lacustrine, Riparian, and Wet Meadow

Under the No Action alternative, aquatic and meadow habitat restoration actions would not occur. These systems would continue to degrade due to altered hydrological processes. The road system, failed culverts, and recreation areas would continue to provide a source of sediment to the stream channels throughout the project area. Vegetation treatments designed to reduce fuels would not be conducted, increasing the risk of extreme wildfire. The effects of an extreme wildfire will likely include increased erosion on the hill slopes and sedimentation within riverine, lacustrine, wet meadow and freshwater emergent environments; therefore, MIS species will also be detrimentally affected.

Early and Mid-Seral Coniferous Forest

Indirect effects to the mountain quail and early and mid-seral coniferous forest may result as unmanaged forest habitats decrease foraging, brooding, and nesting habitats for the mountain quail. Likewise, vegetation treatments designed to reduce fuels would not be conducted, increasing the risk of extreme wildfire and the loss of current available suitable habitats; therefore, MIS species will also be detrimentally affected.

Late Seral Closed Canopy Coniferous Forest

Indirect effects to the California spotted owl, American marten, or northern flying squirrel and late seral closed canopy coniferous forest may result as the risk of stand replacing wildfire increases. The loss of current available suitable habitats could detrimentally affect MIS species.

Snags in Green Forest and Burned Forest

Indirect effects to the hairy woodpecker or the black-backed woodpecker and snags in green or burned forest may result as the risk of stand replacing wildfire increases. The loss of current available suitable habitats could detrimentally affect MIS species. Losses of snags removed as roadside hazards would be minimal as snag recruitment is expected in mature forest systems.

Cumulative Effects

Riverine/Lacustrine, Riparian, and Wet Meadow

The indirect effects discussed above when considered with ongoing vegetation implementation projects, recreation activities, and livestock grazing, are not expected to substantially add to the cumulative effects related to this alternative; therefore, Alternative 2 (No Action) would not alter the existing trend for riverine, lacustrine, riparian or wet meadow habitats or aquatic macro-invertebrates, yellow warbler, or the Pacific tree frog across the Sierra Nevada bioregion.

Early and Mid-Seral Coniferous Forest

The indirect effects discussed above when considered with ongoing vegetation implementation projects, recreation activities, and livestock grazing, are not expected to substantially add to the cumulative effects related to his alternative; therefore, Alternative 2 (No Action) would not alter the existing trend for early and mid-seral coniferous forests or the mountain quail across the Sierra Nevada bioregion.

Late Seral Closed Canopy Coniferous Forest

Vegetation restoration activities would not occur under Alternative 2 (No Action). As such, the indirect effects discussed above when considered with ongoing vegetation implementation projects and recreation activities is not expected to substantially add to the cumulative effects related to his alternative. Therefore, Alternative 2 (No Action) would not alter the existing trend in late seral closed canopy coniferous forest habitat, nor would it lead to a change in the distribution of the California spotted owl, American marten, or northern flying squirrel across the Sierra Nevada bioregion.

Snags in Green Forest and Burned Forest

The indirect effects discussed above when considered with ongoing vegetation implementation projects and recreation activities are not expected to substantially add to the cumulative effects related to his alternative. Therefore, Alternative 2 (No Action) would not alter the existing trend in snags in green or burned forest habitat, nor would it lead to a change in the distribution of the hairy woodpecker or the black-backed woodpecker across the Sierra Nevada bioregion.

Alternative 3

Direct and Indirect Effects

Riverine/Lacustrine, Riparian, and Wet Meadow

Alternative 3 has restoration actions proposed in 1,565 acres of RCA, with 807 acres (72%) occurring in the RCA exclusion and transition zone. These minor differences in potential riparian and riverine treated acres, compared to Alternative 1, would yield similar direct and indirect effects to aquatic and riparian habitats and MIS species as described in Alternative 1 (Proposed Action).

Early and Mid-Seral Coniferous Forest

Early and mid-seral coniferous forest vegetation treatments under Alternative 3 would shift canopy cover from dense (>70%) to moderate (40-69%) across approximately 1,145 acres which has the potential to increase understory shrubs and open meadow. Alternative 3 would retain about 235 more acres in dense canopy structures as compared to Alternative 1. These minor differences in vegetation treatments under Alternative 3 would yield similar direct and indirect effects as described in Alternative 1 (Proposed Action).

Late Seral Closed Canopy Coniferous Forest

Late seral closed canopy coniferous forest vegetation treatments under Alternative 3 would shift canopy cover from dense (>70%) to moderate (40-69%) across approximately 745 acres. Alternative 3 would retain about 171 more acres in dense canopy structures as compared to Alternative 1. These minor

differences in vegetation treatments under Alternative 3 would yield similar direct and indirect effects as described in Alternative 1 (Proposed Action).

Snags in Green Forest and Burned Forest

Alteration of mature forest habitats is expected to occur as a result of project implementation on approximately 5,175 acres. This minor increase (95 acres) in vegetation treatments in Alternative 3 in comparison to Alternative 1 would result in similar direct and indirect effects as described in Alternative 1 (Proposed Action).

Cumulative Effects

Riverine/Lacustrine, Riparian, and Wet Meadow

Cumulative effects to riverine, riparian, and wet meadow habitats and their associated MIS species that result from the implementation of Alternative 3 when considered with ongoing vegetation implementation projects, recreation activities, and livestock grazing, are the same as described in Alternative 1 (Proposed Action). As such, Alternative 3 would not alter the existing trend for riverine, lacustrine, riparian, or wet meadow habitats or aquatic macro-invertebrates, yellow warbler, or the Pacific tree frog across the Sierra Nevada bioregion.

Early and Mid-Seral Coniferous Forest

Cumulative effects to early and mid-seral coniferous forests and mountain quail resulting from the implementation of Alternative 3 when considered with ongoing vegetation implementation projects, recreation activities, and livestock grazing, are the same as described in Alternative 1 (Proposed Action). Alternative 3, therefore, would not alter the existing trend in early and mid-seral coniferous forest habitat, nor would it lead to a change in the distribution of mountain quail across the Sierra Nevada bioregion.

Late Seral Closed Canopy Coniferous Forest

Cumulative effects to late seral closed canopy coniferous forests and associated MIS species resulting from the implementation of Alternative 3 when considered with ongoing vegetation implementation projects and recreation activities are the same as described in Alternative 1 (Proposed Action). Alternative 3, therefore, would not alter the existing trend in late seral closed canopy coniferous forest habitat, nor would it lead to a change in the distribution of the California spotted owl, American marten, or northern flying squirrel across the Sierra Nevada bioregion.

Snags in Green Forest and Burned Forest

Cumulative effects to snags in green and burned forests and associated MIS species resulting from the implementation of Alternative 3 when considered with ongoing vegetation implementation projects and recreation activities are the same as described in Alternative 1 (Proposed Action). Alternative 3, therefore, would not alter the existing trend in snags in green or burned forest habitat, nor would it lead to a change in the distribution of the hairy woodpecker or the black-backed woodpecker across the Sierra Nevada bioregion.

3.09 RANGE

Existing Condition

Approximately 11,895 acres (85%) of the project area is lands authorized for grazing in portions of the Mattley, Lower Blue, Mokelumne, and Bear Valley allotments. Grazing by domestic livestock has occurred in the project area for over 100 years. Unregulated grazing resulted in localized deterioration of range condition and erosion that lowered water tables in meadows and reduced rangeland productivity.

Allotment Management Plans (AMPs) were developed for the Mattley, Lower Blue, Mokelumne, and Bear Valley allotments between 1965 and 1966 (Table 3.09-1). AMPs describe allotment characteristics, summarize allotment history, and prescribe grazing system, season of use, livestock numbers and allotment infrastructure. Rangeland infrastructure includes fences, water developments (troughs), cattleguards, gates and corrals are designed to control livestock movements (timing, duration, and intensity of grazing). Over time, the condition of improvements, particularly fences can deteriorate, adding additional time required for maintenance and repair.

Table 3.09-1 Permitted livestock use in Allotments within the Hemlock project area

Allotment	Allotment Acres	AMP Year	Permitted Number	Class of Livestock	Season of Use	
					On	Off
Mattley	22,500	1966	132	Cow/Calf	6/15	9/15
Lower Blue	40,490	1965	69	Cow/Calf	5/1	9/15
Mokelumne	24,400	1965	73	Cow/Calf	5/15	9/30
Bear Valley	24,320	1965	145	Cow/Calf	7/1	9/30

Capable rangeland is defined as lands that have the ability to produce a minimum of 200 lbs. per acre of forage and are within one mile of perennial water. Capable lands in the project area consist primarily of openings, brush fields, meadows, and riparian areas where plant communities are dominated by palatable shrubs or herbaceous vegetation. Forage production varies based primarily on soils and moisture availability, but is generally greatest in meadows and riparian areas. Forested areas may also be capable of understory production. There are 2,178 acres of capable rangeland in the project area (Table 3.09-2).

Table 3.09-2 Allotment area and capable rangeland within the Hemlock project area

Allotment	Pasture[1]	Total Area	Within Hemlock		Capable Rangeland Area		
			Acres	Percent	Total Acres	Acres in Project Area	Percent in Project Area
Mattley	Mattley	1,032	187	18	151	16	11
Mattley	Hay Gulch	4,829	3,680	76	768	674	88
Mattley	Jelmini	2,931	1,507	51	614	455	74
Mattley	Pumpkin Hollow	3,163	2,277	72	392	392	100
Mattley	Shovel Grave	6,168	39	<1	802	13	2
Mattley	Sky High	2,142	1,266	59	338	178	53
Mattley	**subtotal**	**22,500**	**8,956**	**40**	**3,371**	**1,742**	**52**
Lower Blue	**subtotal**	**65,597**	**2,685**	**4**	**1,378**	**15**	**1**
Mokelumne	**subtotal**	**59,092**	**215**	**<1**	**398**	**371**	**93**
Bear Valley	Stan River Cyn	9,343	39	<1	1,951	14	<1
Bear Valley	**subtotal**	**24,320**	**39**	**<1**	**5,535**	**50**	**<1**
	total	**171,509**	**11,895**	**7**	**10,682**	**2,178**	**20**

[1]Only pastures within the project area are included. Subtotals are given for the entire allotment. Lower Blue and Mokelumne have no separate pastures.

The Lower Blue and Mokelumne allotments are considered transitory range allotments. The primary forage within these allotments is upland brush species, such as deerbrush, with annual and perennial grasses and forbs as a minor but important component. Analysis conducted in 2007 identified that current grazing management was meeting, or satisfactorily moving toward, objectives identified in the Land and Resource Management Plan. These allotments have no long-term range condition and trend plots due to their lack of meadows, but range condition is generally assumed to be fair based on the most current assessments.

The Mattley and Bear Valley allotments are considered perennial range allotments. The primary forage is considered to be perennial herbaceous vegetation, found mainly in meadows, openings, and riparian

areas. Livestock prefer foraging herbaceous vegetation (grasses and forbs) but will move through the allotment browsing upland brush species and riparian woody vegetation. Rangeland condition assessments completed in the 1960s indicated that a majority of the meadows in the Mattley allotment were in poor condition at that time because erosion gullies had lowered the water table. There is one long-term range condition and trend plot on the Mattley allotment and one on the Bear Valley allotment selected to be representative of range condition for the pasture or allotment. The condition of Hay Gulch meadow changed from good to fair from 2002 to 2013, but the amount of bare soil declined steadily during the same time period. Stressors other than livestock grazing, including adjacent roads and conifer encroachment, can affect meadow condition. As such, interpreting the relationship between current grazing and range condition should be done with caution.

Alternative 1 (Proposed Action)

Direct and Indirect Effects

Allotment Administration

Forest thinning, biomass removal, mastication, and prescribed fire treatments proposed in Alternative 1 (Table 3.09-3) would reduce forest density, which may to some extent improve access for allotment administration within the project area. The monitoring and adaptive management component would increase the need for allotment administration. Construction and maintenance of potential barriers would increase administrative workload. Increased need for allotment administration inside of the Hemlock project area may result in reduced capacity for allotment administration outside of the project area.

Rangeland Infrastructure

Alternative 1 would increase rangeland infrastructure. Up to approximately 16.5 miles of barriers (range fences or otherwise) may be established in grazing allotments in the project area (Table 3.09-3). Fences and natural barriers require regular inspection and maintenance. Poorly constructed or poorly maintained barriers may contribute to resource damage and have the potential to cause livestock entrapment, injury or death, which would result in economic losses.

Livestock Movements

Alternative 1 may cause negative short-term effects to livestock movements because cattle are likely to be disturbed by project implementation. The extent of livestock disturbance would likely be mitigated by the timing of implementation because treatments are not likely to occur at the same time throughout the project area. Mechanical treatments and prescribed fire would reduce the density of understory vegetation, which may improve livestock distribution in the long-term by facilitating livestock movement across the landscape. Roadside fuel breaks would reduce the potential for vehicle-cattle interactions. The installation of livestock water developments would facilitate livestock dispersal to uplands and may result in increased use of capable rangelands in the vicinity, while reducing cattle concentration in riparian areas. Livestock barriers may cause negative long-term effects to livestock movements because barriers tend to hamper herding efforts and impede livestock movement, changing livestock distribution and patterns of use. Adaptive management may result in additional barriers, which is likely to further alter livestock movements and distribution. Barriers constructed adjacent to roads (Horse Gulch, Hay Gulch) are likely to increase vehicle-cattle interactions, because they make it difficult for the animals to move off the road.

Capable Rangeland and Forage Production

Conifer removal from meadows and aspen stands would increase capable rangeland and forage production on 238 acres. Biomass removal and mastication would temporarily reduce shrub production on 523 acres of capable rangeland, but fire-adapted shrubs are expected to recover quickly and resprouting shrubs would be more palatable, accessible, and nutritious for livestock. Soil productivity treatments would have beneficial effects on range resources by retaining shrubs and improving soil productivity.

Forest thinning has the potential to increase understory forage production, which would last as long as the forest canopy remains open enough to support understory forage production. Treatments may create capable rangeland where canopies are reduced to 40% or less (in canopy gaps) and conditions allow for sufficient understory forage production (200 lbs/acre). Because this alternative reduces canopy cover to 40% only on ridges and shaded fuel breaks, conversion to capable rangeland may be limited by terrain or water availability in these upland areas. Alternative 1 would thin 4,561 acres within grazing allotments, and may increase capable rangeland on up to 1,208 acres by reducing canopy cover to 40% (Table 3.09-3).

Rangeland Condition

Conifer removal and channel restoration would improve rangeland condition in treated meadows and riparian areas by increasing water availability, perennial herbaceous vegetation, and ground cover. Improved livestock distribution and increased dispersal to upland areas would reduce the potential for cattle concentration and localized impacts. Potential barriers would reduce the amount of capable rangeland accessible to livestock (Table 3.09-3). This reduction in capable rangeland would result in increased use of the remaining capable rangeland in a unit. Implementation of appropriate RCA standards and guidelines (meadow forage utilization, streambank disturbance, riparian browse) would mitigate negative effects to rangeland condition. Activities involving ground disturbance would increase the potential for weed introduction and spread; however, management requirements would reduce this risk.

Table 3.09-3 Alternative 1 treatments in affected grazing allotments

Allotment	Pasture	Thinning Treatment (Acres)	Prescribed Fire (Acres)	Watershed Treatment (Acres)	Potential Conversion to Capable Range (CC < 40% Acres)	Watershed Treatments in Capable Range (Acres)	Estimated Potential Barrier[1] (Miles)	Potential Reduction Capable Range[2] (%)
Mattley	Mattley	31	22	0	21	0	0	0
Mattley	Hay Gulch	1,619	2,062	46	337	35	6	5
Mattley	Jelmini	489	29	39	177	39	5	6
Mattley	Pumpkin Hollow	534	745	9	233	9	2	2
Mattley	Shovel Grave	47	19	0	35	0	0	0
Mattley	Sky High	589	0	21	182	21	2	6
Mattley	**subtotal**	**3,309**	**2,878**	**114**	**984**	**104**	**15**	**3**
Lower Blue	Lower Blue	1,061	1,378	8	197	8	2	1
Mokelumne	Mokelumne	152	9	0	25	0	0	0
Bear Valley	Stan River Cyn.	39	0	0	2	0	0	0
	total	**4,561**	**4,265**	**123**	**1,208**	**112**	**17**	**4**

[1] Assuming all SAFs listed in Table 2.02-4 receive barriers.
[2] Potential reduction of capable range is the percentage of capable range area in a pasture or allotment (Table 3.09-2) that could have barriers related to watershed treatments.

Cumulative Effects

The cumulative effects analysis considers past, present, and reasonably foreseeable future actions within the spatial boundary of all allotments affected by this project. The temporal bounding for cumulative effects is 20 years, which corresponds to the anticipated life of the project. A restoration plan for Mattley meadow is in the early phases of development and would likely include portions of the Mattley allotment. Alternative 1 when combined with the effects of this project may cause short-term negative cumulative effects on range due to the potential for soil compaction, ecological disturbance, and weed invasions. Long-term cumulative effects to range from those projects would be beneficial or neutral because they improve accessibility, curtail resource damage, or generally improve the ecological health of forest and

rangelands. Alternative 1 implements the Forest Plan and includes management requirements that reduce the potential effects. As such, no adverse long-term cumulative effects are expected.

Alternative 2 (No Action)

Indirect Effects

Allotment Administration

Alternative 2 would not improve conditions for allotment administration and grazing management. The presence of dense forests and heavy fuel loads would continue to negatively affect accessibility for allotment administration. Access within the allotments would not be improved from existing conditions. Allotment administration activities such as herding and monitoring would still occur, but administrative workload would not increase under this alternative.

Rangeland Infrastructure

There would be no risk of damage to range infrastructure under Alternative 2.

Livestock Movements

Alternative 2 would not affect livestock movements. The potential for vehicle-cattle interactions would not be reduced by roadside fuel breaks. The installation of livestock water developments would not occur and would not increase livestock dispersal or reduce cattle concentration in riparian areas. Livestock barriers would not be constructed and thus would not hamper herding efforts or change patterns of use.

Range Condition

Alternative 2 would not improve range conditions in forests, uplands or RCAs. Alternative 2 may result in continued degradation in meadows, unstable channels, and special aquatic features due to conifer encroachment and hydrologic alteration. No forest thinning or fuel treatments would occur, so the potential for future catastrophic fire would not change or would increase. This increases the risk for future fire disturbance and associated potential negative effects on rangeland condition.

Cumulative Effects

The Mattley Meadow restoration project may pose some risk to rangeland health due to the potential for soil compaction, ecological disturbance and weed invasions. Mattley Meadow actions may result in long-term beneficial effects to rangeland resources because of the expected improvement in the ecological health of forest and rangelands. When the indirect effects of Alternative 2 are considered in relation to the Mattley Meadow project, the cumulative effects are not likely to contribute to desired conditions for rangeland resources and may result in long-term negative cumulative effects to rangeland resources.

Alternative 3

Direct and Indirect Effects

The effects of actions proposed in Alternative 3 on allotment administration are similar to those described in Alternative 1 (Proposed Action). Alternative 3 has larger areas of forest thinning, biomass removal, mastication, and prescribed fire treatments within allotments (Table 3.09-4) which may improve access for allotment administration within the project area. Because Alternative 3 reduces canopy cover to 40% on slightly more acres, there may be a slight increase in capable rangeland, as compared to Alternative 1.

Cumulative Effects

Cumulative effects of actions proposed in Alternative 3 in consideration with other projects are the same as those described in Alternative 1 (Proposed Action).

Table 3.09-4 Alternative 3 treatments in affected grazing allotments

Allotment	Pasture	Thinning Treatment (Acres)	Prescribed Fire (Acres)	Watershed Treatment (Acres)	Potential Conversion to Capable Range (CC < 40% Acres)	Watershed Treatments in Capable Range (Acres)	Estimated Potential Barrier[1] (Miles)	Potential Reduction Capable Range[2] (%)
Mattley	Mattley	31	22	0	21	0	0	0
Mattley	Hay Gulch	1,682	2,092	46	412	35	6	5
Mattley	Jelmini	489	29	39	176	39	5	6
Mattley	Pumpkin Hollow	534	774	9	233	9	2	2
Mattley	Shovel Grave	47	19	0	35	0	0	0
Mattley	Sky High	617	99	21	196	21	2	6
Mattley	**subtotal**	**3,401**	**3,035**	**114**	**1,073**	**104**	**15**	**3**
Lower Blue	Lower Blue	1,044	1,378	8	197	8	2	1
Mokelumne	Mokelumne	152	9	0	25	0	0	0
Bear Valley	Stan River Cyn.	39	0	0	2	0	0	0
	total	**4,636**	**4,421**	**123**	**1,297**	**112**	**17**	**4**

[1] Assuming all SAFs listed in Table 2.02-4 receive barriers.
[2] Potential reduction of capable range is the percentage of capable range area in a pasture or allotment (Table 3.09-2) that could have barriers related to watershed treatments.

3.10 RECREATION

Existing Condition

Recreation activities in the project area include driving for pleasure (passenger vehicles, all-terrain vehicles, and motorcycles), hunting, viewing scenery, wildlife, dispersed camping, and fuel wood gathering. The project area includes portions of the Black Springs/Corral OHV area which receives high use and results in some resource concerns. There are currently 200 dispersed camping sites, many of which have no authorized access and receive heavy use during peak periods. In high use areas, dispersed camping and day use activities are causing loss of vegetative cover, soil compaction and to some extent bank erosion. Users created trails occur in the Hemlock project that are unsuitable due to resource concerns associated with steep slopes, fragile soils, and sediment inputs.

Alternative 1 (Proposed Action)

Direct and Indirect Effects

Dispersed Recreation

Visitor use of the 21 dispersed campsites (IDs 650-656, 658-663, 665-668, and 670-673) would be negatively impacted for up to a week during installation of materials to delineate appropriate use of the sites. Once completed, actions at these sites would have a long-term positive effect on recreation experience by redirecting use to more resilient locations and improving the sustainability, safety, sanitation, and functionality of the sites.

Decommissioning dispersed sites (IDs 657, 669 and 677) would have a minor negative effect on hikers, fisherman, and hunters by discouraging use of these dispersed sites. Decommissioning these dispersed sites will prevent further resource damage in the vicinity of these sites.

Add Routes to NFTS

Under this Alternative approximately 0.36 mile of existing unauthorized four-wheel drive trails > 50 inches would be added to the NFTS at eight dispersed campsites (IDs 650, 651, 654, 658, 664, 670, 672

and 673) to allow legal motorized vehicle access. Adding these routes to the authorized NFTS would enhance recreational experience by allowing users to legally and safely access these sites.

Decommission Non-system User Created Trails

Decommissioning approximately 1.2 miles of non-system user created trail would prevent further resource damage on these routes. Decommissioning the segment between 06N18 and 16EV190 would prevent riding through unprotected stream crossings. Users would be directed towards legal sustainable routes. There is a low possibility that visitors may go around the barriers to access the remnants of the decommissioned routes or create additional user-created routes. Decommissioning and camouflaging routes would reduce this effect. The blockage of routes would slightly reduce OHV riding opportunities, although routes designated for blockage are short segments and do not provide loop opportunities for recreation users.

OHV Trailhead / Staging Area

The new OHV staging area located at the intersection of 06N62 and 07N23 (Black Springs Road) would enhance the Black Springs trailhead (ID 676). At the trailhead/staging area educational information would be provided to the visitor and it would enhance their recreational experience. Additionally, the staging area would provide an adequate safe place to park and unload motorized vehicles. The trailhead would reduce the number of OHV users parking along 06N62. This would minimize conflicts between OHV users and other users accessing the roads and increase the safety of the intersection.

New Routes

A new OHV trail would parallel 07N23 from the intersection of 06N62 to 06N09 adding approximately 0.77 miles to the NFTS. This new trail would reduce the creation of user created routes and unauthorized OHV use on 07N23 which is designated highway legal only. The new trail would provide loop opportunities to enhance OHV riding experience.

Adding routes to dispersed campsites (ID 652, 650, 674) would provide recreation users access to these sites. These routes would reduce the potential for the creation of unsustainable user-created routes to these sites.

Trail Reconstruction

Repairing the trail surface of 1.5 miles segment of trail 16EV190 would provide a sustainable trail resource. These routes would be temporarily closed during trail construction. Once trail maintenance and bridge construction is complete, the project would benefit OHV riding and experience by providing trail conditions for varied riding levels. Widening the 0.75 mile trail segment of 17EV152 located between 07N11 and 07N72 would provide safer and aesthetically pleasing trail for multiple types of OHV.

Hiking Trailhead Parking Areas

Construction of the new hiking trailhead parking area (ID 675) would improve the recreational experience for users of trail 17EV21. Currently, users typically park on private property and trespass to reach this trail. The new parking area would allow users to safely, conveniently, and legally park and access the trail. During construction there would be temporary disruption of traffic on 06N79.

New Hiking Trails (Non-motorized)

In the short-term, there would be minor, adverse impacts to the recreational user experience at trail 17EV21 during the trail construction period. During this time, approximately 0.57 miles of trail would be closed off to hikers. The existing trail which was burned over would be decommissioned and approximately 0.5 miles of trail would be rerouted to the east parallel to the former trail. Once construction is complete, long-term, beneficial impacts to recreational users and experience are expected. The new trail would be safer and aesthetically pleasing for recreational users.

Additionally, approximately 0.20 mile of non-motorized trail would be constructed from Liberty Vista Point to 06N79. This trail would provide visitors the opportunity to access the North Fork of the Stanislaus River via 17EV21. However, visitor use may exceed the existing parking capacity at Liberty Vista Point.

Vegetation and Fuels Management

Direct effects to recreationists and recreational opportunities from forest restoration, fuels reduction, scenic corridor, wildlife habitat, and heritage resource activities would include short-term noise disturbance, traffic congestion, smoke, and access limitations (temporary road closures). These activities could also lead to an increase in cross-country motorized travel because of reduced vegetation density and corridors created by skid trails, fire lines, temporary roads, and fuel breaks. There is a potential that skid trails established after harvest activities could be used by forest visitors operating motorized vehicles. This is expected to be a short-term risk as the skid trails would be subsoiled and closed after operations, and limbs and tree tops would be scattered over the trails. It is anticipated that these measures would limit unauthorized use of these sites.

Vegetation thinning near dispersed campsites could encourage users to increase the footprint of existing campsites by parking vehicles farther off road or by other means. Thinning near campsites could also lead to decreased privacy and a temporary reduction in scenic quality.

Aquatic Organism Passage Restoration

In the short-term, replacing culverts at 16EV434 (Long Gulch), 17EV501 (Water Gulch), and 07N09 (Water Gulch/Pumpkin Hollow) would negatively impact recreationists. These routes would likely be temporarily inaccessible during construction activities and would cause visitors to seek alternative routes.

Stream, Riparian Areas, Special Aquatic Feature and Aspen Restoration

Conifer removal in meadows and aspen stands could temporarily inconvenience recreational users while trees are being cut and hauled. Skid trails created for completing this work may receive unauthorized motorized use which would create a need for increased patrolling, signing, and barricading.

Transportation

This Alternative would have a positive effect on OHV riding and loop opportunities. Designating approximately 5.4 miles of road (07N09) and (07N05) as mixed use would provide needed connections between OHV trails, increase riding opportunities, allow access to dispersed campsites, and decrease unauthorized use of highway legal only routes.

Under this Alternative, approximately 15.7 miles of roads and trails would be decommissioned. Resource damage from unauthorized or unnecessary routes would be prevented. This could inconvenience users who must find alternative routes to their destinations. Nevertheless, road density would remain adequate and recreationists would still be able to access the area. Routes 16EV434, 17EV501, 17DC493, 06N03, 06N77A, 06N78A, 07N17K, and portions of 07N72, 07N55A that would be decommissioned do not provide loop opportunities and thus are less frequently used by OHV users.

Closure and gating of roads would have little effect on recreationists. In general these are infrequently used and short spur routes, but some users such as hunters would no longer be able to use these routes as desired.

Realignment, reconstruction, and maintenance of roads and trails would have a positive effect on recreational use of the area. The quality and diversity of Forest motorized recreation experience for driving for pleasure, sport experiences, loop opportunities, and connection to loops would be improved.

Cumulative Effects

Past, on-going, and foreseeable projects contributing to cumulative effects across a 10 year time frame on recreation include the ongoing implementation of the Stanislaus National Forest Travel Management and future implementation of campground improvements in the Black Springs Campground project. Cumulative effects are expected to be minimal. Recreation opportunities that may be limited by the Stanislaus Travel Management would be mitigated by the increased opportunities expected from the Proposed Action. Likewise, campground construction would not overlap between Black Springs and Horse gulch, so there should not be a net loss of campground connected to trail networks and both projects are expected to improve public health and safety.

Alternative 2 (No Action)

Indirect Effects

Dispersed Recreation

Under this alternative, no new recreation actions would be implemented. The existing NFTS designations would continue to be implemented. Vehicle access to several popular dispersed recreation sites would remain unauthorized. The risk of additional user created routes and resource damage from unauthorized use would be high. Littering would continue to be a problem due to the distance between campsites and legal parking areas. Enforcement would be problematic.

Add Routes to NFTS

Under the no action, no new routes would be added to the NFTS. Recreational users would continue unauthorized access into dispersed sites, including continued unauthorized riding of non-street legal vehicles from the intersection of 06N62 to 06N09 on Black Spring road.

OHV Trailhead / Staging Area

Under this alternative, there would be no new trailhead parking area constructed. OHV users would continue to park vehicle along both side of 06N62 from the intersection of 07N23 interfering with other users accessing the road. Congestion, user conflict and unsafe conditions would continue.

Trail Reconstruction and Restore Non-system User Created Trails

Trail 16EV190 and 17EV152 would continue to fail with continued sediment loss, riling, and rutting creating unsustainable trails.

Hiking Trailhead Parking Areas

Without construction of a new parking area, there would be continued trespass issues from private property to the parking area.

New Hiking Trails (Non-motorized)

Trail 17EV21 would remain temporarily closed with impacts to natural and cultural/heritage resources. The trail would remain unsafe for users hiking to the North Fork of Stanislaus River.

Vegetation and Fuels Management and Aquatic Restoration Actions

There would be no effects related to recreation under the No Action Alternative.

Transportation

Without legal rights of way or mixed use authorization, unauthorized OHV use of road segments would likely continue as users attempt to connect non-contiguous system trails. Similarly, in an effort to avoid road usage and expand trail miles, some riders would continue to develop and/or re-open unauthorized trails. Some OHV riders would attempt to use more trails that are currently closed to them.

Cumulative Effects

Cumulative effects of implementing OHV improvements at Black Springs Campground and the continued implementation of the NFTS designations, but not improving recreation infrastructure in the Hemlock project area includes the potential for increased unauthorized riding on 07N23 and increased user created trails near trailheads.

Alternative 3

Direct and Indirect Effects

Effects to recreation opportunities would be similar to Alternative 1 with the following modifications.

Dispersed Recreation

Improvements at Sand Flat Campground (ID 674) including site delineation, creation of a parking area, and a new restroom would have a long-term positive effect on recreation experience by redirecting use to more resilient locations and improving the sustainability, safety, sanitation and functionality of the sites.

There is a risk that moving the parking area farther from the campsites will lead to an increase in garbage, unattended campfires, and encroachment of vehicles within the campground.

Trail Reconstruction

Under Alternative 3, new trail construction would add approximately 1.0 miles of trail to the NFTS. Constructing the new trail from Sky-high would allow homeowners access out of the subdivision if there was a wild land fire and for recreational use. Construction of this trail would minimize unauthorized trails in and out of the subdivision.

The newly constructed trail may receive high use from OHV users mostly during the summer/fall seasons, major holidays, weekends, and during hunting seasons. There is the likelihood some OHV users could ride their motorized vehicle into the Subdivision with their non-street legal vehicles.

Installing a gate on 17EV501 would have minor effects on OHV users and camping opportunities in this area. This may be more common during hunting season. Hunters may be more likely go around barriers creating new unauthorized routes with their vehicles to access their favorite spot.

New Hiking Trails (Non-motorized)

Direct and indirect effects to recreation opportunities for new hiking trails outlined in Alternative 3 are similar to Alternative 1, except the non-motorized trail between Liberty Vista Point and 6N79 would not be constructed. As a result, additional hiking opportunities to the North Fork Stanislaus River would not be developed. The proposed trail in Alternative 1 would be steep, which would likely limit use. As such effects are expected to be negligible.

Cumulative Effects

Cumulative effects to recreation opportunities under Alternative 3 would be similar to Alternative 1.

3.11 SENSITIVE PLANTS

The following analyses related to sensitive plants present a summary of the findings from the Sensitive Plants Biological Evaluation.

Existing Condition

Thorough sensitive plant surveys were conducted in the project area from April through September in both 2013 and 2014, including riparian areas and Special Aquatic Features (i.e., fens, meadows, springs and seeps), lahar (lava cap) flows and granitic outcropping, mixed conifer, and other suitable habitats.

Results from these surveys detected four sensitive plant species: Mingan moonwort, Hutchison's lewisia, Stebbins' lomatium, and veined water lichen. A historical occurrence of three-bracted onion was assumed present because snow accumulation restricted access to survey locations; three-bracted onion was detected in the project area in 1991 and recorded in California Natural Diversity Database.

Mingan moonwort was located in a seep near the Middle Fork Mokelumne River. The occurrence had only one specimen which was present in 2013 and 2014. Mingan moonwort is eligible for state listing in California as an endangered species. Currently, there are two Mingan moonwort specimens known on the Calaveras Ranger District, and only one other Mingan moonwort specimen is mapped on the Stanislaus National Forest. This specimen is on the Groveland Ranger District and survived the Rim fire in 2013. There are no populations mapped in Amador County. There appear to be three specimens mapped in Yosemite National Park. There are only 57 unconfirmed records of Mingan moonwort in the state of California. Rare Plant Rank for Mingan Moonwort is reported as Endangered, and Fairly Endangered in California (2B.2) and has a State Rank of Imperiled (2) (CNPS 2015). All plants constituting California Rare Plant Rank 2 meet the definitions of Sec. 1901, Chapter 10 (Native Plant Protection Act) or Secs. 2062 and 2067 (California Endangered Species Act) of the California Department of Fish and Game Code, and are eligible for state listing (CNPS 2015). Stable population estimates for Mingan moonwort are poorly documented, as habitat conditions and disturbances can greatly influence the number of aboveground plants at a given site (Chadde and Kudray 2001). Vanderhorst (1997) reported populations of 200 individuals in one occurrence. Mingan moonwort can develop vegetatively from underground propagules, which contributes to stable plant densities.

Veined water lichen was detected in the upper Middle Fork Mokelumne River. This occurrence is one of only two known occurrences on the Calaveras Ranger District. The occurrence in the Middle Fork Mokelumne River had 8 specimens in 2013, 10 in 2014, and only 1 in 2015. This is biologically significant because this rapidly decreasing population provides a source of spores/plants to help repopulate the population in the lower part of the occurrence which at one time measured between 1000-5000 plants. Veined water lichen has a Rare Plant Rank of "Uncommon in California, and Fairly Endangered in California" (4.2) and has a State Rank of "Vulnerable" (3) (CNPS 2015). This species is not known in Amador County, but there are known occurrences on Mi-Wok and Groveland Ranger Districts. Some of these occurrences were affected by direct mortality during the Rim fire and their habitats were rendered unsuitable.

Occurrences of Stebbins' lomatium and Hutchison's lewisia were located on lahar flows with shallow volcanic derived soil. An elevation range expansion was noted as Stebbins' lomatium was detected at 8,200 ft. in the project area. Previously, Stebbins' lomatium was not known above 7,200 ft. Stebbins' lomatium is endemic to California and more specifically, only known in Calaveras and Tuolumne Counties. Stebbins' lomatium, likewise, is considered rare, threatened, or endangered in California and elsewhere. Rare plant status for Hutchison's lewisia is imperiled and vulnerable (CNPS 2015).

Of the 35 Forest Service sensitive plant species considered on the Stanislaus National Forest, 14 plant species are either outside the geographic or elevation range of the project area, or no suitable habitat is present in or near the project area (Table 3.11-1). In addition, field surveys did not yield species presence, or proposed treatments were not in sensitive plant suitable habitats for 16 plant species. As such, a "No Effect" determination was provided for these 30 sensitive plant species. These species are not discussed in greater depth in this EA.

Project related effects on the Three-bracted onion, Mingan moonwort, Hutchinson's lewisia, Stebbin's lomatium, and veined water lichen are summarized below.

Table 3.11-1 Estimated direct, indirect, and cumulative effects with determination for Forest Service sensitive plant species considered in the Hemlock project analyses

Species Name	Project within Species Distribution	Project within Elevation Range	Habitat in or around Project	Species Present	Direct/Indirect Effects	Determination
Jepson's onion *(Allium jepsonii)*	Yes	Yes	Yes	No	No/No	No Effect
Three-bracted onion *(Allium tribracteatum)*	Yes	Yes	Yes	AP[1]	No/No	No Effect
Nissenan Manzanita *(Arctostaphylos nissenana)*	Yes	No	No	No	No/No	No Effect
Big-scale balsamroot (*Balsamorhiza macrolepis*)	Yes	No	No	No	No/No	No Effect
Hidden rockcress *(Boechera evadens)*	Yes	No	No	No	No/No	No Effect
Moosewort *(Botrychium tunux)*	Yes	No	No	No	No/No	No Effect
Upswept moonwort *(B. ascendens)*	Yes	Yes	Yes	No	No/No	No Effect
Scalloped moonwort *(B. crenulatum)*	Yes	Yes	Yes	No	No/No	No Effect
Slender moonwort *(B. lineare)*	Yes	Yes	Yes	No	No/No	No Effect
Common moonwort *(B. lunaria)*	Yes	Yes	Yes	No	No/No	No Effect
Mingan moonwort *(B. minganense)*	Yes	Yes	Yes	Yes	No/Yes	MA/NL[2]
Western goblin *(B. montanum)*	Yes	Yes	Yes	No	No/No	No Effect
Stalked moonwort *(B. pedunculosum)*	Yes	Yes	Yes	No	No/No	No Effect
Northwestern moonwort *(B. pinnatum)*	Yes	Yes	Yes	No	No/No	No Effect
Giant moonwort *(B. yaaxudakeit)*	Yes	No	No	No	No/No	No Effect
Bolander's bruchia *(Bruchia bolanderi)*	Yes	Yes	Yes	No	No/No	No Effect
Pleasant Valley mariposa lily *(Calochortus clavatus* var. *avius)*	Yes	Yes	Yes	No	No/No	No Effect
Mountain ladyslipper *(Cypripedium montanum)*	Yes	Yes	Yes	No	No/No	No Effect
Branched collybia *(Dendrocollybia racemosa)*	Yes	Yes	Yes	No	No/No	No Effect
Tahoe draba (*Draba asterophora* var. *asterophora)*	Yes	No	No	No	No/No	No Effect
Cup Lake draba *(Draba asterophora* var. *macrocarpa)*	Yes	No	No	No	No/No	No Effect
Jack's buckwheat *(Eriogonum luteolum* var. *saltuarium)*	Yes	Yes	No	No	No/No	No Effect
Tuolumne fawn lily (*Erythronium tuolumnense*)	Yes	No	No	No	No/No	No Effect
Brook pocket moss *(Fissidens aphelotaxifolius)*	Yes	Yes	Yes	No	No/No	No Effect
Blandow's bog moss *(Helodium blandowii)*	Yes	Yes	Yes	No	No/No	No Effect
Parry's horkelia *(Horkelia parryi)*	Yes	No	No	No	No/No	No Effect
Hutchison's lewisia *(Lewisia kelloggii* ssp. *hutchisonii)*	Yes	Yes	Yes	Yes	Yes/No	MA/NL
Kellogg's lewisia *(Lewisia kelloggii* ssp. *kelloggii)*	Yes	Yes	Yes	No	No/No	No Effect
Stebbin's lomatium (*Lomatium stebbinsii)*	Yes	Yes	Yes	Yes	Yes/No	MA/NL
Broad nerved hump moss (*Meesia uliginosa*)	Yes	Yes	Yes	No	No/No	No Effect
Elongate copper moss *(Mielichhoferia elongate)*	Yes	No	No	No	No/No	No Effect
Shevock's copper-moss *(M. shevockii)*	Yes	No	No	No	No/No	No Effect
Pansy monkey flower *(Mimulus pulchellus)*	Yes	No	No	No	No/No	No Effect
Veined water lichen *(Peltigera gowardii)*	Yes	Yes	Yes	Yes	Yes/Yes	MA/NL
Whitebark pine (*Pinus albicaulis*)	Yes	No	No	No	No/No	No Effect

[1] AP = Assume species presence for effects analyses.
[2] MA/NL = May affect individuals, but is not likely to result in a trend towards Federal listing or loss of viability.

Alternative 1 (Proposed Action)

Direct and Indirect Effects

Vegetation and Fuels Management and Aquatic Restoration Actions

Mingan moonwort and veined aquatic lichen were identified in the Middle Fork Mokelumne River drainage. Direct effects from the proposed action are not anticipated for these two sensitive plant species, as their populations would be protected by small barriers until a stable and positive trend is determined for these populations. Specifically, for Mingan moonwort a barrier would be maintained until at least 100

individual plants are quantified in a discrete growing season that resulted in a positive trend that persists for at least 10 years.

Likewise, at least 5,000 veined aquatic lichen plants would need to be quantified in a discrete growing season that resulted in a positive trend that persists for at least 10 years for the aquatic lichen population to be considered stable. This estimate is based on a population count of 1,000-5,000 plants at a different population location, but within the same occurrence on the Middle Fork Mokelumne River. Maintenance of a positive population trend for both occurrences would be necessary for the populations to be considered resilient and resistant to anthropogenic and environmental stressors.

There may be minimal positive or negative effects from hand thinning near the Mingan moonwort and veined aquatic lichen occurrences. The hand thinning ranges from 6” to 10” diameter at breast height and would not change the canopy cover significantly (i.e., 1-2 % change in canopy cover is estimated with the proposed hand thinning prescriptions). Overall, there would be a change in ladder fuel distribution but this would not significantly alter the current sunlight/shade provided to the affected Mingan moonwort or veiny aquatic lichen occurrences.

Indirect effects would occur to the Mingan moonwort occurrence from proposed barrier construction. Specifically, as barriers are created, plant community composition could change from altered herbivory patterns. Mingan moonwort may increase in abundance from the elimination of livestock hoof action and decreased compaction to soils and wetland vegetation. Likewise, there may be an increase in on-site water retention and growth in mycorrhizal fungi which supports growth of Mingan moonwort. These effects could take several years to appear, as the dissected habitat conditions would require time for soil and vegetation to develop. Mingan moonwort populations would require time to build resources and plant structures.

Indirect effects may occur and be measured as an increase in individuals of veined aquatic lichen from proposed barrier construction. The increase in plant individuals could occur as water quality conditions improve locally related to nitrogen levels and turbidity. Local nitrogen levels would decrease as livestock excrement would be absent from the veined aquatic lichen occurrence. Further, reduced turbidity would occur from minimal livestock movement in the plant occurrence (Peterson 2010).

Overall, the resilience of Mingan moonwort and veined aquatic lichen may be increased to sustain natural stressors including drought. Increases in abundance and resiliency may take 10 years or longer. Evaluation of project effects would take several years as Mingan moonwort, like other moonwort species, does not emerge above ground surface every year and detection probabilities are related to late season water availabilities (Laeger 2002).

Dispersed Recreation and Transportation

Lahar flows (lava caps) and occurrences of Stebbins’ lomatium, historical occurrences of three-bracted onion, and Hutchison’s lewisia, would be protected by Management Requirements. Known occurrences of Stebbins’ lomatium (whose habitat also includes historical occurrences of three-bracted onion) and Hutchison’s lewisia would be flagged and avoided by project activities. Specifically, treatments and their associated activities which could disturb shallow, volcanic soils and/or prevent sensitive plant emergence would be prohibited on all lava caps (i.e., piling, burning, driving/skidding). With the Management Requirement in place, direct and indirect effects are not anticipated to these three sensitive plant species on lahar flows.

Further, a barrier would be constructed to protect Stebbins’ lomatium from dispersed recreation along Mattley Ridge. Direct effects could occur from boulder placement and fence installation, but direct impacts would be minimized as best possible to limit plant mortality. Ground disturbance to install boulders and fence material may damage soil but the footprint would be limited to placement of the barrier material; thus, no extensive soil damage would be anticipated. Indirect effects are likely an increase in vigor and abundance within the Stebbins’ lomatium occurrence. Likewise, a partial barrier was

installed as an emergency barrier to dispersed recreation in 2012. In 2013, there was evidence of increased vigor in the sensitive plant occurrence where soil was intact or where there was marginally exposed parent material. Existing soil damage would not be expected to recover where there is severe eroded volcanic soil substrate.

Trail reconstruction would potentially create indirect effects but no anticipated direct effects to the veined aquatic lichen occurrences which occur in the Middle Fork Mokelumne River. Minimal sedimentation could occur temporarily during reconstruction of a 1.5 mile segment of trail 16EV190. The long-term indirect effects of the trail reconstruction would be positive for veined aquatic lichen occurrences, as the trail would be stabilized which would minimize sedimentation in the river. Further, installed bridges would capture pollutants from off-highway motorized vehicles which would increase water quality of the river.

The construction of a roadside barrier and installation of educational signs on 7N11 to protect Hutchison's lewisia would have some direct effects on this sensitive plant occurrence. Individual plants currently exist inside the road prism. The barrier would protect plants outside of the road prism from road grading operations. Thus, there may be direct mortality to plants as the barrier is installed which may overlap where plants currently exist. Transplanting would be attempted to relocate lewisia plants that are in the footprint of the barrier. Plants in the road prism may also be transplanted and placed behind the protective barrier. Direct mortality may occur from transplanting; however, it is anticipated that direct mortality would occur over time for plants in the road prism. Direct mortality would likely occur to the lewisia occurrence from motor vehicles directly impacting and/or road grading operations burying or uprooting plants. Overall, indirect positive effects are expected to occur and may be measured as increased vigor and abundance to the Hutchison's lewisia occurrence.

Cumulative Effects

The cumulative analysis area is delineated by the project boundary. The temporal bound for cumulative effects analysis was 10 years based on the expected life of the project. The result of past projects, including OHV use, invasive plant infestation and spread, livestock grazing, salvage and blow down harvesting, and green tree sales defined the current landscape condition and sensitive plant habitat. Foreseeable future projects and activities in the cumulative effect analysis area include continued abiotic variability from climate change, OHV use, and livestock grazing in special aquatic features. There are no known reasonably foreseeable vegetation management projects in the cumulative effects analysis area that would affect known sensitive plant occurrences.

Cumulative effects for sensitive plant species from Alternative 1 (Proposed Action) would be negligible or positive from restoration activities contributing to repair of past and present effects from livestock to Mingan moonwort and veined aquatic lichen occurrences and their habitats. Cumulatively, constructing barriers may increase population size and vigor for these sensitive plant populations. Special aquatic features, located adjacent to the barriers, would still receive livestock grazing. It is likely that grazing pressure (i.e., frequency, duration, and intensity) would increase at these special aquatic features; however, no sensitive plants were detected at these habitats. OHV and vehicle transportation would not have additional effects because no other sensitive plant occurrences were found in intersecting locations with OHV trails and roads.

Alternative 2 (No Action)

Indirect Effects

Vegetation and Fuels Management and Aquatic Restoration Actions

Under Alternative 2 (No Action), current land use activities would continue to impose indirect effects to Mingan moonwort, veined aquatic lichen, Stebbins' lomatium, and Hutchison's lewisia. The documented occurrence of Mingan moonwort would be at risk of extirpation from continued livestock hoof action and

habitat degradation. Soil disturbance restricts water and nutrients necessary for a viable Mingan moonwort population. Livestock hoof action (soil trampling, pocking, and stream bank shearing) has contributed to altered soil structure which can change water distribution, and subsequent water, nutrient and habitat availability to Mingan moonwort. Hoof pocking has created depressions which fill with water and increases rates of evaporation from exposed peat and organic material in fens (Weixelman and Cooper 2009). Similarly, seeps and springs may lose soil moisture and dry quickly which shortens phenological timeframes and opportunity for spore production/release for Mingan moonwort. Mingan moonwort may experience decreased vigor and abundance which reduces resilience and resistance to anthropogenic (e.g., livestock grazing) and environmental stressors. Nutrient deposition from manure may alter the vegetation composition and water quality which may render the site unsuitable habitat for Mingan moonwort.

Further, in 2014, low water flow, algal blooms, and livestock manure were observed in the river channel which supports the veined aquatic lichen occurrence. Field observations in 2013 recorded higher water level with clear, flowing water (i.e., no algal blooms). The synergistic effect of decreased water flow and warmer temperatures (current climate trend and decreased snow pack), decreased water quality, and continued livestock or other environmental stressors, places this population at high risk of extirpation (Peterson 2010). In 2014, a drastic decrease in this occurrence's population was documented from that of 2013. Further, a dry winter followed by late spring storms in 2014, may have contributed to increased alder downfall and subsequent scouring of the river channel which hosts the veined aquatic lichen. As such, the No Action Alternative is highly expected to lead to the extirpation the veined water lichen occurrence.

Without limiting environmental or anthropogenic stressors, the environmental consequences of continuing the No Action Alterative would contribute to eventual loss of viability for veined aquatic lichen and Mingan moonwort (Potash 1998, Johnson-Groh and Lee 2002); with the latter species further eligible for state and federal listing. This determination would be the equivalent of an adverse effect when considering a federally threatened or endangered species.

Dispersed Recreation and Transportation

Mattley Ridge (7N57) has extensive vehicle and dispersed camping disturbance (i.e., heavy vehicle use, fire rings, and camping) on the west side of the project area on lahar flows. This portion of Mattley Ridge also provides suitable habitat for an occurrence of Stebbins' lomatium. A temporary barrier was partially constructed in 2012 to protect the lava cap and populations of Stebbins' lomatium, resulting in a small increase in this sensitive plant species' abundance and vigor. Under the No Action Alternative, indirect plant mortality and loss of suitable habitat would occur if the barrier is not completed. Livestock may enter into the partial barrier and become disoriented in finding their way out which would create trailing on the thin and fragile volcanic soil. Vehicle and dispersed camping activity may enter the sensitive plant occurrence, decreasing abundance. This is significant as this particular Stebbins' lomatium occurrence is an elevation range extension for the species, and it is an endemic species only known to Calaveras and Tuolumne Counties and no other location in California or worldwide. Stebbins' lomatium is considered rare, threatened, or endangered in California and elsewhere (CNPS 2015) and extirpation of this occurrence would contribute to a loss in species viability.

On 7N11, the occurrence of Hutchison's lewisia is affected by vehicle activity and road maintenance (e.g., grading) deposition. Under the No Action alternative, plants at this site may continue to receive direct mortality from vehicle activity and grading operations, resulting in likely extirpation of this sensitive plant occurrence which would contribute to a loss in species viability.

Cumulative Effects

Cumulative effects may occur from continued livestock grazing and presence (i.e., hoof trampling and streambank shearing) in special aquatic features with Mingan Moonwort and veined aquatic lichen.

Special aquatic features in the project area supported only one population of Mingan moonwort. Likewise, veined aquatic lichen occurrence would continue to be negatively affected by water quality decline from livestock. Negative indirect effects from OHV routes and roads would contribute to cumulative effects as lava cap species, such as Stebbins' lomatium and Hutchison's lewisia, would continue to experience mortality and habitat loss. Increased sedimentation and pollutants would threaten the Middle Fork Mokelumne River from reduced OHV trail maintenance. Further, the synergistic effect of sedimentation, increased nitrogen and pollutants from unmanaged OHV trails and no livestock barrier would likely lead to a loss in viability of the veined aquatic lichen (Peterson 2010).

Alternative 3

Direct and Indirect Effects

Direct and indirect effects to Forest Service sensitive plant species from Alternative 3 actions are the same as described in Alternative 1 (Proposed Action).

Cumulative Effects

Cumulative effects to Forest Service sensitive plant species are the same as described in Alternative 1 (Proposed Action).

3.12 SOILS

The following analyses present a summary of the findings from the Soils Specialist Report.

Existing Condition

Geological history and climate have defined the diversity of soil types found in the project area. Abundant sign of glacial moraine features and glacial drift are found on the south side of the project area along Highway 4. The upper basins of the Mokelumne and Blue Creek drainages show less evidence of glacial action, but likely were influenced by the older glacial periods.

The dominant soil series mapped in the Hemlock area include the Windy, McCarthy, and Gerle family soils (USDA 1995). Windy and McCarthy soils develop within the volcanic mudflow along the Sierra west slope. The Gerle typically indicates granitic and glacially influenced terrain, but can have some volcanic material mixed in. Overall, soils generally have moderately deep (20 to 60") to shallow depth (< 20"). Clay accumulation is very low; most soils have rapid water infiltration rates, and very weak soil structure and cohesion. On the landscape, soils in valley gorges and narrow stream bottoms typically consist of granitic shallow soils. Up the hillslope, soil depth deepens where colluvium is able to accumulate. These areas host the most productive mature forest stands with the best soil condition. Farther upslope, soil types and depth depend on the orientation of volcanic mudflows with the slope, and rock contact between granitics and mudflow. Upper slopes form broad ridges of shallow soils that break to bedrock outcrop of volcanics (Archer and Moser 2014). For example, the parent material is dominantly extrusive igneous or volcanic rocks that were deposited as mudflows on Mattley and Bailey ridges. These volcanic rocks form a hard surface that parallels the ridges in much of the upper catchment of Blue Creek, and outcrops are visible on ridges and side slopes.

Alternative 1 (Proposed Action)

Direct and Indirect Effects

The Soil Resource analysis is bounded in time by the period during which detectable effects on the soil resource could persist. Some soil features, such as cover, can recover quite quickly, whereas effects on soil compaction and soil organic matter can persist for decades or centuries. In general, effects are discussed as short-term (< 5 years) or long-term effects (> 5 years).

Vegetation and Fuels Management

In treatment areas proposed for biomass or sawlog thinning, soil cover would be reduced, especially on landings and main skid trails. Off main skid trails, soil cover may be reduced slightly from tree skidding. Prescribed burning would cause an initial reduction in soil cover due to organic O-horizon combustion; however, with typical spring or fall burning and associated high fuel moistures, this reduction would be within forest soil quality guidelines for cover.

Ground cover reductions may lead to increased erosion rates on the most heavily trafficked areas (main skid trails and landings) which are the most prone to soil erosion after harvest. Typically the extent of these areas is small, <15% of a treatment unit (Jimenez 2007), and erosion control measures would be applied to mitigate potential erosion.

In plantations being masticated, soil cover is expected to increase from tree and shrub material being shredded, thus increasing soil stability and reducing erosion. In mastication areas with very heavy fuel loading, shredded materials can accumulate to several inches in depth. If masticated material depth is greater than 4 inches over a large area, this can cause an indirect effect by increasing the hazard for severe soil heating if a unit burns in a wildland fire. A management requirement is in place to limit prescribed burning to times when soil moisture is >15% to prevent excessive soil heating in a prescribed fire.

Surface organic matter would generally be redistributed, but not moved off site in thinning areas. Where trees are felled and skidded, small limbs and needles are likely to break off, causing a moderate increase in fine woody debris. The O-horizon would be displaced and mixed on light-use skid trails and in areas where feller bunchers or masticators walk. On main, heavy-use skid trails, surface organic matter would be buried and mixed in with surface soil horizons and be scraped away close to landings.

Gaps may have tractor piling done for site preparation, which pushes surface organic material into piles and removes large percentages of surface organic material, including O-horizon layers. This practice could occur on up to 10% of a treatment unit (in the Mid-slope SW treatment category) if tractor piling is done in every gap. Hand thinning would have little impact on surface organic matter. Broadcast burning would reduce surface organic matter through combustion, but would not cause continuous losses of surface organic matter. To maintain soil quality in units with gaps, several soil management requirements are included to prevent topsoil (A-horizon) loss and to limit tractor piling only to areas with deep soils (> 25 in.) and on slopes < 25%.

Broadcast burning would cause a loss of, or possibly a neutral effect, on total nutrient pools in the forest floor. Many remaining nutrients, especially nitrogen, would mineralize or be released into mineral soil and would be more available to plants and soil biota (St. John 1976, Moghaddas 2007). Nutrient cycling and microorganisms are not likely to be affected in the long-term since the forest floor would remain intact over most of the treated areas.

Soil organic matter refers to organic matter that is a component of mineral soil horizons (mainly A-horizons). In thinning areas, total soil organic matter and nutrient cycling would have minor impacts from treatment. In areas with displaced soil and in subsoiled areas, soil organic matter would be removed or distributed throughout the soil profile.

In areas directly under burned slash piles or log decks, soil temperatures may be high enough to cause severe soil heating that would combust soil organic matter and volatilize nutrients. While these areas are heavily disturbed, they are typically very small.

Heavy machinery is likely to cause limited soil displacement within unit boundaries, especially on main skid trails. Soil management requirements would prevent most displaced soil from moving off site. In mastication units, surface organic matter would increase immediately after treatment. Over time, soil organic matter would increase due to the decomposition of this masticated material. In areas with

displaced soil and subsoiling, decomposition and organic matter turnover rates could increase in the short-term, but these areas would be of small extent.

In thinning and mastication units, soil compaction by mechanical equipment would reduce total porosity. The reduction of porosity would be greatest on landings and segments of main skid trails. It is expected that operations and subsoiling would occur when soils are dry, limiting compaction to appropriate levels below the forest soil quality standards. Additionally, most soil types within the project area, possessing relatively low clay content, have a low risk of compaction. Hand thinning and prescribed burn activities would have little to no effect on soil porosity.

Prescribed fire activities could alter soil structure at the surface of the soil. Organic matter can combust in surface layers of the A-horizon if fire resides in one location long enough to heat soil to that depth. This could change the soil structure from granular to single-grain; however, with spring or fall burning and relatively high soil moisture content, this effect should be minimal compared to dry-season fires.

Project proposed actions are unlikely to affect soil moisture regime on uplands or soil filtering-buffering function. Where proposed treatments would occur, soils typically do not have a hydric, or moisture-dependent, soil moisture regime. No chemical additions are proposed that would impact soil micro-organisms, post-project erosion risk, or leaching potential.

Aquatic and Aspen Restoration Actions

Proposed channel rehabilitation treatments and headcut repairs are designed to affect the water table and moisture regime. Stream channel filling and reshaping would help raise the water table to the former meadow surface, restoring the soil moisture regime. Channel restoration and headcut treatments would temporarily reduce streambank ground cover and may result in minor surface erosion in the first year after treatment. Major channel erosion would be reduced in the long-term by eliminating headcuts and gullies and restoring the channel to a more stable condition. In the long-term, soil organic matter could begin to accumulate in areas where it has been lost. If the water table is raised as a result of headcut treatments and channel stabilization, a higher density of plant roots would be supported, increasing carbon and organic matter inputs to the soil (Lewis et al. 2003).

Barriers constructed around special aquatic features and meadows should reduce grazing pressure inside of barriers. This would reduce hoof pocking, allowing the vegetation time to recover and to increase soil cover. In the long-term this could create a slight increase in soil organic matter by reducing oxidization of soil organic matter in exposed areas of bare soil or bare peat. Any surface water flow across wet meadows would likely have less energy for eroding the organic soils; this would create an indirect reduction in soil erosion as a result of the barrier instillation.

Recreation and Transportation

Recreation and transportation activities that involve reconstruction, decommissioning, or blocking access to Non-System User Created Trails would have an indirect positive effect on soil stability and a positive long-term effect on surface and soil organic matter and little effect in the short-term. Blocking would prevent additional compaction of areas dedicated to growing vegetation, allowing soils to recover naturally. While short-term erosion may temporarily increase, decommissioning actions would reduce long-term road surface erosion and sediment delivery to water courses by either improving water infiltration, or by decreasing the distance of surface water flow (via water bars, outsloping).

Construction of new parking areas, trailheads, and trails would remove relatively small areas of soil that currently support vegetation growth, and change the status to an area dedicated as a recreation site. These actions would reduce surface organic matter inputs and soil organic matter accumulation in the long-term. The relocation of disperse camping at Horse Gulch would reduce negative impacts occurring with camping at the current location. Because of the small size of these treatments relative to the project area,

they are not expected to significantly impact soil productivity. Installation of interpretive signage would have little to no impact on soil resources because of the small scale of effects.

Cumulative Effects

Cumulative effects analysis was spatially bounded by the project area and bounded in time by past, present, and reasonably foreseeable future projects. Past logging activities in the natural forested stands had some soil impacts, but evidence of negative impacts are limited to old major landing areas and skid roads. Otherwise, evidence is not widespread in natural stands. Cumulative effects of proposed thinning treatments should not negatively impact long-term soil productivity and are expected to be comparable to other disturbances that occur in this area within the natural range of variability. Skid trails from past activities would be reused where possible to keep major soil effects located in the same area, limiting cumulative impacts, and subsoiling treatments would reduce legacy compaction in some places where it does exist.

All plantations within the project have evidence of past management effects. Units with the highest risk of having a cumulative negative effect, as a result of past and proposed actions, have specific soil restoration treatments proposed, or would have high-hazard areas flagged and avoided during project implementation. The most common impact on the project area is low ground cover and erosion. Mastication in these areas would create new ground cover, and would begin to accumulate soil organic matter and surface cover at a quicker rate. If biomass harvesting and skidding are done, ground cover would increase slightly, except on skid trails and landings, which would be mitigated by subsoiling and erosion control measures. With the proposed treatments increasing ground cover and maintaining shrub cover, the cumulative effects of past and current actions should be neutral or slightly improved over the existing condition.

The only reasonably foreseeable future action within the project area that may affect soil resources is continued livestock grazing. No changes in cattle grazing (number of animals, timing, etc.) are expected, but the proposed barrier installations may slightly alter the location and pattern of livestock use. The areas being excluding from grazing are very small.

Alternative 1 would not produce any significant amount of adverse direct or indirect soil impacts. The proposed action, in combination with the effects of past, present, and reasonably foreseeable future actions, would not produce adverse cumulative effects on soils.

Alternative 2 (No Action)

Indirect Effects

Vegetation and Fuels Management

In plantations identified having reduced levels of surface organic matter and soil stability, ground cover would slowly increase as tree and shrub canopies expand. Full recovery, when forest floor layers reach natural levels, may take five years to decades, depending on the level of existing vegetation canopies and degree of soil heating resulting from exposed bare soil. Sheet erosion would continue until vegetation growth and litter fall restore surface organic horizons. Gullies may continue to expand, producing excess sediment and reducing soil stability within the plantation.

Under current management in forested stands, natural processes would continue to dominate areas proposed for treatment; changes to soil strength, porosity, and soil organic matter would be dominated by natural processes. Soil moisture regimes and soil filtering and buffering function would continue under normal cycles.

Aquatic and Aspen Restoration Actions

Degraded stream channels would continue to have increased erosion rates. Gullies and rills forming in meadows may continue to expand and lower the water table, possibly altering soil moisture regime.

Cumulative Effects

When past and reasonably foreseeable future actions (livestock grazing) are considered with the indirect effects described above, the Alternative 2 cumulative effects erosion and severe soil heating may continue, reducing potential vegetation productivity in plantations for several years to decades.

Alternative 3

Direct and Indirect Effects

Direct and indirect effects resulting from the implementation of Alternative 3 on soil resources would be the same as described in Alternative 1 (Proposed Action) with the following exceptions.

Vegetation and Fuels Management

There are several units that have added treatments in Alternative 3 that were designated as “No Action” in Alternative 1. Conditions in these units are suitable for ground-based mechanical treatment and the effects of these treatments on the soil resources are the same as described in Alternative 1 (Proposed Action).

Changes in canopy cover retention proposed in Alternative 3 should make very little difference to soil effects compared to what is described for Alternative 1. In cases where more canopy cover is retained in Alternative 3, slightly less material would be removed from a unit during thinning, leading to a slightly smaller footprint for mechanical equipment, and possibly fewer passes on main skid trails. In the case where less canopy cover is retained in Alternative 3, there may be a slightly larger footprint and more passes where more material is removed. Overall, the effects for soil resources are expected to be similar to those described in Alternative 1.

Recreation and Transportation

Decommissioning the old trail segment at Sand Flat (71735B) would prevent further compaction of the meadow, allow vegetation to reestablish on the road footprint, and would eventually return soil organic matter to the meadow soil. Other changes at the Sand Flat dispersed site would include relocating a vault toilet, and directing use to an upland location away from meadow soils. These actions would be a benefit to soil resources and would reduce effects to sensitive meadow soils.

Cumulative Effects

Cumulative soil effects in Alternative 3 would be similar to those described in Alternative 1, even with the additional acres of mechanical thinning and motorized trails. As such, actions in Alternative 3, in combination with the effects of past, present, and reasonably foreseeable future actions, would not produce adverse cumulative effects on soils.

3.13 VEGETATION

The following analyses present a summary of the findings from the Forest Vegetation Report.

Existing Condition

As with many areas in the Sierra Nevada, the Hemlock project area has been heavily influenced over the last 150 years by past management activities that include mining, grazing, timber harvesting, and fire exclusion. More recently, the landscape has experienced drought-related mortality during the late 1980s and early 1990s and insect and disease-related mortality in higher elevation red fir stands in the past decade.

Past harvest activities in the mixed conifer stands of the project area were primarily focused on overstory removal and sanitation or salvage harvest on easily accessible terrain of desirable timber species, namely ponderosa/Jeffrey pine and sugar pine. These management actions and a near absence of landscape level,

low-intensity surface fires resulted in the reduction of large dominant and codominant overstory trees, the retention of smaller diameter intermediate and suppressed trees, and a shift in species composition in mixed conifer stands from shade intolerant pine dominated stands to shade tolerant, white fir dominated stands. True fir stands in the project area, primarily comprised of red fir, experienced harvest activity much later than mixed conifer forests. Beginning around the 1950's, harvesting focused on overstory removal and sanitation or salvage thinning.

Currently, stands in the project area have high densities of trees, especially in the < 10" dbh range where densities are as high as 500 trees per acre in some stands. Approximately 40% of stands are at or above the relative stand density index threshold of 60% and show signs of competition-related mortality. An additional 28% of stands are above 50% relative density and rapidly approaching the threshold. Approximately 85% of stands exceed 200 square feet of basal area per acre, including stands that contain pine species. On average, shade intolerant species comprise 12% of the basal area, but in 11% of the stands these species comprise more than one third. Stands designated as mixed conifer have on average only 3% more pine species than those designated as true fir, indicative of the homogenization of stands. Ridges and southwest facing slopes have the highest composition of pine species, but still have on average over 200 square feet of basal area. Plantations are generally pine-dominated with on average 400 trees per acre < 10" dbh.

Aspen stands and California black oak are scattered throughout the project area, but exhibit signs of decline due to conifer encroachment. These shade-intolerant species are adapted to frequent disturbance and historically contributed to landscape diversity. Black oak is commonly found in association with pines, especially on drier south-facing aspects and thinly soiled, rocky areas.

Alternative 1 (Proposed Action)

Direct and Indirect Effects

Forest Restoration and Prescribed Fire

Mechanical thinning would result in reduced tree densities and shift the landscape towards desired conditions. Trees per acre would be reduced on average 40 to 70% from current conditions. Basal area would be reduced on average 15 to 30% across treated stands, though this would vary widely due to the variable retention thinning guidelines. Drainages and RCAs would generally have more trees per acre while ridges and southwest aspects would have fewer. Gaps would contain low densities of trees and clumps would contain several trees aggregated in a small area. Treatments would initially shift size distributions towards a more balanced distribution with higher proportions of larger trees. The reduction in tree density across all treated areas would improve tree vigor and growth. In addition, the development of larger trees would be enhanced by reducing, but not eliminating, competition and risk of mortality from insects, disease, wildfire, and drought.

Forest thinning treatments on mid-slopes and drainages may not be sufficient in reducing densities to appropriate levels for preventing competition-related mortality. Rates of tree mortality may be reduced temporarily, but densities may exceed thresholds in 20-30 years. Additional future treatments would be required to complete transition to desired conditions, especially within red fir stands.

Immediately post-treatment, approximately 45% of true fir stands would be above the 200 sq. ft. per acre threshold for increased mortality and approximately 85% of mixed conifer stands would be above the 150 sq. ft. per acre threshold for bark beetle vulnerability. Within the 30 year analysis period, approximately 95% of true fir stands and all mixed conifer stands would be above thresholds in areas not treated with fire. Dwarf mistletoe, cytospora canker, and fir engraver infections in true fir stands would continue to contribute to the decline in tree vigor and predisposition to mortality. Although conditions may better reflect historical ranges (approximately 90-180 sq. ft. per acre), in areas treated with fire, approximately 45% of true fir and 90% of mixed conifer stands would exceed their thresholds within 30 years.

Greater tree reductions would occur on ridges, and, on the local scale, within gaps and surrounding shade intolerant species. Ridge treatments would be most effective in reducing basal areas below thresholds for pine and true fir species, but would only account for 16% of all mechanically thinned stands. In the remaining 84% of treated stands, mid-slope and drainage treatments would generally reduce true fir stands to below thresholds, but would maintain mixed conifer stands above the threshold for pine species. Thresholds would be exceeded quickly in the near future and higher than desirable levels of mortality could occur. Average residual basal area may be relatively high because of the large number of trees > 30” dbh within treated units.

Alternative 1 would reduce relative stand density by 20 to 40% on average. Pine species are more sensitive to competition and remain susceptible to competition-related mortality under conditions in which white fir is not stressed. Therefore, the maximum stand density of 550 reported by Long and Shaw (2012) may not provide robust estimates for the Hemlock project area. A more conservative, species-based maximum relative stand density for the project area may be closer to 50% post-treatment

Mechanical thinning treatments proposed in Alternative 1 would be effective in reducing relative stand densities below 60%. The resulting improvement in tree vigor and health would increase stand resilience to disturbances such as insects, disease, wildfire, and drought. Within 30 years, only 10% of stands not treated with fire would exceed the threshold, but an additional 40% would be >50% relative stand density and approach thresholds of concern. Stands treated with prescribed fire would remain below thresholds of concern.

Mechanical thinning, with the preferential retention of shade intolerant species, would increase the proportion of desirable shade-intolerant species. In general, stands where more trees are removed would experience a larger shift in species composition. Currently, southwest aspects and ridges have higher components of shade intolerant species and would experience more species shift than drainages. In virtually all treated stands shade-tolerant species presence would be maintained in the overstory as well as the understory due to diameter limits and canopy cover retention guidelines. Treatments are expected to improve overall composition, in comparison to the current condition.

In mixed conifer stands, the creation of gaps with open-canopy conditions favorable to the regeneration and growth of shade-intolerants would help shift future regeneration and species composition towards desirable conditions. Larger gaps on southwest facing slopes and ridges would be the most successful for shade intolerant regeneration which thrive under ample sunlight. Within true fir stands, mechanical thinning treatments would not notably change species composition or regeneration. As shade tolerant species and the primary overstory seed sources, red and white fir would continue to regenerate in the understory.

Thinning conifers within and surrounding aspen and black oak stands would greatly improve growing conditions and regeneration for these shade-intolerant, disturbance-adapted species. The retention of conifers >40” dbh within aspen stands may reduce treatment effectiveness, as these conifers would continue to shade aspen clones and contribute to future conifer encroachment through seed dispersal. Aspen stands would respond favorably to underburning in addition to conifer removal, as the former provides hormonal stimulation and the latter increases sunlight and appropriate soil conditions.

Hand Thinning, Piling and Burning for Fuels Reduction

Hand thinning treatments are generally used in steep terrain, sensitive areas, in close proximity to public facilities, and areas where mechanical thinning is not feasible. This treatment is also preferred in areas where accumulations of surface fuels are not desirable or where high densities of large trees would limit equipment maneuverability.

Hand thinning treatments would reduce understory vegetation by removing trees up to 10” dbh in some areas and up to 6” dbh in other areas. Incidental mortality in the midstory may occur through burning operations but would not be expected to change CWHR size class or density class. The effects of burning

piles of thinned material would be highly localized to the area immediately surrounding the piles and dispersed throughout the stand. These effects would include the reduction of surface fuels and the occasional scorch and subsequent mortality of individual trees; however, this would be a negligible effect due to the relative scale and dispersion associated with the nature of these treatments.

Hand thinning would decrease stand densities in terms of trees per acre by 50% on average. This would shift diameter distributions towards a more balanced distribution with higher portions of larger trees. Basal area would not be greatly affected as large trees contribute the most to basal area and would not be removed under this treatment. Relative stand densities would be reduced by approximately 15% on average to below 50% with some dense stands still approaching the threshold of concern. Within 30 years most stands would remain under the threshold of imminent density-dependent mortality. These reductions in stand density would result in a minor increase in overstory tree vigor. Species composition would not be notably affected, limiting future shift in species composition to desirable shade-intolerant species.

Hand thinning treatments would slightly enhance development into the next size class but would not notably affect stand canopy cover. At the landscape level, these treatments would not noticeable shift seral stage distribution.

Plantation Thinning

Plantations within the project area range from 20 to 40 years in age. With a few exceptions, these plantations are not old enough for commercial thinning, and thus treatments proposed include mechanical thinning (including cutting and removal of merchantable trees < 30” dbh), mastication, biomass removal, and hand thinning, piling and burning to achieve a residual spacing of 20 by 20 feet (approximately 109 trees per acre). Variation in spacing would occur to create buffers around desirable species such as oak or to create a gap mosaic to shift plantations towards a more natural appearance.

Effects of pile burning would be similar to those discussed for hand thinning, piling and burning within mature stands. Mastication would grind and crush conifers as well as competing brush and existing surface fuels. This would improve decomposition of existing surface fuels and increase growing space for residual trees.

Plantation treatments would reduce trees per acre by 70-80%, primarily in the smallest diameter classes. In mechanically treated areas, residual basal areas would be below the150 sq. ft. threshold of concern. Likewise, relative stand density would be below the 60% threshold for approximately 30 years. Tree vigor would increase and susceptibility to competition-related mortality would be reduced, which would enhance development into later seral stages and accelerate the development of diverse vertical and horizontal stand structures more representative of desired conditions.

Shaded Fuel Breaks

Shaded fuel break treatments would reduce tree densities by 50-70%, by removing smaller, suppressed and intermediate trees. Larger trees would be retained, and would experience increased vigor and growth. Basal area would be reduced by an average of 25-40%. In stands with shade intolerant species, basal area would average 170 sq. ft., slightly above the 150 sq. ft. threshold of concern for pine species. In true fir stands, the 170 sq. ft. average is below the threshold immediately post-treatment. Relative stand densities would be reduced to within the desired range and would not approach or exceed the threshold within the 30 year analysis period. As such, tree vigor and growth would be improved

Scenic Corridor

Tree density in the scenic corridor would be reduced within the smallest size classes, but smaller trees would be retained for visual diversity and along road and unit edges to decrease visual contrast. Diameter distribution would be diversified and become more balanced. Mastication may create horizontal fuel continuity on the ground, but would reduce vertical continuity by removing ladder fuels and shrubs. Basal area would be reduced on average 20-45%, but would remain relatively high due to the large number of

trees > 30” dbh. Relative stand densities would be reduced to desired ranges post-treatment and would remain below the threshold. Reduced tree densities would increase growing space for residual trees and improve their vigor and growth. This would also promote a variety of structures with different sizes and age classes, creating occasional gaps that would favor shade intolerant regeneration.

Planting

Effect on stand structure would be minimal as planting would occur on a small, localized scale and be dispersed throughout the stand. Within 30 years, planted trees would be expected to grow into the biomass size category, providing structural diversity in the stand and eventually replacing overstory mortality. Species composition would benefit as shade-intolerant species would be planted.

Roadside Fuel Breaks and Hazard Tree Removal

Fuel breaks would have brush and small trees removed within a 25 ft. buffer along roads. This would reduce tree densities in the immediate vicinity, but would not noticeably affect forest vegetation structure, composition, or landscape diversity due to the localized nature of roadside buffers. Likewise the removal of hazard trees (some potentially > 30”dbh) would not noticeably affect forest vegetation structure, composition, or heterogeneity at the stand and landscape scale.

Soil Productivity Improvements

Treatments designed to increase soil productivity in plantations may inhibit establishment of conifers and development into a forested canopy, but this is expected to occur infrequently and on a relatively small scale. Improvement in soil conditions in the future may encourage conifer establishment. Treatments would not noticeably affect forest vegetation structure, composition or landscape diversity due to the localized nature of the activities.

Road, Watershed, Heritage, and Recreation Improvements

Road, watershed, heritage, and recreation improvements would be highly localized and may result in the incidental removal of trees. The treatments would not noticeably affect forest vegetation structure, composition, or landscape heterogeneity.

Cumulative Effects

Activities considered in the cumulative effects analysis area include timber harvest on private lands, and ongoing vegetation management projects on NFS lands, including the Bailey Plantation Health Improvement, and West Calaveras Plantation thinning projects. The Bailey and West Calaveras Plantation Thinning projects are limited in scope. These projects are predominantly pre-commercial thinning of small parcels in the lower part of the watershed from the Hemlock project area. As such, these projects would not substantially alter forest structure or composition. Timber production on private lands would continue to occur and create open canopy and early seral conditions; however, this would not occur immediately across all private land. Likewise, firewood collection on public land would not have an effect on standing forest vegetation. These effects would be highly localized near roads and dispersed in nature, having a negligible effect across the analysis area. As such, when ongoing vegetation management projects on federal and private lands are considered with the direct and indirect effects related to the implementation Alternative 1 (Proposed Action), project activities are not expected to shift forest communities to open-canopy conditions or substantially add to the cumulative effects related to this alternative.

Alternative 2 (No Action)

Indirect Effects

Under Alternative 2, forest restoration (hand and mechanical), fuel treatments (fuel breaks and prescribed fire), watershed improvements, and road work actions would not be implemented. Existing stand

conditions would persist and develop unaltered by active management. Wildfire, drought, disease, and insect-related mortality and recruitment would continue to occur. There would be no reduction in trees per acre, basal area per acre or relative stand density, except for natural occurrences.

As stands develop, the density of small trees (0-10” dbh) would remain high even as mortality occurred. Growth of these small trees into the next diameter class (10-20”dbh) would be inhibited by competition-related mortality. Intermediate to large size trees would increase as mortality would be focused primarily in the smallest trees. Among intermediate and large trees, competition for growing space would continue and resistance to insects, disease, wildfire, and drought would remain low.

Basal area would continue to accumulate to densities above desired conditions. Approximately 85% of non-plantation stands currently exceed 200 sq. ft. of basal area per acre, including stands that contain pine species. Within 30 years, all stands would exceed this threshold. As pine species are at a greater risk of bark beetle mortality at densities > 150 sq. ft. per acre and are a component in nearly all stands, increased bark beetle activity could be expected in the near future (Sartwell 1971). Likewise, true fir would experience higher levels of mortality associated with fir engraver beetle activity (Oliver 1988) and predisposition to mortality caused by dwarf mistletoe cytospora. Densities would exceed or approach the higher end of the historical range described by various studies (Taylor 2004, Stephens and Gill 2005, Scholl and Taylor 2010).

Under the Alternative 2, relative stand densities would continue to increase and approximately 72% of stands would be above the 60% threshold of the onset of competition-dependent mortality within 30 years. High densities of small trees may cause competition for soil moisture and nutrients, which could contribute to increased stress on larger, older trees (Dolph et al. 1995). These conditions would differ greatly from historical conditions in which relative stand densities were generally low (Taylor 2004, Stephens and Gill 2005, Scholl and Taylor 2010).

Under Alternative 2 there would be no change in species composition. The existing canopy cover strongly influences species composition as these conditions are unfavorable to the growth and regeneration of desirable shade-intolerant species such as ponderosa/Jeffrey pine, sugar pine, black oak, and aspen/cottonwood. Stands in the project area are becoming more occupied by shade-tolerant species such as white fir and incense-cedar, and this trend would be expected to continue especially as high stand density conditions are perpetuated and shade-intolerant species are discouraged (McKelvey and Johnston 1992, Skinner and Chang 1996, Ansley and Battles 1998).

The distribution of seral stages (CWHR size and density) would not be changed under Alternative 2. The landscape is currently dominated by CWHR 4 M and D, best described as mid-seral closed-canopy forest. Under Alternative 2, current stands would increase in density and canopy cover as diameter growth and ingrowth occurred.

Aspen, black oak, and meadows would remain susceptible to conifer encroachment and associated declining health. Aspen and oaks depend on disturbance to create early seral conditions. Absence of stand-replacing disturbances combined with extended periods of high stand densities and insufficient sunlight may cause aspen clones and oak root systems to deplete their root reserves and die completely. Similar effects would occur in meadows as conifer encroachment would continue to lower the water table and shade out herbaceous species. A homogenous landscape composed of stands of similar structure and composition is less resilient and more susceptible to insect and pathogen outbreaks, competition-related mortality, wildfire, and drought (North et al. 2009, North 2012, Stephens et al. 2010, Millar et al. 2007).

Cumulative Effects

Vegetation restoration activities would not occur under Alternative 2 (No Action). As such, the indirect effects discussed above when considered with ongoing vegetation implementation projects is not expected to substantially add to the cumulative effects related to this alternative.

Alternative 3

Direct and Indirect Effects

Direct and indirect effects resulting from the implementation of forest restoration (hand and mechanical), fuel treatments (fuel breaks and prescribed fire), watershed improvements, and road work proposed in Alternative 3 on forest structure, composition, and diversity would be the same as described in Alternative 1 (Proposed Action) with the following exceptions.

Under Alternative 3, mechanical thinning treatments would differ in intensity on approximately 1044 acres as compared to Alternative 1. Most of the thinning differences (619 acres) occur in Hay, Middle, and Water gulches, while the remaining 425 acres occur in closer proximity to spotted owl PACs. Within the Hay and Middle gulches, treatment would be less intensive than Alternative 1, with 50 to 60% residual canopy cover averaged across topographic features. Within Water gulch, treatment would be more intensive than Alternative 1 with 40% residual canopy cover and an increased number of gaps and treated acres. The variable density thinning prescription to diversify stand structure would remain the same.

Within light treatment areas (60% canopy cover), residual stand structure would be similar to those described for RCAs. Trees per acre would be reduced primarily in the smaller diameter classes, but with some intermediate trees being removed to create desirable structures or conditions. Basal area would average 200 sq. ft. per acre. Relative stand density would be reduced to 40%. Residual tree growth and vigor would be improved immediately post-treatment, but increasing densities over time would diminish desired conditions. Species composition would not be altered noticeably. Canopy cover would be slightly reduced and closed canopy conditions would persist.

Within more aggressive treatment areas (40% canopy cover), residual stand densities would be similar to those described for ridges under Alternative 1, though stand structure would include more gaps and openings than under Alternative 1. Average residual basal area may be relatively high because of the large number of trees > 30” dbh. Reduced tree densities would improve residual tree growth and vigor.

Aspen stands and meadows would receive the same treatment as under Alternative 1, but would occur on 15 additional acres. Effects would be similar to those described for Alternative 1. Species composition on the landscape would be enhanced by promoting aspen and herbaceous meadow species, which are currently lacking on the landscape or at risk from conifer encroachment. Early seral conditions would be created, diversifying landscape structure.

Cumulative Effects

Cumulative effects would be similar to those described under Alternative 1.

3.14 VISUAL RESOURCES

Existing Condition

State Highway 4, a designated National Scenic Byway and State Scenic Highway (Ebbetts Pass), offers panoramic vistas, views of interesting geological features and large tree character. These panoramic views are hidden by dense conifers, effectively reducing the visual experience that many scenic byway visitors expect.

The Hemlock project area is located within a mixed conifer forest type. Most forested stands are densely stocked with white fir, incense cedar, ponderosa pine and sugar pine in the overstory and many stands also have a dense understory of white fir and lodgepole pine. In some stands, the understory includes several hardwoods such as black oak, dogwood, aspen, alder, willow, big-leaf maple and numerous shrub species. Most of these non-conifer species are becoming over-topped by the conifers and therefore

becoming more stressed, less vigorous and fall color from these hardwoods is sometimes not noticed by the recreationist or motorist.

There are natural openings within the project area, primarily along the ridge tops where the soil is thin and tree and shrub establishment and growth is limited. In addition, there are openings created by fire (most recently the Ramsey Fire) and by past timber practices. The clear cuts were planted following harvest. Most are now occupied by young, even-aged conifers.

Overall, visual diversity in the Hemlock project area is declining as vegetation becomes thicker and appears more uniform in color and texture. Views from Highway 4, primarily to the south, are less frequent with foreground vegetation blocking the panoramic views and observation of fall color. In some areas, human changes are readily evident. In other areas, human changes are present, but appear subordinate to the surrounding landscape.

Alternative 1 (Proposed Action)

Direct and Indirect Effects

Scenic Corridor

Alternative 1 includes 421 acres of forest thinning and 153 acres of fuels treatments within the Highway 4, Ebbetts Pass National Scenic Byway corridor.

Direct and indirect effects of treatments in the Scenic Corridor in relation to Visual Quality Objectives (VQO) include short-term impacts on visual quality while the project is being implemented by mechanical equipment. Mechanical thinning (timber harvest, biomass removal, mastication, and potential pile and burn) is performed by wheeled or tracked equipment that yields foreground vegetation and soil disturbance that would be noticed by recreationists and motorists.

Trees not marked for removal, adjacent to the highway and recreation sites, could be damaged by maneuvering mechanical equipment trying to access trees for removal. Broken limbs and large patches of bark could be removed from residual trees, which remain noticeable for many years. Hand thinning is the only activity performed by workers on the ground and has the least impact or direct effect on the landscape.

The Retention VQO in the scenic strip allows for management activities which are not readily evident immediately after project completion. Alternative 1 would meet the Retention VQO. Only short-term visual change would be noticeable for the casual forest visitor by mechanized equipment as mentioned above. After project completion, the long-term visual change would improve visual opportunities for the casual forest visitor.

Vegetation treatments adjacent to the Scenic Corridor include the positive effects on scenic qualities by opening previously shaded or inaccessible areas for viewing and increased sunlight to reach the ground to promote the growth of new vegetation. Rebirth of new tree and shrub form, spring and fall color, and new texture being created by foliage and bark, would be new highlights as seen from the scenic corridor and recreation areas. As such, the scenic corridor proposed treatments would open the foreground vegetation, panoramic and geologic views along Highway 4.

Recreation

Recreation improvements would be made to upgrade Horse Gulch from dispersed use to a developed use campground. The improvements to the campground would improve the visual quality of this site by controlling the dispersed activity (vehicle access, and appropriate camping areas), by adding amenities for an improved aesthetic recreation experience, and by allowing disturbed and damaged vegetation to recover.

Likewise, actions proposed at the Black Springs OHV trailhead and staging area would improve the visual quality of this site by controlling vehicle access, identifying appropriate locations to park, identifying appropriate locations to access OHV trails, and by allowing disturbed and damaged vegetation to recover.

Forest Restoration, Mature Forest Habitat Restoration, Heritage Resources, and Fuels Reduction

Roadside treatments by fuel reduction would enhance the visual resource by reducing thick understory and providing views into the forest which is consistent with meeting VQO standards. Conifer removal around meadows and aspen stands would improve foreground scenery allowing visitors to enjoy fall color and new growth. Removal of encroaching conifers around heritage sites, along with thinning and fuel reduction work within HRCAs would promote attractive new growth that would be noticeable and appreciated by the casual forest visitor to meet VQO standards.

Burn effects from fuels treatments would exhibit some blackened tree boles and vegetation along Highway 4, but only in the short-term of approximately one growing season. Vegetation would sprout quickly after a winter of rain and snow and the visual condition left from fuels treatments would be less noticeable each passing year.

Streams, Riparian Areas, Special Aquatic Features Restoration, and Aquatic Organism Passage Restoration

Removing culverts at road crossings always raises the level of VQO attainment by eliminating unnatural elements on the landscape. Aspen stand treatments, and treatments to correct instability, eroding head cuts, and incised channels all raise the attainment of meeting VQO standards.

Transportation

Proposals to perform route decommissioning, closures, OHV route designations, and road realignments, all bring positive visual effects within the Hemlock project; these improvements would help attain the VQO standards within the Hemlock project.

Cumulative Effects

The results of past projects, salvage, blow down harvesting and green tree sales define the current visual landscape condition. The Sourgrass Fuels Reduction Project treated part of the Ebbetts Pass National Scenic Byway along Highway 4 immediately west of the Hemlock project area. Thus, this project was considered for cumulative effects. The only future foreseeable projects considered in the cumulative effects analyses are campground improvements for Black Springs Campground and private timber land harvest. The temporal bounding for cumulative effects is 20 years, which corresponds to the anticipated life of the project.

The private timber lands around the Hemlock project area has been intensively managed and impacts the visual quality of the area. Most of these units are not visible from the primary viewing areas including scenic corridor, vista points, and campgrounds associated with the project area. They are, however, visible from secondary routes within and near the project area. The other private land adjacent to the project area is primarily residential in nature. The homes and other structures on this land are not readily visible from the project area. These human-made structures present little visual contrast or eye-holding ability to affect meeting VQO standards along the scenic corridor, Black Springs Campground, Big Meadows Campground and Group Site, and designated vista points within the project area.

When the direct and indirect effects of Alternative 1 are considered in relation to the Sourgrass Fuels Reduction project, private land management, and Black Springs Campground improvement, the cumulative visual effects of the Hemlock project is expected to increase the visual diversity across viewshed. As such, negative cumulative effects are not expected.

Alternative 2 (No Action)

Indirect Effects

Scenic Corridor

Alternative 2 would offer no visual improvements to the Scenic Corridor or around campgrounds and vista points. Vegetation density would continue to increase and degrade foreground, middle ground and background viewing opportunities from the Scenic Byway, campgrounds and vista points. Aspen stands surrounding recreation sites would continue to decline with continued conifer encroachment and too much shade to promote healthy and thriving stands.

Recreation

Without improvements to the Horse Gulch Dispersed Campsite and Black Springs Road OHV Trailhead / Staging Area, dispersed camping activity, uncontrolled parking, soil compaction, and vegetation loss would continue to degrade the visual quality of these areas.

Forest Restoration, Mature Forest Habitat Restoration, Heritage Resources, and Fuels Reduction

Coniferous stands would remain dense and would continue to screen forest views. Suppression of hardwoods by conifers would increase, to the point where many of the hardwoods would be lost. The amount of seasonal color would decrease and overall visual diversity would decrease. The risk of a stand-replacing wildfire would continue to increase under this alternative. In the event of such a fire, visual quality for most observers would be seriously degraded.

Transportation

The visual quality of the transportation infrastructure would not be improved though decommissioning, closures or road realignments.

Cumulative Effects

When the indirect effects of Alternative 2 (No Action) are considered in relation to the Sourgrass Fuels Reduction project, private land management, and Black Springs Campground improvement, visual diversity would not be altered across the viewshed. As such, negative cumulative effects are not expected.

Alternative 3

Direct and Indirect Effects

Direct and indirect effects are the same as those described for Alternative 1 with the following exceptions.

Fuels Reduction

Alternative 3 includes prescribed burning within the scenic corridor. These burns could result in blackened tree boles and vegetation along Highway 4, but only in the short-term of approximately one growing season.

Recreation

Designated parking and toilet replacement at Sand Flat would decrease soil compaction and vegetation loss, and improve the visual quality for campers and the casual forest visitor by returning the dispersed campground to a near natural condition.

Cumulative Effects

Cumulative effects are the same as described for Alternative 1 (Proposed Action).

3.15 WATERSHED

The following analyses present a summary of the findings from the Watershed Report and Special Aquatic Feature Report.

Existing Condition

The watershed analysis focuses on four HUC 7 subwatersheds where most project activities would occur: Upper Blue Creek, Hells Kitchen, Solinsky Crossing-Upper Middle Fork Mokelumne River, and Ganns-Middle North Fork Stanislaus River HUC 7 subwatersheds. Given the small proportion (2% and 0.4% of their area, respectively) of treatment acreage and the relatively low impact of proposed project treatments (e.g., forest thinning, prescribed fire) in the Headwaters Upper South Fork Mokelumne River and East Forest Creek HUC7 watersheds, these watersheds were not included in detailed effects analysis.

Data indicate that stream conditions within the watershed are generally good overall. Overall hillslope conditions on NFS land in the watershed are stable, have high soil ground cover, and do not show evidence of widespread surface erosion. Hillslopes within logged areas on private land were not examined although it is assumed that BMPs were implemented as required by the California's Forest Practice Rules and offsite erosion and sediment movement was mitigated. Widespread hillslope sources of sediment from private land were not evidenced in the stream survey. Road densities in these watersheds are high but evidence of adverse cumulative effects resulting from the road system was not apparent in the field surveys. Special aquatic features vary widely in conditions, but conifer encroachment, altered meadow hydrology, and recreation and livestock disturbance exist at many sites.

Alternative 1 (Proposed Action)

Direct and Indirect Effects

Erosion/Sedimentation Potential

Several proposed actions have the potential to increase erosion and sedimentation. The use of mechanized equipment (e.g., feller-buncher, rubber tire skidder) for vegetation management activities has the potential to cause short-term (i.e., 1 to 2 years) increases in accelerated erosion and stream sedimentation that could adversely affect water quality.

Vegetation pile burning has the potential to result in localized increases of erosion and sedimentation. However, piles are generally small and dispersed throughout the project area. Given the relatively small, discontinuous areas of pile burning and the implementation of BMPs, this activity is not expected to result in any significant increases in erosion and sedimentation.

Broadcast burning is designed to burn at low-intensities to retain adequate residual ground cover (i.e., duff and litter) in order to protect mineral soil from erosion. Elliot et al. (2010) presented results of numerous studies where measured erosion rates after low-intensity prescribed fire were shown to be very low compared with moderate and high severity wildfires. Although prescribed fire is intended to produce low-intensity and low-severity burns, the potential exists to reduce soil ground cover below intended levels which would cause soil erosion and sediment delivery to streams.

Road treatments include maintenance, reconstruction, closure, decommissioning, and new construction. Four large culverts would be replaced to improve AOP. In addition, barriers may be placed along roads to prevent unauthorized motorized travel and route pioneering. Other related activities include reconstruction and improvement of an existing campground, construction of a new OHV staging parking area, reconstruction of motorized and non-motorized trails and construction of new ones. These activities involve ground disturbance and have the potential for producing short-term, localized increases in accelerated erosion and sediment delivery to streams. Reconstruction of stream crossings has the potential to result in short-term increases in sedimentation and turbidity in those creeks due to the necessity of

equipment operating within and near the channel along with the removal and replacement of large amounts of fill material. Sediment eroded from the road prism is highest during the first 1 to 2 years following construction activities, after which time erosion rates sharply decrease (Megahan 1974, Ketcheson and Megahan 1996).

Channel restoration using mechanized equipment would occur in up to four meadows (IDs 539, 541, 547, 548). Mechanized equipment use for these restorations has the potential to increase stream sedimentation and turbidity and potentially impact water quality at the stream-reach scale in the short-term. It is expected that sedimentation may increase the first several years after project implementation as the channel adjusts to a stable form and then subsequently decrease as vegetation becomes established. In addition to implementing BMPs, the project would comply with all other applicable state and federal permitting requirements (e.g., 404 U.S. Army Corps of Engineers Dredge and Fill permit; 401 State Water Quality Certification).

The repair of headcuts in meadows and small gullies in plantation areas has limited potential to result in increased erosion and sedimentation due to the minimal amount of ground disturbance that would result. Structures (e.g., check dams /energy dissipaters) would be constructed to stabilize and prevent each headcut from continuing to migrate upstream. Most structures would be built by hand using small boulders; however, mechanized equipment may be used where needed for headcuts or gullies that are too large to repair by hand.

A comprehensive suite of BMPs (Chapter 2.05) would be implemented during project activities to ensure that any potential adverse impacts to water quality would be avoided or minimized to minor and/or short-term levels. Monitoring performed on the Stanislaus National Forest and throughout the region indicates that BMPs are implemented at high rates and are highly effective in preventing increased erosion and sedimentation from vegetation management, prescribed fire, road, and restoration activities when implemented. It is expected that these treatments would result in only minor and/or short-term, localized increases in erosion and sedimentation and would not adversely affect beneficial uses. In addition, the Forest has adaptive mechanisms in place to identify and mitigate threats to water quality that may arise from inadequate BMP implementation or other factors.

Water Quality and Stream Temperature

The use of mechanized equipment during the project implementation has the potential to increase the risk of spills and leaks of petroleum products (e.g., fuel, oil, hydraulic fluid) into water courses. BMPs would be implemented during the project to minimize the risk of contamination to water.

Stream water temperatures have the potential to increase slightly due to reductions in overstory canopy as a result of vegetation management prescriptions; this effect would decrease over time as the canopy increases due to tree and shrub growth. For small forested streams, research has shown that elevated water temperatures resulting from a reduction in shade generally decrease to pre-disturbance water temperature within 500 feet downstream of the affected reach (Zweiniecki and Newton 1999); therefore, beneficial uses would not be adversely affected.

Streams and Special Aquatic Features

Stream flows could potentially be increased for several years after the project due to vegetation removal resulting in decreased evapotranspiration potential, increase in snow accumulation, and delay in melting within forest gaps (Stednick 1996). This effect would be expected to diminish over time as vegetation grows. Decommissioning roads within meadows would improve infiltration, reduce erosion, and result in an overall improvement in meadow hydrologic function. Channel restoration and headcut/gully stabilization would result in a reduction in erosion and sedimentation over the long-term. In meadows with channel restoration, an increase in the quantity and duration of dry season base flows is expected as the water table rises in response to the higher base level of the restored channel. The presence and extent

of obligate riparian meadow vegetation would likely increase. All of these factors would contribute to an overall improvement in water quality and watershed function.

Removal of conifers around SAFs would create wetter conditions and a subsequent increase in extent and vigor of wet meadow vegetation. Placement of barriers around SAFs would result in less disturbance (e.g., pocking/trailing, streambank disturbance, rutting) to these features as livestock and motor vehicle use would be excluded. Placement of new water troughs for livestock is expected to result in less disturbance to unfenced SAFs and streams. Overall improvement in SAF condition and function is expected.

Cumulative Effects

Cumulative watershed effects (CWE) analysis consists of two steps: (1) an office evaluation to determine the risk of cumulative effects using a predictive model and watershed history data, and (2) field evaluation of stream-course cumulative effects indicators. The CWE accounts for constant features (e.g., roads and buildings) and past, ongoing, and future land management actions in the four watersheds within the project area. CWE analysis converts constant features and actions into a numerical rating referred to as equivalent roaded area (ERA). The CWE also identifies an ERA threshold that, if exceeded or closely approached, would predict the risk of future negative impacts to water quality and watershed condition by management activities. Activities evaluated included land use (e.g., roads and other infrastructure, residential development, logging, construction) and disturbance events (e.g., wildland fires). The temporal scale of the CWE analysis is a 10 year period.

The following assumptions were used to estimate Hemlock project implementation: Mechanical vegetation treatments would be implemented between 2016 and 2021, and divided into three timber sale areas. Prescribed fire treatments (pile burning, underburning) would occur in between 2019–2025. Road closure and decommissioning would occur after vegetation treatments are completed.

Table 3.15-1 Annual percent equivalent roaded acreage (ERA) within watersheds for each alternative

Watershed	Annual % ERA									
	Threshold	2016	2017	2018	2019	2020	2021	2022	2023	2024
Hell's Kitchen	**10-12**									
Alternative 1 (Proposed Action)		3.00	3.81	4.49	4.11	3.82	3.52	3.25	2.97	2.72
Alternative 2 (No Action)		2.08	2.08	2.08	2.08	2.08	2.08	2.08	2.08	2.08
Alternative 3		2.87	3.72	4.58	4.21	3.93	3.64	3.33	3.04	2.78
Ganns Middle North Fork Stanislaus River	**10-12**									
Alternative 1 (Proposed Action)		2.31	2.32	2.28	2.61	2.92	3.11	2.85	2.60	2.43
Alternative 2 (No Action)		2.30	2.32	2.28	2.10	2.00	1.87	1.75	1.66	1.63
Alternative 3		2.31	2.32	2.28	2.58	2.89	3.11	2.86	2.63	2.44
Upper Blue Creek	**12-14**									
Alternative 1 (Proposed Action)		3.76	4.06	4.22	4.87	5.40	4.85	4.40	3.97	3.47
Alternative 2 (No Action)		3.76	3.10	2.43	2.18	2.04	1.96	1.91	1.87	1.87
Alternative 3		3.76	4.08	4.27	4.94	5.48	4.92	4.46	4.03	3.52
Solinsky Crossing-Upper Middle Fork Mokelumne River	**12-14**									
Alternative 1 (Proposed Action)		2.43	3.19	3.73	3.51	3.93	4.28	4.55	4.19	3.79
Alternative 2 (No Action)		2.43	3.17	3.71	3.50	3.28	3.06	2.87	2.68	2.49
Alternative 3		2.43	3.19	3.73	3.51	3.93	4.28	4.55	4.19	3.79

Cumulative effects estimated by the ERA modeling indicate that estimated CWE for Alternative 1 (Proposed Action) are well below the threshold of concern for all project watersheds (Table 3.15-1). Field evaluation validated the ERA model prediction that the proposed action, considered along with past,

present and reasonably foreseeable future actions in the project watersheds, was not expected to result in adverse cumulative watershed effects.

Alternative 1 would achieve all watershed goals and objectives; water quality, beneficial uses, and watershed condition would be maintained. BMPs to protect water quality would be utilized, and long-term watershed stability would be improved. Alternative 1 is consistent with all RCOs and would help to further the goals of the Aquatic Management Strategy.

Alternative 2 (No Action)

Indirect Effects

Erosion/Sedimentation

Short-term potential increases in erosion and sedimentation would not occur because there would be no ground disturbance. Plantations and natural stands with high fuel loads would not be treated and would continue to accumulate more fuels over time, thereby increasing the risk of a high-severity wildfire and subsequent post-fire increases in runoff, erosion and sedimentation. Sediment would continue to be delivered to streams from untreated hydrologically-connected road segments and failed stream crossings, possibly increasing over time as road conditions deteriorate further.

Water Quality and Stream Temperature

There would be no risk to water quality from petroleum products associated with equipment use. Likewise, there would be no modification to stream temperatures.

Streams and Special Aquatic Features

Under Alternative 2 (No Action), roads affecting meadows would not be decommissioned would continue to impair and could worsen meadow hydrologic function over time. Actively eroding areas would continue to erode and worsen over time, increasing risk to water quality/beneficial uses from erosion and sedimentation. Headcuts would continue to migrate upstream and cause erosion in currently stable areas, resulting in a lowered water table that would degrade SAF hydrologic function.

Watershed function would remain impaired and would worsen over time as areas identified as being in poor condition or at-risk of deterioration would not be treated. Encroaching conifers would not be removed and would continue to shade out riparian vegetation, reducing the extent of SAFs. Disturbance to vulnerable SAFs from livestock and motor vehicle use would continue and would worsen SAF condition.

Cumulative Effects

Cumulative effects estimated by the ERA modeled percentages did not increase under Alternative 2 (No Action) and remained well below the thresholds of concern for these watersheds (Table 3.15-1). The risk of cumulative effects would not increase. Alternative 2 is not fully consistent with RCO 2, (maintain or restore the geomorphic and biological characteristics of special aquatic features, streams, and hydrologic connectivity for aquatic-dependent species), RCO 5 (preserve, restore, or enhance special aquatic features, and provide the ecological conditions and processes), or RCO 6 (identify and implement restoration treatments to maintain, restore or enhance water quality and maintain, restore, or enhance habitat for riparian and aquatic species) because it does not implement restoration treatments needed to restore degraded conditions that were identified during project analysis.

Alternative 3

Direct and Indirect Effects

Potential direct and indirect effects would be virtually identical to those discussed for Alternative 1. While the number and distribution of acres in various treatment categories differs slightly, the differences

between the Alternatives 1 and 3 are not substantial enough to result in different conclusions for the analysis of direct/indirect effects.

Cumulative Effects

ERA results are virtually identical for all CWE analysis watersheds for this alternative in comparison to Alternative 1 (Table 3.15-1). Therefore, cumulative effects risk conclusions are the same as Alternative 1 (Proposed Action). Alternative 3 is consistent with all RCOs and would help to further the goals of the Aquatic Management Strategy.

3.16 WILDLIFE

The following analyses present a summary of the findings from the Terrestrial Wildlife Biological Assessment/Evaluation.

Existing Condition

Mature forest ecosystems in the project area are well distributed across the project area and host suitable habitats for Forest Service sensitive species. Mature forest patches are fragmented by natural features (rock outcrops, lakes, etc.) and historical land management practices, but currently exhibit a mosaic of canopy layers (1-3 layers) and cover (50-90% canopy cover). The Bailey Ridge area ingress and egress for species relying on contiguous mature forest ecosystems (CSO, NGO, and American marten) is predominantly to the east, towards Pumpkin Hollow. Adequate snags are present in the project area for potential nesting structures; however, there are pockets of excessive down and woody debris and ladder fuels in PACs that place them at risk of stand replacing wildfire. A complete description of suitable habitat for federally listed endangered, threatened, or candidate terrestrial species and Forest Service sensitive species considered in the project area is available in the Biological Assessment/Evaluation.

California spotted owls and northern goshawks were detected during occupancy and nest success surveys conducted from 2011-2013. Of the seven spotted owl PACs (approximately 1,480 acres) that overlap with the project area, three were determined to be occupied and two were breeding during the survey period. The reproduction attempt of both was successful. The third occupied PAC had a non-breeding pair. In addition, approximately 4,533 acres of CSO HRCA (portions of 10 owl territories) occur in the project area. Three goshawk PACs (approximately 391 acres) partially occur within the project area. One PAC was determined to be occupied and reproductively successful during the survey period.

Baited camera surveys were conducted in project area with a focus to detect target carnivore species (American marten, Pacific fisher, California wolverine). American martens were detected at eight wildlife camera stations from 2012-2013, with multiple individual sightings (two to four) occurring at three stations. No Pacific fishers or California wolverines were detected during these surveys. Formalized surveys were not conducted for willow flycatcher, great gray owl, fringed myotis, Townsend’s big-eared bat, or pallid bat. Suitable habitat occurs for these species in the project area; and, therefore, presence was assumed for these species for effects analyses.

Federally listed endangered, threatened or proposed terrestrial species and Forest Service sensitive species considered for analyses are included in Table 3.16-1. Detailed analysis for the valley elderberry longhorn beetle was not conducted because the project area was not within the species’ geographic or elevation range, and suitable habitat was not present in or around the project area. Likewise, detailed analyses for the Sierra Nevada red fox was not warranted because there was not sufficient suitable habitat within the project area.

The effects of project proposed activities on the Pacific fisher, California wolverine, American martin, northern goshawk, California spotted owl, willow flycatcher, great gray owl, fringed myotis, Townsend’s

big-eared bat, and pallid bat are described below. Required consultation with US Fish and Wildlife was completed.

Table 3.16-1 Estimated direct, indirect, and cumulative effects with determination for Federally listed endangered, threatened, or candidate terrestrial species and Forest Service sensitive species considered in the Hemlock project analyses

Species Name	Status	Project within Species Distribution	Project within Elevation Range	Habitat in or around Project	Species Present	Direct/ Indirect Effects	Determination
Valley Elderberry Longhorn Beetle (*Desmocerus californicus dimorphus)*	Threatened	No	No	No	No	No/No	No Effect
Pacific fisher *(Pekania pennanti)*	Candidate	Yes	Yes	Yes	AP[1]	No/ Yes	MA/NL[2]
California wolverine (*Gulo gulo luteus*)	Candidate, Sensitive	Yes	Yes	Yes	No	No/No	No Effect
American marten *(Martes americana)*	FS Sensitive	Yes	Yes	Yes	Yes	Yes/Yes	MA/NL
Sierra Nevada red fox *(Vulpes vulpes necator)*	FS Sensitive	Yes	Yes	No	No	No/No	No Effect
Fringed myotis (*Myotis thysanodes)*	FS Sensitive	Yes	Yes	Yes	AP	Yes/Yes	MA/NL
Townsend's big-eared bat *(Corynorhinus townsendii)*	FS Sensitive	Yes	Yes	Yes	AP	Yes/Yes	MA/NL
Pallid bat *(Antrosous pallidus)*	FS Sensitive	Yes	Yes	Yes	AP	Yes/Yes	MA/NL
Bald eagle *(Haliaeetus leucocephalus)*	FS Sensitive	Yes	Yes	No	No	No/No	No Effect
Northern goshawk *(Accipiter gentilis)*	FS Sensitive	Yes	Yes	Yes	Yes	Yes/Yes	MA/NL
California spotted owl (*Strix occidentalis occidentalis)*	FS Sensitive	Yes	Yes	Yes	Yes	Yes/Yes	MA/NL
Willow flycatcher *(Empidonax traillii)*	FS Sensitive	Yes	Yes	Yes	AP	Yes/Yes	MA/NL
Great gray owl *(Strix nebulosa)*	FS Sensitive	Yes	Yes	Yes	AP	Yes/Yes	MA/NL

[1] AP = Assume species presence for effects analyses.
[2] MA/NL = MA/NL = May affect individuals, but is not likely to result in a trend towards Federal listing or loss of viability.

Alternative 1 (Proposed Action)

Direct and Indirect Effects

Forest Restoration, Scenic Corridor, and Fuels Reduction

Direct and indirect effects on mature forest sensitive wildlife species (American marten, Pacific fisher, California spotted owl, and northern goshawk), great gray owl, willow flycatcher, fringed myotis, and Pallid and Townsend's big-eared bats are expected to be minor and short-term. Direct and indirect effects are related to: death, injury, disturbance from mechanical vegetation treatments, road reconstruction and maintenance, dispersed recreation site improvement, and prescribed fire operations that may increase individual movement and displacement; and, habitat alteration, canopy reduction (changes in CWHR classes), and potential increase in understory canopy vegetation that may modify microclimatic conditions, alter prey availability and influence reproductive success.

Ground-based logging, biomass, and mastication, road and watershed treatments, and prescribed burning have the potential to cause death or injury or noise disturbance because of the use of heavy equipment, the felling of timber, and the introduction of fire on the landscape. The mobility of the species makes it highly improbable that death or injury would occur as a result of project activities. The use of loud machinery such as feller bunchers, skidders, and chainsaws, has the potential to cause disturbance and change normal behavior patterns during project implementation which would take place intermittently over an approximate 5 year period from 2016 to 2021.

Prescribed fire may result in displacement of individual owls and goshawks and a temporary avoidance of the area due to smoke and active flames. Prescribed fire treatment of 13% of spotted owl HRCAs, 2% of

spotted owl PACs and 0.5% of northern goshawk PACs should result in a minor impact on the spotted owl and goshawk, but increase forest resiliency by removing pockets of excessive fuels and improve prey diversity and availability. Alternative 1 would reduce the risk of habitat loss for mature forest sensitive wildlife species, great gray owls, willow flycatchers, fringed myotis, Pallid bats, and Townsend's big-eared bats.

Mature Forest Wildlife Habitat

Alteration of mature forest habitats expected to occur includes: reduction in trees < 30" dbh; reduction of canopy structures; and, the potential reduction and redistribution of snags and downed woody debris within the treatment units, scenic corridors, and fuelbreaks. The reduction of small and moderate size trees could potentially increase shrub cover, which may reduce prey availability. Conversely, increases in herbaceous vegetation within canopy openings should increase prey diversity and availability. The change in microclimatic conditions (increase in ambient temperature from decreased thermal cover) could also decrease reproductive success (nest/den success, and juvenile survival).

Project treatments developed using guidelines discussed by North et al. (2009) are expected to yield a landscape matrix of forest structure and densities averaging 50% canopy cover across the treated units (Table 2.07-1) with less cover retention on the ridges (40%) and more retained within RCA units (60%). The heterogeneity associated with clumps and gaps could: augment the long-term viability of mature forested habitat; increase the potential of future fire events exhibiting low fire intensity by removing pockets of excessive fuels; improve forest resiliency; reduce susceptibility to insect and diseases; maintain wildlife habitat diversity; and, improve prey availability for sensitive wildlife species. Creating a landscape matrix of forest structure and densities should minimize long-term impacts from vegetation treatments on mature forest wildlife. In suitable mature forest stands (CWHR size classes 4-6, and density classes M and D), a decrease in CWHR size or density class is expected on 2,429 acres, although this change would not yield habitat unsuitable for mature forest wildlife species. Prescribed fire treatments are proposed on 314 acres of California spotted owl PAC and 66 acres of northern goshawk PAC. Also proposed within these PACs would be 1,342 acres (spotted owl) and 106 acres (northern goshawk) of hand treatments for the removal of small (<6" dbh) trees. Less than 30% of a PAC would be treated during a calendar year which should make the effects of this action negligible on the California spotted owl and northern goshawk.

Mature forest species may exhibit a short-term temporary avoidance of areas being disturbed during project implementation. Displacement or avoidance of the area by individuals should be of short duration and should subside soon after project completion. Individual movements may increase during project implementation due to noise and equipment disturbance. The increase in movement may lead to an increase in mortality from increased energetic expenditures and predation risk. Spotted owl and northern goshawk limited operating periods should reduce the risk of species displacement and mortality risks during the sensitive breeding periods for both of these species, and address risks to American marten and Pacific fisher as well.

Streams, Riparian Areas, Special Aquatic Features, and Aquatic Organism Passages

Suitable habitat in the project for great gray owls and willow flycatchers is primarily limited to Hay Gulch meadow, although the species are not known to occur in the project area. Project implementation could result in short-term temporary displacement or avoidance of the area by individuals. Increased movements resulting from disturbances could lead to an increase in mortality from increased energetic expenditures and predation risk. Potential great gray owl nest trees would not be removed. Actions proposed in Alternative 1 would benefit great gray owls and willow flycatchers in the long-term by restoring meadow systems and hydrologic processes.

Fringed myotis, Pallid and Townsend's big-eared bats are sensitive to disturbance and may abandon roost locations if disturbed by noise (Kunz and Martin 1982). Disturbance during project implementation could

result in short-term avoidance by bats. These bat species are known to forage in meadows, meadow fringe, habitat edges, and open areas (Hermanson and O'Shea 1983; Kunz and Martin 1982). Alternative 1 restoration treatments should improve bat foraging conditions in meadow and riparian habitats within the project area.

Dispersed Recreation and Transportation

Delineating and rehabilitating dispersed campsites, adding motorized and non-motorized routes, enhancing trailheads, reconstructing, maintaining, decommissioning, and blocking roads, improving drainage and reducing hydrologically connected road segments have the potential to cause disturbances because of the use of loud machinery such as graders, backhoes, dozers, and chain saws. These activities may change normal behavior patterns of wildlife during project implementation. The mobility of the species, however, makes it highly improbable that death or injury would occur as a result of project activities.

Cumulative Effects

The temporal bound of terrestrial wildlife cumulative effect analyses assumes completion within 10 years, which is the longest estimated time of recovery from vegetation management treatments in the project area. A 10 year temporal bound also relates to the Cumulative Watershed Effect (CWE) analyses. The spatial bound for analysis is the 7th level HUCs, as described in Chapter 3.15 (3.15 Watershed).

Private land, owned in most part by Sierra Pacific Industries (SPI), surrounds the project area. With some parcels logged in the past 10 years, additional small project sales are planned within the next few years near the project area. Harvest methods on private land would include a variety of techniques such as clear-cut, mechanical thinning, skyline operations and random group selection and were considered in the cumulative impacts. Foreseeable future projects and activities in the cumulative effects analysis area include continued livestock grazing in the Mattley, Lower Blue, Mokelumne and Bear Valley grazing allotments, recreation activities, and vegetation management projects in Ramsey Fire Salvage activities, Bailey Plantation Health Improvement project, and West Calaveras Thin project.

Current on-going implementation of vegetation management projects on National Forest lands could reduce the overall canopy cover by a minor amount. The additional effects of these private land timber sales on Forest Service terrestrial wildlife species is expected to be negligible, as these proposed future projects are relatively small and not directly connected to the project area. The private lands timber sales are also scheduled to be implemented at different times over a period of time (2016 to 2021) which should help reduce the impacts. Ongoing grazing has the potential to impact herbaceous vegetation in meadows and newly created openings creating competition for prey species. Restoration actions in Alternative 1 (Proposed Action) would reduce riparian, special aquatic features, and aspen restoration concerns related to future grazing events. As such, the direct and indirect effect related to Alternative 1 when considered with foreseeable future projects are expected to be minor, and would not add to cumulative impacts.

Alternative 2 (No Action)

Indirect Effects

Forest Restoration, Scenic Corridor, Fuels Reduction, Mature Forest Wildlife Habitat

Under Alternative 2 (No Action), landscape restoration projects would not be implemented. Indirect effects from this alternative include continued degradation of forest processes through increased forest health issues, and increased fire risk. This may result in additional habitat alteration and fragmentation which could reduce suitability of the available habitats in the project area and influence reproductive success for all Forest Service sensitive terrestrial wildlife species.

Streams, Riparian Areas, Special Aquatic Features, and Aquatic Organism Passages

Indirect effects from not implementing this alternative include continued degradation of riparian, meadow, aspen, and watersheds, resulting in the potential habitat loss for great gray owls and willow flycatchers.

Dispersed Recreation and Transportation

Indirect effects from not implementing recreation and transportation activities include continued disturbance from user-created roads and dispersed campsites, and likely an increase over time from the expansion of unauthorized routes. This may result in additional disturbances and habitat alteration which could reduce suitability of the available habitats and migration corridors in the project area for Forest Service sensitive terrestrial wildlife species, and influence reproductive success for all Forest Sensitive terrestrial wildlife species.

Cumulative Effects

The ongoing vegetation management projects, livestock grazing, recreation activity, inadequate road maintenance and the indirect effects discussed above contribute to cumulative effects resulting in decreased forest health and increased fire risk. These factors may lead toward modification of habitats and reduction in Forest Service sensitive terrestrial wildlife species populations. Unmanaged recreation activities may increase noise disturbances and disruption to Forest Service sensitive terrestrial wildlife species.

Alternative 3

Direct and Indirect Effects

Direct and indirect effects on Forest Service sensitive terrestrial wildlife from actions proposed in Alternative 3 are similar to Alternative 1 (Proposed Action) with the following exceptions.

Forest Restoration, Scenic Corridor, and Fuels Reduction

Canopy cover retention is more heterogeneous across topographic positions in Alternative 3 (Table 2.07-1). This greater heterogeneity and higher percentages of canopy closure closer to spotted owl PACs would benefit mature forest species by retaining existing dispersal corridors for movement within and through the project area and retaining high-use roosting, denning, and foraging habitat. These habitats are expected to contain higher density of both trees and snags, reducing potential exposure to predation because of greater vertical structural diversity than random sites (Chapter 3.17, Effects Relative to Issues).

Mature Forest Wildlife Habitat

With the retention of higher canopy covers (50-60%) and greater vertical structural diversity in transition zones within HRCAs that are strategically located adjacent to California spotted owl PACs, these locations have the potential to become dispersal corridors. This is especially true within the Bailey Ridge area that is almost entirely surrounded on three sides by privately owned lands subject to timber management. Alternative 3 would enhance the ability of spotted owls, goshawks, martens, and fishers to migrate through mature forest corridors and disperse to suitable but unoccupied nesting and denning habitats within and outside the project area.

Cumulative Effects

The cumulative effects on Forest Service sensitive terrestrial wildlife species are the same as described in Alternative 1 (Proposed Action).

3.17 EFFECTS RELATIVE TO ISSUES

This section provides a summary of effects relative to the issue identified in Chapter 1.06 (Issues). Chapter 1.05 (Public Involvement) provides further details regarding public involvement and scoping; and, Chapter 1.06 (Issues) provides further details regarding the development of the issue identified through public involvement and scoping.

Forest Canopy Structure

Issue: Reductions in canopy cover in spotted owl HRCAs near PACs may alter the species use of these areas. A heterogeneous forest structure, density, and canopy cover across watersheds may provide an insight into actions to enhance water retention.

Evaluation Indicators

- Quantification of habitats of medium and large tree conifer forest (average tree size > 12 inches dbh) with high canopy cover (>60%) in HRCAs and PACs.
- Connectivity potential for mature forest wildlife species dispersal.

Alternative 3 was developed to address this relevant issue. Detailed analyses illustrating the effects of Alternatives 1 and 3 are provided in Chapter 3.16 (Wildlife) and the Wildlife MIS Report.

California Spotted Owl Population Stressors

In 2006 the USFWS made the determination that listing the California spotted owl was not warranted because there was inconclusive evidence that populations were in decline. This determination was based on the hypothesis that high severity fire represented the greatest threat to the species and that fuels treatments would greatly reduce this threat. Since USFWS made their determination, the research community has investigated stressors and their effects on spotted owl populations.

Conner et al. (2013) determined that statistical methods used to estimate California spotted owl population trends based on mark-recapture data are inherently susceptible to a Type II error, or false negative. Over the 18-year study period, these statistical methods indicated population declines of 21-22% for the Lassen National Forest population, 11-16% for the Sierra National Forest population, and an increase of 16-27% for the Sequoia-Kings Canyon population.

Tempel and Gutierrez (2013) investigated occupancy modeling versus mark-recapture techniques and determined that occupancy results closely matched the mark-recapture results but the occupancy data provided more precise estimates. Their study indicated that occupancy declined by 30% and territory extinction increased over time. Colonization rates were insufficient to maintain occupancy at its initial level. Likewise, Tempel et al. (2014) developed a new statistical method for mark-recapture data that had more precise results and indicated a 50% population decline over the 23 year study. They noted that there was little to no fire during the study periods within any of the demographic study areas.

Dolance et al (2014) compared Vegetation Type Map data (1929-1936) and Forest Inventory and Analysis data (2001-2010) in the central and northern Sierra Nevada which indicated a 41-40% decline in large tree (≥ 24” dbh) component across the study area for most conifer tree species. Seamans and Gutierrez (2007) determined that alteration of ≥ 50 acres of mature conifer forest (≥ 70% canopy cover dominated by medium and large trees) within 0.7 mile of a spotted owl territory center was correlated with nest failure. This was confirmed by Stephens et al. (2014) when their study revealed that within four years of completing defensible fuel profile zones and group selection treatments, the number of occupied California spotted owl territories declined from seven to four. Stephens et al. (2014) also indicated that owl territory sizes increased with the amount of treatment within the territory. Tempel et al. (2014) noted that medium-intensity timber harvests, characteristic of proposed fuel treatments, were negatively correlated to reproduction, and reproduction was sensitive to even modest amounts of treatment.

Reductions in canopy cover to < 70% were associated with reductions in survival and territory colonization rates, as well as increases in nest failure rates. Over 90% of the medium intensity harvests they studied converted high-canopy forests into lower-canopy vegetation classes.

Interim Recommendations for the California Spotted Owl

In 2004 a Supplemental EIS was prepared and a Record of Decision signed replacing the 2001 Sierra Nevada Forest Plan Amendment standards and guidelines; the 2001 plan amendment covered all National Forests in the Sierra Nevada range and is also known as the Sierra Nevada Framework. A coalition of conservation organizations led by Sierra Forest Legacy and including the Center for Biological Diversity, Natural Resources Defense Council, Sierra Club and The Wilderness Society filed suit in early 2005 claiming the 2004 Framework failed to adequately protect old growth forests and associated wildlife species and was not consistent with national environmental laws.

On October 9, 2014 a settlement agreement was finalized resolving litigation with the 2004 Sierra Nevada Forest Plan Amendment. This settlement agreement is the outcome of the 9th Circuit mediation program. One of the elements of the settlement agreement is that the Forest Service agrees to complete a conservation strategy for the California Spotted Owl in collaboration with experts on the California spotted owl, fire ecology, and forest ecology. Pending completion of this strategy, the Forest Service and experts would develop interim recommendations on changes to forest management.

Further, the Forest Service agreed that any EA prepared for a site-specific, vegetation management project within the range of the California spotted owl in the Sierra Nevada National Forests (for which public notice of scoping is published after receipt of the recommendations) would analyze an alternative consistent with the interim recommendations.

The interim recommendations for the California spotted owl and forest management were not released prior to public scoping of this EA; however, draft interim recommendations to manage California spotted owls promote higher amounts of dense forest important to the spotted owl for reproduction and persistence. Spotted owl PACs would not be larger, but HRCAs would be managed differently to include breeding and foraging habitat. Greater amounts of dense (> 60% Canopy Cover) forest would be retained in HRCAs closer to spotted owl PACs. The heterogeneity associated with these habitats can be augmented using GTR 220 approaches (Chapter 2). Canopy cover can decrease at greater distances from activity centers, and may be managed at an average of 40% canopy cover at the landscape scale.

Alternative 3

The Forest Service developed Alternative 3 to provide greater amounts of dense forest closer to spotted owl PACs in HRCAs, while still addressing site specific fuels concerns (Figure 3.17-1). Prescribed fire or vegetation treatments were included to reduce surface and small diameter ladder fuels where needed to address high risk areas. Collins et al. (2011) simulated fire and forest dynamics for a landscape fuel treatment project in the Sierra Nevada and determined that adequate fuels treatments could occur by cutting ≤ 12” dbh trees.

Retention of higher percentages of canopy closure would benefit mature forest species in the project area by increasing heterogeneity through the retention of existing dispersal corridors for movement within and through the project area, and high-use nesting, roosting, and foraging habitat that contains adequate density of mature trees and snags. Potential exposure to predation would be reduced because of higher canopy covers and greater vertical structural diversity in these transition zones, in comparison to random sites. This is especially important within the Bailey Ridge area that is almost entirely surrounded on three sides by privately owned lands subject to timber management. Alternative 3 would enhance the ability of spotted owls to migrate through mature forest corridors and disperse to suitable but unoccupied nesting habitats within and outside the project area.

Figure 3.17-1 Acres of mature forest habitat with canopy cover < 60% in HRCAs and outside HRCAs for each Alternative (acres provided in distance intervals from California spotted owl PACs)

In addition to addressing forest management for the California spotted owl, Alternative 3 responds to the desire to investigate how different forest vegetation treatments affect snow pack accumulations. Four sub-watersheds were identified along Mattley Ridge where restoration treatments consistent with GTR-220 treatment guidelines could vary in terms of the canopy cover retention, and thus forest structure. General treatments in these sub-watersheds are as follows:

Cottonwood Gulch: Cottonwood Gulch would serve as a control treatment. This sub-watershed is predominantly in spotted owl PAC. Alternative 1 includes hand thinning of excess fuels (< 6” dbh),

prescribed fire, fuel break construction along the ridge, and many acres with no activity planned. In Alternative 3, project implementation (hand thinning and fire) can be delayed until the snow pack study is completed. Overall, this sub-watershed would retain >60% canopy cover.

Hay Gulch: Hay Gulch is adjacent to Cottonwood Gulch and is predominantly in a spotted owl HRCA. Hay Gulch would receive a light mechanical and hand treatment, with canopy cover averaging 60%.

Middle Gulch: Middle Gulch is adjacent to Hay Gulch and has some spotted owl HRCA in the lower part of the drainage. Middle Gulch would receive mechanical treatments that would result in an average canopy cover of 50%.

Water Gulch: Water Gulch does not contain spotted owl PACs or HRCAs. This sub-watershed would receive mechanical treatments where the average canopy cover retained would be 40%.

3.18 FINDING OF NO SIGNIFICANT IMPACT

Context

The Hemlock project is a site specific action that that by itself does not have international, national, regional, or statewide importance. The Stanislaus National Forest includes 898,000 acres of NFS lands. This project, located on the Calaveras Ranger District, proposes treatment on approximately 9,756 acres within the 14,118 acre project planning area.

Intensity

The following ten elements of impact intensity address the potential significance of project effects.

1. Impacts that may be both beneficial and adverse.

Direct, indirect and cumulative effects were analyzed for the action alternatives and the no action alternative. The project was designed to avoid or minimize environmental harm. The effects of implementing either action alternative were very similar, and are summarized as follows:

- The project may affect, and is likely to adversely affect, the Sierra Nevada yellow-legged frog and the Yosemite toad, but is not likely to jeopardize the continued existence of these species (3.02 Aquatics).
- Project implementation would reduce a long-term carbon store by removing or burning trees and other vegetation; however, the stability of remaining carbon stored in trees would be increased by reducing the risk of large wildfire (3.03 Climate Change).
- The project would have negligible or beneficial effects on heritage resources (3.04 Cultural Resources).
- The project would have a positive effect on the overall economic activity in the local area. This project would help provide stability and revenue to the manufacturing industry, forest products industry, transportation, and indirect industries (housing, food, education, etc.) (3.05 Economics).
- The project would reduce the risks of catastrophic wildfire and provide areas needed for safe fire suppression (3.06 Fuels).
- Through the implementation of project management requirements, there is a low risk of establishment and expansion of noxious weeds by the project (3.07 Invasive Species).
- The project may increase the need for range allotment administration through increased rangeland infrastructure. Overall the project is expected to increase the ecological health of forest and rangelands in the project area (3.09 Range).
- Project activities could cause short-term, minor disruption to recreational activities within the project area, but are expected to result in the long-term sustainable, accessible, safe, and functional recreational opportunities (3.10 Recreation).

- The project would reduce tree density in key locations resulting in increased resilience to insects, disease, wildfire, and drought (3.13 Vegetation).
- The project would enhance the scenic quality associated with the Highway 4, National Scenic Byway (3.14 Visual Resources).
- The project may result in short-term increases in erosion and sedimentation; however the project would implement a comprehensive suite of Best Management Practices (BMPs) that would greatly reduce this risk. The project is expected to result in long-term reduced erosion and sedimentation, improved special aquatic feature condition and function, and overall improvement in water quality (3.12 Soils; 3.15 Watershed).
- The project may affect individuals and/or habitat, but would not result in a loss of viability or a trend towards federal listing for the Forest Service Sensitive terrestrial and aquatic wildlife species, and sensitive plants (3.02 Aquatics; 3.11 Sensitive Plants; 3.16 Wildlife). Likewise, the project would not alter the existing trend for Management Indicator Species or habitats across the Sierra Nevada Bioregion (3.08 Management Indicator Species).

2. The degree to which the proposed action affects public health or safety.

All action alternatives would avoid adverse impacts to public safety through project design efforts. Implementation of the action alternatives would be governed by standard public health and safety contract clauses. Standard precautionary measures would be used, such as dust abatement, signing of roads during log and biomass hauling, safely securing truckloads, and maintaining haul routes.

Overall, the project would have beneficial effects on public health and safety. Forest restoration and fuels reduction treatments would reduce fuel loading, reduce vegetation density, and create effective fuel breaks. This would improve the safety of forest visitors, nearby communities, and fire fighters by reducing the severity and intensity of future fires. All implementation would be monitored by Forest Service inspectors and would comply with Occupational Safety and Health Administration (OSHA) regulations, Forest Service direction, Regional air quality standards, Clean Air Act, and other applicable laws and guidance.

3. Unique characteristics of the geographic area such as proximity to historic or cultural resources, park lands, prime farmlands, wetlands, wild and scenic rivers, or ecologically critical areas.

Heritage resources of interest are located within or adjacent to proposed treatment areas. Proposed activities would result in negligible or beneficial effects on these resources (3.04 Cultural Resources). No other unique characteristics or ecologically critical areas such as park lands, prime farmlands, wetlands, exist within the project area. Ecologically critical areas in or near the project area include California spotted owl and northern goshawk PACs, and areas inhabited by sensitive plant and animal species. Project design features will protect these critical habitats from disturbance.

All action alternatives would: enhance the ecological health of forests, aspen stands and meadows, special aquatic features and streams, and rangelands by reducing susceptibility to insect, diseases, and drought-related mortality; reduce future fire intensity and severity; improve watershed condition by reducing sediment from the road system and reducing stressors to aquatic systems; and, maintain and enhance important wildlife habitat in California Spotted Owl PACs and HRCAs.

4. The degree to which the effects on the quality of the human environment are likely to be highly controversial.

There is not substantial scientific dispute as to the size, nature, or effects of action alternatives.

5. The degree to which the possible effects on the human environment are highly uncertain or involve unique or unknown risks.

Proposed activities are routine in nature, have been implemented in the past in similar forest conditions, employ standard practices and protection measures, and their effects are known. The

effect on the human environment from the proposed actions is not uncertain and does not involve unique or unknown risks. The proposed activities have all been previously implemented with known effects.

6. The degree to which the action may establish a precedent for future actions with significant effects or represents a decision in principle about a future generation.

Neither action alternative would establish a precedent for any future actions with significant effects. The proposed treatments are not new or unique in type, size, or intensity and are consistent with all laws, regulations, and policies including the Forest Plan, as amended (USDA 2010). This decision only applies to the project area and does not represent a decision in principle about a future consideration. Any future action not analyzed in this EA would be analyzed separately and on its own merits at the time it is proposed in the future.

7. Whether the action is related to other actions with individually insignificant but cumulatively significant impacts.

A cumulative effects analysis was completed separately for each resource area and is discussed within the respective specialist reports. Specialists considered the effects of the proposed action along with the effects of past, present and reasonably foreseeable future actions (both private and public) to determine if any cumulatively significant effects may exist. The spatial and temporal boundaries for the cumulative effects analyses varied among resources. Each of the specialist's cumulative effects analyses determined that implementation of the action alternatives would not result in significant adverse cumulative effects (Chapters 3.02 - 3.17).

8. The degree to which the action may adversely affect districts, sites, highways, structures, or objects listed in or eligible for listing in the National register of Historic Places or may cause loss or destruction of significant scientific, cultural, or historical resources.

The project would not affect any scientific resources. Potential effects to heritage resources are discussed in Chapter 3.04 (Cultural Resources) and in the Heritage Resource Report. The Forest informed 5 federal and state recognized tribes regarding the scope of this project. The Miwok and Washoe still actively use Stanislaus National Forest for gathering traditional food and medicine plants, hunting, and conducting ceremonies. In addition to public scoping efforts made to the general public, the scoping package for this project was mailed to the Calaveras Band of Miwok, Washoe Tribe of Nevada and California, California Valley Miwok Tribe Chicken Ranch Tribal Council, and the Tuolumne Band of Me-Wuk Indians with cover letters dated June 16, 2015. This project was presented at the Annual Tribal Consultations with Tuolumne Me-Wuk Tribe and Stanislaus National Forest on May 2, 2013, on May 9, 2014 and also on June 1, 2015. Presentations were made to describe and solicit information regarding the actions being considered at each of at these meetings and Forest Service contact information was provided. Copies of a public scoping package were provided to all tribal participants at the 2015 meeting. Representatives from Tuolumne Band of Me-Wuk Indian cultural resources group attended a site visit on July 29, 2015 to discuss the Hemlock project and other projects from the June 1, 2015 meeting. A site visit on August 10, 2015 with the Tribal Historic Preservation Officer for the Washoe Tribe of Nevada and California discussed proposed actions associated with the Hemlock project. Consultation site visits included trips to campgrounds, meadow habitats, and significant viewsheds within the proposed area. Heritage site preservation and traditional gathering areas were discussed, especially in regards to proposed recreation site enhancements, trail construction, and interpretive exhibits. No written comments have been received but project discussions during meetings, site visits, and phone calls have been documented and incorporated into project management requirements. Due to project design and management requirements, no direct, indirect, or cumulative effect on heritage resource sites are anticipated (Cultural Resource Management Report 05-16-2278, Aug 2015).

9. The degree to which the action may adversely affect an endangered or threatened species or its habitat that has been determined to be critical under the Endangered Species Act of 1973.

As a result of the effects analysis detailed in the Aquatic Species Biological Assessment and consultation with the Fish and Wildlife Service completed through batch consultation under a programmatic biological opinion (USFWS 2014), it was determined that that actions in Alternatives 1 and 3 may affect, and are likely to adversely affect the Yosemite toad (Threatened) and the Sierra Nevada yellow-legged frog (Endangered). The US Fish and Wildlife Service has concluded that projects consistent with the Forest Plan and that fully implement appropriate conservation measures were not likely to jeopardize the continued existence of these species (3.02 Aquatics). The proposed action would not affect any other Federally listed species or critical habitat (3.02 Aquatics; 3.11 Sensitive Plants; 3.16 Wildlife).

10. Whether the action threatens a violation of Federal, State, or local law or requirements imposed for the protection of the environment.

The proposed action complies with Federal, State and local laws or requirements imposed for the protection of the environment (i.e., National Forest Management Act, Endangered Species Act, National Historic Preservation Act, Federal Clean Water Act, Executive Order 11988 for Floodplain Management, and the Clean Air Act). The Forest Service obtained concurrence with SHPO and would obtain required permits from the appropriate county, state, and federal regulatory agencies prior to implementation.

4. Consultation and Coordination

The Forest Service consulted with the following individuals, Federal, State, and local agencies, tribes and non-Forest Service persons during the development of this EA.

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Katie Wilkinson, Writer/Editor/GIS
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Rebecca Wong, Archaeologist
Alex Yiu, Forester
Kendal Young, ID Team Leader/Writer/Editor
Quinn Young, Botanist

Federal, State, and Local Agencies

Calaveras County Water District
California Department of Fish and Wildlife
California Department of Forestry and Fire Protection
California Department of Transportation
Central Valley Regional Water Quality Control Board
East Bay Municipal Utility District
US Fish and Wildlife Service

Tribes

Calaveras Band of Miwok
Washoe Tribe of Nevada and California
California Valley Miwok Tribe
Chicken Ranch Tribal Council
Tuolumne Band of Me-Wuk Indians

Others

Amador Calaveras Consensus Group
Residents of Sky High Ranch, Cabbage Patch, and Ganns Meadow
Range Permittees
University of California, Berkeley
University of California, Merced

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A. Glossary of Terms

Term	Definition
Basal Area (BA)	The cross-sectional area of all stems of a species or all stems in a stand measured at breast height and expressed per unit of land area.
Biomass Removal	The removal of non-merchantable wood products obtained from all or some portion of trees including limbs, tops, and small diameter stems.
California Wildlife Habitat Relationships (CWHR)	The California Wildlife Habitat Relationships System (CWHR) classifies existing vegetation types important to wildlife. This system was developed to recognize and logically categorize major vegetative complexes at a scale sufficient to predict wildlife-habitat relationships. Tree size class and canopy closure classes are described below:
Size Class 1	Seedlings; <1” dbh (diameter breast height)
Size Class 2	Saplings; 1”-6” dbh
Size Class 3	Pole Trees; 6”-11” dbh
Size Class 4	Small Trees; 11”-24” dbh
Size Class 5 and 6	Large Trees; >24” dbh
Density Class S	Sparse Cover; 10-24% canopy cover
Density Class P	Open Cover; 25-39% canopy cover
Density Class M	Moderate Cover; 40-60% canopy cover
Density Class D	Dense Cover; >60% canopy cover
Gully	A channel formed by erosion from concentrated overland flow or surface runoff, such as originating from roads or other impervious surfaces. Gullies are larger than rills (typically greater than a foot in width and depth), cannot be easily filled in by mechanized equipment, and may present an obstacle to the operation of mechanized equipment.
Home Range Core Area (HRCA)	California spotted owl Home Range Core Area consists of 1,000 acres (including the 300 acres of PAC) of suitable habitat.
Jackstraw barrier	Trees or woody debris are purposely placed on the ground to create a physical barrier to browsers and grazers.
Long-term (Effects Analysis Duration)	Impacts that last 10 years or more.
Low Impact Yarding	To convey logs or trees to a landing in a manner to greatly reduce soil disturbance, compaction, and residual stand damage.
Major (Effects Analysis Intensity)	An action that would cause a definite change to a resource. The change would be readily measurable and would have a substantial consequence to the resource. Major impacts may be significant, and might constitute impairment.
Masticate	To reduce vegetative materials by crushing, grinding, or shredding.
Merchantable Timber	Wood, other than fuelwood, potentially usable for lumber.
Minor (Effects Analysis Intensity)	An action that may cause a change to a resource but the change would be small and, if measurable, it would cause a small and localized consequence. Minor impacts would not cause impairment of a resource.
Moderate (Effects Analysis Intensity)	An action that would cause some change to a resource and the change would have a definite and measurable consequence, but it is localized. Moderate impacts would not constitute impairment.

Term	Definition
Moderate-term (Effects Analysis Duration)	Impacts that last more than one year, but less than 10 years.
Negligible (Effects Analysis Intensity)	An action that may cause a change to a resource but the change would be so small that it would not be of any measurable consequence to the resource. Negligible impacts would not cause impairment of a resource
Protected Activity Center (PAC)	Protected Activity Centers are areas of suitable habitat (300 acres for California spotted owls, and 200 acres for northern goshawks) drawn around known nest locations.
Rill	Narrow and shallow channelized incision into a surface resulting from erosion by overland flow or surface runoff, such as originating from roads or other impervious surfaces. Rills are small channels (from inches to about one foot in width and depth) that can be easily filled-in with a pass from a piece of mechanized equipment such as a road grader or tractor.
Road Treatments	Road physical actions that are described below.
Close ML1	Physically close a road to all motor vehicle traffic by barriers such as boulders, water bars or berms, but leave on the NFTS. The road would be used when needed for project access, but kept closed for periods of years between uses. During the closure process, culverts and fills would be removed if susceptible to failure and durable drainage features such as water bars would be constructed to prevent erosion during long periods without maintenance. While closed to motor vehicle traffic, the maintenance level would be level 1
Decommission	Restoring an unneeded road to a more natural state. Motor vehicle traffic would be eliminated by construction of barriers and the road would be stabilized. In addition to blocking with barriers, removing culverts and constructing water bars, other actions may be taken to further reduce hydrological impacts, such as subsoiling, outsloping, recontouring and mulching. The barriers may be augmented with techniques such as camouflaging with brush or slash and recontouring the segment of road visible from its entrance. A route that is on the NFTS would be removed from the system when decommissioned.
Gate	Install a gate and keep it locked year round to prevent unauthorized traffic. Gates and barriers would provide sufficient room for vehicle turn-around if necessary.
Maintain	Preserve the drainage function and/or serviceability of the road without improving its standard or constructing new features. Maintenance activities include removal of roadside hazard trees, cleaning or repairing drainage structures such as culverts, dips and ditches, grading the road surface, removing unintended berms, brushing, and repair of road surfaces. Maintenance actions generally do not disturb ground outside the existing roadway other than hazard tree skid trails and removal of material around culvert inlets and outlets.
Realign Road	Construct a new road alignment to replace an unsatisfactory portion of existing road, in combination with decommissioning the existing road segment.
Reconstruct	Restore or improve the drainage function and/or serviceability of the road. Actions can include construction of improved road surface, construction of drainage dips, culverts, riprap fills or other drainage or stabilization features, clearing and widening. Reconstruction also includes routine maintenance actions including blading, brushing, maintenance of drainage features and removal of roadside hazard trees.
Reopen	Reopen denotes reconstruction of a route that is completely overgrown, as distinguished from reconstruction of a route that is currently open.

Term	Definition
Roadside Barrier	In addition to maintenance activities, construct a barrier alongside a road using materials such as boulders, and/or post signs, to prevent vehicles from traveling off the designated route.
Temporary Road	Construct a new road or use an existing road and decommission it after project use. Temporary roads are not intended to be a permanent part of the road system. Temporary roads can be requested by the contractor during contract operations and authorized by agreement by the Forest Service. Temporary roads are expected to be needed in certain locations included in this analysis. It is expected that no more than 0.5 mile of additional temporary road would be requested and approved during project implementation.
Watershed Rehab	Improve drainage and reduce or eliminate watershed damage on a road that is not expected to be needed for project traffic. The work might not be included in a vegetation management contract arising from this analysis and might be included in a separate resource restoration contract. The actions generally include constructing, repairing or improving fords, dips, water bars, culverts and other drainage features, repairing road surfaces, and similar means of correcting erosion and sedimentation problems.
Seep	An area where ground water is discharged to the earth's surface, but is typically not of sufficient volume to be flowing. Seeps are wet areas that may be saturated and contain standing water.
Short-term (Effects Analysis Duration)	Impacts that last less than one year.
Special Aquatic Feature (SAF)	Areas that include lakes, meadows, fens, wetlands, vernal pools, and springs.
Spring	An area where ground water is discharged to the earth's surface and is of sufficient volume to be flowing.
Stand Density Index (SDI)	A widely used measure that expresses relative stand density in terms of the relationship of a number of trees to stand quadratic mean diameter.
Watershed	A topographically delineated unit of land that is drained by a stream network.
Wetland	An area that has hydric soils, hydrophytic vegetation, and is typically flooded or saturated for part of the year and forms a transition zone between aquatic and terrestrial systems.

B. Treatment Units

Table B.01-1 Proposed vegetation and prescribed fire treatment units for Alternatives 1 and 3 (Maps 1 and 2); Other restoration treatments (SAF, recreation, soils, etc.) may occur in treatment units.

ID	Acres	Alternative 1		Alternative 3	
		Vegetation Treatment	Fire	Vegetation Treatment	Fire
1	11.5	None	No	None	No
2	28.8	None	No	None	No
3	9.4	None	Yes	None	Yes
4	8.0	None	No	None	No
5	7.3	None	No	None	No
6	3.5	None	No	None	No
7	44.5	None	No	None	No
8	11.2	None	No	None	No
9	16.2	None	No	None	No
10	2.8	None	Yes	None	Yes
11	8.3	None	Yes	None	Yes
12	7.8	None	No	None	No
13	3.8	None	Yes	None	Yes
14	3.6	None	No	None	No
15	14.5	None	No	None	No
16	3.1	None	Yes	None	Yes
17	6.4	None	No	None	No
18	7.5	None	Yes	None	Yes
19	5.5	None	Yes	None	Yes
20	185.4	None	Yes	None	Yes
21	23.7	None	No	None	No
22	30.8	None	No	None	No
23	5.5	None	No	None	No
24	4.8	None	No	None	No
25	47.8	None	No	None	No
26	663.3	None	No	None	No
27	5.3	None	No	None	No
28	5.4	None	No	None	No
29	19.6	None	No	None	No
30	8.9	None	No	None	No
31	14.7	None	No	None	No
32	10.1	None	No	None	No
33	6.0	None	No	None	No
34	24.0	None	No	Hand Treat (<10in)	No
35	13.8	None	No	None	No
36	16.6	None	No	None	No
37	12.8	None	Yes	Mid-slope SW - retain 50%	Yes
38	154.1	None	Yes	None	Yes
39	91.9	None	Yes	None	Yes
40	362.3	None	No	None	No
41	10.0	None	Yes	None	Yes
42	417.3	None	No	None	No
43	2.3	None	Yes	None	Yes
44	29.0	None	No	None	No
45	17.5	None	Yes	None	Yes
46	2.9	None	Yes	None	Yes
47	8.6	None	No	None	No
48	7.7	None	Yes	None	Yes
49	6.9	None	Yes	None	Yes
50	2.1	None	Yes	None	Yes

ID	Acres	Alternative 1		Alternative 3	
		Vegetation Treatment	Fire	Vegetation Treatment	Fire
51	31.3	None	Yes	None	Yes
52	472.1	None	No	None	No
53	1.9	None	Yes	None	Yes
54	60.6	None	Yes	None	Yes
55	2.0	None	No	None	No
56	4.9	None	No	None	No
57	13.5	None	Yes	None	Yes
58	3.0	None	No	None	No
59	3.5	None	Yes	None	Yes
60	37.2	None	Yes	None	Yes
61	64.4	None	No	None	No
62	3.5	None	Yes	None	Yes
63	940.5	None	No	None	No
64	35.4	None	Yes	None	Yes
65	24.5	None	Yes	None	Yes
66	4.9	None	Yes	None	Yes
67	12.7	None	No	None	No
68	21.1	None	No	None	No
69	524.1	None	No	None	No
70	6.8	None	No	None	No
71	8.5	None	Yes	None	Yes
72	13.2	None	No	Shaded Fuel Break - WUI	No
73	3.1	Plantation: Mastication / Biomass	No	Plantation: Mastication / Biomass	No
74	4.9	Plantation: Mastication / Biomass	Yes	Plantation: Mastication / Biomass	Yes
75	17.0	Plantation: Mastication / Biomass	Yes	Plantation: Mastication / Biomass	Yes
76	6.4	Plantation: Mastication / Biomass	Yes	Plantation: Mastication / Biomass	Yes
77	9.0	Plantation: Mastication / Biomass	No	Plantation: Mastication / Biomass	No
78	13.0	Plantation: Mastication / Biomass	No	Plantation: Mastication / Biomass	No
79	4.5	Plantation: Mastication / Biomass	No	Plantation: Mastication / Biomass	No
80	10.1	Plantation: Mastication / Biomass	No	Plantation: Mastication / Biomass	No
81	1.6	Plantation: Mastication / Biomass	No	Plantation: Mastication / Biomass	No
82	23.6	Hand Treat (<10in)	Yes	Hand Treat (<10in)	Yes
83	11.6	Plantation: Mastication / Biomass	Yes	Plantation: Mastication / Biomass	Yes
84	9.5	Plantation: Mastication / Biomass	Yes	Plantation: Mastication / Biomass	Yes
85	14.0	Plantation: Mastication / Biomass	Yes	Plantation: Mastication / Biomass	Yes
86	5.4	Plantation: Mastication / Biomass	Yes	Plantation: Mastication / Biomass	Yes
87	19.0	Hand Treat (<10in)	Yes	Hand Treat (<10in)	Yes
88	4.3	Hand Treat (<10in)	No	Hand Treat (<10in)	No
89	24.6	Hand Treat (<6in)	No	Hand Treat (<6in)	No
90	5.8	Plantation: Mastication / Biomass	Yes	Plantation: Mastication / Biomass	Yes
91	5.5	Plantation: Mastication / Biomass	Yes	Plantation: Mastication / Biomass	Yes
92	6.7	Plantation: Mastication / Biomass	Yes	Plantation: Mastication / Biomass	Yes
93	9.3	Plantation: Mastication / Biomass	Yes	Plantation: Mastication / Biomass	Yes
94	2.4	Plantation: Mastication / Biomass	Yes	Plantation: Mastication / Biomass	Yes
95	2.7	Plantation: Mastication / Biomass	Yes	Plantation: Mastication / Biomass	Yes
96	24.7	Plantation: Mastication / Biomass	Yes	Plantation: Mastication / Biomass	Yes
97	11.4	Plantation: Mastication / Biomass	Yes	Plantation: Mastication / Biomass	Yes
98	5.1	Hand Treat (<10in)	Yes	Hand Treat (<10in)	Yes
99	15.9	Plantation: Mastication / Biomass	Yes	Plantation: Mastication / Biomass	Yes
100	1.4	Plantation: Mastication / Biomass	Yes	Plantation: Mastication / Biomass	Yes
101	2.0	Plantation: Mastication / Biomass	Yes	Plantation: Mastication / Biomass	Yes
102	2.1	Plantation: Mastication / Biomass	Yes	Plantation: Mastication / Biomass	Yes
103	4.3	Plantation: Mastication / Biomass	Yes	Plantation: Mastication / Biomass	Yes
104	10.8	Plantation: Mastication / Biomass	Yes	Plantation: Mastication / Biomass	Yes
105	6.8	Plantation: Mastication / Biomass	Yes	Plantation: Mastication / Biomass	Yes
106	4.7	Plantation: Mastication / Biomass	Yes	Plantation: Mastication / Biomass	Yes

ID	Acres	Alternative 1		Alternative 3	
		Vegetation Treatment	Fire	Vegetation Treatment	Fire
107	10.3	Plantation: Mastication / Biomass	Yes	Plantation: Mastication / Biomass	Yes
108	4.3	Plantation: Mastication / Biomass	Yes	Plantation: Mastication / Biomass	Yes
109	0.8	Plantation: Mastication / Biomass	Yes	Plantation: Mastication / Biomass	Yes
110	8.1	Plantation: Mastication / Biomass	No	Plantation: Mastication / Biomass	No
111	7.4	Plantation: Mastication / Biomass	No	Plantation: Mastication / Biomass	No
112	4.2	Plantation: Mastication / Biomass	Yes	Plantation: Mastication / Biomass	Yes
113	10.9	Plantation: Mastication / Biomass	Yes	Plantation: Mastication / Biomass	Yes
114	14.5	Hand Treat (<10in)	Yes	Hand Treat (<10in)	Yes
115	24.8	Hand Treat (<10in)	Yes	Hand Treat (<10in)	Yes
116	13.5	Hand Treat (<10in)	Yes	Hand Treat (<10in)	Yes
117	5.9	Plantation: Mastication / Biomass	Yes	Plantation: Mastication / Biomass	Yes
118	6.1	Plantation: Mastication / Biomass	No	Plantation: Mastication / Biomass	No
119	5.5	Plantation: Mastication / Biomass	No	Plantation: Mastication / Biomass	No
120	6.6	Plantation: Mastication / Biomass	No	Plantation: Mastication / Biomass	No
121	3.9	Plantation: Mastication / Biomass	No	Plantation: Mastication / Biomass	No
122	14.7	Plantation: Mastication / Biomass	No	Plantation: Mastication / Biomass	No
123	6.1	Plantation: Mastication / Biomass	No	Plantation: Mastication / Biomass	No
124	9.5	Plantation: Mastication / Biomass	No	Plantation: Mastication / Biomass	No
125	1.8	Plantation: Mastication / Biomass	Yes	Plantation: Mastication / Biomass	Yes
126	8.4	Plantation: Mastication / Biomass	Yes	Plantation: Mastication / Biomass	Yes
127	15.6	Plantation: Mastication / Biomass	Yes	Plantation: Mastication / Biomass	Yes
128	2.7	Plantation: Mastication / Biomass	No	Plantation: Mastication / Biomass	No
129	3.3	Plantation: Mastication / Biomass	No	Plantation: Mastication / Biomass	No
130	18.7	Plantation: Mastication / Biomass	No	Plantation: Mastication / Biomass	No
131	3.8	Plantation: Mastication / Biomass	No	Plantation: Mastication / Biomass	No
132	2.7	Plantation: Mastication / Biomass	No	Plantation: Mastication / Biomass	No
133	9.0	Plantation: Sawlog	No	Plantation: Sawlog	No
134	2.8	Plantation: Mastication / Biomass	No	Plantation: Mastication / Biomass	No
135	6.5	Plantation: Mastication / Biomass	Yes	Plantation: Mastication / Biomass	Yes
136	6.0	Plantation: Mastication / Biomass	No	Plantation: Mastication / Biomass	No
137	10.3	Plantation: Mastication / Biomass	No	Plantation: Mastication / Biomass	No
138	4.0	Plantation: Mastication / Biomass	No	Plantation: Mastication / Biomass	No
139	2.4	Plantation: Mastication / Biomass	No	Plantation: Mastication / Biomass	No
140	2.9	Plantation: Mastication / Biomass	No	Plantation: Mastication / Biomass	No
141	3.5	Plantation: Mastication / Biomass	No	Plantation: Mastication / Biomass	No
142	10.2	Plantation: Mastication / Biomass	No	Plantation: Mastication / Biomass	No
143	7.7	Plantation: Sawlog	No	Plantation: Sawlog	No
144	5.2	Plantation: Mastication / Biomass	No	Plantation: Mastication / Biomass	No
145	5.2	Plantation: Mastication / Biomass	No	Plantation: Mastication / Biomass	No
146	32.2	Plantation: Mastication / Biomass	Yes	Plantation: Mastication / Biomass	Yes
147	2.6	Plantation: Mastication / Biomass	Yes	Plantation: Mastication / Biomass	Yes
148	2.3	Plantation: Mastication / Biomass	Yes	Plantation: Mastication / Biomass	Yes
149	15.6	Plantation: Mastication / Biomass	Yes	Plantation: Mastication / Biomass	Yes
150	7.6	Plantation: Mastication / Biomass	No	Plantation: Mastication / Biomass	No
151	5.9	Plantation: Mastication / Biomass	No	Plantation: Mastication / Biomass	No
152	233.0	Hand Treat (<10in)	No	Hand Treat (<10in)	No
153	120.5	Hand Treat (<6in)	No	Hand Treat (<6in)	No
154	3.6	Plantation: Sawlog	Yes	Plantation: Sawlog	Yes
155	14.9	Plantation: Mastication / Biomass	No	Plantation: Mastication / Biomass	No
156	2.5	Plantation: Mastication / Biomass	Yes	Plantation: Mastication / Biomass	Yes
157	15.2	Plantation: Mastication / Biomass	Yes	Plantation: Mastication / Biomass	Yes
158	8.2	Plantation: Sawlog	Yes	Plantation: Sawlog	Yes
159	3.2	Plantation: Mastication / Biomass	Yes	Plantation: Mastication / Biomass	Yes
160	23.3	Plantation: Mastication / Biomass	Yes	Plantation: Mastication / Biomass	Yes
161	9.8	Plantation: Mastication / Biomass	Yes	Plantation: Mastication / Biomass	Yes
162	5.3	Plantation: Mastication / Biomass	Yes	Plantation: Mastication / Biomass	Yes

ID	Acres	Alternative 1		Alternative 3	
		Vegetation Treatment	Fire	Vegetation Treatment	Fire
163	3.6	Plantation: Mastication / Biomass	Yes	Plantation: Mastication / Biomass	Yes
164	7.9	Plantation: Mastication / Biomass	Yes	Plantation: Mastication / Biomass	Yes
165	3.8	Plantation: Mastication / Biomass	Yes	Plantation: Mastication / Biomass	Yes
166	7.1	Plantation: Mastication / Biomass	Yes	Plantation: Mastication / Biomass	Yes
167	8.9	Plantation: Mastication / Biomass	Yes	Plantation: Mastication / Biomass	Yes
168	6.5	Plantation: Mastication / Biomass	Yes	Plantation: Mastication / Biomass	Yes
169	7.7	Plantation: Mastication / Biomass	Yes	Plantation: Mastication / Biomass	Yes
170	7.3	Plantation: Mastication / Biomass	Yes	Plantation: Mastication / Biomass	Yes
171	11.4	Plantation: Mastication / Biomass	No	Plantation: Mastication / Biomass	No
172	8.6	Plantation: Mastication / Biomass	No	Plantation: Mastication / Biomass	No
173	16.9	Plantation: Mastication / Biomass	No	Plantation: Mastication / Biomass	No
174	15.6	Hand Treat (<10in)	No	Hand Treat (<10in)	No
175	3.5	Plantation: Mastication / Biomass	No	Plantation: Mastication / Biomass	No
176	7.1	Plantation: Mastication / Biomass	Yes	Plantation: Mastication / Biomass	Yes
177	30.6	Hand Treat (<10in)	No	Hand Treat (<10in)	No
178	6.4	Plantation: Mastication / Biomass	No	Plantation: Mastication / Biomass	No
179	4.5	Plantation: Mastication / Biomass	No	Plantation: Mastication / Biomass	No
180	5.1	Plantation: Mastication / Biomass	No	Plantation: Mastication / Biomass	No
181	6.1	Plantation: Mastication / Biomass	No	Plantation: Mastication / Biomass	No
182	30.6	Plantation: Mastication / Biomass	No	Plantation: Mastication / Biomass	No
183	9.2	Plantation: Mastication / Biomass	No	Plantation: Mastication / Biomass	No
184	18.0	Plantation: Mastication / Biomass	No	Plantation: Mastication / Biomass	No
185	8.8	Plantation: Mastication / Biomass	No	Plantation: Mastication / Biomass	No
186	98.1	Scenic Corridor	No	Scenic Corridor	Yes
187	8.6	Scenic Corridor	No	Scenic Corridor	Yes
188	100.8	Scenic Corridor	No	Scenic Corridor	Yes
189	6.7	Scenic Corridor	No	Scenic Corridor	Yes
190	207.2	Scenic Corridor	No	Scenic Corridor	Yes
191	30.6	Hand Treat (<6in)	Yes	Hand Treat (<6in)	Yes
192	234.1	Hand Treat (<6in)	No	Hand Treat (<6in)	No
279	2.3	RCA - retain 60%	No	RCA - retain 60%	No
280	11.2	RCA - retain 60%	Yes	RCA - retain 60%	Yes
281	2.5	RCA - retain 60%	No	RCA - retain 60%	No
282	1.7	RCA - retain 60%	Yes	RCA - retain 60%	Yes
283	3.6	RCA - retain 60%	Yes	RCA - retain 60%	Yes
284	5.4	RCA - retain 60%	No	RCA - retain 60%	No
285	6.0	RCA - retain 60%	Yes	RCA - retain 60%	Yes
286	13.5	RCA - retain 60%	Yes	RCA - retain 50%	Yes
287	26.9	RCA - retain 60%	Yes	RCA - retain 50%	Yes
288	16.4	RCA - retain 60%	Yes	RCA - retain 60%	Yes
289	10.2	RCA - retain 60%	No	RCA - retain 60%	No
290	2.5	RCA - retain 60%	No	RCA - retain 60%	No
291	3.8	RCA - retain 60%	No	RCA - retain 60%	No
292	4.0	RCA - retain 60%	No	RCA - retain 60%	No
293	3.7	RCA - retain 60%	No	RCA - retain 60%	No
294	21.0	RCA - retain 60%	Yes	RCA - retain 60%	Yes
295	10.3	Mid-slope NE - retain 50%	No	Mid-slope NE - retain 60%	No
296	45.9	Mid-slope SW - retain 50%	Yes	Mid-slope SW - retain 50%	Yes
297	30.4	Mid-slope SW - retain 50%	Yes	Mid-slope SW - retain 50%	Yes
298	115.8	Mid-slope SW - retain 50%	Yes	Mid-slope SW - retain 50%	Yes
299	5.0	Mid-slope SW - retain 50%	No	Mid-slope SW - retain 50%	No
300	17.1	Mid-slope SW - retain 50%	No	Mid-slope SW - retain 50%	No
378	1.9	Drainage - retain 50%	No	Drainage - retain 60%	No
379	11.1	Ridge - retain 40%	No	Ridge - retain 40%	No
380	7.8	Ridge - retain 40%	No	Ridge - retain 40%	No
381	16.1	Ridge - retain 40%	Yes	Ridge - retain 40%	Yes

ID	Acres	Alternative 1		Alternative 3	
		Vegetation Treatment	Fire	Vegetation Treatment	Fire
382	0.6	Ridge - retain 40%	Yes	Ridge - retain 40%	Yes
383	1.8	Ridge - retain 40%	Yes	Ridge - retain 40%	Yes
384	1.2	Ridge - retain 40%	No	Ridge - retain 40%	No
385	0.6	Ridge - retain 40%	No	Ridge - retain 40%	No
386	5.8	Ridge - retain 40%	No	Ridge - retain 40%	No
387	4.1	Mid-slope NE - retain 50%	Yes	Mid-slope NE - retain 50%	Yes
388	14.2	Ridge - retain 40%	No	Ridge - retain 40%	No
389	1.1	Ridge - retain 40%	Yes	Ridge - retain 40%	Yes
390	1.4	Ridge - retain 40%	No	Ridge - retain 40%	No
391	3.8	Ridge - retain 40%	No	Ridge - retain 40%	No
392	1.8	Ridge - retain 40%	Yes	Ridge - retain 40%	Yes
393	17.9	Ridge - retain 40%	No	Ridge - retain 40%	No
394	11.6	Ridge - retain 40%	Yes	Ridge - retain 40%	Yes
395	10.3	Ridge - retain 40%	No	Ridge - retain 40%	No
396	0.9	Ridge - retain 40%	Yes	Ridge - retain 40%	Yes
397	1.1	Ridge - retain 40%	Yes	Ridge - retain 40%	Yes
398	28.4	Ridge - retain 40%	Yes	Ridge - retain 40%	Yes
399	40.1	Mid-slope NE - retain 50%	No	Mid-slope NE - retain 50%	No
193	76.2	Hand Treat (<6in)	No	Hand Treat (<6in)	No
194	4.9	Hand Treat (<10in)	No	Hand Treat (<10in)	No
195	5.1	Hand Treat (<10in)	No	Hand Treat (<10in)	No
196	39.8	Hand Treat (<10in)	Yes	Hand Treat (<10in)	Yes
197	106.0	Hand Treat (<10in)	Yes	Hand Treat (<10in)	Yes
198	159.2	Hand Treat (<6in)	No	Hand Treat (<6in)	No
199	38.4	Hand Treat (<6in)	Yes	Hand Treat (<6in)	Yes
200	128.7	Hand Treat (<6in)	Yes	Hand Treat (<6in)	Yes
201	38.7	Hand Treat (<10in) or Mechanical (Retain 50%)	Yes	Hand Treat (<10in) or Mechanical (Retain 50%)	Yes
202	33.1	Hand Treat (<10in) or Mechanical (Retain 50%)	Yes	Hand Treat (<10in) or Mechanical (Retain 50%)	Yes
203	21.3	Hand Treat (<10in) or Mechanical (Retain 50%)	Yes	Hand Treat (<10in) or Mechanical (Retain 60%)	Yes
204	162.3	Hand Treat (<10in)	No	Hand Treat (<10in)	No
205	78.2	Shaded Fuel Break - WUI	No	Shaded Fuel Break - WUI	No
206	4.1	Shaded Fuel Break - WUI	No	Shaded Fuel Break - WUI	No
207	49.5	Shaded Fuel Break - WUI	Yes	Shaded Fuel Break - WUI	Yes
208	61.5	Shaded Fuel Break - WUI	No	Shaded Fuel Break - WUI	No
209	7.9	Shaded Fuel Break - WUI	No	Shaded Fuel Break - WUI	No
210	35.7	Shaded Fuel Break - WUI	No	Shaded Fuel Break - WUI	No
211	15.0	Shaded Fuel Break	No	Shaded Fuel Break	No
212	7.9	Shaded Fuel Break	Yes	Shaded Fuel Break	Yes
213	18.7	Shaded Fuel Break	Yes	Shaded Fuel Break	Yes
214	95.7	Ridge - retain 40%	Yes	Ridge - retain 40%	Yes
215	86.0	Shaded Fuel Break - WUI	No	Shaded Fuel Break - WUI	No
216	7.1	Hand Treat (<10in)	No	Hand Treat (<10in)	No
217	82.4	Shaded Fuel Break - WUI	No	Shaded Fuel Break - WUI	No
218	89.5	Shaded Fuel Break - WUI	No	Shaded Fuel Break - WUI	No
219	18.7	Plantation: Mastication / Biomass	No	Plantation: Mastication / Biomass	No
220	318.1	Hand Treat (<6in)	No	Hand Treat (<6in)	No
221	40.1	RCA - retain 60%	No	RCA - retain 60%	No
222	0.5	RCA - retain 60%	No	RCA - retain 60%	No
223	20.1	RCA - retain 60%	Yes	RCA - retain 60%	Yes
224	0.7	RCA - retain 60%	No	RCA - retain 60%	No
225	14.6	Mid-slope NE - retain 50%	No	Mid-slope NE - retain 50%	No
226	1.1	Mid-slope NE - retain 50%	No	Mid-slope NE - retain 50%	No
227	12.8	Mid-slope NE - retain 50%	No	Mid-slope NE - retain 50%	No
228	16.9	Mid-slope NE - retain 50%	No	Mid-slope NE - retain 50%	No
229	24.0	Mid-slope NE - retain 50%	No	Mid-slope NE - retain 50%	No
230	30.7	Mid-slope NE - retain 50%	No	Mid-slope NE - retain 60%	No

ID	Acres	Alternative 1		Alternative 3	
		Vegetation Treatment	Fire	Vegetation Treatment	Fire
231	11.6	Mid-slope NE - retain 50%	No	Mid-slope NE - retain 60%	No
232	5.7	Mid-slope NE - retain 50%	No	Mid-slope NE - retain 50%	No
233	22.6	Mid-slope SW - retain 50%	No	Mid-slope SW - retain 50%	No
234	0.6	Mid-slope SW - retain 50%	No	Mid-slope SW - retain 50%	No
235	2.8	Mid-slope SW - retain 50%	No	Mid-slope SW - retain 50%	No
236	86.2	Mid-slope SW - retain 50%	No	Mid-slope SW - retain 50%	No
237	28.7	Mid-slope SW - retain 50%	No	Mid-slope SW - retain 50%	No
238	22.6	Mid-slope SW - retain 50%	No	Mid-slope SW - retain 50%	No
239	12.3	Mid-slope SW - retain 50%	Yes	Mid-slope SW - retain 50%	Yes
240	34.4	Mid-slope SW - retain 50%	No	Mid-slope SW - retain 50%	No
241	23.8	Mid-slope SW - retain 50%	No	Mid-slope SW - retain 50%	No
242	23.1	Mid-slope SW - retain 50%	Yes	Mid-slope SW - retain 50%	Yes
243	86.4	Mid-slope SW - retain 50%	No	Mid-slope SW - retain 50%	No
244	17.9	Mid-slope SW - retain 50%	Yes	Mid-slope SW - retain 50%	Yes
245	8.0	Mid-slope SW - retain 50%	Yes	Mid-slope SW - retain 60%	Yes
246	12.9	Mid-slope SW - retain 50%	No	Mid-slope SW - retain 50%	No
247	3.0	Mid-slope SW - retain 50%	No	Mid-slope SW - retain 50%	No
248	7.4	Mid-slope SW - retain 50%	Yes	Mid-slope SW - retain 50%	Yes
249	4.0	Mid-slope SW - retain 50%	Yes	Mid-slope SW - retain 50%	Yes
250	33.4	Mid-slope SW - retain 50%	No	Mid-slope SW - retain 60%	No
251	35.3	Mid-slope SW - retain 50%	Yes	Mid-slope SW - retain 60%	Yes
252	52.8	Mid-slope SW - retain 50%	Yes	Mid-slope SW - retain 50%	Yes
253	17.1	Mid-slope SW - retain 50%	No	Mid-slope SW - retain 60%	No
254	1.6	Mid-slope SW - retain 50%	No	Mid-slope SW - retain 60%	No
255	0.8	Mid-slope SW - retain 50%	No	Mid-slope SW - retain 60%	No
256	116.0	Mid-slope SW - retain 50%	Yes	Mid-slope SW - retain 60%	Yes
257	2.8	Mid-slope SW - retain 50%	Yes	Mid-slope SW - retain 60%	Yes
258	53.3	Mid-slope SW - retain 50%	Yes	Mid-slope SW - retain 60%	Yes
259	18.1	Mid-slope SW - retain 50%	Yes	Mid-slope SW - retain 60%	Yes
260	6.6	Mid-slope SW - retain 50%	No	Mid-slope SW - retain 60%	No
261	21.9	Mid-slope SW - retain 50%	No	Mid-slope SW - retain 60%	No
262	2.0	RCA - retain 60%	No	RCA - retain 60%	No
263	7.0	RCA - retain 60%	No	RCA - retain 60%	No
264	7.5	RCA - retain 60%	No	RCA - retain 60%	No
265	1.6	RCA - retain 60%	No	RCA - retain 60%	No
266	7.4	RCA - retain 60%	No	RCA - retain 60%	No
267	8.8	RCA - retain 60%	No	RCA - retain 60%	No
268	34.0	RCA - retain 60%	No	RCA - retain 60%	No
269	7.0	RCA - retain 60%	Yes	RCA - retain 60%	Yes
270	6.9	RCA - retain 60%	Yes	RCA - retain 60%	Yes
271	5.0	RCA - retain 60%	No	RCA - retain 60%	No
272	1.8	RCA - retain 60%	Yes	RCA - retain 60%	Yes
273	8.8	RCA - retain 60%	Yes	RCA - retain 60%	Yes
274	1.7	RCA - retain 60%	No	RCA - retain 60%	No
275	8.8	RCA - retain 60%	No	RCA - retain 60%	No
276	0.7	RCA - retain 60%	No	Shaded Fuel Break - WUI	No
277	0.5	RCA - retain 60%	No	Shaded Fuel Break - WUI	No
278	20.4	RCA - retain 60%	No	RCA - retain 60%	No
301	104.6	Mid-slope SW - retain 50%	Yes	Mid-slope SW - retain 50%	Yes
302	19.0	Mid-slope SW - retain 50%	No	Mid-slope SW - retain 50%	No
303	11.3	Mid-slope SW - retain 50%	No	Mid-slope SW - retain 50%	No
304	22.8	Mid-slope SW - retain 50%	No	Mid-slope SW - retain 50%	No
305	13.3	Mid-slope SW - retain 50%	No	Mid-slope SW - retain 50%	No
306	2.6	Mid-slope SW - retain 50%	No	Mid-slope SW - retain 50%	No
307	3.2	Mid-slope SW - retain 50%	No	Mid-slope SW - retain 50%	No
308	2.7	Mid-slope SW - retain 50%	Yes	Mid-slope SW - retain 50%	Yes

ID	Acres	Alternative 1		Alternative 3	
		Vegetation Treatment	Fire	Vegetation Treatment	Fire
309	9.6	Mid-slope SW - retain 50%	No	Mid-slope SW - retain 50%	No
310	124.7	Mid-slope SW - retain 50%	No	Mid-slope SW - retain 50%	No
311	24.0	Mid-slope SW - retain 50%	Yes	Mid-slope SW - retain 40%	Yes
312	50.6	Mid-slope SW - retain 50%	Yes	Mid-slope SW - retain 50%	Yes
313	34.6	Mid-slope SW - retain 50%	Yes	Mid-slope SW - retain 50%	Yes
314	2.4	Mid-slope SW - retain 50%	Yes	Mid-slope SW - retain 60%	Yes
315	0.6	Mid-slope SW - retain 50%	Yes	Mid-slope SW - retain 60%	Yes
316	7.4	Mid-slope SW - retain 50%	Yes	Mid-slope SW - retain 60%	Yes
317	30.2	Mid-slope SW - retain 50%	No	Mid-slope SW - retain 50%	No
318	13.3	Mid-slope SW - retain 50%	Yes	Mid-slope SW - retain 40%	Yes
319	1.9	Mid-slope SW - retain 50%	Yes	Mid-slope SW - retain 60%	Yes
320	7.9	Mid-slope SW - retain 50%	Yes	Mid-slope SW - retain 60%	Yes
321	52.4	Mid-slope SW - retain 50%	No	Mid-slope SW - retain 50%	No
322	1.1	Mid-slope NE - retain 50%	No	Mid-slope NE - retain 50%	No
323	9.5	Mid-slope NE - retain 50%	No	Mid-slope NE - retain 50%	No
324	18.1	Mid-slope NE - retain 50%	No	Mid-slope NE - retain 50%	No
325	9.7	Mid-slope NE - retain 50%	No	Mid-slope NE - retain 50%	No
326	37.7	RCA - retain 60%	No	RCA - retain 60%	No
327	8.7	RCA - retain 60%	No	RCA - retain 60%	No
328	3.4	Mid-slope NE - retain 50%	No	Mid-slope NE - retain 50%	No
329	1.9	Mid-slope NE - retain 50%	No	Mid-slope NE - retain 50%	No
330	31.2	Mid-slope NE - retain 50%	No	Mid-slope NE - retain 50%	No
331	30.7	Mid-slope NE - retain 50%	No	Mid-slope NE - retain 50%	No
332	7.2	Mid-slope NE - retain 50%	Yes	Mid-slope NE - retain 50%	Yes
333	15.7	Mid-slope NE - retain 50%	Yes	Mid-slope NE - retain 50%	Yes
334	6.9	Mid-slope NE - retain 50%	Yes	Mid-slope NE - retain 50%	Yes
335	33.3	Mid-slope NE - retain 50%	Yes	Mid-slope NE - retain 50%	Yes
336	4.7	Mid-slope NE - retain 50%	No	Mid-slope NE - retain 50%	No
337	5.2	Mid-slope NE - retain 50%	No	Mid-slope NE - retain 50%	No
338	40.6	Mid-slope NE - retain 50%	No	Mid-slope NE - retain 60%	No
339	2.3	Drainage - retain 50%	No	Drainage - retain 50%	No
340	1.4	Drainage - retain 50%	No	Drainage - retain 50%	No
341	12.9	Drainage - retain 50%	No	Drainage - retain 50%	No
342	3.3	Drainage - retain 50%	No	Drainage - retain 50%	No
343	2.1	Drainage - retain 50%	No	Drainage - retain 50%	No
344	3.4	Drainage - retain 50%	No	Drainage - retain 50%	No
345	7.1	Drainage - retain 50%	No	Drainage - retain 50%	No
346	13.6	Drainage - retain 50%	Yes	Drainage - retain 60%	Yes
347	2.5	Drainage - retain 50%	Yes	Drainage - retain 60%	Yes
348	11.2	Drainage - retain 50%	Yes	Drainage - retain 50%	Yes
349	14.7	Drainage - retain 50%	Yes	Drainage - retain 60%	Yes
350	1.5	Drainage - retain 50%	No	Drainage - retain 50%	No
351	5.4	Drainage - retain 50%	Yes	Drainage - retain 60%	Yes
352	1.8	Drainage - retain 50%	No	Drainage - retain 50%	No
353	6.3	Drainage - retain 50%	No	Drainage - retain 50%	No
354	7.2	Drainage - retain 50%	Yes	Drainage - retain 60%	Yes
355	21.4	Drainage - retain 50%	Yes	Drainage - retain 60%	Yes
356	0.7	Drainage - retain 50%	Yes	Drainage - retain 60%	Yes
357	2.7	Drainage - retain 50%	Yes	Drainage - retain 50%	Yes
358	16.2	Drainage - retain 50%	No	Drainage - retain 50%	No
359	3.3	Drainage - retain 50%	Yes	Drainage - retain 40%	Yes
360	5.7	Drainage - retain 50%	Yes	Drainage - retain 40%	Yes
361	4.3	Drainage - retain 50%	Yes	Drainage - retain 40%	Yes
362	16.5	Drainage - retain 50%	Yes	Drainage - retain 40%	Yes
363	1.9	Drainage - retain 50%	Yes	Drainage - retain 40%	Yes
364	5.7	Drainage - retain 50%	No	Drainage - retain 50%	No

ID	Acres	Alternative 1		Alternative 3	
		Vegetation Treatment	Fire	Vegetation Treatment	Fire
365	1.6	Drainage - retain 50%	Yes	Drainage - retain 40%	Yes
366	1.3	Drainage - retain 50%	Yes	Drainage - retain 60%	Yes
367	0.7	Drainage - retain 50%	Yes	Drainage - retain 60%	Yes
368	1.4	Drainage - retain 50%	Yes	Drainage - retain 60%	Yes
369	18.3	Drainage - retain 50%	Yes	Drainage - retain 60%	Yes
370	3.5	Drainage - retain 50%	No	Drainage - retain 50%	No
371	10.2	Drainage - retain 50%	No	Drainage - retain 60%	No
372	3.7	Drainage - retain 50%	No	Drainage - retain 60%	No
373	3.7	Drainage - retain 50%	No	Drainage - retain 60%	No
374	2.2	Drainage - retain 50%	No	Drainage - retain 50%	No
375	8.5	Drainage - retain 50%	Yes	Drainage - retain 60%	Yes
376	2.9	Drainage - retain 50%	Yes	Drainage - retain 60%	Yes
377	19.4	Drainage - retain 50%	No	Drainage - retain 60%	No
400	10.7	Ridge - retain 40%	Yes	Ridge - retain 40%	Yes
401	0.9	Ridge - retain 40%	No	Ridge - retain 40%	No
402	1.6	Ridge - retain 40%	No	Ridge - retain 40%	No
403	40.8	Ridge - retain 40%	Yes	Ridge - retain 50%	Yes
404	4.2	Ridge - retain 40%	No	Ridge - retain 40%	No
405	19.5	Ridge - retain 40%	No	Ridge - retain 40%	No
406	3.2	Ridge - retain 40%	No	Ridge - retain 40%	No
407	38.1	Ridge - retain 40%	Yes	Ridge - retain 40%	Yes
408	13.5	Ridge - retain 40%	No	Ridge - retain 40%	No
409	36.3	Mid-slope NE - retain 50%	No	Mid-slope NE - retain 50%	No
410	15.5	Mid-slope NE - retain 50%	Yes	Mid-slope NE - retain 50%	Yes
411	32.0	Mid-slope SW - retain 50%	No	Mid-slope SW - retain 50%	No
412	83.5	Mid-slope SW - retain 50%	No	Mid-slope SW - retain 50%	No
413	1.3	Mid-slope SW - retain 50%	Yes	Mid-slope SW - retain 40%	Yes
414	36.2	Mid-slope SW - retain 50%	Yes	Mid-slope SW - retain 40%	Yes
415	8.0	Ridge - retain 40%	Yes	Ridge - retain 40%	Yes
416	64.6	Ridge - retain 40%	No	Ridge - retain 40%	No
417	52.8	Ridge - retain 40%	Yes	Ridge - retain 40%	Yes
418	51.1	Ridge - retain 40%	No	Ridge - retain 40%	No
419	16.2	Ridge - retain 40%	Yes	Ridge - retain 40%	Yes
420	48.8	Ridge - retain 40%	Yes	Ridge - retain 40%	Yes
421	14.4	Ridge - retain 40%	Yes	Ridge - retain 40%	Yes
422	10.5	Ridge - retain 40%	No	Ridge - retain 40%	No
423	12.9	Ridge - retain 40%	No	Ridge - retain 40%	No
424	3.7	Mid-slope SW - retain 50%	Yes	Mid-slope SW - retain 50%	Yes
425	36.9	Mid-slope SW - retain 50%	Yes	Mid-slope SW - retain 60%	Yes
426	8.8	Mid-slope SW - retain 50%	Yes	Mid-slope SW - retain 60%	Yes
427	31.8	Mid-slope SW - retain 50%	Yes	Mid-slope SW - retain 50%	Yes
428	10.3	Mid-slope SW - retain 50%	Yes	Mid-slope SW - retain 60%	Yes
429	8.1	Mid-slope NE - retain 50%	Yes	Mid-slope NE - retain 50%	Yes
430	16.7	Mid-slope NE - retain 50%	Yes	Plantation: Mastication / Biomass	Yes
431	0.6	Mid-slope NE - retain 50%	No	Mid-slope NE - retain 50%	No
432	13.8	Mid-slope NE - retain 50%	No	Mid-slope NE - retain 50%	No
433	4.1	Mid-slope NE - retain 50%	No	Mid-slope NE - retain 50%	No
434	4.1	Mid-slope NE - retain 50%	No	Mid-slope NE - retain 50%	No
435	11.9	Mid-slope NE - retain 50%	No	Mid-slope NE - retain 50%	No
436	11.1	Mid-slope NE - retain 50%	No	Mid-slope NE - retain 60%	No
437	5.8	Mid-slope NE - retain 50%	No	Mid-slope NE - retain 50%	No
438	25.0	Mid-slope SW - retain 50%	No	Mid-slope SW - retain 50%	No
439	12.5	Mid-slope SW - retain 50%	No	Mid-slope SW - retain 50%	No
440	3.2	Drainage - retain 50%	No	Drainage - retain 60%	No
441	7.4	Roadside Fuel Break	Yes	Roadside Fuel Break	Yes
442	2.3	Roadside Fuel Break	Yes	Roadside Fuel Break	Yes

ID	Acres	Alternative 1		Alternative 3	
		Vegetation Treatment	Fire	Vegetation Treatment	Fire
443	0.7	Roadside Fuel Break	Yes	Roadside Fuel Break	Yes
444	1.8	Roadside Fuel Break	No	Roadside Fuel Break	No
445	2.0	Roadside Fuel Break	No	Roadside Fuel Break	No
446	10.7	Roadside Fuel Break	No	Roadside Fuel Break	No
447	5.5	Roadside Fuel Break	Yes	Roadside Fuel Break	Yes
448	0.9	Roadside Fuel Break	Yes	Roadside Fuel Break	Yes
449	7.5	Roadside Fuel Break	Yes	Roadside Fuel Break	Yes
450	18.8	Roadside Fuel Break	No	Roadside Fuel Break	No
451	3.6	Roadside Fuel Break	No	Roadside Fuel Break	No
452	1.5	Roadside Fuel Break	Yes	Mid-slope SW - retain 50%	Yes
453	0.8	Mid-slope SW - retain 50%	Yes	Mid-slope SW - retain 60%	Yes
454	1.6	Roadside Fuel Break	Yes	Roadside Fuel Break	Yes
455	4.7	Roadside Fuel Break	Yes	Roadside Fuel Break	Yes
456	3.7	Roadside Fuel Break	Yes	Roadside Fuel Break	Yes
457	1.7	Plantation: Mastication / Biomass	Yes	Plantation: Mastication / Biomass	Yes
458	1.5	Roadside Fuel Break	Yes	Roadside Fuel Break	Yes
459	3.0	Hand Treat (<10in)	Yes	Hand Treat (<10in)	Yes
460	1.1	Plantation: Mastication / Biomass	Yes	Plantation: Mastication / Biomass	Yes
461	0.5	Plantation: Mastication / Biomass	No	Plantation: Mastication / Biomass	No
462	1.4	Plantation: Mastication / Biomass	No	Plantation: Mastication / Biomass	No
463	0.8	Plantation: Mastication / Biomass	Yes	Plantation: Mastication / Biomass	Yes
464	4.4	Hand Treat (<10in)	Yes	Hand Treat (<10in)	Yes
465	14.9	Hand Treat (<6in)	Yes	Hand Treat (<6in)	Yes
466	5.2	Hand Treat (<6in)	Yes	Hand Treat (<6in)	Yes
467	0.6	Hand Treat (<6in)	No	Hand Treat (<6in)	No
468	7.0	RCA - retain 60%	Yes	RCA - retain 60%	Yes
469	5.0	Mid-slope SW - retain 50%	Yes	Mid-slope SW - retain 60%	Yes
470	1.8	Mid-slope SW - retain 50%	Yes	Mid-slope SW - retain 60%	Yes
471	1.0	Mid-slope SW - retain 50%	Yes	Mid-slope SW - retain 60%	Yes
472	0.6	Mid-slope SW - retain 50%	Yes	Mid-slope SW - retain 60%	Yes
473	0.7	Mid-slope SW - retain 50%	Yes	Mid-slope SW - retain 60%	Yes
474	1.0	RCA - retain 60%	Yes	RCA - retain 60%	Yes
475	0.7	RCA - retain 60%	Yes	RCA - retain 60%	Yes
476	0.6	RCA - retain 60%	Yes	RCA - retain 60%	Yes
477	1.2	RCA - retain 60%	Yes	RCA - retain 60%	Yes
478	1.3	RCA - retain 60%	Yes	RCA - retain 60%	Yes
479	1.0	RCA - retain 60%	Yes	RCA - retain 60%	Yes
480	0.9	Mid-slope SW - retain 50%	Yes	Mid-slope SW - retain 50%	Yes
481	3.1	Mid-slope SW - retain 50%	Yes	Mid-slope SW - retain 50%	Yes
482	0.7	Mid-slope SW - retain 50%	Yes	Mid-slope SW - retain 50%	Yes
483	2.4	Mid-slope SW - retain 50%	Yes	Mid-slope SW - retain 50%	Yes
484	1.4	Mid-slope SW - retain 50%	Yes	Mid-slope SW - retain 50%	Yes
485	4.9	Mid-slope SW - retain 50%	Yes	Mid-slope SW - retain 50%	Yes
486	2.1	Mid-slope NE - retain 50%	No	Mid-slope NE - retain 50%	No
487	1.9	Mid-slope NE - retain 50%	Yes	Mid-slope NE - retain 50%	Yes
488	1.4	Drainage - retain 50%	Yes	Drainage - retain 60%	Yes
489	0.3	Drainage - retain 50%	Yes	Drainage - retain 60%	Yes
490	1.1	Drainage - retain 50%	Yes	Drainage - retain 60%	Yes
491	1.3	Drainage - retain 50%	Yes	Drainage - retain 60%	Yes
492	1.3	Drainage - retain 50%	Yes	Drainage - retain 40%	Yes
493	1.3	Drainage - retain 50%	Yes	Drainage - retain 40%	Yes
494	4.8	Drainage - retain 50%	Yes	Drainage - retain 60%	Yes
495	1.5	Drainage - retain 50%	Yes	Drainage - retain 60%	Yes
496	0.8	Ridge - retain 40%	Yes	Ridge - retain 40%	Yes
497	1.1	Mid-slope SW - retain 50%	Yes	Mid-slope SW - retain 50%	Yes
498	0.9	Mid-slope SW - retain 50%	Yes	Mid-slope SW - retain 40%	Yes

ID	Acres	Alternative 1		Alternative 3	
		Vegetation Treatment	Fire	Vegetation Treatment	Fire
499	1.5	Ridge - retain 40%	Yes	Ridge - retain 40%	Yes
500	0.9	Mid-slope SW - retain 50%	Yes	Mid-slope SW - retain 60%	Yes
501	1.6	Mid-slope SW - retain 50%	Yes	Mid-slope SW - retain 60%	Yes
502	1.3	Mid-slope SW - retain 50%	Yes	Mid-slope SW - retain 50%	Yes
503	1.5	Mid-slope SW - retain 50%	Yes	Mid-slope SW - retain 50%	Yes
504	0.5	Mid-slope SW - retain 50%	Yes	Mid-slope SW - retain 60%	Yes
505	3.4	Mid-slope NE - retain 50%	Yes	Mid-slope NE - retain 50%	Yes
506	0.7	Mid-slope SW - retain 50%	Yes	Mid-slope SW - retain 60%	Yes
507	10.6	Ridge - retain 40%	No	Ridge - retain 40%	No
508	50.8	Shaded Fuel Break	Yes	Shaded Fuel Break	Yes
509	23.5	None	No	None	No
510	10.0	Ridge - retain 40%	Yes	Ridge - retain 50%	Yes
511	6.9	Mid-slope SW - retain 50%	Yes	Mid-slope SW - retain 50%	Yes
512	2.0	None	Yes	RCA - retain 60%	Yes
513	2.7	Mid-slope SW - retain 50%	Yes	Mid-slope SW - retain 60%	Yes
514	1.3	Mid-slope SW - retain 50%	Yes	Mid-slope SW - retain 40%	Yes
515	8.6	Mid-slope SW - retain 50%	Yes	Mid-slope SW - retain 40%	Yes
516	15.6	None	Yes	Ridge - retain 40%	Yes
517	31.0	None	Yes	Mid-slope SW - retain 40%	Yes
518	0.8	Mid-slope NE - retain 50%	Yes	Mid-slope NE - retain 50%	Yes
519	0.8	Mid-slope SW - retain 50%	Yes	Mid-slope SW - retain 60%	Yes
520	74.0	None	No	None	No
521	2.4	None	No	None	No
522	7.7	Meadow/Aspen Conifer Removal	Yes	Meadow/Aspen Conifer Removal	Yes
523	6.6	Meadow/Aspen Conifer Removal	Yes	Meadow/Aspen Conifer Removal	Yes
524	1.6	Meadow Conifer Removal	Yes	Meadow Conifer Removal	Yes
525	4.0	Aspen Conifer Removal	No	Aspen Conifer Removal	No
526	8.8	None	No	None	No
527	7.8	Meadow Conifer Removal	No	Meadow Conifer Removal	No
528	3.9	None	No	None	No
529	23.2	Meadow Conifer Removal	No	Meadow Conifer Removal	No
530	5.6	Meadow Conifer Removal	Yes	Meadow Conifer Removal	Yes
531	6.0	None	Yes	None	Yes
532	1.2	Meadow Conifer Removal	Yes	Meadow Conifer Removal	Yes
533	5.8	Meadow Conifer Removal	No	Meadow Conifer Removal	No
534	1.0	Meadow Conifer Removal	Yes	Meadow Conifer Removal	Yes
535	5.6	Meadow Conifer Removal	No	Meadow Conifer Removal	No
538	5.2	Meadow/Aspen Conifer Removal	No	Meadow/Aspen Conifer Removal	No
539	4.7	Meadow/Aspen Conifer Removal	No	Meadow/Aspen Conifer Removal	No
540	4.1	Meadow Conifer Removal	No	Meadow Conifer Removal	No
541	3.5	Meadow/Aspen Conifer Removal	No	Meadow/Aspen Conifer Removal	No
542	2.9	Meadow/Aspen Conifer Removal	No	Meadow/Aspen Conifer Removal	No
543	4.4	Meadow Conifer Removal	No	Meadow Conifer Removal	No
544	8.7	Meadow/Aspen Conifer Removal	No	Meadow/Aspen Conifer Removal	No
545	22.0	Meadow Conifer Removal	No	Meadow Conifer Removal	No
546	8.1	Shaded Fuel Break - WUI	No	Shaded Fuel Break - WUI	No
547	14.6	Meadow/Aspen Conifer Removal	No	Meadow/Aspen Conifer Removal	No
548	61.4	Meadow/Aspen Conifer Removal	Yes	Meadow/Aspen Conifer Removal	Yes
549	7.2	Meadow Conifer Removal	Yes	Meadow Conifer Removal	Yes
550	38.8	Shaded Fuel Break - WUI	No	Shaded Fuel Break - WUI	No
551	3.5	Meadow Conifer Removal	No	Meadow Conifer Removal	No
552	4.0	Meadow Conifer Removal	No	Meadow Conifer Removal	No
553	2.3	Meadow Conifer Removal	No	Meadow Conifer Removal	No
554	2.0	Meadow Conifer Removal	No	Meadow Conifer Removal	No
555	7.0	Meadow Conifer Removal	No	Meadow Conifer Removal	No
556	2.7	None	Yes	None	Yes

ID	Acres	Alternative 1		Alternative 3	
		Vegetation Treatment	Fire	Vegetation Treatment	Fire
557	5.4	Meadow/Aspen Conifer Removal	No	Meadow/Aspen Conifer Removal	No
558	2.6	RCA - retain 60%	Yes	RCA - retain 60%	Yes
559	15.1	None	No	Aspen Conifer Removal	No
560	109.6	Shaded Fuel Break	No	Shaded Fuel Break	No
561	29.5	Shaded Fuel Break	No	Shaded Fuel Break	No
562	25.1	Shaded Fuel Break	No	Shaded Fuel Break	No
563	24.8	None	No	None	No
564	22.2	None	No	None	No
565	11.7	None	Yes	None	Yes
566	88.1	None	Yes	None	Yes
567	121.8	None	Yes	None	Yes
568	60.0	Hand Treat (<6in)	Yes	Hand Treat (<6in)	Yes
569	28.2	Hand Treat (<6in)	Yes	Hand Treat (<6in)	Yes
570	6.0	None	Yes	None	Yes
571	62.1	None	No	None	No
572	157.2	Hand Treat (<6in)	No	Hand Treat (<6in)	No
573	12.4	Mid-slope SW - retain 50%	Yes	Mid-slope SW - retain 50%	Yes
574	6.3	Shaded Fuel Break - WUI	No	Shaded Fuel Break - WUI	No
575	9.5	Shaded Fuel Break - WUI	No	Shaded Fuel Break - WUI	No
576	84.6	Hand Treat (<6in)	Yes	Hand Treat (<6in)	Yes
577	46.4	None	No	None	No
578	97.1	None	No	None	No
579	0.7	None	No	None	No
580	16.1	Hand Treat (<6in)	No	Hand Treat (<6in)	No
581	46.2	None	No	None	No
582	16.8	Mid-slope SW - retain 50%	No	Mid-slope SW - retain 50%	No
583	12.6	Drainage - retain 50%	No	Drainage - retain 60%	No
584	16.3	RCA - retain 60%	Yes	RCA - retain 60%	Yes
585	14.3	Drainage - retain 50%	Yes	Drainage - retain 60%	Yes
586	4.3	Drainage - retain 50%	Yes	Drainage - retain 50%	Yes
587	11.2	Mid-slope NE - retain 50%	Yes	Mid-slope NE - retain 50%	Yes
588	8.0	RCA - retain 60%	Yes	RCA - retain 60%	Yes
589	7.8	None	No	None	No
590	15.5	Ridge - retain 40%	Yes	Ridge - retain 40%	Yes
591	41.6	Shaded Fuel Break	Yes	Shaded Fuel Break	Yes
592	7.9	Ridge - retain 40%	Yes	Ridge - retain 40%	Yes
593	31.3	Ridge - retain 40%	Yes	Ridge - retain 40%	Yes
594	18.7	Ridge - retain 40%	No	Ridge - retain 40%	No
595	24.1	Shaded Fuel Break	Yes	Shaded Fuel Break	Yes
596	52.0	Ridge - retain 40%	Yes	Ridge - retain 40%	Yes
597	13.9	Shaded Fuel Break	Yes	Shaded Fuel Break	Yes
598	10.5	None	No	Shaded Fuel Break - WUI	No
599	1.2	Mid-slope NE - retain 50%	Yes	Mid-slope NE - retain 50%	Yes
600	5.2	None	No	None	No

SIERRA NEVADA CONSERVANCY
SNC Watershed Improvement Program - DETAILED BUDGET FORM

Project Name: Pumpkin Hollow Restoration Project

Applicant: Upper Mokelumne River Watershed Authority

SECTION ONE **DIRECT COSTS**	**Year One**	**Year Two**	**Year Three**	**Total**
Wildlife Hand Treatments	$22,000.00	$22,000.00	$22,000.00	$66,000.00
Biomass	$22,000.00	$12,000.00	$22,000.00	$56,000.00
Fuel Break	$20,000.00	$20,000.00	$30,000.00	$70,000.00
Mastication of Plantations	$50,000.00	$75,000.00	$75,000.00	$200,000.00
Procurement	$5,000.00	$5,000.00	$5,000.00	$15,000.00
Accounting	$5,000.00	$5,000.00	$5,000.00	$15,000.00
DIRECT COSTS SUBTOTAL:	$124,000.00	$139,000.00	$159,000.00	$422,000.00

SECTION TWO **PARTIAL INDIRECT COSTS**	**Year One**	**Year Two**	**Year Three**	**Total**
Implementation Quality Control	$7,000.00	$7,000.00	$7,000.00	$21,000.00
Environmental Scientist (monitoring, reporting, performance measures)	$4,000.00	$2,000.00	$2,000.00	$8,000.00
Grant reporting and Invoicing	$6,000.00	$6,000.00	$7,000.00	$19,000.00
				$0.00
INDIRECT* COSTS SUBTOTAL:	$11,000.00	$9,000.00	$9,000.00	$48,000.00
PROJECT TOTAL:	$135,000.00	$148,000.00	$168,000.00	$470,000.00

SECTION THREE **Administrative Costs (Costs may n*ot exceed 15% of the above listed Project costs*) :**				**Total**
Office, copying, telephone, computer technical support, etc.	$10,000.00	$10,000.00	$10,000.00	$30,000.00
				$0.00
				$0.00
ADMINISTRATIVE TOTAL:**	$10,000.00	$10,000.00	$10,000.00	$30,000.00
SNC TOTAL GRANT REQUEST:	$145,000.00	$158,000.00	$178,000.00	$500,000.00

SECTION FOUR **OTHER PROJECT CONTRIBUTIONS**	**Year One**	**Year Two**	**Year Three**	**Total**
In-Kind Contributor: Stanislaus National Forest				
Limiting opperating periods (LOP) Surveys	$2,500.00	$2,500.00	$2,500.00	$7,500.00
Wildlife Hand Treatments	$60,000.00	$60,000.00	$61,125.00	$181,125.00
Biomass	$2,000.00	$2,000.00	$2,449.00	$6,449.00
Fuel Break	$40,000.00	$40,000.00	$33,002.00	$113,002.00
Mastication of Plantations	$6,000.00	$6,000.00	$7,423.00	$19,423.00
				$0.00
Total Other Contributions:	$110,500.00	$110,500.00	$106,499.00	$327,499.00

Indirect*: Expenses involve ongoing operations, repair, or maintenance costs, regardless of whether the repair or maintenance may last more than one year.
Administrative**: Expenses associated with the administration of a project and may not exceed 15 percent of the total SNC grant request for direct and indirect costs.

8. SUPPLEMENTARY DOCUMENTS

a. Environmental Documents

Below is a brief summary of the CEQA documents for the Pumpkin Hollow project. The supporting CEQA environmental documentation is attached below and includes:

- CEQA/NEPA Compliance Form
- Draft Initial Study/Negative Declaration/Pumpkin Hollow Restoration Project CEQA

SUMMARY OF CEQA STATUS OF THE PROJECT

The Upper Mokelumne River Watershed Authority (UMRWA, or Authority) is a Joint Powers Authority comprised of six water agencies and the counties of Amador, Calaveras and Alpine. The six water agencies are Amador Water Agency, Calaveras County Water District, Calaveras Public Utility District, East Bay Municipal Utility District, Jackson Valley Irrigation District and Alpine County Water Agency. The Authority is governed by an eight member Board of Directors which meets quarterly. Open to the public, the governing Board meetings are typically held at Pardee Center about four miles north of Valley Springs. UMRWA has the authority to serve as a CEQA lead agency and thus has the discretionary authority to verify compliance with CEQA.

An Initial Study/Negative Declaration has been prepared and is scheduled to be approved at the UMRWA Board Meeting on April 22, 2016

Appendix F - CEQA/NEPA Compliance Form

(California Environmental Quality Act & National Environmental Policy Act)

Instructions: All applicants must complete the CEQA compliance section. Check the box that describes the CEQA status of the proposed project. You must also complete the documentation component and submit any surveys, and/or reports that support the checked CEQA status.

If NEPA is applicable to your project, you must complete the NEPA section in addition to the CEQA section. Check the box that describes the NEPA status of the proposed project. Submit any surveys, and/or reports that support the NEPA status. For both CEQA and NEPA, submittal of permits is only necessary if they contain conditions providing information regarding potential environmental impacts.

NOTE: Effective July 1, 2015, AB52 compliance is required.

CEQA STATUS

(All applicants must complete this section)

Check the box that corresponds with the CEQA compliance for your project. The proposed action is either Categorically Exempt from CEQA, requires a Negative Declaration, Mitigated Negative Declaration, or an Environmental Impact Report per CEQA.

☐ **Categorical Exemption or Statutory Exemption**

If a project is exempt from CEQA, all applicants, including public agencies that provide a filed Notice of Exemption, are required to provide a clear and comprehensive description of the physical attributes of the project site, including potential and known special-status species and habitat, in order for the SNC to make a determination that the project is exempt. A particular project that ordinarily would fall under a specific category of exemption may require further CEQA review due to individual circumstances, i.e., it is within a sensitive location, has a cumulative impact, has a significant effect on the environment , is within a scenic highway, impacts an historical resource, or is on a hazardous waste site. Potential cultural/archaeological resources must be noted, but do not need to be specifically listed or mapped at the time of application submittal. Backup data informing the exemption decision, such as biological surveys, Cultural Information Center requests, research papers, etc. should accompany the full application. Applicants anticipating the SNC to file an exemption should conduct the appropriate surveys and submit an information request to an office of the California Historical Resources Information System (CHRIS).

1. Describe how your project complies with the requirements for claiming a Categorical or Statutory Exemption per CEQA:

2. If your organization is a state or local governmental agency, submit a signed, approved Notice of Exemption (NOE) documenting the use of the Categorical Exemption or Statutory Exemption, along with any permits, surveys, and/or reports that have been completed to support this CEQA status. The Notice of Exemption must bear a date stamp to show that it has been filed with the State Clearinghouse and/or County Clerk, as required by CEQA.
3. If your organization is a nonprofit, there is no other California public agency having discretionary authority over your project, and you would like the SNC to prepare a NOE for your project, let us know that and list any permits, surveys, and/or reports that have been completed to support the CEQA status. All supplementary documentation must be provided to the SNC before the NOE can be prepared.

☒ **Negative Declaration OR**
☐ **Mitigated Negative Declaration**

If a project requires a Negative Declaration or Mitigated Negative Declaration, then applicants must work with a qualified public agency, i.e., one that has discretionary authority over project approval or permitting, to complete the CEQA process.

1. Describe how your project complies with the requirements for the use of a Negative Declaration or a Mitigated Negative Declaration per CEQA:

   Trees will be removed and thinned to improve forest health and reduce fire risk using methods that will protect water quality and improve habitat values. The project is designed to avoid activity in the vicinity of sensitive and protected resources. Sensitive or listed plant species identified in the Botanical Resources Biological Evaluation are not located within the project area or will be flagged and avoided. As described in the Hemlock Landscape Restoration Environmental Assessment and Finding of No Significant Impact (2016), Pumpkin Hollow project area has been extensively surveyed for cultural and biological resources. The project will result in minor alterations to land and no significant impacts would occur.

   The Upper Mokelumne River Watershed Authority (UMRWA, or Authority) is a Joint Powers Authority comprised of six water agencies and the counties of Amador, Calaveras and Alpine. The six water agencies are Amador Water Agency, Calaveras County Water District, Calaveras Public Utility District, East Bay Municipal Utility District, Jackson Valley Irrigation District and Alpine County Water Agency. The Authority is governed by an eight member Board of Directors which meets quarterly.

2. Submit the approved Initial Study and Negative Declaration/Mitigated Negative Declaration along with any Mitigation Monitoring or Reporting Plans, permits, surveys, and/or reports that have been completed to support this CEQA status. The IS/ND/MND must be accompanied by a signed, approved Notice of Determination, which must bear a date stamp to show that it has been filed with the State Clearinghouse and/or County Clerk, as required by CEQA.

☐ **Environmental Impact Report**

If a project requires an Environmental Impact Report, then applicants must work with a qualified public agency, i.e., one that has discretionary authority over project approval or permitting, to complete the CEQA process.

1. Describe how your project complies with the requirements for the use of an Environmental Impact Report per CEQA:

2. Submit the Draft and Final Environmental Impact Report along with any Mitigation Monitoring or Reporting Plans, permits, surveys, and/or reports that have been completed to support this CEQA status. The EIR documentation must be accompanied by a signed, approved Notice of Determination, which must bear a date stamp to show that it has been filed with the State Clearinghouse and/or County Clerk, as required by CEQA.

NEPA STATUS

Check the box that corresponds with the NEPA compliance for your project.

☐ **Categorical Exclusion**

Submit the signed, approved Decision Memo and Categorical Exclusion, as well as documentation to support the Categorical Exclusion, including any permits, surveys, and/or reports that have been completed to support this NEPA status.

☒ **Environmental Assessment & Finding of No Significant Impact**

Submit the signed, approved Environmental Assessment and Finding of No Significant Impact along with any permits, surveys, and/or reports that have been completed to support this NEPA status.

☐ **Environmental Impact Statement**

Submit the Draft and approved, Final Environmental Impact Statement, along with the Record of Decision and any permits, surveys, and/or reports that have been completed to support this NEPA status.

DRAFT (3/1/16)

Initial Study and Proposed Negative Declaration

Pumpkin Hollow Restoration Project

February 4, 2016

Upper Mokelumne River Watershed Authority

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PUMPKIN HOLLOW RESTORATION PROJECT

I. PROJECT DESCRIPTION

1.0 INTRODUCTION

The Upper Mokelumne River Watershed Authority (UMRWA) is proposing to implement the Pumpkin Hollow Restoration Project (Project). The purpose of the Project is to improve ecological resilience of forested communities within the project landscape. This will be accomplished through forest, meadow and aspen restoration and fuels management treatments on the Stanislaus National Forest. These treatments are designed to increase resistance to catastrophic wildfire while also improving water supply through snowpack accumulation and persistence. As discussed below, thinned forests with the appropriate tree stem density per acre (or basal area) have been shown to increase water supply through prolonged and increased density of snowpack accumulation (Kittredge 1953 and Lundquist et.al., 2013). This restoration project will result in a forested landscape that is more likely to withstand catastrophic wildfire and the ecological and water quality damage potentially caused by these events. The project will result in overall improved conditions and adaptations to climate change as well as habitat conditions for a variety of species and it will utilize the local work force to the extent possible.

1.1 Background

The Project is a subset of the 14,075-acre Hemlock Landscape Restoration project (Hemlock) which is in turn a component of the even larger Cornerstone Collaborative Forest Landscape Restoration Program (CFLRP) (390,904 acres). The Hemlock Landscape Restoration Environmental Assessment (Hemlock EA 2015) and Decision Notice/Finding of No Significant Impact (USDA-FS 2016) analyzed the environmental impacts of the Hemlock project area including Pumpkin Hollow project area. The proposed Project would include BMPs and management requirements designed to reduce all environmental effects to less than significant and no impact.

The Cornerstone Program was developed in collaboration with over 30 stakeholders that make up the Amador Calaveras Consensus Group (ACCG, see description below). The Pumpkin Hollow project is designed to implement a portion of the Hemlock project, which is considered a high priority area for implementation due to dense, overstocked, homogeneous conditions resulting in forest structures that are susceptible to mortality from drought, pests, pathogens, and catastrophic wildfire. A key component of the project is to actively manage the forests and create local jobs. As part of the potential local social/economic benefits provided by this project, ACCG is committed to providing opportunities to Calaveras, Amador, Alpine and Tuolumne counties. As described in the Hemlock EA, the project is proposed in an area of high importance and in need of vegetation management which is in line with the Watershed Improvement Program's (WIP) mission to implement projects in the most strategic locations possible. The project will also provide data to the WIP program.

Restoration treatments would include hand, mechanical, silviculture, prescribed fire, watershed or other actions employed to promote ecosystem stability by improving landscape resilience and watershed conditions, and by modifying fuel characteristics to lessen fire behavior or burn severity. Vegetation treatments were strategically designed using guidelines discussed in the General Technical Report (GTR) 220 by North et al. (2009) and GTR 237 by North, ed. (2012). These guidelines stress the ecological importance of forest heterogeneity. The authors offer suggestions on how to design treatment areas to meet diverse forest objectives, retain existing large trees, promote recruitment of more large structures and provide for forest sustainability. Forest "structures" can be either live or dead trees that make up the forest environment at a particular location. The proposed treatments would result in a landscape matrix of forest structure and densities that aim to: 1) modify fuel characteristics; 2) improve forest resiliency; 3) reduce susceptibility to insect and diseases; 4) improve watershed condition; 5) improve meadow function and water sequestration; and 6) maintain wildlife and ethno-botanical connectivity and diversity.

1.2 CEQA Review

To comply with the UMRWA's requirements under the California Environmental Quality Act (CEQA), this Initial Study (IS) and proposed Negative Declaration (ND) has been prepared (per CEQA Guidelines §15070-15075) to identify and address potential environmental effects and management requirements during implementation activities of the proposed Project. This IS/ND includes the UMRWA's understanding of applicable environmental regulatory review processes and required mitigation measures for implementing the proposed Project activities.

2.0 PROJECT LOCATION

The Pumpkin Hollow Restoration Project is located on the Calaveras Ranger District of the Stanislaus National Forest in Calaveras County, California. The majority of project activities are planned in the upper headwaters of Blue Creek which flows into the Mokelumne River with a small area near Big Meadow Creek which flows into the North Fork Stanislaus River. Large-scale catastrophic wildfires have plagued this region of the Sierra Nevada range for decades.

The Pumpkin Hollow project is located in Calaveras County, California. The approximate latitude is 120º9'31.703 and longitude is 38º25'14.08N. Elevations within the 972 acre project area range between 6,100 feet and 7,300 feet. The Project is located within Sections 25, 34, 35 and 36 of Township 7 North, Range 16 East, and Section 1 of Township 6 North, Range 16 East, Sections 30, 31, and 33 of Township 7 North, Range 17 East, and Section 6 of Township 6 North Range 17 East, Mount Diablo Baseline & Meridian on the United States Geological Survey (USGS) Calaveras Dome and Tamarack 7.5 Minute Quadrangle map. Please refer to Figure 1 for the Project Location and Vicinity Map and Figure 2 for the Vegetation Treatments.

3.0 PROJECT OBJECTIVES

The objectives and purpose for the Pumpkin Hollow project help protect water supply and water quality by:

1. Reducing future fire intensity and severity to federal land and adjacent private land and by reducing surface fuels, increasing the height to canopy, decreasing crown density (thereby allowing more snow accumulation), and retaining large fire-resistant tree species.
2. Increasing tree, stand, and landscape resiliency and sustainability by producing different stand structures and densities across the landscape. The project will enhance snowpack density and accumulation and thereby water supplies as well as the general health of forested stands by reducing susceptibility to insect, diseases, and drought-related mortality by improving and promoting stand and individual tree growth and vigor.
3. Maintaining or enhancing the hydrologic, geomorphic, and biological characteristics of special aquatic features (springs, seeps, meadows, and fens). It will implement restoration actions to maintain, restore or enhance water quality and habitat for riparian and aquatic species and aspen stands.
4. Maintaining and enhancing the extent and connectivity of aspen stands by reducing encroaching conifers, the visual character of the Ebbetts Pass Scenic Corridor through fuels management treatments, and important wildlife habitat, mature forest ecosystem values, and connectivity of mature forest stands (e.g., late seral with closed canopies, California Wildlife Habitat Relationship (CWHR) size classes of 4-6, and density classes of M and D).

4.0 PROPOSED PROJECT COMPONENTS

The Pumpkin Hollow Restoration Project reestablishes more resilient forest species composition, structure, and patterns on the landscape, as well as ecological processes (e.g., hydrologic function, fire regime) necessary for the long-term sustainability of terrestrial and aquatic ecosystems and water supply. An ecologically sustainable and resilient watershed would have a greater capacity to adapt and thrive in the face of natural disturbances and large-scale threats, such as; fire, drought, and insect and disease infestations which may be exacerbated by current and future climate warming. As discussed above, Kittredge (1953) and Lundquist (2013) demonstrated that a thinned forest with reduced canopy cover allows for more snow accumulation. This is because a dense canopy cover with high basal area, traps the snow in pine needles where it evaporates more quickly than from the ground.

4.1 Hand Treatments

Purpose of Treatment: Hand treatments in California spotted owl and northern Goshawk protected activity centers and home range core areas were designed to reduce the risk of catastrophic wildfire while maintaining existing habitat quality.

Major Tasks: Hand thinning of trees less than 10” diameter in stands, based on USFS descriptions of priorities for removal and desired tree spacing. Slash shall either be lopped and scattered or piled per USFS specifications.

Milestones: Reduction of ladder fuels and a decrease in trees per acre.

4.2 Aspen and Meadow Restoration

Purpose of Treatment: Aspen and meadow restoration treatments were designed to achieve an environmental context of ethno-botanical diversity similar to indigenous stewardship conditions and enhance the hydrologic, geomorphic, and biological characteristics of these important ecological communities.

Major Tasks: Removal of conifers less than 30” DBH (diameter at breast height) within meadow boundaries. Within 50 feet of meadows and aspen stands, conifers 30-40” dbh may be thinned where basal areas of conifers exceed 120 ft^2/ acre (at least 3 trees >30” dbh per acre would be retained). Sawlogs would be decked on site and non-commercial material would be chipped or piled for future burning by USFS crews.

Milestones: Removal of conifers encroaching on meadows and aspen stands and increase the meadow’s water sequestration potential.

4.3 Forest Restoration

Purpose of Treatment: Forest restoration treatments were strategically designed using guidelines discussed in the General Technical Report (GTR) 220 by North et al. (2009) and GTR 237 by North, ed. (2012). These guidelines stress the ecological importance of forest heterogeneity. Treatments are expected to transition the landscape to a matrix of forest structure and densities that aim to: 1) modify fuel characteristics; 2) improve forest resiliency; 3) reduce susceptibility to insect and diseases; and 4) improve watershed condition.

Major Tasks: Removal of trees less than 30” DBH based on silvicultural prescriptions and marking guides. Residual slash resulting from restoration activities would be piled and burned, lopped ad scattered, masticated, or the biomass removed. Trees < 10”, other woody debris, and brush would be masticated (shredded), piled and burned (hand or grapple piles), lopped and scattered, or removed as biomass. Additional use of non-merchantable material may include firewood, shavings, small log removal, and pulpwood use.

Milestones: Reduction of canopy cover to 40%, 50% or 60% depending on unit location in order to restore forests patterns while improving residual tree vigor and reducing tree mortality from drought, pests, and other pathogens.

4.4 Plantation Thinning

Purpose of Treatment: Plantation treatments are focused on reducing plantation stocking conditions that have led to suppressed tree growth and health, an increased susceptibility to insect outbreaks, drought related mortality, and high risk of increased wildfire severity, intensity, and frequency.

Major Tasks: Plantations would be mechanically thinned to approximately 20x20 foot spacing. Brush and trees less than 10" dbh would be mechanically thinned through mastication, biomass removal, and/or hand piling and burning. Trees 10-16" dbh could be removed as biomass or other forest products.

Milestones: Reduction of tree densities in plantation areas in order to improve residual tree vigor, increase growth, and reduce fire severity.

4.5 Fuel Breaks

Purpose of Treatment: Fuel break treatments were designed to reduce the cumulative buildup of dead and down surface fuels, the dense understory ladder fuels, and reduce overstory tree density and canopy closures that exhibit high risk of stand replacing, high intensity fires. Fuel breaks will also provide for safer fire suppression areas. In addition, fuel treatments near the WUI would create defensible space around private property.

Major Tasks: Construct 300'-wide shaded fuel break along ridge tops, private property, and highway 4. Trees less than 30" dbh would be thinned to 40% canopy cover by ground based mechanical thinning or hand thinning, piling, and burning. Trees less than 10" dbh and brush would be treated through mastication, biomass removal, or hand cutting, piling and burning. Brush and small trees less than 10" dbh would be removed or masticated within 25 feet of designated roads. Excess fuels may be removed mechanically or through hand thinning, piling, and burning. Tree species retention would vary depending on site capacity, topographic position, and elevation. In general, firs and cedars would be targeted for removal. Prescribed fire activities may occur after fuel treatments by Forest Service staff.

Milestones: Lines of defense for fighting wildfire and a reduced risk of catastrophic wildfire.

4.6 Proposed Project Construction Methods

Construction activities would occur primarily during the business hours of 7:00 A.M. to 6:00 P.M.. Equipment for Project activities would include the following:

- Excavator
- Masticator
- Fellibuncher
- Skidder
- Log Loader
- Water Truck
- Light duty utility trucks
- Personal vehicles

5.0 PROPOSED PROJECT OPERATIONS AND MONITORING

Operations would be temporary and limited and would occur in remote areas. There would be no affect to public roadways and no need for road closures. Ongoing monitoring would involve a timber sale administrator onsite. Appendix A includes a detailed monitoring plan.

6.0 ENVIRONMENTAL REVIEW AND POTENTIAL PERMITTING REQUIREMENTS

UMRWA CEQA review, UMRWA Project approvals, and applicable permits would be required before commencement of the proposed Project activities. Table 1 lists the anticipated agency reviews and permits that would be necessary to implement the Project activities.

Table 1. Agency Review and Potential Permit Requirements

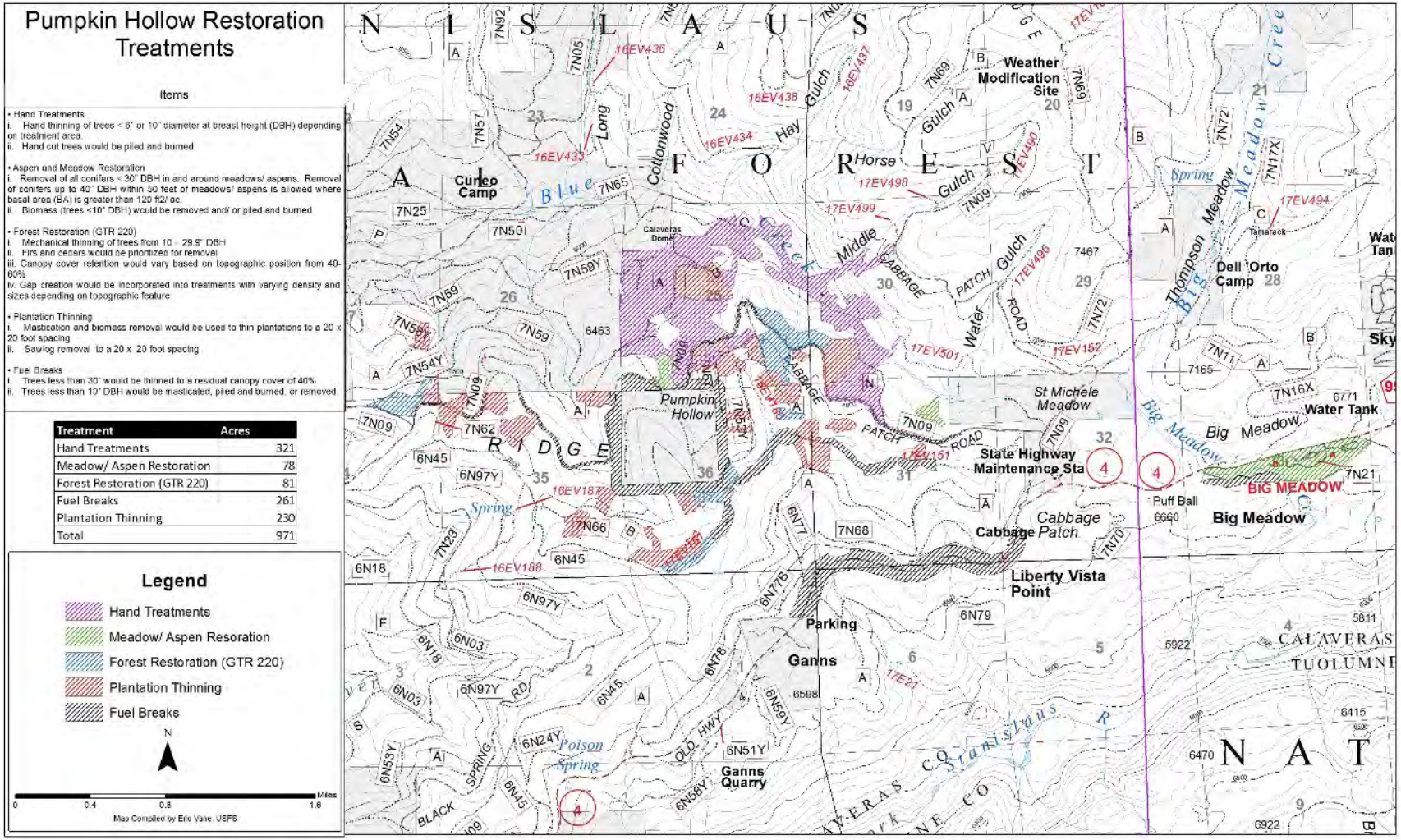
Agency	Applicable Laws/Reviews/ Approvals
UMRWA (CEQA Lead Agency)	Section 21000 et seq. of Public Resources Code and Section 15000 et seq. of the California Environmental Quality Act (CEQA) Guidelines.
U.S. Army Corps of Engineers	Nationwide Permit Section 404 under Clean Water Act, NPDES Waiver Permit for roads used for forestry for farming activities and silvicultural activities. BMPs are implemented and monitored annually and reported by timber sale administrators.
U.S. Fish and Wildlife Service	Endangered Species Act, Section 7 Consultation, Fish and Wildlife Coordination Act. Completed as part of Hemlock EA.
State Office of Historic Preservation	Section 106 of National Historic Preservation Act, completed as part of Hemlock EA
Central Valley Regional Water Quality Control Board	Clean Water Act, Section 401, Water Quality Certification under Clean Water Act. NPDES Waiver Permit for roads used for forestry for farming activities and silvicultural activities. BMPs are implemented and monitored annually and reported by timber sale administrators.
Department of Fish and Wildlife, North Central Region	Fish and Game Code, Section 1600 et seq., Streambed Alteration Agreement. Not Applicable. Forest Service does not meet definition of “Entity”.

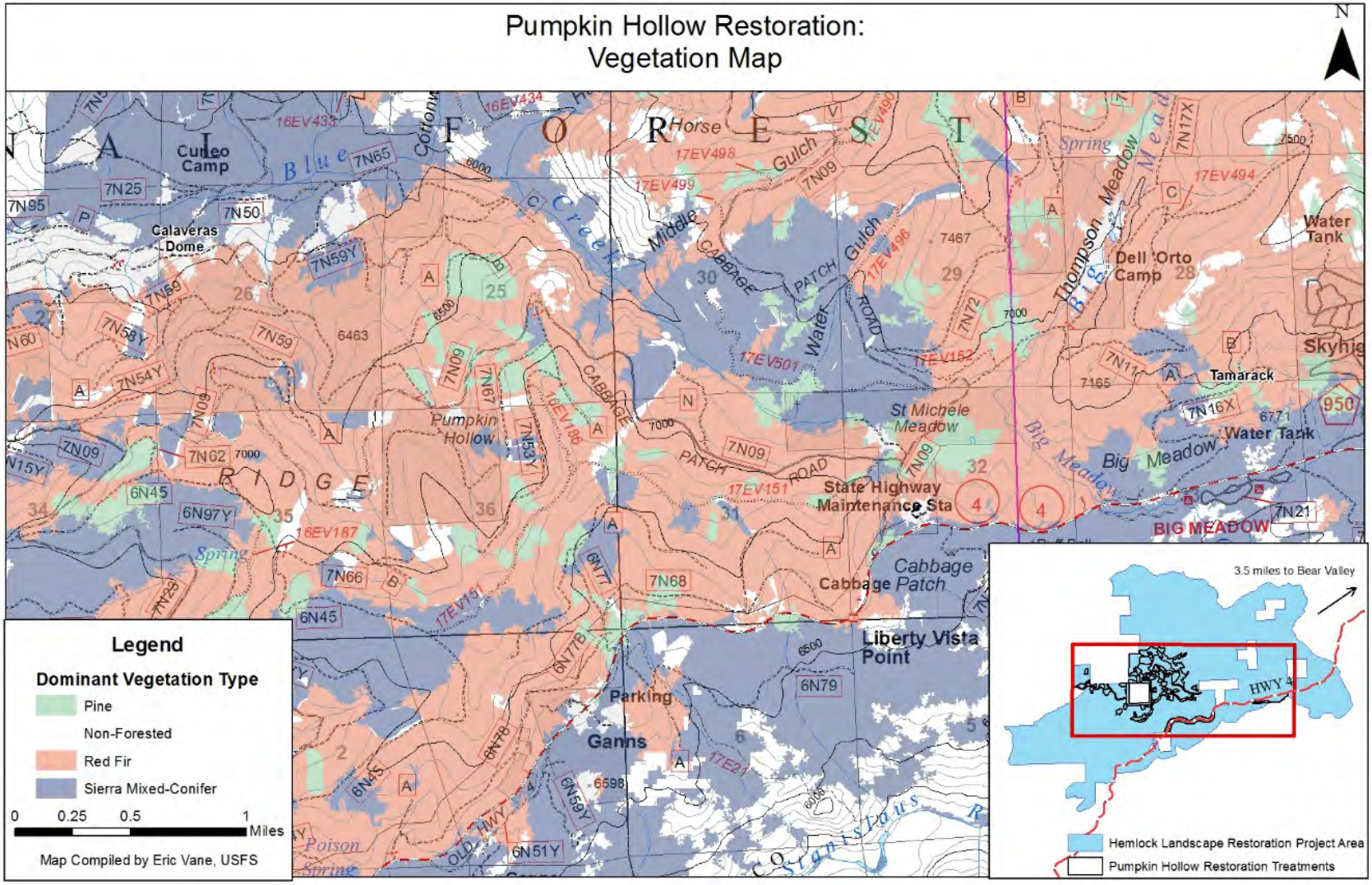
7.0 PROPOSED PROJECT DELEVERABLES AND SCHEDULE

Table 2. Detailed Project Deliverables and Timeline

TASK	TASK DESCRIPTION	DETAILED PROJECT DELIVERABLES (see Task Descriptions Above)	TIMELINE[1]
1	Administration	• Executed Agreement • Invoices and backup documentation • Wet-signed Invoice Forms	Ongoing
2	Reporting	• Quarterly Progress Reports • Draft Project Report • Final Project Report	Ongoing
3	Hand Treatments	Hand thinning: 321 acres, Hand Pile & Burn: 321 acres.	Implementation: Fall 2016 through Spring 2018
4	Aspen and Meadow Restoration	Mechanical thinning: 78 acres.	Implementation: Fall 2017
5	Forest Restoration	Mechanical thinning: 81 acres.	Implementation: Summer 2018
6	Plantation Thinning	Mechanical thinning: 230 acres	Implementation: Summer 2018 through Fall 2019
7	Fuel Breaks	Mechanical thinning: 261 acres	Implementation: Summer, Fall 2017 and 2019

[1] Actual implementation dates are subject to funding streams, weather conditions and contract obligations.


Pumpkin Hollow Restoration Treatments
Items
• Hand Treatments
i. Hand thinning of trees < 6" or 10" diameter at breast height (DBH) depending on treatment area.
ii. Hand cut trees would be piled and burned
• Aspen and Meadow Restoration
i. Removal of all conifers < 30" DBH in and around meadows/ aspens. Removal of conifers up to 40" DBH within 50 feet of meadows/ aspens is allowed where basal area (BA) is greater than 120 ft2/ ac.
ii. Biomass (trees <10" DBH) would be removed and/ or piled and burned
• Forest Restoration (GTR 220)
i. Mechanical thinning of trees from 10 - 29.9" DBH
ii. Firs and cedars would be prioritized for removal
iii. Canopy cover retention would vary based on topographic position from 40-60%
iv. Gap creation would be incorporated into treatments with varying density and sizes depending on topographic feature
• Plantation Thinning
i. Mastication and biomass removal would be used to thin plantations to a 20 x 20 foot spacing
ii. Sawlog removal to a 20 x 20 foot spacing
• Fuel Breaks
i. Trees less than 30" would be thinned to a residual canopy cover of 40%
ii. Trees less than 10" DBH would be masticated, piled and burned, or removed
Treatment | Acres
Hand Treatments | 321
Meadow/ Aspen Restoration | 78
Forest Restoration (GTR 220) | 81
Fuel Breaks | 261
Plantation Thinning | 230
Total | 971
Legend
Hand Treatments
Meadow/ Aspen Resoration
Forest Restoration (GTR 220)
Plantation Thinning
Fuel Breaks
N
Miles
0 0.4 0.8 1.6
Map Compiled by Eric Vane, USFS
Weather Modification Site
Curleo Camp
Pumpkin Hollow
St Michele Meadow
State Highway Maintenance Sta
Cabbage Patch
Liberty Vista Point
Parking
Ganns
Ganns Quarry
Dell 'Orto Camp
Water Tank
Big Meadow
BIG MEADOW
Puff Ball
Calaveras Dome
Tamarack
Blue Creek
Big Meadow Creek
Thompson Meadow
Cottonwood
Long
Hay Gulch
Horse Gulch
Middle Gulch
Water Gulch
Spring
Poison Spring
Stanislaus R
CALAVERAS
TUOLUMNE
N I S L A U S
A L F O R E S T
R I D G E
N A T


Pumpkin Hollow Restoration:
Vegetation Map
N
Legend
Dominant Vegetation Type
Pine
Non-Forested
Red Fir
Sierra Mixed-Conifer
0 0.25 0.5 1 Miles
Map Compiled by Eric Vane, USFS
3.5 miles to Bear Valley
HWY 4
Hemlock Landscape Restoration Project Area
Pumpkin Hollow Restoration Treatments
Cuneo Camp
Calaveras Dome
Pumpkin Hollow
St Michele Meadow
State Highway Maintenance Sta
Cabbage Patch
Liberty Vista Point
Parking
Ganns
Dell Orto Camp
Tamarack
Water Tank
Skyhig
BIG MEADOW
Big Meadow
Thompson Meadow
Middle Gulch
Horse Gulch
Water Gulch
Cabbage Patch Road
Poison Spring
Stanislaus R
Blue Creek
Spring
RIDGE

II. ENVIRONMENTAL CHECKLIST

1.0 OVERVIEW:

Project title:	Pumpkin Hollow Restoration Project
Lead Agency name and address:	Upper Mokelumne River Watershed Authority 5883 East Camanche Parkway Valley Springs, CA 95252
Contact person and phone number:	Rob Alcott Executive Officer (707) 785-1008
Project location:	Calaveras Dome and Tamarack 7.5 Minute Quadrangle Maps, MDB&M. The Project is located within Sections 25, 34, 35 and 36 of Township 7 North, Range 16 East, and Section 1 of Township 6 North, Range 16 East, Sections 30, 31, and 33 of Township 7 North, Range 17 East, and Section 6 of Township 6 North Range 17 East.
Project sponsor's name and address:	Upper Mokelumne River Watershed Authority 5883 East Camanche Parkway Valley Springs, CA 95252
Land designation:	Land administered by United States Forest Service, Stanislaus National Forest

2.0 ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED:

The environmental factors checked below would be potentially affected by this proposed Project, involving at least one impact that is a ”Less-than-Significant” or "Less-than-Significant with Mitigation" as indicated by the accompanying environmental checklist.

☐ Aesthetics	☐ Agriculture and Forestry	☐ Air Quality
☒ Biological Resources	☐ Cultural Resources	☐ Geology/Soils
☐ Greenhouse Gas Emissions	☐ Hazards and Hazardous Materials	☐ Hydrology/Water Quality
☐ Land Use/Planning	☐ Mineral Resources	☐ Noise
☐ Population/Housing	☐ Public Services	☐ Recreation
☐ Transportation/Traffic	☐ Utilities/Service Systems	☐ Mandatory Findings of Significance

3.0 EVALUATION OF ENVIRONMENTAL IMPACTS:

The degree of change from existing conditions caused by the Project is compared to the impact evaluation criteria to determine if the change is significant. Where it is determined that one or more significant impacts could result from implementation of the Project, mitigation measures are developed to reduce or eliminate the significant impacts. Existing conditions serve as a baseline for evaluating the impacts of the Project.

The following terminology is used in this document to describe the various levels of environmental impacts associated with the Project:

- A finding of *no impact* is identified if the analysis concludes that the proposed Project would not affect a particular environmental topical area in any way.
- An impact is considered *less than significant* if the analysis concludes that the proposed Project would not cause a substantial adverse change in the environment.
- An impact is considered *less than significant with mitigation* if the analysis concludes that the proposed Project has the potential to cause a substantial adverse change in the environment, but the proposed Project includes measures to mitigate the potential impact to a less than significant level.
- An impact would be considered a *potentially significant impact* if the analysis concludes that the proposed Project could cause a significant environmental effect. Proposed Projects that potentially produce a significant impact(s) warrant the greater level of analysis and consideration provided by an Environmental Impact Report (EIR).

4.0 CEQA ENVIRONMENTAL CHECKLIST

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
I. AESTHETICS: Would the project:				
a) Have a substantial adverse effect on a scenic vista	☐	☐	☐	☒
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway	☐	☐	☐	☒
c) Substantially degrade the existing visual character or quality of the site and its surroundings?	☐	☐	☐	☒
d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	☐	☐	☐	☒

Environmental Setting

The Pumpkin Hollow Restoration Project (Project) is located between the foothills and the western slopes of the central Sierra Nevada mountain range and at the eastern edge of the Central Valley, with elevations ranging from 6,100 to 7,300 feet. The region is characterized as a natural and forested environment, which is owned and operated by the United States Forest Service. The Project would remove fuel build up along Ebbett's Pass and improve this Scenic Corridor.

Vegetation treatments adjacent to the Scenic Corridor include the positive effects on scenic qualities by opening previously shaded or inaccessible areas for viewing and increased sunlight to reach the ground to promote the growth of new vegetation. Rebirth of new tree and shrub form, spring and fall color, and new texture being created by foliage and bark, would be new highlights as seen from the scenic corridor and recreation areas. As such, the scenic corridor proposed treatments would open the foreground vegetation, panoramic and geologic views along Highway 4.

Explanations

a) No Impact. The project would result in no substantial adverse effect to a scenic vista.

b) No Impact. As described on page 113 of the Hemlock EA, the project would enhance the scenic quality associated with the Highway 4, National Scenic Byway (see also chapter 3.14 Visual Resources of the Hemlock EA). The project would not substantially damage scenic resources, including trees, rock outcroppings, or historic buildings within a state scenic highway.

c) No Impact. The project would not substantially degrade the existing visual character or quality of the site and its surroundings. The project would result in beneficial effects to the visual character.

d) No Impact. The project would not create a new source of substantial light or glare nor which would it adversely affect day or nighttime views in the area.

Mitigation Measures

- No mitigation is required or warranted.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
II. AGRICULTURE AND FOREST RESOURCES: In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Dept. of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment Project; and the forest carbon measurement methodology provided in				

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Forest Protocols adopted by the California Air Resources Board. Would the project:				
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	☐	☐	☐	☒
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?	☐	☐	☐	☒
c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?	☐	☐	☐	☒
d) Result in the loss of forest land or conversion of forest land to non-forest use?	☐	☐	☐	☒
e) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?	☐	☐	☐	☒

Environmental Setting

The land surrounding the Project is administered by the Stanislaus National Forest. UMRWA has a 10 year Master Stewardship Agreement in place with the Stanislaus National Forest to implement the proposed project.

Explanations

a) No Impact. The Project would not convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared

pursuant to the Farmland Mapping and Monitoring Program of the California Department of Conservation (CDC), to non-agricultural use (CDC 2014).

b) No Impact. The Project would not conflict with existing zoning for agricultural use, or a Williamson Act contract.

c) No Impact. The Project would not Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g)).

d) No Impact. The Project would not result in the loss of forest land or conversion of forest land to non-forest use.

e) No Impact. The Project would not involve other changes in the existing environment, which could result in the conversion of Farmland to non-agricultural use.

Mitigation Measures

- No mitigation is required or warranted.

	Potentially Significant Impact	**Less Than Significant with Mitigation Incorporated**	**Less Than Significant Impact**	**No Impact**
III. AIR QUALITY: Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations. Would the project:				
a) Conflict with or obstruct implementation of the applicable air quality plan?	☐	☐	☐	☒
b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?	☐	☐	☐	☒

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non- attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?	☐	☐	☐	☒
d) Expose sensitive receptors to substantial pollutant concentrations?	☐	☐	☐	☒
e) Create objectionable odors affecting a substantial number of people?	☐	☐	☐	☒

Environmental Setting

Air emissions are generally managed and analyzed spatially by air basins where topographic features delineate common air quality characteristics. Air quality conditions are highly controlled by short and long-term meteorological and climate conditions. Most of the land in the Stanislaus National Forest is located in the Tuolumne County Air Pollution Control District (APCD). A smaller portion of the Forest is located in the Great Basin (Alpine County), Calaveras and Mariposa County Air Pollution Control Districts. Tuolumne, Calaveras, and Mariposa APCDs are part of the Mountain Counties Air Basin. A Smoke Management Plan and Burn Permit would be required for all prescribed burning activities, in accordance with Title 17, Smoke Management Guidelines for Agricultural and Prescribed Burning as required by the California Air Resources Board. The project would also comply with additional requirements set forth by the Mountain Counties Air Basin and the Great Basin Air Pollution Control Districts and the Forest Plan.

Particulate Matter, Ozone, Nitrogen oxides and natural occurring asbestos may pose a threat to human health and forest ecosystems in the Stanislaus National Forest and Sierra Nevada. Some of the pollutants regulated under the National Ambient Air Quality Standards and the California Ambient Air Standards are created by motorized vehicles and can cause detrimental effects to public health and ecosystems. The air pollutants of concern in this area include particulate matter (PM2.5 and PM10/fugitive dust), ozone, and natural occurring asbestos. Air quality within the project area is within national and state standards for visibility, particulate levels (PM10), and pollutants. Air quality in the project area could be effected by agricultural, and adjacent private forest activities producing seasonal dust and smoke as well as recreational activities using dirt roads in and around the project area. These

effects would generally be short-term (less than 24 hours) and localized. The proposed action of piling activity fuels (machine and hand) and prescribed burning would occur after the completion of thinning harvest. Depending on the amount of activity fuels in the project area, it is estimated that it could take five to ten years to complete all burning activities. Burning would be conducted on permissive burn days for Calaveras County, which should result in a negligible effect to the air quality of the project area, and ensure smoke dispersion to meet air quality standards and minimize short-term or long-term effects.

Explanations

a) No Impact. Implementation of the Project would not conflict with or obstruct implementation of the Calaveras County Air Pollution Control District plans or policies.

b) No Impact. The project would not violate any air quality standard or contribute substantially to an existing or projected air quality violation.

c) No Impact. All implementation would be monitored by Forest Service inspectors and would comply with Occupational Safety and Health Administration (OSHA) regulations, Forest Service direction, Regional air quality standards, Clean Air Act, and other applicable laws and guidance. The project would not result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non- attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors).

d) No Impact. There are no known sensitive receptors nearby the Project site, and therefore no impacts would occur to sensitive receptors.

e) No Impact. The Project would not create objectionable odors and would not result in excessive odors as defined under the Calaveras County AQMD rules for public nuisance odors.

Mitigation Measures

- No mitigation is required or warranted.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
IV. BIOLOGICAL RESOURCES: Would the project:				
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?	☐	☐	☒	☐
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Wildlife or US Fish and Wildlife Service?	☐	☐	☐	☒
c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	☐	☐	☐	☒
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	☐	☐	☐	☒
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	☐	☐	☒
f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	☐	☐	☐	☒

Environmental Setting

A biological evaluation (BE) and biological assessment (BA)of the Project area was completed in 2015 and the results of the field surveys are included in the NEPA Project Record for the Hemlock EA (USDA-FS, 2015). The various habitat types identified during the biological survey and ecotones are described below.

The forested landscape of the Project area lies in the western side of the central Sierra Nevada range within the ecological transition zone (ecotone) between lower moist mixed conifer and higher elevation true fir forests, with white fir (*Abies concolor*) and red fir (*Abies magnifica*) being the main overstory trees in most stands. Sugar pine (*Pinus lambertiana*) is a minor overstory component in many of these true fir dominated stands. Douglas-fir (*Psuedotsuga menziesii*), Jeffrey pine (*Pinus jeffreyi*), ponderosa pine (*Pinus ponderosa*), incense cedar (*Calocedrus decurrens*) and lodgepole pine (*Pinus contorta var. murrayana*) are present in many stands at lower elevations and on south to southwest facing slopes. Ponderosa/Jeffrey pine plantations established after harvest or wildfire exist throughout the project area. The majority of the land within the project area ranges from Forest Survey Site Class (FSSC) 3 to 5 (based on a 1-7 index where FSSC 7 represents the least productive site class), corresponding to Dunning site class I-IV with a growth rate of 50 to 164 cubic feet per acre per year.

Part of the project area lies within or near the wildland urban intermix (WUI) and thus experiences large amounts of human interaction (e.g. firewood collection, recreation, etc.). Past management actions, including fire suppression, have created undesirable conditions within this fire-adapted ecosystem.

The Hemlock Landscape Restoration project EA determined the project would not affect the above mentioned species due to the lack of suitable habitat or the Hemlock Landscape Restoration project location being outside of the species' range. Further, sensitive plant species with no known occurrences following thorough surveys are not expected to have direct or indirect project effects, and therefore, the 30 above species will not be considered in further effects analyses in this BE.

If sensitive plant species, undetected during 2013-14 surveys, do occur in wetland habitats (i.e., Special Aquatic Features), these plants would be protected through the use of a 50 foot buffer around perennial and intermittent wetland features as part of a RCA management requirement. This buffer would prohibit mechanized ground disturbance in and around areas with ground or surface water and suitable sensitive plant habitat. Sensitive plant species which may occur on lava caps would not be impacted by the Hemlock Landscape Restoration project as treatments are not proposed on lahar flows and these habitats and/or are protected with a Management Requirement within the project boundary.

Explanations

a) Less Than Significant. As a result of the effects analysis detailed in the Aquatic Species Biological Assessment and consultation with the Fish and Wildlife Service

completed through batch consultation under a programmatic biological opinion (USFWS 2014), it was determined that that actions in Alternatives 3 may affect, and are likely to adversely affect the Yosemite toad (Threatened) and the Sierra Nevada yellow-legged frog (Endangered). The US Fish and Wildlife Service has concluded that projects consistent with the Forest Plan and that fully implement appropriate conservation measures were not likely to jeopardize the continued existence of these species (Hemlock EA, Section 3.02 Aquatics). The proposed action would not affect any other Federally listed species or critical habitat (Hemlock EA, Section 3.02 Aquatics; 3.11 Sensitive Plants; 3.16 Wildlife).

Habitat requirements can be found in the Hemlock EA, Management Indicator Species Report and BE and BE/BA.

Plant Species

Table 3 summarizes the existing environment, anticipated environmental effects to plant species from the Hemlock Landscape Restoration project, and Determinations of effects on species.

Of the 35 Forest Service sensitive plant species considered on the Calaveras Ranger District, Stanislaus National Forest, 14 plant species are either outside the geographic or elevation range of the project area, or no suitable habitat is present in or near the project area (Table 3). In addition, field surveys did not yield species presence, or proposed treatments were not in sensitive plant suitable habitats for 16 plant species.

Species excluded from further discussion are those whose distribution (i.e., geographic or elevation) does not occur in the Hemlock Landscape Restoration cumulative analysis area. Further, field surveys, office records, and aerial photo interpretation were used to determine whether habitat occurred for species whose distribution was in the range of the Hemlock Landscape Restoration cumulative analysis area. Those species which did not have habitat will be excluded from further discussion in this BE and are documented in Table 3. Hemlock Landscape Restoration project is outside the current or historical range and/or there is no suitable habitat for the following Forest Service designated sensitive species (Table 3): *Allium jepsonii, Arctostaphylos nissenana, Balsamorhiza macrolepis, Boechera evadens, Botrychium ascendens, B. crenulatum, B. lineare, B. lunaria, B. montanum, B. pedunculosum, B. pinnatum, B. tunux, B. yaaxudakei, Bruchia bolanderi, Calochortus clavatus* var. *avius, Cypripedium montanum, Dendrocollybia racemosa, Draba asterophora* var. *asterophora, Draba asterophora* var. *macrocarpa, Eriogonum luteolum* var. *saltuarium, Erythronium tuolumnense, Fissidens aphelotaxifolius, Helodium blandowii, Horkelia parryi, Lewisia kelloggii* ssp. *kelloggii, Meesia uliginosa, Mielichhoferia elongate, Mielichhoferia shevockii, Mimulus pulchellus,* and *Pinus albicaulis.*

Thorough sensitive plant surveys were conducted in the Hemlock Landscape Restoration project area from April through September in both 2013 and 2014, including riparian areas and Special Aquatic Features (i.e., fens, meadows, springs and seeps), lahar (lava cap) flows and granitic outcropping, mixed conifer, and other suitable habitats.

Results from these surveys detected four sensitive plant species: Mingan moonwort, Hutchison's lewisia, Stebbins' lomatium, and veined water lichen. A historical occurrence of three-bracted onion was assumed present because snow accumulation restricted access to survey locations; three-bracted onion was detected in the project area in 1991 and recorded in California Natural Diversity Database.

Mingan moonwort was located in a seep near the Middle Fork Mokelumne River, below the Pumpkin Hollow Restoration project area The occurrence had only one specimen which was present in 2013 and 2014. Mingan moonwort is eligible for state listing in California as an endangered species. Currently, there are two Mingan moonwort specimens known on the Calaveras Ranger District, and only one other Mingan moonwort specimen is mapped on the Stanislaus National Forest. This specimen is on the Groveland Ranger District and survived the Rim fire in 2013. There are no populations mapped in Amador County. There appear to be three specimens mapped in Yosemite National Park. There are only 57 unconfirmed records of Mingan moonwort in the state of California. Rare Plant Rank for Mingan Moonwort is reported as Endangered, and Fairly Endangered in California (2B.2) and has a State Rank of Imperiled (2) (CNPS 2015). All plants constituting California Rare Plant Rank 2 meet the definitions of Sec. 1901, Chapter 10 (Native Plant Protection Act) or Secs. 2062 and 2067 (California Endangered Species Act) of the California Department of Fish and Game Code, and are eligible for state listing (CNPS 2015). Stable population estimates for Mingan moonwort are poorly documented, as habitat conditions and disturbances can greatly influence the number of aboveground plants at a given site (Chadde and Kudray 2001). Vanderhorst (1997) reported populations of 200 individuals in one occurrence. Mingan moonwort can develop vegetatively from underground propagules, which contributes to stable plant densities.

Veined water lichen was detected in the upper Middle Fork Mokelumne River, below the Pumpkin Hollow Restoration project area. This occurrence is one of only two known occurrences on the Calaveras Ranger District. The occurrence in the Middle Fork Mokelumne River had 8 specimens in 2013, 10 in 2014, and only 1 in 2015. This is biologically significant because this rapidly decreasing population provides a source of spores/plants to help repopulate the population in the lower part of the occurrence which at one time measured between 1000-5000 plants. Veined water lichen has a Rare Plant Rank of "Uncommon in California, and Fairly Endangered in California" (4.2) and has a State Rank of "Vulnerable" (3) (CNPS 2015). This species is not known in Amador County, but there are known occurrences on Mi-Wok and Groveland Ranger Districts. Some of these occurrences were affected by direct mortality during the Rim fire and their habitats were rendered unsuitable.

Occurrences of Stebbins' lomatium and Hutchison's lewisia were located on lahar flows with shallow volcanic derived soil, outside of the Pumpkin Hollow Restoration project. An elevation range expansion was noted as Stebbins' lomatium was detected at 8,200 ft. in the project area. Previously, Stebbins' lomatium was not known above 7,200 ft. Stebbins' lomatium is endemic to California and more specifically, only known in Calaveras and Tuolumne Counties. Stebbins' lomatium, likewise, is considered rare, threatened, or endangered in California and elsewhere. Rare plant status for Hutchison's lewisia is imperiled and vulnerable (CNPS 2015).

Of the 35 Forest Service sensitive plant species considered on the Stanislaus National Forest, 14 plant species are either outside the geographic or elevation range of the project area, or no suitable habitat is present in or near the project area (Table 3). In addition, field surveys did not yield species presence, or proposed treatments were not in sensitive plant suitable habitats for 16 plant species. As such, a "No Effect" determination was provided for these 30 sensitive plant species. These species were not discussed in greater depth in the Hemlock EA.

The Hemlock Landscape Restoration Project related effects on the Three-bracted onion, Mingan moonwort, Hutchinson's lewisia, Stebbin's lomatium, and veined water lichen are summarized below. However, these three sensitive plant species were not detected in the Pumpkin Hollow Restoration project area and there is no suitable habitat available for the Three-bracted onion, Hutchinson's lewisia, or Stebbin's lomatium in the Pumpkin Hollow Restoration project area.

Table 3. Forest Service sensitive plant species considered in the project analyses

Species Name	Project within Species Distribution	Project within Elevation Range	Habitat in or around Project	Species Present	Direct/Indirect Effects	Determination
Jepson's onion *(Allium jepsonii)*	Yes	Yes	Yes	No	No/No	No Effect
Three-bracted onion *(Allium tribracteatum)*	Yes	Yes	Yes	AP[1]	No/No	No Effect
Nissenan Manzanita *(Arctostaphylos nissenana)*	Yes	No	No	No	No/No	No Effect
Big-scale balsamroot (*Balsamorhiza macrolepis*)	Yes	No	No	No	No/No	No Effect
Hidden rockcress *(Boechera evadens)*	Yes	No	No	No	No/No	No Effect
Moosewort *(Botrychium tunux)*	Yes	No	No	No	No/No	No Effect
Upswept moonwort *(B. ascendens)*	Yes	Yes	Yes	No	No/No	No Effect
Scalloped moonwort *(B. crenulatum)*	Yes	Yes	Yes	No	No/No	No Effect
Slender moonwort *(B. lineare)*	Yes	Yes	Yes	No	No/No	No Effect
Common moonwort *(B. lunaria)*	Yes	Yes	Yes	No	No/No	No Effect
Mingan moonwort *(B. minganense)*	Yes	Yes	Yes	Yes	No/Yes	MA/NL[2]
Western goblin *(B. montanum)*	Yes	Yes	Yes	No	No/No	No Effect
Stalked moonwort *(B. pedunculosum)*	Yes	Yes	Yes	No	No/No	No Effect
Northwestern moonwort *(B. pinnatum)*	Yes	Yes	Yes	No	No/No	No Effect
Giant moonwort *(B. yaaxudakeit)*	Yes	No	No	No	No/No	No Effect
Bolander's bruchia *(Bruchia bolanderi)*	Yes	Yes	Yes	No	No/No	No Effect
Pleasant Valley mariposa lily *(Calochortus clavatus* var. *avius)*	Yes	Yes	Yes	No	No/No	No Effect
Mountain ladyslipper *(Cypripedium montanum)*	Yes	Yes	Yes	No	No/No	No Effect
Branched collybia *(Dendrocollybia racemosa)*	Yes	Yes	Yes	No	No/No	No Effect
Tahoe draba (*Draba asterophora* var. *asterophora)*	Yes	No	No	No	No/No	No Effect
Cup Lake draba *(Draba asterophora* var. *macrocarpa)*	Yes	No	No	No	No/No	No Effect
Jack's buckwheat *(Eriogonum luteolum* var. *saltuarium)*	Yes	Yes	No	No	No/No	No Effect

Species Name	Project within Species Distribution	Project within Elevation Range	Habitat in or around Project	Species Present	Direct/Indirect Effects	Determination
Tuolumne fawn lily (*Erythronium tuolumnense*)	Yes	No	No	No	No/No	No Effect
Brook pocket moss *(Fissidens aphelotaxifolius)*	Yes	Yes	Yes	No	No/No	No Effect
Blandow's bog moss *(Helodium blandowii)*	Yes	Yes	Yes	No	No/No	No Effect
Parry's horkelia *(Horkelia parryi)*	Yes	No	No	No	No/No	No Effect
Hutchison's lewisia *(Lewisia kelloggii* ssp. *hutchisonii)*	Yes	Yes	Yes	Yes	Yes/No	MA/NL
Kellogg's lewisia *(Lewisia kelloggii* ssp. *kelloggii)*	Yes	Yes	Yes	No	No/No	No Effect
Stebbin's lomatium (*Lomatium stebbinsii)*	Yes	Yes	Yes	Yes	Yes/No	MA/NL
Broad nerved hump moss (*Meesia uliginosa*)	Yes	Yes	Yes	No	No/No	No Effect
Elongate copper moss *(Mielichhoferia elongate)*	Yes	No	No	No	No/No	No Effect
Shevock's copper-moss *(M. shevockii)*	Yes	No	No	No	No/No	No Effect
Pansy monkey flower *(Mimulus pulchellus)*	Yes	No	No	No	No/No	No Effect
Veined water lichen *(Peltigera gowardii)*	Yes	Yes	Yes	Yes	Yes/Yes	MA/NL
Whitebark pine (*Pinus albicaulis*)	Yes	No	No	No	No/No	No Effect

[1] AP = Assume species presence for effects analyses.
[2] MA/NL = May affect individuals, but is not likely to result in a trend towards Federal listing or loss of viability.

Wildlife

Mature forest ecosystems in the Hemlock Landscape Restoration project area are well distributed across the project area and host suitable habitats for Forest Service sensitive species. Mature forest patches are fragmented by natural features (rock outcrops, lakes, etc.) and historical land management practices, but currently exhibit a mosaic of canopy layers (1-3 layers) and cover (50-90% canopy cover). The Bailey Ridge area ingress and egress for species relying on contiguous mature forest ecosystems (CSO, NGO, and American marten) is predominantly to the east, towards Pumpkin Hollow. Adequate snags are present in the project area for potential nesting structures; however, there are pockets of excessive down and woody debris and ladder fuels in PACs that place them at risk of stand replacing wildfire. A complete description of suitable habitat for federally listed endangered, threatened, or candidate terrestrial species and Forest Service sensitive species considered in the project area is available in the Hemlock Landscape Restoration Terrestrial Wildlife BA/BE.

California spotted owls and northern goshawks were detected during occupancy and nest success surveys conducted from 2011-2013. Of the seven spotted owl PACs (approximately 1,480 acres) that overlap with the project area, three were determined to be occupied and two were breeding during the survey period. The reproduction attempt of both was successful. The third occupied PAC had a non-breeding pair. In addition, approximately 4,533 acres of CSO HRCA (portions of 10 owl territories) occur in the project area. Three goshawk PACs (approximately 391 acres) partially occur within the project area. One PAC was determined to be occupied and reproductively successful during the survey period.

Baited camera surveys were conducted in project area with a focus to detect target carnivore species (American marten, Pacific fisher, California wolverine). American martens were detected at eight wildlife camera stations from 2012-2013, with multiple individual sightings (two to four) occurring at three stations. No Pacific

fishers or California wolverines were detected during these surveys. Formalized surveys were not conducted for willow flycatcher, great gray owl, fringed myotis, Townsend's big-eared bat, or pallid bat. Suitable habitat occurs for these species in the project area; and, therefore, presence was assumed for these species for effects analyses.

Federally listed endangered, threatened or proposed terrestrial species and Forest Service sensitive species considered for analyses are included in Table 4. Detailed analysis for the valley elderberry longhorn beetle was not conducted because the Hemlock Landscape Restoration project area was not within the species' geographic or elevation range, and suitable habitat was not present in or around the project area. Likewise, detailed analyses for the Sierra Nevada red fox was not warranted because there was not sufficient suitable habitat within the project area.

The effects of project proposed activities on the Pacific fisher, California wolverine, American martin, northern goshawk, California spotted owl, willow flycatcher, great gray owl, fringed myotis, Townsend's big-eared bat, and pallid bat were disclosed in the Hemlock Landscape Restoration EA and Terrestrial Wildlife BA/BE. Overall determinations are provided in Table 4 below. Required consultation with US Fish and Wildlife was completed.

Table 4. Forest Service sensitive wildlife species considered in the project analyses

Species Name	Status	Project within Species Distribution	Project within Elevation Range	Habitat in or around Project	Species Present	Direct/ Indirect Effects	Determination
Valley Elderberry Longhorn Beetle (*Desmocerus californicus dimorphus)*	Threatened	No	No	No	No	No/No	No Effect
Pacific fisher *(Pekania pennanti)*	Candidate	Yes	Yes	Yes	AP[1]	No/ Yes	MA/NL[2]
California wolverine (*Gulo gulo luteus*)	Candidate, Sensitive	Yes	Yes	Yes	No	No/No	No Effect
American marten *(Martes americana)*	FS Sensitive	Yes	Yes	Yes	Yes	Yes/Yes	MA/NL
Sierra Nevada red fox *(Vulpes vulpes necator)*	FS Sensitive	Yes	Yes	No	No	No/No	No Effect
Fringed myotis (*Myotis thysanodes)*	FS Sensitive	Yes	Yes	Yes	AP	Yes/Yes	MA/NL
Townsend's big-eared bat *(Corynorhinus townsendii)*	FS Sensitive	Yes	Yes	Yes	AP	Yes/Yes	MA/NL
Pallid bat *(Antrosous pallidus)*	FS Sensitive	Yes	Yes	Yes	AP	Yes/Yes	MA/NL
Bald eagle *(Haliaeetus leucocephalus)*	FS Sensitive	Yes	Yes	No	No	No/No	No Effect
Northern goshawk *(Accipiter gentilis)*	FS Sensitive	Yes	Yes	Yes	Yes	Yes/Yes	MA/NL
California spotted owl (*Strix occidentalis occidentalis)*	FS Sensitive	Yes	Yes	Yes	Yes	Yes/Yes	MA/NL
Willow flycatcher *(Empidonax traillii)*	FS Sensitive	Yes	Yes	Yes	AP	Yes/Yes	MA/NL
Great gray owl *(Strix nebulosa)*	FS Sensitive	Yes	Yes	Yes	AP	Yes/Yes	MA/NL

[1] AP = Assume species presence for effects analyses.

[2] MA/NL = MA/NL = May affect individuals, but is not likely to result in a trend towards Federal listing or loss of viability.

Aquatic Resources

The project area provides approximately 20 miles of perennial aquatic habitat that sustains some surface flow through the summer. The perennial habitat contains approximately 16.6 miles of fish bearing streams that support self-sustaining

populations of non-native trout (rainbow trout, brown trout). The project area has a high variability in fine sediment. The Middle Fork Mokelumne River and Blue Creek watersheds have a low amount of fine sediment (<14%) and have a large capacity to assimilate sediment influx. Big Meadow Creek showed high levels of fine sediment with five out of six stream reaches measuring pool tail fine sediment amounts above 14%. There is no fine sediment threshold for the Sierra Nevada yellow legged frog; however, effects analyses utilized the fine sediment threshold reported for the Foothill yellow-legged frog of 13% (Bryce et al. 2010).

Sierra Nevada yellow legged frogs are strongly associated with montane riparian habitats. The project area contains approximately 20.2 miles of perennial stream channels in Big Meadow Creek, Middle Fork Mokelumne River, Blue Creek, Hay Gulch, Water Gulch, and Pumpkin Hollow. Known localities of Sierra Nevada Yellow Legged Frog are located approximately 1.0 miles from the project area in Moore Creek (4,600 ft.) and Mattley Meadow. No known yellow legged frog localities occur within habitats which could be affected by project activities.

Yosemite toads occupy high elevation montane meadows and surrounding forest upland. On the Stanislaus National Forest, Yosemite toads are known to occur at approximately 110-120 sites, all above 7,000 feet in elevation. Adults breed in meadows and then travel into the surrounding forest upland over-wintering. The nearest known occupied site by the toad is found approximately five miles east of the project area at Wheeler Lake. No known Yosemite toad localities occur within habitats which could be affected by project activities.

In the Stanislaus National Forest, the western pond turtle is associated with low gradient streams and ponds at elevations from 1,520 to 5,360 ft. The highest elevation riverine population of turtles on Forest occurs at an elevation of 3,720 ft. Two of 18 known occurrences are above 4,000 ft. in pond environments. The Middle Fork Mokelumne River has approximately 510 acres of suitable breeding and dispersal western pond turtle habitat in the project area. Although pond turtles may travel further than 980 feet from aquatic habitat for overwintering purposes, these movements appear to be far less frequent. Since most nesting occurs within 328 ft. of aquatic habitat (Holland 1994, Lovich and Meyer 2002), potential for impacts beyond 328 ft. of suitable aquatic habitat is very low and would likely result in negligible effects to the species. Systematic surveys of the project area were not conducted for pond turtles in all potentially suitable aquatic habitats. As such, species presence was assumed for effects analyses.

Federally listed endangered, threatened or proposed aquatic wildlife species, their associated critical habitat, and Forest Service sensitive species considered for analyses are included in Table 5 Detailed analysis for California red-legged frog, California red-legged frog critical habitat, delta smelt, and Central Valley steelhead, Lahontan cutthroat trout, Limestone salamander, Foothill yellow-legged frog, and hardhead was not conducted because the Hemlock Landscape Restoration project area was not within the species' geographic or elevation range, and suitable habitat was not present in or around the project area. These species were not discussed in greater depth in the Hemlock Landscape Restoration EA.

The effects of project proposed activities on the Sierra Nevada yellow-legged frog, Yosemite toad, and Western pond turtle were disclosed in the Hemlock Landscape Restoration EA and Aquatic Wildlife BA/BE. Overall determinations are provided in Table 5 below. The effects analysis assumes the effective implementation of all BMPs and Standards and Guidelines outlined in Chapter 2. The Hemlock project area does not contain critical habitat for either the Sierra Nevada yellow-legged or the Yosemite toad. Required consultation with US Fish and Wildlife was completed.

Most literature published up to 2007 pertaining to yellow-legged frogs could refer to either *R. muscosa* or *Rana sierrae* (Mountain yellow-legged frog or Sierra Nevada yellow-legged frog). All of this published literature was considered for effects analyses. *Rana sierrae* is the recognized species that occurs on the Stanislaus National Forest.

Table 5. Estimated direct, indirect, and cumulative effects with determination for Federally listed endangered, threatened, or candidate aquatic species and Forest Service sensitive species considered in the Hemlock project analyses

Species Name	Status	Project within Species Distribution	Project within Elevation Range	Habitat in or around Project	Species Present	Direct/ Indirect Effects	Determination
California red-legged frog (*Rana draytonii*	Threatened	No	No	No	No	No/No	No Effect
California red-legged frog Critical Habitat	Designated	No	No	No	No	No/No	No Effect
Sierra Nevada yellow-legged frog (*Rana sierrae)*	Endangered	Yes	Yes	Yes	AP[1]	Yes/Yes	MA/LAA[2]
Sierra Nevada yellow-legged frog Critical Habitat	Proposed	Yes	Yes	No	No	No/No	No Effect
Yosemite toad (*Anaxyrus canorus)*	Threatened	Yes	Yes	Yes	AP	Yes/Yes	MA/LAA
Yosemite toad Critical Habitat	Proposed	Yes	No	No	No	No/No	No Effect
Lahontan cutthroat trout (*Oncorhynchus clarki henshawi)*	Threatened	No	No	No	No	No/No	No Effect
Delta smelt (*Hypomesus transpacificus)*	Threatened	No	No	No	No	No/No	No Effect
Central Valley steelhead (*Oncorhynchus mykiss)*	Threatened	No	No	No	No	No/No	No Effect
Limestone salamander (*Hydromantes brunus)*	FS Sensitive	No	Yes	No	No	No/No	No Effect
Foothill yellow-legged frog (*Rana boylii)*	FS Sensitive	Yes	No	No	No	No/No	No Effect
Hardhead (*Mylopharodon conocephalus)*	FS Sensitive	No	No	No	No	No/No	No Effect
Western pond turtle (*Actinemys marmorata)*	FS Sensitive	Yes	Yes	Yes	AP	No/Yes	MA/NL[3]

[1] AP = Assume species presence for effects analyses.

[2] May affect and is likely to adversely affect.

3 MA/NL = May affect individuals, but is not likely to result in a trend towards Federal listing or loss of viability.

b) No Impact. The project would not have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means.

c) No Impact. The Project activities would not involve any activity that would restrict the movement of fish or wildlife or impede the use of native wildlife nursery sites.

d) No Impact. The Project would not interfere or conflict with any local ordinances or policies protecting biological resources. The Project activities would be in compliance with existing Calaveras County General Plan policies related to biological resources (CCGP 2004).

e) No Impact. The Project would not conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.

f) No Impact. The Project would not interfere or conflict with provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.

Mitigation Measures

- No mitigation is required or warranted.

	Potentially Significant Impact	**Less Than Significant with Mitigation Incorporated**	**Less Than Significant Impact**	**No Impact**
V. CULTURAL RESOURCES: Would the project:				
a) Cause a substantial adverse change in the significance of a historical resource as defined in §15064.5?	☐	☐	☐	☒
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?	☐	☐	☐	☒
c) Cause a substantial adverse change in the significance of a tribal cultural resource as defined in §21074?	☐	☐	☐	☒
d) Disturb any human remains, including those interred outside of formal cemeteries?	☐	☐	☐	☒

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
e) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☐	☐	☒

Environmental Setting

Heritage resource surveys have identified more than 100 archeological sites within the Hemlock Landscape Restoration project area. Approximately 80% of these sites represent Native American prehistoric land use, represented by seasonal villages, temporary camps, and bedrock mortar milling locations. The Miwok and Washoe still actively use the Forest for gathering traditional food and medicinal plants, hunting, and conducting ceremonies. Thus, some of the proposed landscape and habitat restoration areas included in this analysis are significant heritage resources. The additional 20% of these sites represent historic land uses such as European American emigration, mining, ranching, and forestry practices from ca 1846 to present. These sites represent historic ditches, pits, trails, roads, buildings, camps, arbor-glyphs (tree carvings), and historic inscriptions. Few sites retain evidence of both prehistoric and historic land use. Previous fire suppression activities, forestry practices, and recreational activities have also left a mark on the landscape. Some of these practices have fostered resource preservation, while others have been addressed in this analysis to improve long-term preservation and management of heritage resources within the project area. Heritage sites provide many opportunities for interpretation and public appreciation.

All heritage resources that have not been evaluated for eligibility to the National Register of Historic Places are being considered eligible for the purposes of this analysis.

Explanations

a-b) No Impact. Forest Restoration and Scenic Corridor

Project design and management requirements for Forest Restoration actions were specifically included to eliminate visual demarcation of heritage sites, preserve site integrity, and promote traditionally used plants. Mastication would not be allowed within the known boundaries of heritage resources. Hand treatments within heritage sites would be directed under the guidance of a Forest or District Archeologist in accordance with Programmatic Agreements between Stanislaus National Forest and the California State Historic Preservation Office. As such, direct effects to heritage resources from Forest Restoration actions would be negligible.

No Impact. Fuels Reduction

Fuels reduction within the vicinity of heritage resources is intended to reduce the intensity and duration of wild land fires, thus reducing the potential damages to heritage sites. Fuels thinning would be implemented in accordance with established management requirements and pre-burn site preparation as determined appropriate by a Forest or District Archeologist. Pre-burn condition assessments and preparation would guide the implementation process for this proposed action. For example, in sensitive heritage areas vegetation would be carried, not dragged, out of known site boundaries and placed in burn piles. Mastication would not be permitted within the boundaries of known heritage sites. In light of these management requirements, actions proposed for Fuels reduction would have negligible effects.

No Impact. Mature Forest Wildlife Habitat Restoration

Heritage considerations for Mature Forest Wildlife Habitat Restoration are similar to those proposed for Forest Restoration and Fuels Reduction. Restoration of wildlife habitat and a healthy ecosystem further support heritage values and traditional indigenous lifeways. Due to the nature of heritage resources and natural events that affect traditional gathering practices, Stanislaus National Forest heritage staff would continue to work with tribal members during implementation and monitoring of proposed treatments. Effects of these actions on heritage resources would be negligible.

No Impact. Streams, Riparian Areas, Special Aquatic Feature and Aspen Restoration

Restoration of waterways and aquatic wildlife supports heritage values and traditional lifeways. Barrier placement has been designed to favor the preservation of heritage features rather than detrimentally impact or bisect them. Watershed restoration and removal of encroaching conifers within meadows further promotes wildlife and traditionally used plant habitats. Additional site specific tribal consultation would be incorporated into project implementation. Effects of these actions on heritage resources would be negligible.

c) No Impact. As part of the Hemlock EA NEPA process, the Forest Service mailed scoping letters to Tribes interested in this project, including the Calaveras Band of Miwok, Washoe Tribe of Nevada and California, California Valley Miwok Tribe Chicken Ranch Tribal council, and the Tuolumne Band of Me-Wuk Indians. In addition, the project was discussed at the Annual Tribal Consultations with Tuolumne Me-Wuk Tribe and Stanislaus National Forest on May 2, 2013, on May 9, 2014 and also on June 1, 2015.

d) No Impact. The project would not disturb any human remains, including those interred outside of formal cemeteries.

e) No Impact. No geologic strata that would contain paleontological resources exist at the site.

Mitigation Measures

- No mitigation is required or warranted.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
VI. GEOLOGY AND SOILS: Would the project:				
a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:				
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42?	☐	☐	☐	☒
ii) Strong seismic ground shaking?	☐	☐	☐	☒
iii) Seismic-related ground failure, including liquefaction?	☐	☐	☐	☒
iv) Landslides?	☐	☐	☐	☒
b) Result in substantial soil erosion or the loss of topsoil?	☐	☐	☐	☒
c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?	☐	☐	☐	☒

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?	☐	☐	☐	☒
e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?	☐	☐	☐	☒

Environmental Setting

Geological history and climate have defined the diversity of soil types found in the Hemlock Landscape project area. Abundant sign of glacial moraine features and glacial drift are found on the south side of the project area along Highway 4. The upper basins of the Mokelumne and Blue Creek drainages show less evidence of glacial action, but likely were influenced by the older glacial periods.

The dominant soil series mapped in the Hemlock area include the Windy, McCarthy, and Gerle family soils (USDA 1995). Windy and McCarthy soils develop within the volcanic mudflow along the Sierra west slope. The Gerle typically indicates granitic and glacially influenced terrain, but can have some volcanic material mixed in. Overall, soils generally have moderately deep (20 to 60”) to shallow depth (< 20”). Clay accumulation is very low; most soils have rapid water infiltration rates, and very weak soil structure and cohesion. On the landscape, soils in valley gorges and narrow stream bottoms typically consist of granitic shallow soils. Up the hillslope, soil depth deepens where colluvium is able to accumulate. These areas host the most productive mature forest stands with the best soil condition. Farther upslope, soil types and depth depend on the orientation of volcanic mudflows with the slope, and rock contact between granitics and mudflow. Upper slopes form broad ridges of shallow soils that break to bedrock outcrop of volcanics (Archer and Moser 2014). For example, the parent material is dominantly extrusive igneous or volcanic rocks that were deposited as mudflows on Mattley and Bailey ridges. These volcanic rocks form a hard surface that parallels the ridges in much of the upper catchment of Blue Creek, and outcrops are visible on ridges and side slopes.

Explanations

a) No Impact. This Project would not expose people or structures to potential substantial or adverse effects.

i) California Geological Survey does not list the County of Calaveras as a county affected by the Alquist-Priolo Earthquake Fault Zone. According to the Fault Activity Map of California and Adjacent Areas, no active faults are located on the Project site.

ii) The Project would not expose people or structures to seismic ground shaking, and does not occur in an area of active seismicity. Additionally, the Project does not involve the construction of structures.

iii) The Project would not create ground failure or liquefaction.

iv) The Project would not create landslides.

b) No Impact. The project will not result in substantial soil erosion or the loss of topsoil.

c) No Impact. The Project is not located in an area prone to on- or off-site landslides, lateral spreading, subsidence, liquefaction or collapse; nor would activities increase the likelihood of creating on- or off-site landslides, lateral spreading, subsidence, liquefaction or collapse in the Project area.

d) No Impact. The project is not located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), and does not create substantial risks to life or property

e) No Impact. The Project would not introduce septic tanks or alternative wastewater disposal systems that require soil infiltration.

Mitigation Measures

- No mitigation is required or warranted.

	Potentially Significant Impact	**Less Than Significant with Mitigation Incorporated**	**Less Than Significant Impact**	**No Impact**
VII. GREENHOUSE GAS EMISSIONS: Would the project:				

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	☐	☐	☐	☒
b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	☐	☐	☐	☒

Environmental Setting

Greenhouse Gases (GHGs) are present in the atmosphere naturally, are released by natural and anthropogenic (human-caused) sources, and are formed from secondary reactions taking place in the atmosphere. The following are GHGs that are widely accepted as the principal contributors to human-induced global climate change:

- Carbon dioxide (CO_2)
- Methane (CH_4)
- Nitrous oxide (N_20)
- Hydrofluorocarbons
- Perfluorocarbons
- Sulfur hexafluoride

Assembly Bill 32 (AB 32) established legislation in September 2006 for the State of California to combat human-induced GHGs and promote the development and use of energy-efficient technologies. In addition, AB 32 established a comprehensive program of regulatory and market mechanisms to achieve real, quantifiable, cost-effective reductions of greenhouse gas emissions. The law requires a reduction of carbon emissions in California to 1990 levels by 2020. CARB is the primary state agency designated to implement the requirements outlined in AB 32.

a) No Impact. Direct effects of forest restoration and fuels reduction treatments include the removal of carbon from the forest carbon cycle in the form of approximately 19.2 million board feet of sawlogs and removed biomass. Carbon from this harvested material would be stored in wood products until they decompose or are burned, ultimately releasing the carbon back to the atmosphere. Additional activity generated fuels may be left in the woods and would slowly emit

carbon back to the atmosphere. Other emissions include smoke, dust, and greenhouse gases from prescribed fire, pile burning, and vehicle and equipment use during implementation.

While the project would reduce a long-term store of carbon through vegetation treatments, the stability of the existing stores would be increased by reducing the risk of large wildfire. This trade-off is in agreement with Stephens et al. (2009) and Hurteau and North (2009) who conclude that when weighing the risk of reducing existing carbon stocks in the short-term by thinning forests and reducing fire risk, compared to allowing forests to grow untreated with higher amounts of carbon storage but high risk of wildfire, the more prudent approach is to reduce fire risk. These studies and subsequent studies (Hurteau and North 2009; North and Hurteau 2010) suggest creating a more stabilized, long-term store for carbon in forests with an active fire regime by emphasizing low density stands dominated by large, fire-resistant trees. Treatments which retain or protect large trees are believed to allow for more rapid recovery of carbon.

These studies also found that initial emissions from fuels treatments could be recovered within a decade or more of growth due to the increase in growth of residual trees. Burning was found to be a large source of emissions, as compared to only mechanical treatment, but was still small compared to high severity wildfire which converted most live carbon stores into decomposing carbon sources (North and Hurteau 2011). Treatments which reduce densities of small diameter trees as well as some intermediate, fire-sensitive trees were found to be most effective in reducing losses during burning and enabling rapid carbon recovery (Millar et al. 2007, Hurteau and North 2010).

Indirect effects of treatments would be beneficial to the landscape in terms of emissions and resilience to climate change impacts. Reduced stand densities would increase residual tree vigor and growth, reducing mortality and increasing carbon storage rates of residual trees. Development of larger trees (critical to long-term carbon storage in forests) would be enhanced, decreasing risk of mortality due to drought, insects, disease, or wildfire. Restoration treatments increase landscape resilience to disturbances and help maintain forested conditions which are essential to the ecosystem carbon cycle. Retention of preferred fire-resistant pine species would increase diversity within stands currently dominated by fire-sensitive fir species. Pine species would be better adapted for expected changes in environmental conditions (warmer and drier) and would help maintain productivity while maladapted species would suffer from increased drought stress, insect outbreaks, disease infestations, and sensitivity to fire (Rehfeldt et al. 2014).

b) No Impact. Project construction activities would be temporary and minor, and therefore have minimal effects on AB 32 greenhouse gas emission reduction goals. For Project operations, long-term maintenance activities would require minimal vehicle miles traveled, since the proposed Project maintenance would be incorporated into the existing UMRWA maintenance schedule, and as mentioned above, the Project would reduce long-term GHGs from catastrophic wildfire.

Therefore, the Project would not hinder or delay California's ability to meet the reduction targets contained in AB 32.

Mitigation Measures

- No mitigation is required or warranted.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
VIII. HAZARDS AND HAZARDOUS MATERIALS: Would the project:				
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☐	☐	☐	☒
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	☐	☐	☐	☒
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☐	☐	☒
d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	☐	☐	☐	☒
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☐	☒

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
f) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☐	☒
g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☐	☐	☒
h) Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?	☐	☐	☐	☒

Explanations

a) No Impact. All action alternatives would avoid adverse impacts to public safety through project design efforts. Implementation of the action alternatives would be governed by standard public health and safety contract clauses. Standard precautionary measures would be used, such as dust abatement, signing of roads during log and biomass hauling, safely securing truckloads, and maintaining haul routes.

Overall, the project would have beneficial effects on public health and safety. Forest restoration and fuels reduction treatments would reduce fuel loading, reduce vegetation density, and create effective fuel breaks. This would improve the safety of forest visitors, nearby communities, and fire fighters by reducing the severity and intensity of future fires. All implementation would be monitored by Forest Service inspectors and would comply with Occupational Safety and Health Administration (OSHA) regulations, Forest Service direction, Regional air quality standards, Clean Air Act, and other applicable laws and guidance.

b) No Impact. See discussion above.

c) No Impact. There are no schools within a quarter mile of the Project.

d) No Impact. The Project site is not included on any list of hazardous materials sites compiled pursuant to Government Code Section 65962.5.

e) No Impact. There is no airport located in the Project vicinity.

f) No Impact. There are not airstrips located in the Project vicinity.

g) No Impact. The Project would not interfere with an adopted emergency response plan or emergency evacuation plan.

h) No Impact. The project is designed to reduce the threat of wildland fires.

Mitigation Measures

- No mitigation measures are required or warranted.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
IX. HYDROLOGY AND WATER QUALITY: Would the project:				
a) Violate any water quality standards or waste discharge requirements?	☐	☐	☐	☒
b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?	☐	☐	☐	☒
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?	☐	☐	☐	☒

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
d) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?	☐	☐	☐	☒
e) Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?	☐	☐	☐	☒
f) Otherwise substantially degrade water quality?	☐	☐	☐	☒
g) Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?	☐	☐	☐	☒
h) Place within a 100-year flood hazard area structures which would impede or redirect flood flows?	☐	☐	☐	☒
i) Expose people or structure to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?	☐	☐	☐	☒
j) Inundation by seiche, tsunami, or mudflow	☐	☐	☐	☒

Environmental Setting

The watershed analysis for the Hemlock Landscape Restoration project focuses on four HUC 7 subwatersheds where most project activities would occur: Upper Blue Creek, Hells Kitchen, Solinsky Crossing-Upper Middle Fork Mokelumne River, and Ganns-Middle North Fork Stanislaus River HUC 7 subwatersheds. Given the small proportion (2% and 0.4% of their area, respectively) of treatment acreage and the relatively low impact of proposed

project treatments (e.g., forest thinning, prescribed fire) in the Headwaters Upper South Fork Mokelumne River and East Forest Creek HUC7 watersheds, these watersheds were not included in detailed effects analysis.

Data indicate that stream conditions within the watershed are generally good overall. Overall hillslope conditions on NFS land in the watershed are stable, have high soil ground cover, and do not show evidence of widespread surface erosion. Hillslopes within logged areas on private land were not examined although it is assumed that BMPs were implemented as required by the California's Forest Practice Rules and offsite erosion and sediment movement was mitigated. Widespread hillslope sources of sediment from private land were not evidenced in the stream survey. Road densities in these watersheds are high but evidence of adverse cumulative effects resulting from the road system was not apparent in the field surveys. Special aquatic features vary widely in conditions, but conifer encroachment, altered meadow hydrology, and recreation and livestock disturbance exist at many sites.

Explanations

a) No Impact. Direct and Indirect Effects

Erosion/Sedimentation Potential

Several proposed actions have the potential to increase erosion and sedimentation. The use of mechanized equipment (e.g., feller-buncher, rubber tire skidder) for vegetation management activities has the potential to cause short-term (i.e., 1 to 2 years) increases in accelerated erosion and stream sedimentation that could adversely affect water quality.

Vegetation pile burning has the potential to result in localized increases of erosion and sedimentation. However, piles are generally small and dispersed throughout the project area. Given the relatively small, discontinuous areas of pile burning and the implementation of BMPs, this activity is not expected to result in any significant increases in erosion and sedimentation.

Broadcast burning is designed to burn at low-intensities to retain adequate residual ground cover (i.e., duff and litter) in order to protect mineral soil from erosion. Elliot et al. (2010) presented results of numerous studies where measured erosion rates after low-intensity prescribed fire were shown to be very low compared with moderate and high severity wildfires. Although prescribed fire is intended to produce low-intensity and low-severity burns, the potential exists to reduce soil ground cover below intended levels which would cause soil erosion and sediment delivery to streams.

Road treatments include maintenance, reconstruction, closure, decommissioning, and new construction. Four large culverts would be replaced to improve AOP. In addition, barriers may be placed along roads to prevent unauthorized motorized travel and route pioneering. Other related activities include reconstruction and improvement of an existing campground, construction of a new OHV staging parking area, reconstruction of motorized and non-motorized trails and construction of new ones. These activities involve ground disturbance and have the potential for

producing short-term, localized increases in accelerated erosion and sediment delivery to streams. Reconstruction of stream crossings has the potential to result in short-term increases in sedimentation and turbidity in those creeks due to the necessity of equipment operating within and near the channel along with the removal and replacement of large amounts of fill material. Sediment eroded from the road prism is highest during the first 1 to 2 years following construction activities, after which time erosion rates sharply decrease (Megahan 1974, Ketcheson and Megahan 1996).

Channel restoration using mechanized equipment may occur in up to four meadows (IDs 539, 541, 547, 548). Mechanized equipment use for these restorations has the potential to increase stream sedimentation and turbidity and potentially impact water quality at the stream-reach scale in the short-term. It is expected that sedimentation may increase the first several years after project implementation as the channel adjusts to a stable form and then subsequently decrease as vegetation becomes established. In addition to implementing BMPs, the project would comply with all other applicable state and federal permitting requirements (e.g., 404 U.S. Army Corps of Engineers Dredge and Fill permit; 401 State Water Quality Certification).

The repair of headcuts in meadows and small gullies in plantation areas has limited potential to result in increased erosion and sedimentation due to the minimal amount of ground disturbance that would result. Structures (e.g., check dams /energy dissipaters) would be constructed to stabilize and prevent each headcut from continuing to migrate upstream. Most structures would be built by hand using small boulders; however, mechanized equipment may be used where needed for headcuts or gullies that are too large to repair by hand.

A comprehensive suite of BMPs (Chapter 2.05) would be implemented during project activities to ensure that any potential adverse impacts to water quality would be avoided or minimized to minor and/or short-term levels. Monitoring performed on the Stanislaus National Forest and throughout the region indicates that BMPs are implemented at high rates and are highly effective in preventing increased erosion and sedimentation from vegetation management, prescribed fire, road, and restoration activities when implemented. It is expected that these treatments would result in only minor and/or short-term, localized increases in erosion and sedimentation and would not adversely affect beneficial uses. In addition, the Forest has adaptive mechanisms in place to identify and mitigate threats to water quality that may arise from inadequate BMP implementation or other factors.

Water Quality and Stream Temperature

The use of mechanized equipment during the project implementation has the potential to increase the risk of spills and leaks of petroleum products (e.g., fuel, oil, hydraulic fluid) into water courses. BMPs would be implemented during the project to minimize the risk of contamination to water.

Stream water temperatures have the potential to increase slightly due to reductions in overstory canopy as a result of vegetation management prescriptions; this effect

would decrease over time as the canopy increases due to tree and shrub growth. For small forested streams, research has shown that elevated water temperatures resulting from a reduction in shade generally decrease to pre-disturbance water temperature within 500 feet downstream of the affected reach (Zweiniecki and Newton 1999); therefore, beneficial uses would not be adversely affected.

Streams and Special Aquatic Features

Stream flows could potentially be increased for several years after the project due to vegetation removal resulting in decreased evapotranspiration potential, increase in snow accumulation, and delay in melting within forest gaps (Stednick 1996). This effect would be expected to diminish over time as vegetation grows. Decommissioning roads within meadows would improve infiltration, reduce erosion, and result in an overall improvement in meadow hydrologic function. Channel restoration and headcut/gully stabilization would result in a reduction in erosion and sedimentation over the long-term. In meadows with channel restoration, an increase in the quantity and duration of dry season base flows is expected as the water table rises in response to the higher base level of the restored channel. The presence and extent of obligate riparian meadow vegetation would likely increase. All of these factors would contribute to an overall improvement in water quality and watershed function.

Removal of conifers around SAFs would create wetter conditions and a subsequent increase in extent and vigor of wet meadow vegetation. Placement of barriers around SAFs would result in less disturbance (e.g., pocking/trailing, streambank disturbance, rutting) to these features as livestock and motor vehicle use would be excluded. Placement of new water troughs for livestock is expected to result in less disturbance to unfenced SAFs and streams. Overall improvement in SAF condition and function is expected.

Cumulative Effects

Cumulative watershed effects (CWE) analysis consists of two steps: (1) an office evaluation to determine the risk of cumulative effects using a predictive model and watershed history data, and (2) field evaluation of stream-course cumulative effects indicators. The CWE accounts for constant features (e.g., roads and buildings) and past, ongoing, and future land management actions in the four watersheds within the project area. CWE analysis converts constant features and actions into a numerical rating referred to as equivalent roaded area (ERA). The CWE also identifies an ERA threshold that, if exceeded or closely approached, would predict the risk of future negative impacts to water quality and watershed condition by management activities. Activities evaluated included land use (e.g., roads and other infrastructure, residential development, logging, construction) and disturbance events (e.g., wildland fires). The temporal scale of the CWE analysis is a 10 year period.

The following assumptions were used to estimate Hemlock project implementation: Mechanical vegetation treatments would be implemented between 2016 and 2021, and divided into three timber sale areas. Prescribed fire treatments (pile burning,

underburning) would occur in between 2019–2025. Road closure and decommissioning would occur after vegetation treatments are completed.

Table 6. Annual percent equivalent roaded acreage (ERA) within watersheds for the proposed action

Watershed	Annual % ERA									
	Threshold	2016	2017	2018	2019	2020	2021	2022	2023	2024
Hell's Kitchen	**10-12**									
Alternative 1 (Proposed Action)		3.00	3.81	4.49	4.11	3.82	3.52	3.25	2.97	2.72
Ganns Middle North Fork Stanislaus River	**10-12**									
Alternative 1 (Proposed Action)		2.31	2.32	2.28	2.61	2.92	3.11	2.85	2.60	2.43
Upper Blue Creek	**12-14**									
Alternative 1 (Proposed Action)		3.76	4.06	4.22	4.87	5.40	4.85	4.40	3.97	3.47
Solinsky Crossing-Upper Middle Fork Mokelumne River	**12-14**									
Alternative 1 (Proposed Action)		2.43	3.19	3.73	3.51	3.93	4.28	4.55	4.19	3.79

Cumulative effects estimated by the ERA modeling indicate that estimated CWE for Alternative 1 (Proposed Action) are well below the threshold of concern for all project watersheds (Table 6). Field evaluation validated the ERA model prediction that the proposed action, considered along with past, present and reasonably foreseeable future actions in the project watersheds, was not expected to result in adverse cumulative watershed effects.

Alternative 1 would achieve all watershed goals and objectives; water quality, beneficial uses, and watershed condition would be maintained. BMPs to protect water quality would be utilized, and long-term watershed stability would be improved. Alternative 1 is consistent with all RCOs and would help to further the goals of the Aquatic Management Strategy.

b) No Impact. The Project does not involve withdrawals or additions to groundwater.

c) No Impact. Project activities would not substantially alter a stream course.

d) No Impact. Refer to sections a) above.

e) No Impact. Refer to sections a) above.

f) No Impact. Refer to sections a) above.

g) No Impact. Refer to sections a) above.

h) No Impact. The project would not place within a 100-year flood hazard area structures which would impede or redirect flood flows.

i) No Impact. The Project would not increase the exposure of people or structures to flooding as a result of the failure of a levee or dam.

j) No Impact. The Project does not impact any water bodies that could result in seiche, tsunami, or mudflow events.

Mitigation Measures

- No mitigation measures are required or warranted.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
X. LAND USE AND PLANNING: Would the project:				
a) Physically divide an established community?	☐	☐	☐	☒
b) Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☐	☐	☒
c) Conflict with any applicable habitat conservation plan or natural community conservation plan?	☐	☐	☐	☒

Environmental Setting

The Stanislaus National Forest "Forest Plan Direction" (USDA 2010) presents the current Forest Plan management direction, based on the original Forest Plan as amended. The Forest Plan Direction includes forest wide standards and guidelines (p. 33-64) and applicable management area direction for General Forest (p. 161-164) and Wildlife (p. 123-127), Developed Recreation or Administration Site (p. 165-182), Near Natural (p. 119-122), and Scenic Corridor (Retention and Partial Retention) (p. 155-160).

Sierra Nevada Framework Land Allocations as defined in the Forest Plan occurring in the project area include: General Forest, Old Forest Emphasis Areas, California Spotted Owl

Protected Activity Centers (PAC), Northern Goshawk PAC, California Spotted Owl Home Range Core Areas (HRCA), Wildland Urban Intermix (WUI): Defense and Threat Zones, and Riparian Conservation Areas (RCA). The Forest Plan Direction includes desired conditions, management intents, and management objectives for each land allocation (p. 183-196).

Explanations

a) No Impact. The Project activities would not divide a community.

b) No Impact. The Project would not require a change in zoning of the Project site, and would therefore not conflict with the Calaveras County General Plan (CCGP 1996).

c) No Impact. The Project would not interfere or conflict with provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.

Mitigation Measures

- No mitigation measures are required or warranted.

	Potentially Significant Impact	**Less Than Significant with Mitigation Incorporated**	**Less Than Significant Impact**	**No Impact**
XI. MINERAL RESOURCES: Would the project:				
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	☐	☐	☐	☒
b) Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?	☐	☐	☐	☒

Environmental Setting

The project does not involve any mineral resource extraction.

Explanations

a) No Impact. Because mineral resources are not known to exist on or immediately adjacent to the Project site, the Project would not affect known mineral resources that could be of value to the region and the residents of the state.

b) No Impact. Because mineral resources are not known to exist on or immediately adjacent to the Project site, the Project would not result in the loss of availability of a locally important mineral resource recovery site.

Mitigation Measures

- No mitigation measures are required or warranted.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
XII. NOISE: Would the project result in:				
a) Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	☐	☐	☐	☒
b) Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?	☐	☐	☐	☒
c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☐	☐	☒
d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☐	☐	☒

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☒
f) For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☒

Environmental Setting

The Project area is characterized as a rural and natural environment on the Stanislaus National Forest with open space and forested environments. The noise environment of the Project area is defined primarily by motor vehicles (e.g., automobiles, buses, trucks, and motorcycles) utilizing Highway 4 and nearby level 3 Forest Service roads which are both main arterial roadways.

Noise-sensitive land uses, or sensitive receptors, are generally defined as locations where people reside or locations where the presence of unwanted sound could adversely affect the use of the land. Noise-sensitive land uses typically include residences, hospitals, schools, libraries, and certain types of recreational uses. Motor vehicle noise from nearby roads is the primary influence for noise levels. There are no sensitive receptors, such as residences, in the project vicinity.

In addition, proposed activities are routine in nature, have been implemented in the past in similar forest conditions, employ standard practices and protection measures, and their effects are known. The effect on the human environment from the proposed actions is not uncertain and does not involve unique or unknown risks. The proposed activities have all been previously implemented with known effects.

Explanations

a) No Impact. Project generated noise impacts would occur in rural and natural areas.

b) No Impact. Power tools and equipment would be utilized during Project activities. These activities would be temporary, and primarily occur during daylight.

c) No Impact. The Project activities are temporary and would not cause permanent increases in ambient noise levels in the Project vicinity.

d) No Impact. Project activities would occur near Highway 4 and level 3 Forest Service roads and would not result in substantial increases in ambient noise levels. During restoration activities, there would be temporary noise increases from the use of power tools, equipment, and other non-powered hand-tools. The UMRWA would require the contractor to comply with all applicable noise and occupational safety standards as defined in the contract specifications, and to protect workers and other persons from the health effects of increased noise levels from the use of equipment. Compliance with contract specifications would reduce potential noise-related concerns at the construction site, and therefore would have no impact.

e) No Impact. There are no public airports within two miles of the Project.

f) No Impact. There are no private airstrips in the vicinity of the Project.

Mitigation Measures

- No mitigation measures are required or warranted.

	Potentially Significant Impact	**Less Than Significant with Mitigation Incorporated**	**Less Than Significant Impact**	**No Impact**
XIII. POPULATION AND HOUSING: Would the project:				
a) Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	☐	☐	☐	☒
b) Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒
c) Displace substantial numbers of people, necessitating the construction or replacement housing elsewhere?	☐	☐	☐	☒

Environmental Setting

No portions of the Project area include residential property. The Project would not alter the number or type of residential units that exist, nor would it introduce land use or changes that would attract new residents creating a need for additional housing. No change to sewer capacity would result from implementation of the Project.

Chapter 3.05 (Economics) of the Hemlock EA describes and evaluates economic growth inducing impacts. No population growth inducing impacts are expected since NFS lands are not available for urbanization. Chapter 3.05 also describes employment and income opportunities related to the alternatives considered in detail.

Explanations

a) No Impact. The Project would not directly or indirectly induce substantial population growth in the area.

b) No Impact. The Project would not result in displacing or replacing existing housing.

c) No Impact. The Project would not result in the displacement of any people, necessitating the construction or replacement of housing anywhere.

Mitigation Measures:

- No mitigation is required or warranted.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
XIV. PUBLIC SERVICES: Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:				

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Fire protection?	☐	☐	☐	☒
Police protection?	☐	☐	☐	☒
Schools?	☐	☐	☐	☒
Parks?	☐	☐	☐	☒
Other public facilities?	☐	☐	☐	☒

Environmental Setting

The Project site is located within an unincorporated area of Calaveras County, and is within the jurisdiction of the Calaveras County's Sheriff's Department and Fire Protection District. The Project site is located on Stanislaus National Forest and no residential homes and therefore school district boundaries are associated with National Forest System lands.

Explanations

Fire Protection: No Impact. The Project would not contribute to any change in population, traffic circulation, or other land use modifications that would impact local fire protection.

Police Protection: No Impact. The Project would not impact police protection, nor would it contribute to any change in population, traffic circulation, or other land use modifications that would impact local police protection.

Schools: No Impact. The Project would not impact existing school facilities, nor would it contribute to any change in population, traffic circulation, or other land use modifications that would impact the local school districts.

Parks: No Impact. The Project would not impact existing parks, nor would it contribute to any change in population, traffic circulation, or other land use modifications that would impact local parks.

Other Public Facilities: No Impact. The Project would not impact other public facilities, nor would it contribute to any change in population, traffic circulation, or other land use modifications that would impact the local public facilities.

Mitigation Measures:

- No mitigation is required or warranted.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
XV. RECREATION:				
a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	☐	☐	☐	☒
b) Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?	☐	☐	☐	☒

Environmental Setting

There will be no expansion or construction of recreation facilities during project activities. Proposed campsite improvements at Big Meadow Campground would better define areas where people can recreate without inadvertently impacting heritage resources. These actions promote responsible heritage resource management and stewardship. The same is true for trail reconstruction and the establishment of designated parking areas where no heritage resources would be impacted by these recreational uses. However, the actions would not impact the recreation facility.

Dispersed recreation occurs throughout the project area. The Big Meadow Campground improvements are limited to conifer removal. Vegetation thinning near dispersed campsites could encourage users to increase the footprint of existing campsites by parking vehicles farther off road or by other means. Thinning near campsites could also lead to decreased privacy and a temporary reduction in scenic quality (see Hemlock Landscape Restoration EA, Section 3.10 Recreation).

Explanations

a) No Impact. The Project would not affect the use of nearby parks or other recreation facilities.

b) No Impact. No public recreational facilities are warranted or proposed.

Mitigation Measures:

- No mitigation is required or warranted.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
XVI. TRANSPORTATION/TRAFFIC: Would the project:				
a) Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?	☐	☐	☐	☒
b) Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?	☐	☐	☐	☒
c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?	☐	☐	☐	☒

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
d) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☐	☐	☐	☒
e)Result in inadequate emergency access?	☐	☐	☐	☒
f) Conflict with adopted policies, plans or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?	☐	☐	☐	☒

Environmental Setting

All action alternatives would avoid adverse impacts to public safety through project design efforts. Implementation of the action alternatives would be governed by standard public health and safety contract clauses. Standard precautionary measures would be used, such as dust abatement, signing of roads during log and biomass hauling, safely securing truckloads, and maintaining haul routes.

Overall, the project would have beneficial effects on public health and safety. All implementation would be monitored by Forest Service inspectors and would comply with Occupational Safety and Health Administration (OSHA) regulations, Forest Service direction, and other applicable laws and guidance.

Explanations

a) No Impact. Project activities would generate temporary restoration activity-related traffic, including: 1) passenger vehicles transporting field and inspection workers to and from the site, and 2) heavy trucks/haulers accessing the site to deliver materials and to remove debris. Additionally, Project equipment would be staged at the Project site reducing the number of equipment accessing the site on a daily basis.

b) No Impact. As discussed in section a) above, restoration-related generated traffic would be temporary in nature. No intersections are expected to operate at an unacceptable LOS as a result of this Project. Project operations would not increase traffic on local roadways.

c) No Impact. The Project would not affect air traffic patterns.

d) No Impact. The Project would not alter existing roadways, and therefore would not increase hazards due to a design feature or incompatible use.

e) No Impact. The Project would not result in inadequate emergency access.

f) No Impact. The Project would not conflict with adopted policies, plans, or programs supporting alternative transportation.

Mitigation Measures:

- No mitigation is required or warranted.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
XVII. UTILITIES AND SERVICE SYSTEMS: Would the project:				
a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?	☐	☐	☐	☒
b) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	☐	☒
c) Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	☐	☒
d) Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?	☐	☐	☐	☒

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
e) Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	☐	☐	☐	☒
f) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?	☐	☐	☐	☒
g) Comply with federal, state, and local statutes and regulations related to solid waste?	☐	☐	☐	☒

Environmental Setting

Project activities would not require power service to be terminated at any time.

Explanations

a) No Impact. The Project would not involve wastewater treatment requirements.

b) No Impact. The Project would not require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities.

c) No Impact. The Project would not require or result in the construction of new storm water drainage facilities or expansion of existing facilities.

d) No Impact. The Project would not increase water supply demand or require new or expanded water supply entitlements.

e) No Impact. The Project would not affect wastewater treatment.

f) No Impact. The Project would not increase solid waste disposal needs.

g) No Impact. The Project would comply with federal, state, and local statutes and regulations related to solid waste.

Mitigation Measures

- No mitigation is required or warranted.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
XVIII. MANDATORY FINDINGS OF SIGNIFICANCE				
a) Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	☐	☐	☐	☒
b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?	☐	☐	☐	☒
c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	☐	☐	☐	☒

Discussion

The UMRWA is proposing to implement the Pumpkin Hollow Restoration Project (Project). The Project is located in Calaveras County, on the boundary between the foothills and the western slopes of the central Sierra Nevada mountain range and at the eastern edge of the Sacramento Valley, at an elevation ranging from approximately 6,100 feet to 7,300 feet.

Explanations

a) No Impact. The Project will not degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory.

b) No Impact. The Project does not have impacts that are individually limited, but cumulatively considerable.

c) No Impact. The Project has no environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly.

The National Environmental Policy Act (NEPA) requires agencies to assess the environmental effects of a proposed agency action and any reasonable alternatives before making a decision on whether, and if so, how to proceed. The California Environmental Quality Act (CEQA) applies to projects of all California state, regional or local agencies, but not to Federal agencies. Its purposes are similar to NEPA. They include ensuring informed governmental decisions, identifying ways to avoid or reduce environmental damage through feasible mitigation or project alternatives, and providing for public disclosure (CEQA Guidelines, 15002, subd. (a)(1)-(4)).

The CEQ regulations for implementing NEPA encourage cooperation with state and local agencies in an effort to reduce duplication in the NEPA process (40 CFR 1506.2). The CEQ regulations further provide agencies with the ability to combine documents, by stating that "any environmental document in compliance with NEPA may be combined with any other agency document to reduce duplication and paperwork" (40 CFR 1506.4). Furthermore, if an existing document cannot be utilized, portions may be incorporated by reference. Like NEPA, CEQA encourages cooperation with Federal agencies to reduce duplication in the CEQA process. In fact, CEQA recommends that lead agencies rely on a Federal NEPA document "whenever possible," so long as it satisfies the requirements of CEQA (Cal. Pub. Resources Code, 21083.7).

The following NEPA Finding of No Significant Impact summarizes the environmental impacts of the Hemlock EA and the proposed project is a subset of this larger Hemlock project. The proposed Project would include BMPs and management requirements designed to reduce all environmental effects to less than significant and no impact. For the factors of aesthetics, biological resources, cultural resources, geology and soils, hydrology and water quality, and hazardous materials, all impacts would be reduced to below a level of significance.

NEPA Finding of No Significant Impact

Hemlock Landscape Restoration Project, 2016

Context

The Hemlock project is a site specific action that that by itself does not have international, national, regional, or statewide importance. The Stanislaus National Forest includes 898,000 acres of NFS lands. This project, located on the Calaveras Ranger District, proposes treatment on approximately 9,756 acres within the 14,118 acre project planning area.

Intensity

The following ten elements of impact intensity address the potential significance of project effects.

1. Impacts that may be both beneficial and adverse.

Direct, indirect and cumulative effects were analyzed for the action alternatives and the no action alternative. The project was designed to avoid or minimize environmental harm. The effects of implementing either action alternative were very similar, and are summarized as follows:

- The project may affect, and is likely to adversely affect, the Sierra Nevada yellow-legged frog and the Yosemite toad, but is not likely to jeopardize the continued existence of these species (3.02 Aquatics).
- Project implementation would reduce a long-term carbon store by removing or burning trees and other vegetation; however, the stability of remaining carbon stored in trees would be increased by reducing the risk of large wildfire (3.03 Climate Change).
- The project would have negligible or beneficial effects on heritage resources (3.04 Cultural Resources).
- The project would have a positive effect on the overall economic activity in the local area. This project would help provide stability and revenue to the manufacturing industry, forest products industry, transportation, and indirect industries (housing, food, education, etc.) (3.05 Economics).
- The project would reduce the risks of catastrophic wildfire and provide areas needed for safe fire suppression (3.06 Fuels).
- Through the implementation of project management requirements, there is a low risk of establishment and expansion of noxious weeds by the project (3.07 Invasive Species).
- The project may increase the need for range allotment administration through increased rangeland infrastructure. Overall the project is expected to increase the ecological health of forest and rangelands in the project area (3.09 Range).
- Project activities could cause short-term, minor disruption to recreational activities within the project area, but are expected to result in the long-term sustainable, accessible, safe, and functional recreational opportunities (3.10 Recreation).
- The project would reduce tree density in key locations resulting in increased resilience to insects, disease, wildfire, and drought (3.13 Vegetation).
- The project would enhance the scenic quality associated with the Highway 4, National Scenic Byway (3.14 Visual Resources).
- The project may result in short-term increases in erosion and sedimentation; however the project would implement a comprehensive suite of Best Management Practices (BMPs) that would greatly reduce this risk. The project is expected to result in long-term reduced erosion and sedimentation, improved special aquatic feature condition and function, and overall improvement in water quality (3.12 Soils; 3.15 Watershed).
- The project may affect individuals and/or habitat, but would not result in a loss of viability or a trend towards federal listing for the Forest Service Sensitive terrestrial and aquatic wildlife species, and sensitive plants (3.02 Aquatics; 3.11 Sensitive Plants; 3.16 Wildlife). Likewise, the project would not alter the existing trend for Management Indicator Species or habitats across the Sierra Nevada Bioregion (3.08 Management Indicator Species).

2. The degree to which the proposed action affects public health or safety.

All action alternatives would avoid adverse impacts to public safety through project design efforts. Implementation of the action alternatives would be governed by standard public health and safety contract clauses. Standard precautionary measures would be used, such as dust abatement, signing of roads during log and biomass hauling, safely securing truckloads, and maintaining haul routes.

Overall, the project would have beneficial effects on public health and safety. Forest restoration and fuels reduction treatments would reduce fuel loading, reduce vegetation density, and create effective fuel breaks. This would improve the safety of forest visitors, nearby communities, and fire fighters by reducing the severity and intensity of future fires. All implementation would be monitored by Forest Service inspectors and would comply with Occupational Safety and Health Administration (OSHA) regulations, Forest Service direction, Regional air quality standards, Clean Air Act, and other applicable laws and guidance.

3. Unique characteristics of the geographic area such as proximity to historic or cultural resources, park lands, prime farmlands, wetlands, wild and scenic rivers, or ecologically critical areas.

Heritage resources of interest are located within or adjacent to proposed treatment areas. Proposed activities would result in negligible or beneficial effects on these resources (3.04 Cultural Resources). No other unique characteristics or ecologically critical areas such as park lands, prime farmlands, wetlands, exist within the project area. Ecologically critical areas in or near the project area include California spotted owl and northern goshawk PACs, and areas inhabited by sensitive plant and animal species. Project design features will protect these critical habitats from disturbance.

All action alternatives would: enhance the ecological health of forests, aspen stands and meadows, special aquatic features and streams, and rangelands by reducing susceptibility to insect, diseases, and drought-related mortality; reduce future fire intensity and severity; improve watershed condition by reducing sediment from the road system and reducing stressors to aquatic systems; and, maintain and enhance important wildlife habitat in California Spotted Owl PACs and HRCAs.

4. The degree to which the effects on the quality of the human environment are likely to be highly controversial.

There is not substantial scientific dispute as to the size, nature, or effects of action alternatives.

5. The degree to which the possible effects on the human environment are highly uncertain or involve unique or unknown risks.

Proposed activities are routine in nature, have been implemented in the past in similar forest conditions, employ standard practices and protection measures, and their effects are known. The effect on the human environment from the proposed actions is not uncertain and does not involve unique or unknown risks. The proposed activities have all been previously implemented with known effects.

6. The degree to which the action may establish a precedent for future actions with significant effects or represents a decision in principle about a future generation.

Neither action alternative would establish a precedent for any future actions with significant effects. The proposed treatments are not new or unique in type, size, or intensity and are consistent with all laws, regulations, and policies including the Forest Plan, as amended (USDA

2010). This decision only applies to the project area and does not represent a decision in principle about a future consideration. Any future action not analyzed in this EA would be analyzed separately and on its own merits at the time it is proposed in the future.

7. Whether the action is related to other actions with individually insignificant but cumulatively significant impacts.

A cumulative effects analysis was completed separately for each resource area and is discussed within the respective specialist reports. Specialists considered the effects of the proposed action along with the effects of past, present and reasonably foreseeable future actions (both private and public) to determine if any cumulatively significant effects may exist. The spatial and temporal boundaries for the cumulative effects analyses varied among resources. Each of the specialist's cumulative effects analyses determined that implementation of the action alternatives would not result in significant adverse cumulative effects (Chapters 3.02 - 3.17).

8. The degree to which the action may adversely affect districts, sites, highways, structures, or objects listed in or eligible for listing in the National register of Historic Places or may cause loss or destruction of significant scientific, cultural, or historical resources.

The project would not affect any scientific resources. Potential effects to heritage resources are discussed in Chapter 3.04 (Cultural Resources) and in the Heritage Resource Report. The Forest informed 5 federal and state recognized tribes regarding the scope of this project. The Miwok and Washoe still actively use Stanislaus National Forest for gathering traditional food and medicine plants, hunting, and conducting ceremonies. In addition to public scoping efforts made to the general public, the scoping package for this project was mailed to the Calaveras Band of Miwok, Washoe Tribe of Nevada and California, California Valley Miwok Tribe Chicken Ranch Tribal Council, and the Tuolumne Band of Me-Wuk Indians with cover letters dated June 16, 2015. This project was presented at the Annual Tribal Consultations with Tuolumne Me-Wuk Tribe and Stanislaus National Forest on May 2, 2013, on May 9, 2014 and also on June 1, 2015. Presentations were made to describe and solicit information regarding the actions being considered at each of at these meetings and Forest Service contact information was provided. Copies of a public scoping package were provided to all tribal participants at the 2015 meeting. Representatives from Tuolumne Band of Me-Wuk Indian cultural resources group attended a site visit on July 29, 2015 to discuss the Hemlock project and other projects from the June 1, 2015 meeting. A site visit on August 10, 2015 with the Tribal Historic Preservation Officer for the Washoe Tribe of Nevada and California discussed proposed actions associated with the Hemlock project. Consultation site visits included trips to campgrounds, meadow habitats, and significant viewsheds within the proposed area. Heritage site preservation and traditional gathering areas were discussed, especially in regards to proposed recreation site enhancements, trail construction, and interpretive exhibits. No written comments have been received but project discussions during meetings, site visits, and phone calls have been documented and incorporated into project management requirements. Due to project design and management requirements, no direct, indirect, or cumulative effect on heritage resource sites are anticipated (Cultural Resource Management Report 05-16-2278, Aug 2015).

9. The degree to which the action may adversely affect an endangered or threatened species or its habitat that has been determined to be critical under the Endangered Species Act of 1973.

As a result of the effects analysis detailed in the Aquatic Species Biological Assessment and consultation with the Fish and Wildlife Service completed through batch consultation under a programmatic biological opinion (USFWS 2014), it was determined that that actions in Alternatives 1 and 3 may affect, and are likely to adversely affect the Yosemite toad (Threatened) and the Sierra Nevada yellow-legged frog (Endangered). The US Fish and Wildlife Service has

concluded that projects consistent with the Forest Plan and that fully implement appropriate conservation measures were not likely to jeopardize the continued existence of these species (3.02 Aquatics). The proposed action would not affect any other Federally listed species or critical habitat (3.02 Aquatics; 3.11 Sensitive Plants; 3.16 Wildlife).

10. Whether the action threatens a violation of Federal, State, or local law or requirements imposed for the protection of the environment.

The proposed action complies with Federal, State and local laws or requirements imposed for the protection of the environment (i.e., National Forest Management Act, Endangered Species Act, National Historic Preservation Act, Federal Clean Water Act, Executive Order 11988 for Floodplain Management, and the Clean Air Act). The Forest Service obtained concurrence with SHPO and would obtain required permits from the appropriate county, state, and federal regulatory agencies prior to implementation.

III. DETERMINATION

(To be completed by the Lead Agency)

On the basis of this initial evaluation:

☒I find that the proposed Project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.

☐I find that although the proposed Project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the proposed Project have been made by or agreed to by the proposed Project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.

☐I find that the proposed Project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.

☐I find that the proposed Project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.

☐I find that although the proposed Project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed Project, nothing further is required.

Signature Date

Karen Quidachay, Environmental Review Analyst
UMRWA, Environmental Consultant

Signature Date

Rob Alcott, Executive Officer
UMRWA

Signature Date

Greg Gillott, Legal Council
UMRWA

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V. ACRONYMS

AQMD	Air Quality Management District
BA	Biological Assessment
BE	Biological Evaluation
BMP	Best Management Practices
CARB	California Air Resources Board
CDC	California Department of Conservation
CDFW	California Department of Fish and Wildlife
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
CNPS	California Native Plant Society
CO	carbon monoxide
CY	cubic yards
EA	Environmental Assessment
FONSI	Finding of No Significant Impact
IS	Initial Study
LOS	level of service
MND	Mitigated Negative Declaration
OSHA	Occupational Safety and Health Administration
PM_{10}	particulate matter less than 10 micrometers in diameter
$PM_{2.5}$	particulate matter less than 2.5 micrometers in diameter
ROG	reactive organic gases
SC	special concern
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey

APPENDIX A

MANAGEMENT REQUIREMENTS, MONITORING, AND REPORTING PROGRAM

Based on review of the actions proposed, resource specialists identified the following management requirements that would be implemented for all activities proposed as part of the Hemlock EA. Management Requirements are designed to implement the Forest Plan and to minimize or avoid potential adverse impacts. Management Requirements are mandatory components of the action alternatives and would be implemented as part of the proposed activities. Most Management Requirements were utilized in other past project activities and, through monitoring, have shown to be very effective in protecting or enhancing resources. The following table identifies the management requirements for this project.

Number	Management Requirement	Reporting Milestone	Reporting/ Responsible Party
MR-AES-1	Topsoil would be side cast during temporary road construction to be used for future decommissioning and recontouring.	Prior to and during Project activities	UMRWA/FS
MR-AES-2	Intersect temporary roads and skid trails at a right angle, and where feasible, curve after the junction to minimize the length of route seen from the primary travel route.	Implementation	UMRWA/FS
MR-AES-3	Within scenic corridor treatment areas and areas with a VQO of Retention: ▪ Log landings and skid trails would be minimized. ▪ Slash would be abated near landing by scattering, chipping, or other techniques. ▪ Slash and other debris would be removed, burned, masticated, or lopped to a height of 12 inches or less. ▪ Cut trees (as opposed to leave trees) would be marked and species designation would be utilized where appropriate to minimize the amount of marking.	Prior to and during Project activities	UMRWA/FS
MR-BIO(Aq)-1:	The construction of roads and trails will be minimized within the Riparian Conservation Area.	Prior to and during Project activities	UMRWA/FS
MR-BIO(Aq)-2:	Low velocity water pumps and screening devices for pumps will be utilized during drafting to prevent mortality of eggs, tadpoles and adults.	Prior to and during Project activities	UMRWA/FS
MR-BIO(Aq)-3:	Fuels and other toxic chemicals will be stored outside of RCA, to limit exposure of amphibians to toxic material.	Prior to and during Project activities	UMRWA/FS
MR-BIO(Aq)-4:	Disturbance will be limited to 20 percent or less of streambanks to reduce the impacts to cover in aquatic habitats.	Prior to and during Project activities	UMRWA/FS
MR-BIO(Aq)-5:	Temporary dry crossings on drainages with defined channels will be constructed and removed when the channels are dry and will be installed such that water flow and fish passage will not be obstructed. Wet stream crossings improvement/re-construction should be constructed in the fall, when the channel is not flowing or at low flow. A water diversion plan may be developed for these crossings.	Prior to and during Project activities	UMRWA/FS

Number	Management Requirement	Reporting Milestone	Reporting/ Responsible Party
MR-BIO(Aq)-6:	Relevant project implementation BMPs provided in the Mountain yellow-legged frog, and Yosemite toad Programmatic BO (December 19, 2014) are incorporated into Table 2.05-of the Hemlock EA. A crosswalk of where each programmatic conservation measure is addressed in the Hemlock project is provided in the Aquatics BA/BE.	Prior to and during Project activities	UMRWA/FS
MR-BIO(Bot)-1:	Standard contract provisions for equipment cleaning will be applied to timber and construction activities, including washing of vehicle prior to arrival at the work site and following completion of work in an area. For all other activities, all equipment that leaves roads or works with soil must be free of soil, mud (wet or dried), seeds, vegetative matter or other debris that could contain seeds. Dust or very light dirt that would not contain weed seed is not a concern.	During Project construction activities	UMRWA/FS
MR-BIO(Bot)-2:	Slash may be used in lieu of straw for protection of areas susceptible to erosion. If straw is the only option then it must be certified weed free straw.	During Project construction activities	Contractor, and Environmental Specialist
MR-BIO(Bot)-3:	During the reroute of Road 6N58Y ensure that all equipment is thoroughly washed to remove Klamath weed propagules after use. Continue hand pulling efforts after reroute is complete to reduce the negative impact of Klamath weed on native species.	Prior to and during Project construction activities	Contractor, and Environmental Specialist
RBIO(Bot)-4:	No mechanical operations (e.g. mastication, fuel-break construction/maintenance, driving, temporary roads, skid trails), prescribed burning, or piling and burning would occur on lava caps.	Prior to and during Project construction activities	Contractor, Project Engineer and Environmental Analyst
MR-BIO(Bot)-5:	Surveys to detect the presence of Forest Service sensitive plants would occur prior to any water source development. Surveys would be conducted between April and August. If sensitive plant populations are present, activities would be adapted to minimize mortality or disturbance, or, if possible, transplanting would be conducted.	During Project construction activities	UMRWA/FS
MR-BIO(Bot)-6:	Project adherence to the Forest Plan direction for RCAs would be followed for special aquatic features.	During Project construction activities	UMRWA/FS

Number	Management Requirement	Reporting Milestone	Reporting/ Responsible Party
MR-BIO(W)-1:	A limited operating period would be applied to vegetation and fuels treatments, and road reconstruction activities within 0.25 miles of a known spotted owl activity center (or PAC boundary if activity center is unknown) from March 1 through August 15. LOPs may be lifted by the FS if surveys conducted to protocol confirm non-presence or non-breeding.	Prior to Project construction activities	Environmental Specialist
MR-BIO(W)-2:	A limited operating period would be applied to vegetation and fuels treatments, and road reconstruction within 0.25 miles of a known goshawk activity center (or PAC boundary if activity center is unknown), from February 15-September 15. LOPs may be lifted by the FS if surveys conducted to protocol confirm non-presence or non-breeding.	During Project construction activities	UMRWA/FS
MR-BIO(W)-3:	A District Wildlife Biologist would be notified if any Federally Threatened, Endangered, Candidate species or any Region 5 Forest Service Sensitive species are discovered during project implementation.	At All Times	UMRWA/FS/Contractor
MR-BIO(W)-4:	Large diameter cull logs located at landings would be returned to units where coarse woody debris in decay classes 1 and 2 are deficient, as determined by the Forest Service.	During Project construction activities	UMRWA/FS
MR-CR-1:	All heritage resource sites would be avoided or treated according to Programmatic Agreements with the California State Historic Preservation Office, Tribal Historic Preservation Offices, and Cooperative Agreements between the USDA Forest Service and federally and/or state recognized tribes.	At All Times	UMRWA/FS/Contractor
MR-CR-2:	Restoration actions within selected heritage resource sites would be monitored by Forest or District Archeologist.	As Needed	UMRWA/FS/Contractor

Number	Management Requirement	Reporting Milestone	Reporting/ Responsible Party
MR-CR-3:	Soil erosion control devices (fiber matting, weed free straw, geotextiles, silt fencing, erosion control logs, woody debris, etc.) may be used within and/or around archaeological site boundaries to protect heritage resources.	As Needed	UMRWA/FS/Contractor
MR-CR-4:	If new heritage resources are discovered during implementation, all work in the vicinity would cease until a Forest or District Archeologist examines and assesses the resource. Appropriate measures would be undertaken to protect the new resource as activities resume.	At All Times	UMRWA/FS/Contractor
MR-CR-5:	No barriers would be installed within 25 feet of the boundaries of heritage resource area without specific approval and an archaeological monitor for installation.	At All Times	UMRWA/FS/Contractor
MR-CR-6:	Heavy equipment, tilling compacted soil, and constructing drainage structures (e.g. mastication, root ripping, water bars, rolling dips) are prohibited within heritage resource sites.	At All Times	UMRWA/FS/Contractor
MR-CR-7:	Slash piling would not be located within the boundaries of known heritage resources unless Forest or District Archeologist approves the location and the work is monitored by heritage resource staff. Understory vegetation and adjacent felled trees may be piled outside of heritage site boundaries for burning.	At All Times	UMRWA/FS/Contractor
MR-CR-8:	Burn piles would be placed greater than 25 feet from known historic isolates and sites (e.g. arborglyphs, historic inscriptions or cabin sites).	At All Times	UMRWA/FS/ Contractor
MR-CR-9:	Dendroglyphs/arborglyphs (culturally inscribed trees) will not be felled and will be avoided during prescribed fire.	At All Times	UMRWA/FS/ Contractor
MR-CR-10:	Trees would be felled away from heritage sites unless authorized by the District or Forest Archaeologist.	As Needed	UMRWA/FS/ Contractor

Number	Management Requirement	Reporting Milestone	Reporting/ Responsible Party
MR-CR-11:	Pre-burn site preparation may include removing duff and/or filling bedrock milling feature cups with sterile soil to protect them from rapid heat fluctuations, or the use of temporary protection materials.	As Needed	UMRWA/FS/ Contractor
MR-CR-12:	Any heritage resources that may be negatively impacted by the proposed actions would be flagged for hand treatment or avoidance. If flagged for hand treatment, monitoring by Forest or District Archeologist would be required on-site for implementation.	As Needed	UMRWA/FS/ Contractor
MR-CR-13:	No ground disturbance or dragging of material would occur within the known boundaries of archaeological features, heritage sites, or historic properties unless authorized by District or Forest Archeologist.	At All Times	UMRWA/FS/ Contractor
MR-GEO(S)-1:	On slopes less than 25%, maintain well-distributed organic soil cover of 50% after thinning treatment, prescribed fire, or site preparation in gaps. Maintain 60% cover on steeper slopes, and 70% in RCAs. Soil cover consists of basal live plant cover, litter, fine woody debris, and downed logs.	At All Times	UMRWA/FS/ Contractor
MR-GEO(S)-2:	Retain a minimum of 5 downed logs per acre for soil cover and nutrient cycling as long as this requirement does not exceed fuel management objectives. Desired logs are greater than 20 inch diameter and >10ft long in a variety of decomposition classes.	Implementation	UMRWA/FS/ Contractor
MR-GEO(S)-3:	Monitor ground-based operations occurring between November 1 and June 1 (test for soil moisture and trafficability) to prevent soil compaction. Ground-based equipment would operate on relatively dry soils of high soil strength, or bearing capacity.	Implementation	UMRWA/FS/ Contractor
MR-GEO(S)-4:	Subsoil all temporary roads, landings, and main skid trails except where high rock content, slope, moisture content, depth to restricting layer, or erosion hazard would limit subsoiling feasibility. Coordinate with the soil scientist during project implementation to determine final subsoiling needs.	Implementation	UMRWA/FS/ Contractor

Number	Management Requirement	Reporting Milestone	Reporting/ Responsible Party
MR-GEO(S)-5:	Subsoiling Provision- Include winged ripper tool design specifications and maximum subsoiling acres in the contract or operating plan. Subsoiling depth requirements: Landings and temp roads, 24 inches; main skid trails, 18 inches. Maximum furrow depth, 8 inches. CoMRon furrows deeper than eight inches on subsoiled terrain would be backbladed to reduce rill and gully erosion potential.	Implementation	UMRWA/FS/ Contractor
MR-GEO(S)-6:	When excessive soil displacement occurs, the Contracting Officer's Representative (COR) or soil scientist may require replacing or recontouring soil.	Implementation	UMRWA/FS/ Contractor
MR-GEO(S)-7:	Limit skidding with rubber-tired or fixed track equipment to slopes less than 35%; dozer piling would be limited to less than 25%; and low ground pressure tracked equipment (i.e. masticator/feller-buncher) would be limited to less than 45% slope.	Implementation	UMRWA/FS/ Contractor
MR-GEO(S)-8:	When the depth of masticated fuels exceeds 4 inches across greater than 25% of the burn area, ensure adequate soil moisture is present (greater than 15% by volume soil water) in the upper 6 inches of the soil profile when burning.	Implementation	UMRWA/FS/ Contractor
MR-GEO(S)-9:	Dozer piling would be performed with a machine equipped with a brush rake on slopes less than 25%. The blade should be kept about 6 inches above ground level to prevent soil, litter, and duff material from being piled. Piles should be relatively free of soil (less than 10% soil material), or operator may be required to rebuild piles and re-spread soil.	Implementation	UMRWA/FS/ Contractor
MR-GEO(S)-10:	Machine piling locations within gaps may need to be reviewed by the soil scientist or sale administrator, if thin soils (less than 25 inches deep) are present.	Implementation	UMRWA/FS/ Contractor
MR-GEO(S)-11:	In all aspen meadows and special aquatic features with planned mechanical thinning operations, the boundary of the exclusion zone would be reviewed by the soil scientist or hydrologist and mapped with a global positioning system (GPS).	Implementation	UMRWA/FS/ Contractor

Number	Management Requirement	Reporting Milestone	Reporting/ Responsible Party
MR-GEO(S)-12:	Tree removal from or around aspen meadows and SAFs would be done with low ground pressure tracked equipment (less than 13 psi) to adequately protect soil and water resources (i.e. equipment that is light on the land, rubber-tired equipment, equipment that operates on a bed of slash, or other innovative technologies that reduce impacts to soils). Operations should occur on dry soil, or by end-lining of trees <100 ft. out of the meadow. Other mechanical removal methods should be approved by soil scientist or hydrologist.	Implementation	UMRWA/FS/ Contractor
MR-GEO(W)-1:	Mechanized equipment within RCAs would follow guidelines displayed in Table 2.05-1 of the Hemlock EA (adapted from Frazier 2006)	Implementation	UMRWA/FS/ Contractor
MR-GEO(W)-2:	Operations would follow additional management requirements derived from Regional and National Best Management Practices (BMPs) (USDA 2011, USDA 2012) and Riparian Conservation Objectives (RCOs) (USDA 2004) as displayed in Table 2.05-2 of the Hemlock EA.	Implementation	UMRWA/FS/ Contractor
MR-GEO(W)-3:	BMPs applicable to this project are listed in Table 2.05-2 of the Hemlock EA with site-specific requirements and comments. Project planners and administrators (e.g., layout, Sale Administrator, Contracting Officer Representative) are responsible for consulting with a hydrologist and/or soil scientist prior to or during project implementation for interpretation, clarification, or adjustment of watershed management requirements.	Implementation	UMRWA/FS/ Contractor
MR-REC-1:	Treatment timing would be coordinated to minimize conflicts with recreation use.	Pre-Project and Implementation	UMRWA/FS/ Contractor
MR-REC-2:	Temporary road and/or skid trail crossings across designated forest trails would be kept to a minimum. Any crossings would be perpendicular to designated forest trails.	Implementation	UMRWA/FS/ Contractor

Number	Management Requirement	Reporting Milestone	Reporting/ Responsible Party
MR-REC-3:	Minimize overlaying skid trails/haul roads on non-motorized system trails.	Implementation	UMRWA/FS/ Contractor
MR-REC-4:	If trails are used as skid trails/haul roads, trail cleanup/rehabilitation (including returning the trails to pretreatment standard) would be included in the contract.	Post-Project	UMRWA/FS/ Contractor
MR-REC-5:	Character trees and trees that define the trail corridor (as identified by timber or recreation staff) should be retained where ever feasible.	Implementation	UMRWA/FS/ Contractor
MR-REC-6:	Warning signs would be placed on all trail access points and along the trail where activities are occurring.	Pre-Project and Implementation	UMRWA/FS/ Contractor
MR-REC-7:	When activities are occurring along open trails, slash would be treated within 100’ of the corridor within specified timeframes (check with recreation specialist).	Implementation	UMRWA/FS/ Contractor
MR-TRAN-1:	Preserve sufficient road width for the critical vehicle when installing gates or cattle guards.	Implementation	UMRWA/FS/ Contractor

8. SUPPLEMENTARY DOCUMENTS

a. Environmental Documents

Below is a brief summary of the NEPA status of the Pumpkin Hollow project. The supporting NEPA environmental documentation is attached below and includes:

- CEQA/NEPA Compliance Form
- Hemlock Landscape Restoration Project Decision Notice and Finding of No Significant Impact
- Hemlock Landscape Restoration Project Environmental Assessment (see electronic document entitled LTMP for Long Term Management Plan)

SUMMARY OF NEPA STATUS OF THE PROJECT

The Forest Service prepared the Hemlock Landscape Restoration Environmental Assessment (EA) in compliance with the National Environmental Policy Act (NEPA) and other relevant Federal and State laws and regulations. The EA discloses the direct, indirect, and cumulative environmental effects that would result from the project activities as well as other alternatives. The Decision Notice and Finding of No Significant Impact was signed by the Forest Supervisor, the Responsible Official, on January 29, 2016.

The Hemlock Landscape Restoration project has undergone extensive public scoping, in addition to planning the project in collaboration with the Amador Calaveras Consensus Group. No relevant or specific comments were provided by the public during public meetings or scoping timeframes. The public overwhelmingly expressed general support for the project. Public comments are available in the project record.

Appendix F - CEQA/NEPA Compliance Form

(California Environmental Quality Act & National Environmental Policy Act)

Instructions: All applicants must complete the CEQA compliance section. Check the box that describes the CEQA status of the proposed project. You must also complete the documentation component and submit any surveys, and/or reports that support the checked CEQA status.

If NEPA is applicable to your project, you must complete the NEPA section in addition to the CEQA section. Check the box that describes the NEPA status of the proposed project. Submit any surveys, and/or reports that support the NEPA status. For both CEQA and NEPA, submittal of permits is only necessary if they contain conditions providing information regarding potential environmental impacts.

NOTE: Effective July 1, 2015, AB52 compliance is required.

CEQA STATUS

(All applicants must complete this section)

Check the box that corresponds with the CEQA compliance for your project. The proposed action is either Categorically Exempt from CEQA, requires a Negative Declaration, Mitigated Negative Declaration, or an Environmental Impact Report per CEQA.

☐ **Categorical Exemption or Statutory Exemption**

If a project is exempt from CEQA, all applicants, including public agencies that provide a filed Notice of Exemption, are required to provide a clear and comprehensive description of the physical attributes of the project site, including potential and known special-status species and habitat, in order for the SNC to make a determination that the project is exempt. A particular project that ordinarily would fall under a specific category of exemption may require further CEQA review due to individual circumstances, i.e., it is within a sensitive location, has a cumulative impact, has a significant effect on the environment , is within a scenic highway, impacts an historical resource, or is on a hazardous waste site. Potential cultural/archaeological resources must be noted, but do not need to be specifically listed or mapped at the time of application submittal. Backup data informing the exemption decision, such as biological surveys, Cultural Information Center requests, research papers, etc. should accompany the full application. Applicants anticipating the SNC to file an exemption should conduct the appropriate surveys and submit an information request to an office of the California Historical Resources Information System (CHRIS).

1. Describe how your project complies with the requirements for claiming a Categorical or Statutory Exemption per CEQA:

2. If your organization is a state or local governmental agency, submit a signed, approved Notice of Exemption (NOE) documenting the use of the Categorical Exemption or Statutory Exemption, along with any permits, surveys, and/or reports that have been completed to support this CEQA status. The Notice of Exemption must bear a date stamp to show that it has been filed with the State Clearinghouse and/or County Clerk, as required by CEQA.
3. If your organization is a nonprofit, there is no other California public agency having discretionary authority over your project, and you would like the SNC to prepare a NOE for your project, let us know that and list any permits, surveys, and/or reports that have been completed to support the CEQA status. All supplementary documentation must be provided to the SNC before the NOE can be prepared.

☒ **Negative Declaration OR**
☐ **Mitigated Negative Declaration**

If a project requires a Negative Declaration or Mitigated Negative Declaration, then applicants must work with a qualified public agency, i.e., one that has discretionary authority over project approval or permitting, to complete the CEQA process.

1. Describe how your project complies with the requirements for the use of a Negative Declaration or a Mitigated Negative Declaration per CEQA:

   Trees will be removed and thinned to improve forest health and reduce fire risk using methods that will protect water quality and improve habitat values. The project is designed to avoid activity in the vicinity of sensitive and protected resources. Sensitive or listed plant species identified in the Botanical Resources Biological Evaluation are not located within the project area or will be flagged and avoided. As described in the Hemlock Landscape Restoration Environmental Assessment and Finding of No Significant Impact (2016), Pumpkin Hollow project area has been extensively surveyed for cultural and biological resources. The project will result in minor alterations to land and no significant impacts would occur.

   The Upper Mokelumne River Watershed Authority (UMRWA, or Authority) is a Joint Powers Authority comprised of six water agencies and the counties of Amador, Calaveras and Alpine. The six water agencies are Amador Water Agency, Calaveras County Water District, Calaveras Public Utility District, East Bay Municipal Utility District, Jackson Valley Irrigation District and Alpine County Water Agency. The Authority is governed by an eight member Board of Directors which meets quarterly.

2. Submit the approved Initial Study and Negative Declaration/Mitigated Negative Declaration along with any Mitigation Monitoring or Reporting Plans, permits, surveys, and/or reports that have been completed to support this CEQA status. The IS/ND/MND must be accompanied by a signed, approved Notice of Determination, which must bear a date stamp to show that it has been filed with the State Clearinghouse and/or County Clerk, as required by CEQA.

☐ **Environmental Impact Report**

If a project requires an Environmental Impact Report, then applicants must work with a qualified public agency, i.e., one that has discretionary authority over project approval or permitting, to complete the CEQA process.

1. Describe how your project complies with the requirements for the use of an Environmental Impact Report per CEQA:

2. Submit the Draft and Final Environmental Impact Report along with any Mitigation Monitoring or Reporting Plans, permits, surveys, and/or reports that have been completed to support this CEQA status. The EIR documentation must be accompanied by a signed, approved Notice of Determination, which must bear a date stamp to show that it has been filed with the State Clearinghouse and/or County Clerk, as required by CEQA.

NEPA STATUS

Check the box that corresponds with the NEPA compliance for your project.

☐ **Categorical Exclusion**
Submit the signed, approved Decision Memo and Categorical Exclusion, as well as documentation to support the Categorical Exclusion, including any permits, surveys, and/or reports that have been completed to support this NEPA status.

☒ **Environmental Assessment & Finding of No Significant Impact**
Submit the signed, approved Environmental Assessment and Finding of No Significant Impact along with any permits, surveys, and/or reports that have been completed to support this NEPA status.

☐ **Environmental Impact Statement**
Submit the Draft and approved, Final Environmental Impact Statement, along with the Record of Decision and any permits, surveys, and/or reports that have been completed to support this NEPA status.

Hemlock Landscape Restoration (45690)
Decision Notice and Finding of No Significant Impact

Stanislaus National Forest
Calaveras Ranger District
Calaveras County, California

The Forest Service prepared an Environmental Assessment (EA) for the Hemlock Landscape Restoration (Hemlock) project in compliance with the National Environmental Policy Act (NEPA) and other relevant laws and regulations. The EA discloses the direct, indirect and cumulative effects that would result from the alternatives.

This document contains a Decision Notice and Finding of No Significant Impact (FONSI). The Decision Notice identifies the decision and the rationale for selecting or modifying an alternative from the EA. The FONSI shows that the decision does not cause significant impacts on the human environment and explains why an environmental impact statement is not necessary. Additional documentation, including more detailed analyses of project area resources, may be found in the project record located at the Calaveras Ranger District Office in Hathaway Pines, California. The EA and the supporting project record are incorporated into this Decision Notice and FONSI.

Background

The mission of the Forest Service is to sustain the health, diversity and productivity of the Nation's forests and grasslands to meet the needs of present and future generations. The Forest Service's goal for Region 5 is to retain and reestablish ecological resilience of National Forest System (NFS) lands to achieve sustainable ecosystems that provide a broad range of services to humans and other organisms. Ecologically healthy and resilient landscapes would have greater capacity to survive and adapt following natural disturbances and large scale threats to sustainability, especially under changing and uncertain future environmental conditions such as those driven by climate change and increasing human use.

At least three environmental stressors in the Sierra Nevada help define restoration needs: 1) climate change and shifting hydrologic patterns; 2) increasingly dense and unhealthy forests; and, 3) California's human population pressure on public lands. These stressors (or drivers of change) result in a dramatic increase in disturbance events (e.g., uncharacteristic, large-scale wildfires, floods, insect and disease outbreaks, and the spread of invasive species), a reduction of ecosystem services (e.g. wood, water, scenic landscapes, wildlife habitat, biodiversity, and carbon sequestration and storage), and a growing need to revitalize rural economies in California.

Collaboration

Congress established the Collaborative Forest Landscape Restoration Program (CFLRP) with Title IV of the Omnibus Public Land Management Act of 2009. The purpose of the CFLRP is to encourage the collaborative, science-based ecosystem restoration of priority forest landscapes. The Amador-Calaveras Consensus Group (ACCG) Cornerstone program is a CFLPR project. ACCG is a community based local collaborative that works to create healthy forests and watersheds, fire-safe communities, and sustainable local economies. ACCG fosters partnerships among private, nonprofit, state, and federal entities with a common interest in health and well-being of the landscape and communities in the Mokelumne and Calaveras watersheds. The group is advancing an all-lands strategy to create a heightened degree of environmental stewardship, local jobs, greater local economic stability, and healthy forests and communities. ACCG's principles reflect the group's emphasis on its triple bottom line for balancing environmental, social, and economic goals. The

Hemlock project, developed in collaboration with the ACCG, is a component of the Cornerstone Program.

Project

The Hemlock project is located within the Stanislaus National Forest on the Calaveras Ranger District in Calaveras County, California (EA, p. 3). The project area is located northeast of Arnold and southwest of Bear Valley on the north side of the North Fork Stanislaus River (T 6-7 N, R 16-17 E; MDBM). The EA (p. 3-4) describes the Purpose and Need for Action, including these purposes:

- Improve the ecological resilience of forested communities across the project landscape.
- Re-establish forest species composition, structure, and pattern on the landscape, as well as ecological processes (e.g. hydrologic function, fire regime) necessary for the long-term sustainability, resilience, and health of terrestrial and aquatic ecosystems.

Decision

I decided to implement Alternative 3, including these specific actions listed and described in the EA (p. 24-38). The EA (p.12) lists 5 maps that apply to Alternative 3, available by request in a separate Map Package. Alternative 3 includes:

1. **Forest Restoration**: mechanical thinning, hand thinning, biomass removal, mastication, planting, provisions for soil productivity (Map 2).
   - 3,966 acres designed using guidelines in the General Technical Report (GTR) 220.
   - 846 acres of plantation thinning.
   - 249 acres of meadow and aspen treatments.
2. **Scenic Corridor**: mechanical thinning, hand thinning, biomass removal, mastication, piling and burning (Map 2).
   - 241 acres mechanical thinning along the Ebbetts Pass National Scenic Byway.
3. **Fuels Reduction**: mechanical thinning, hand thinning, piling and burning, mastication, roadside fuel-breaks, shaded fuel-breaks, and prescribed fire (Maps 2 and 3).
   - 73 acres roadside fuel-break.
   - 582 acres of shaded fuel-break in the Wildland Urban Interface.
   - 336 acres of shaded fuel-break outside of the Wildland Urban Interface.
   - 4,769 acres of prescribed fire.
   - 2,331 acres of hand thinning.
4. **Mature Forest Wildlife Habitat Restoration**: mechanical thinning, hand thinning, biomass removal, mastication, planting, and prescribed fire (included in Map 2; acres included in categories above).
   - 2,293 acres of mechanical thinning in spotted owl Home Range Core Area (HRCA) designed using guidelines in the General Technical Report (GTR) 220.
   - 23 acres of plantation thinning in HRCAs.
   - 18 acres of meadow and aspen treatments in HRCAs.
   - 102 acres of HRCA mechanical thinning along the Ebbetts Pass National Scenic Byway.
   - 76 acres of HRCA fuel treatments in roadside fuel-breaks, and shaded fuel-breaks.
   - 1,922 acres of prescribed fire in HRCAs and 380 acres in Protected Activity Centers (PACs).
   - 872 acres of hand thinning in HRCAs and 1,488 acres in PACs.
5. **Heritage Resources**: hand thinning, conifer removal, road decommissioning or blocking, barrier installation, interpretive signage installation, and recreation area relocation.
6. **Aquatic Organism Passage Restoration**: culvert replacement or removal (Map 4).
   - 8 sites would receive restoration actions.

7. **Streams, Riparian Areas, Special Aquatic Feature and Aspen Restoration**: encroaching conifer removal, monitoring/adaptive management, Special Aquatic Feature (SAF) barrier installation, stream channel restoration, head-cut stabilization, and trough installation (Map 4).
   - 16 sites would receive head-cut/channel restoration actions; armor one site.
   - 47 SAFs may receive monitoring prior to adaptive management actions.
   - 2 sites would receive a barrier until desired conditions are met.
   - 4 water troughs would be installed.

8. **Recreation**: motorized and non-motorized trail improvement, maintenance, reconstruction, rerouting and construction; road designation changes, dispersed campsites enhancement or rehabilitation, and trailheads and parking areas development (Map 6).
   - 21 dispersed recreation sites would be delineated.
   - 1 dispersed campsite improvement (Horse Gulch), including a Forest Plan Amendment (described below) to allocate this site to the developed recreation site management area and constructing a fence around the campground.
   - 1 dispersed campsite improvement (Sand Flat), including constructing a parking area, decommissioning existing toilets, and placing a new vault toilet near parking area.
   - 3 dispersed campsites would be rehabilitated.
   - 0.75 miles of trails added to the National Forest Trail System (NFTS) to facilitate access to dispersed recreation sites.
   - 0.86 miles of new OHV trails added to the NFTS to connect existing OHV infrastructure.
   - 0.26 miles of OHV trail constructed from the Skyhigh subdivision to 07N11.
   - 0.5 miles of new non-motorized trail to replace a damaged existing hiking trail.
   - 1 OHV staging area and 1 hiking parking area would be constructed with informational signage.
   - 1.3 miles of user created trails blocked/decommissioned.
   - 2.25 miles of motorized trail would be reconstructed, including placing bridges across identified drainages to reduce soil erosion.

9. **Transportation**: roads and motorized trails maintenance, reconstruction, decommissioning, and construction needed to accomplish restoration objectives, and identification of rock quarry sites and water sources to accommodate road needs during implementation as well as for long-term resource needs (Map 8).
   - 107.77 miles of physical actions on National Forest system roads.
   - 14.10 miles of physical actions on National Forest system trails.
   - 9.29 miles of physical actions on unauthorized routes.
   - Modification to NFTS Travel Management Designations:
     - 1.07 miles of system road and 2.23 miles of non-system routes would be reassigned as a system trail.
     - 5.21 miles of system trail and 2.19 miles of non-system routes would be reassigned as system road.
     - 4.02 miles of system road and 2.41 miles of system trail would be decommissioned and removed from the system.
     - 26.3 miles of changes to NFTS Vehicle Class.

10. **Management Requirements**: include requirements related to protecting resources while implementing other actions as described in the EA (p. 28-38).

In reaching this decision, I reviewed and considered the most recent information, including the Forest Plan (USDA 2010), the EA, resource specialist reports (EA, p. 45) and input from interested parties during the scoping period (Scoping Summary, project record), and 30-day comment period (Response to Comments, project record).

Forest Plan Amendment

The Horse Gulch Campground Forest Plan Amendment (Figure 1) changes the management area land allocation on 14.85 acres from General Forest to Developed Recreation Sites.

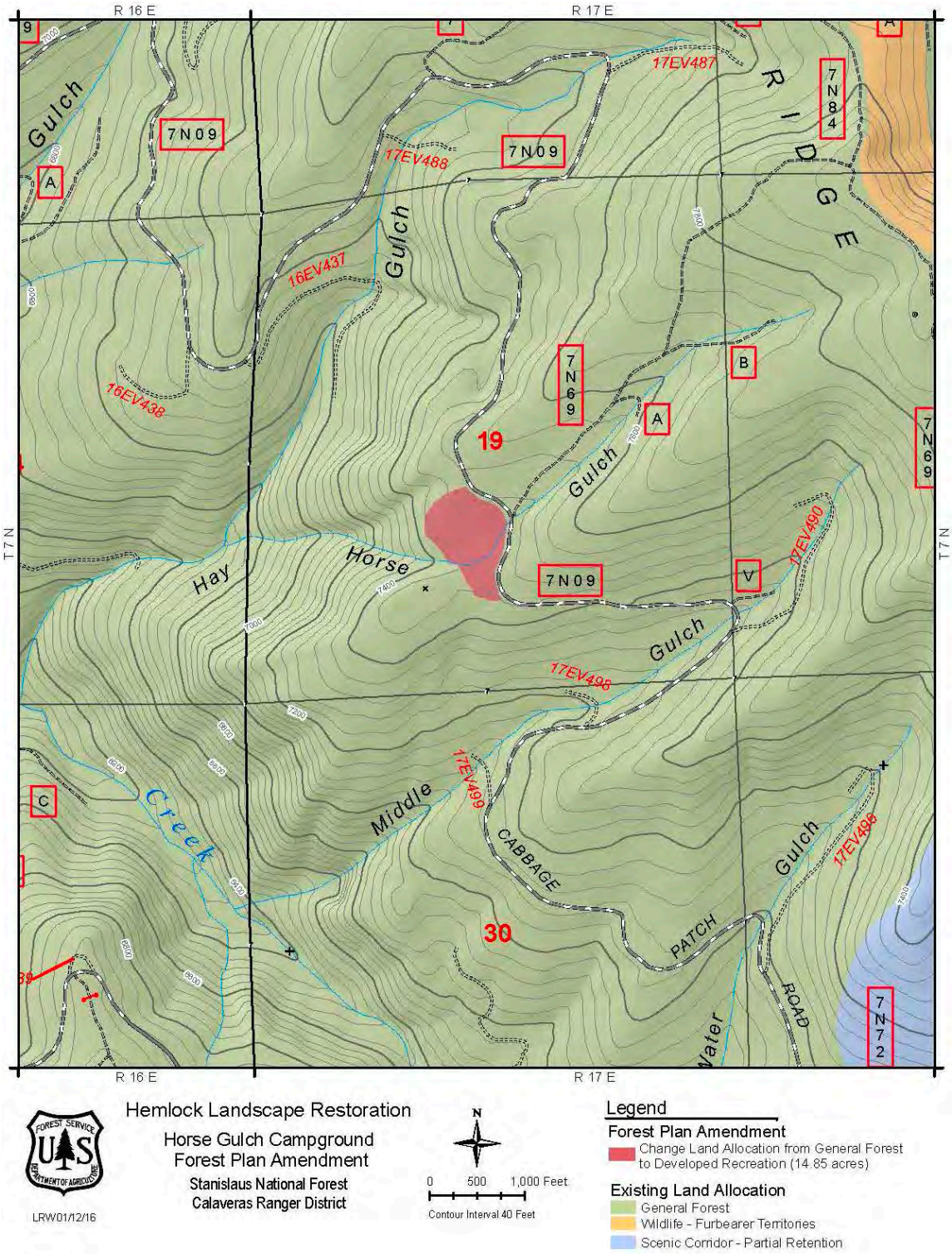


Figure 1 Horse Gulch Campground Forest Plan Amendment

Reasons for the Decision

I selected Alternative 3 because it responds to the Forest Canopy Structure issue (EA, p. 9) relative to spotted owls and snow retention research (EA, p. 24-38), and other comments received during the scoping period (Scoping Summary, project record). In addition:

1. Alternative 3 provides greater forest structural diversity by prescribing a greater distribution of residual canopy cover values across landscape slope positions and aspects.
2. The redistribution of residual canopy cover values (as compared to the Proposed Action) allows research scientists to investigate key hydrological questions while still enhancing mature forest dispersal corridors and retaining greater canopy cover percentages near strategic owl PACs.
3. Economic benefits associated with Alternative 3 are similar to Alternative 1 (Proposed Action). Alternative 3 would generate direct and indirect jobs and help sustain employment for local families and businesses.
4. Alternative 3 responds to public comment regarding recreation opportunities and ingress into Skyhigh subdivision, in addition to creating a shaded fuel-break along Skyline drive.

Other Alternatives Considered

In addition to the selected Alternative, I considered two other alternatives described in detail in the EA (p. 13-38). The EA (p. 39-41) includes a comparison of the alternatives considered in detail.

Alternative 1 (Proposed Action)

Alternative 1 is the Proposed Action, as described in the November 13, 2014 scoping letter, with corrections based on updated data and refined field information as indicated in the EA (p. 7). I did not select Alternative 1 for the following reasons:

1. It does not provide opportunities for research scientists to investigate key questions related to how different forest structure, density, and canopy cover across watersheds may provide insight into actions to enhance water retention.
2. It does not respond to concerns expressed during public comment regarding the potential trend in spotted owl site occupancy and possible influence of forest canopy cover percentages in close proximity to PACs.
3. The social/economic outcomes expected from the implementation of Alternative 1 are similar to Alternative 3.

Alternative 2 (No Action)

Under Alternative 2 (No Action), no actions would occur. Current management plans would continue to guide management of the project area (EA, p. 24). I did not select Alternative 2 (No Action) for the following reasons:

1. Without restoration treatments, the Hemlock project area is at risk of stand replacing wildfires, drought, disease, and insect-related mortality and tree recruitment due to the current forest vegetation density, composition, and structural homogeneity.
2. Vegetation density would continue to increase and degrade viewing opportunities along the Ebbetts Pass National Scenic Byway, campgrounds, and other vista points.
3. Roads, trails, and areas with existing gullies and areas prone to the creation of new gullies would continue to add fine sediment to the watersheds, further degrading the quality of the habitat for federally listed amphibian species and reducing water quality.
4. Ecological shifts in wildlife habitat and hydrology are currently occurring within forested habitats and SAFs.
5. Forest Service sensitive plants may continue to receive anthropogenic stressors that could result in the extirpation of sensitive plants and contribute to a loss in species viability.

6. Current fuel loads increase the risk of high intensity wildfires that can cause irreparable damage to heritage resources.
7. It does not provide opportunities for research scientists to investigate key questions related to how different forest structure, density, and canopy cover across watersheds may provide insight into actions to enhance water retention.

Public Involvement

The Forest Service first listed the Hemlock project online [http://data.ecosystem-management.org/nepaweb/current-sopa.php?forest=110516] in the Stanislaus National Forest Schedule of Proposed Actions (SOPA) on October 28, 2014. The project first appeared in the published quarterly SOPA in January 2015. The Forest distributes the SOPA to about 160 parties and it is available on the internet [http://www.fs.fed.us/sopa/forest-level.php?110516].

Designated Scoping Period (30 days)

On November 5, 2014 the Forest sent a scoping letter to 320 individuals, organizations, businesses, agencies, and Tribes interested in this project. The letter described the proposed action and requested specific written comments from November 13 through December 15, 2014. The scoping information was also posted on the project website [http://www.fs.usda.gov/project/?project=45690].

The Forest issued a November 13, 2014 news release announcing the designated scoping comment period. The Forest held a public meeting on November 20, 2014 in Hathaway Pines, California. Six individuals attended the meeting and expressed general support for the project but did not submit specific written comments at the meeting.

A total of 17 private individuals or organizations, including the Amador Calaveras Consensus Group, Central Sierra Environmental Resource Center, California Forestry Association, livestock permittee and private landowners submitted timely comments during the designated comment period. Ten of those provided comments in support of the proposed actions. A total of 3 individuals submitted comments outside the designated comment period: one (November 12, 2014) before it began; and, two (January 13, 2015 and January 30, 2015) after it ended.

The Scoping Summary (project record) provides an analysis of the scoping comments submitted. The EA provides further details regarding the development of issues identified through public involvement and scoping (p. 9) and provides a summary of effects relative to the issues (p. 109-112).

Designated Draft EA Comment Period (30 days)

A legal notice announcing the 30-day Opportunity to Comment on the Draft EA appeared in the Union Democrat, the newspaper of record, on September 03, 2015. The Forest mailed notice of the availability of the EA to the 20 parties who submitted scoping comments and 294 additional parties. The 30-day comment period ended on October 5, 2015. A total of 16 parties submitted comments during the designated comment period. Copies of all comment letters received, along with the Response to Comments, are located in the project record and available by request.

California Spotted Owl

The John Muir Project of the Earth Island Institute and the Center for Biological Diversity submitted a letter (December 14, 2015) after the designated comment periods and after the 45-day objection period. The letter, claiming “significant new information” requested that the Forest prepare a supplemental EA to determine whether an Environmental Impact Statement (EIS) was required because the U.S. Fish and Wildlife Service (FWS) issued a determination (September 18, 2015) that listing the California spotted owl under the Endangered Species Act “may be warranted.”

According to the FWS, this positive 90-day finding: does not change the status of the species; it does not mean that the FWS decided to grant federal protections for the species; and, it means only that the FWS determined the petition presented substantial scientific information to indicate that the action may be warranted. Since the project record includes the recent FWS determination and the analysis accurately reflects the current status of the California spotted owl, a supplemental EA is not required.

Finding of No Significant Impact

After considering the environmental effects described in the EA (p. 43-112) along with the Finding of No Significant Impact context and intensity factors (EA, p. 113-116), I determined that these actions will not have a significant effect on the quality of the human environment (40 CFR 1508.27); therefore, an environmental impact statement will not be prepared. I incorporate the EA and project record, by reference, in making this determination.

Findings Required by Other Laws and Regulations

My decision is consistent with the long term goals and objectives of the Forest Plan (USDA 2010, p. 5-16). The Horse Gulch Campground Forest Plan Amendment (Figure 1) is consistent with the April 2012 National Forest System Land Management Planning; Final Rule (36 CFR 219.13(a); 219.13(b)(3); 219.17(a)(3); and, 219.17(b)(2). I determined that Alternative 3 is consistent with the Forest Plan goals and objectives and forestwide and Management Area standards and guidelines (EA, p. 3 and subsections under each resource area in Chapter 3), and therefore this project complies with the National Forest Management Planning Act of 1976. In addition, implementation and effects of this decision will be consistent with the following relevant acts and executive orders:

- Section 508 of the 1978 Rehabilitation Act of 1973
- Archaeological Resource Protection Act of 1978
- Clean Water Act of 1948, as amended
- Endangered Species Act of 1973, as amended
- Fish and Wildlife Coordination Act of 1934, as amended
- National Environmental Policy Act of 1969, as amended
- National Historic Preservation Act (NHPA) of 1966, as amended
- Protection of Wetlands Executive Order 11990

Administrative Review or Appeal Opportunities

This project was subject to the pre-decisional objection process pursuant to 36 CFR 218, Subparts A and B. A legal notice announcing the 45-day objection period on the draft decision appeared in the Union Democrat, the newspaper of record, on October 15, 2015. The Forest mailed notice of the availability of the draft decision to the 16 parties who submitted comments on the Draft EA. The 45-day objection period ended on November 30, 2015.

One individual submitted an objection (November 10, 2015) with eight issues related the analysis. Another group submitted a letter (November 20, 2105) indicating an objection if the draft decision was modified. The Reviewing Officer completed the objection review letter (January 14, 2016) finding the rationale for the project is clear and the reasons for the project are logical and responsive to direction contained in the Forest Plan. The Reviewing Officer also instructed the Forest Supervisor to proceed with issuance of a Decision Notice and states there will be no further review by any other Forest Service or U.S. Department of Agriculture official as per 36 CFR 218.11(b)(2). The objection related documents are located in the project record and available by request.

Implementation Date

Implementation of this decision may begin immediately (36 CFR 218.12(a)).

Contact Person

For additional information regarding this decision, contact Kendal Young; PO Box 500; Hathaway Pines, CA 95233; or, call (209) 795-1381 ext. 355

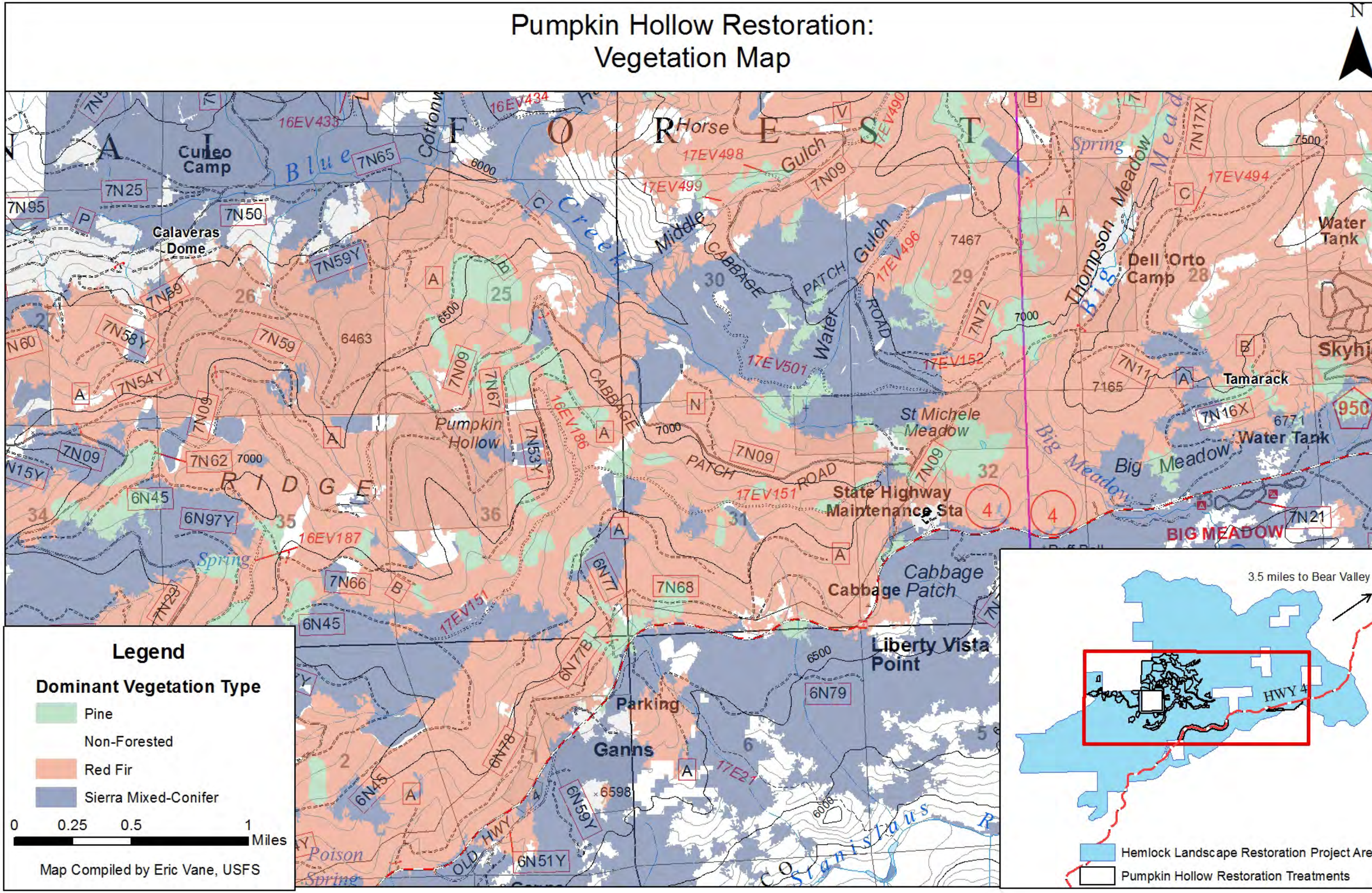
Signature and Date

January 26, 2016

JEANNE M. HIGGINS
Forest Supervisor
Stanislaus National Forest

Date

Pumpkin Hollow Restoration: Vegetation Map



Pumpkin Hollow Restoration Treatments

Items

- Hand Treatments
  i. Hand thinning of trees < 6" or 10" diameter at breast height (DBH) depending on treatment area.
  ii. Hand cut trees would be piled and burned

- Aspen and Meadow Restoration
  i. Removal of all conifers < 30" DBH in and around meadows/ aspens. Removal of conifers up to 40" DBH within 50 feet of meadows/ aspens is allowed where basal area (BA) is greater than 120 ft2/ ac.
  ii. Biomass (trees <10" DBH) would be removed and/ or piled and burned

- Forest Restoration (GTR 220)
  i. Mechanical thinning of trees from 10 – 29.9" DBH
  ii. Firs and cedars would be prioritized for removal
  iii. Canopy cover retention would vary based on topographic position from 40-60%
  iv. Gap creation would be incorporated into treatments with varying density and sizes depending on topographic feature

- Plantation Thinning
  i. Mastication and biomass removal would be used to thin plantations to a 20 x 20 foot spacing
  ii. Sawlog removal to a 20 x 20 foot spacing

- Fuel Breaks
  i. Trees less than 30" would be thinned to a residual canopy cover of 40%
  ii. Trees less than 10" DBH would be masticated, piled and burned, or removed

Treatment	Acres
Hand Treatments	321
Meadow/ Aspen Restoration	78
Forest Restoration (GTR 220)	81
Fuel Breaks	261
Plantation Thinning	230
Total	971

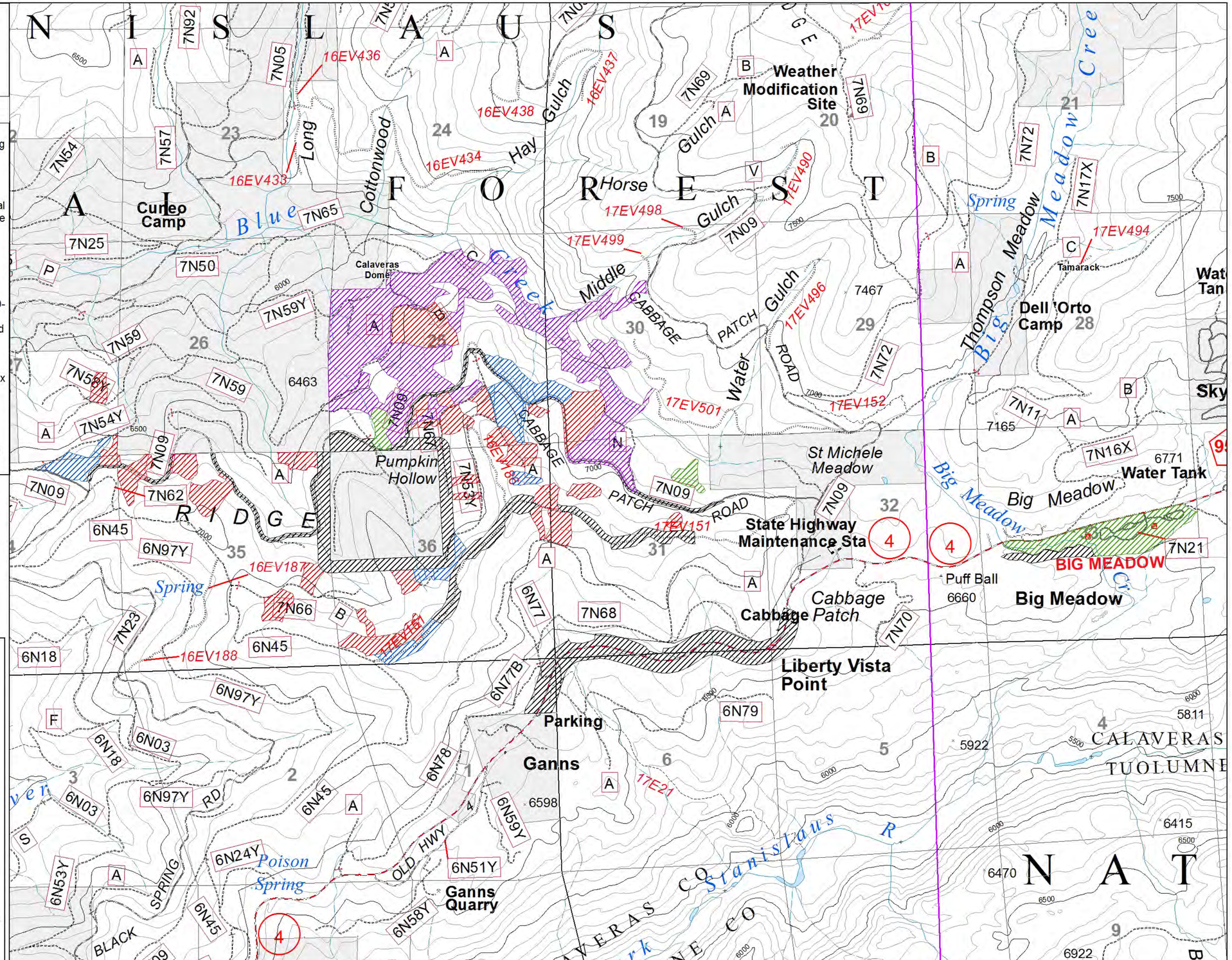
Legend

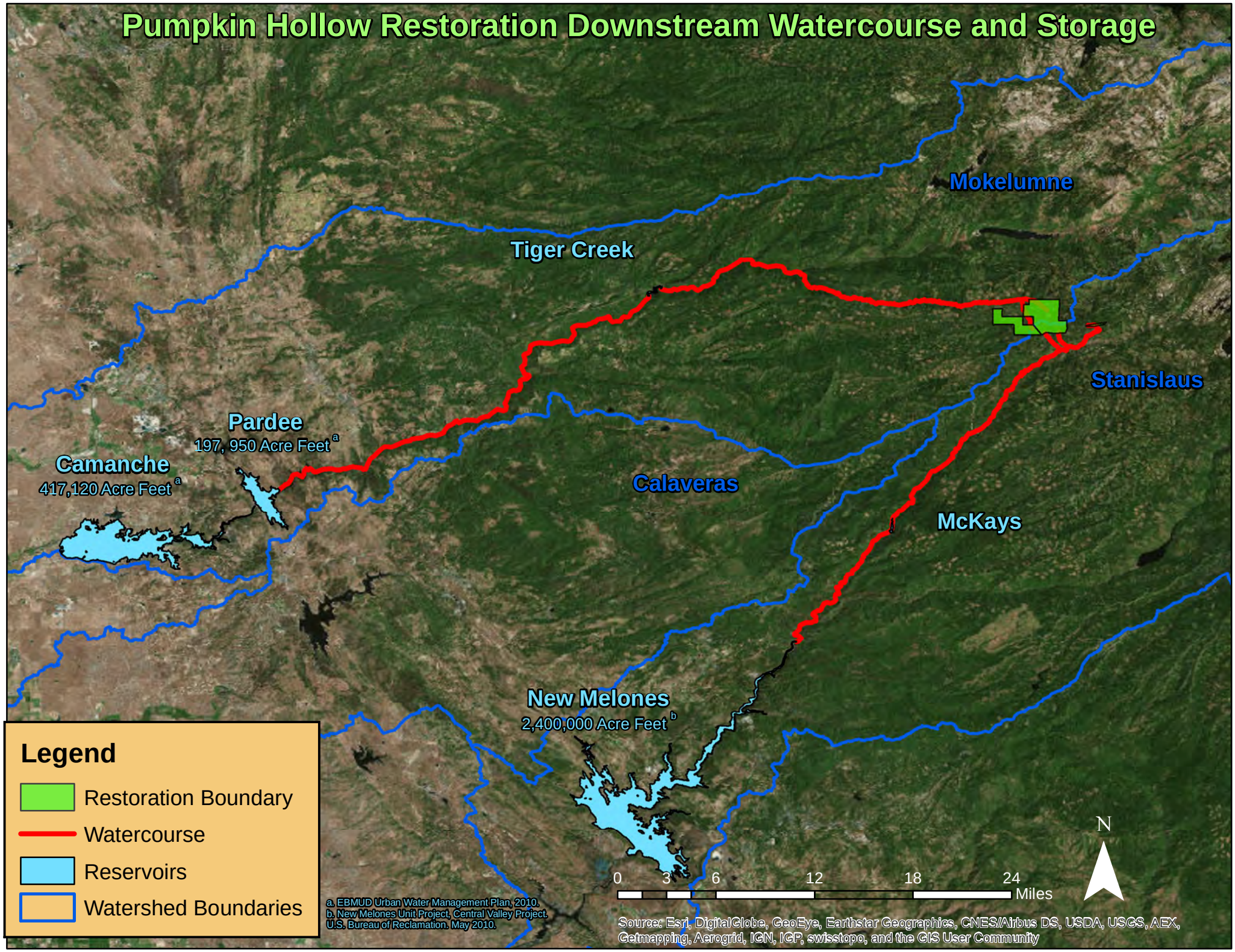
- Hand Treatments
- Meadow/ Aspen Resoration
- Forest Restoration (GTR 220)
- Plantation Thinning
- Fuel Breaks

N

0 0.4 0.8 1.6 Miles

Map Compiled by Eric Vane, USFS




Pumpkin Hollow Restoration Downstream Watercourse and Storage
Mokelumne
Tiger Creek
Stanislaus
Pardee
197, 950 Acre Feet a
Camanche
417,120 Acre Feet a
Calaveras
McKays
New Melones
2,400,000 Acre Feet b
Legend
Restoration Boundary
Watercourse
Reservoirs
Watershed Boundaries
a. EBMUD Urban Water Management Plan, 2010.
b. New Melones Unit Project, Central Valley Project.
U.S. Bureau of Reclamation. May 2010.
0 3 6 12 18 24
Miles
N
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

8. PHOTO DOCUMENTATION
b. Maps and Photos - Photos of the Project Area

Protected municipal water supply is an important benefit of the Pumpkin Hollow Restoration Project. Photo of the main stem Mokelumne River. Although this photo was taken downstream of the proposed restoration area, studies by Kittredge (1952) and Lundquist et. al (2013) demonstrate the relationship between forest and fuels management activities and snowpack density/water supply. *Photo by Tyler Childress, May 2009.*

Photos above depict fuels reduction needs along Highway 4. Restoration actions include removal of surface and ladder fuels, thinning of overstocked forested stands, and thinning plantations. The two photos above were taken along a scenic strip near Highway 4. These photographs provide good examples of vegetation conditions in Pumpkin Hollow project area. Photo by *USFS, June 2015.*

The photos above depict conifers encroaching on meadows and aspen stands in the Pumpkin Hollow Restoration Area. Removal of conifers less than 30" DBH (diameter at breast height) within meadow boundaries will enhance the hydrologic, geomorphic, and biological characteristics of these important ecological communities. *USFS Photo, Fall of 2015 .*

Photograph of Big Meadow before 1964
Photo depicts desired condition of forested landscape
(precise date and location within the campground is unknown).

Pre-treatment photograph within Big Meadow developed campground taken in November 2014.

Photograph of Big Meadow before 1964, representative of the desired condition of the Pumpkin Hollow Restoration Area. The forest is much more open with reduced understory vegetation and fuel loading. Maintaining the health of our forests and watersheds for future generations is a critical objective of this project. (precise date and location within the campground is unknown).

Pre-treatment photograph within Big Meadow developed campground taken in November 2014

FS Agreement No. _____ - _____ - _____

Cooperator Agreement No. _____

DRAFT

MASTER
STEWARDSHIP AGREEMENT
Between The
Upper Mokelumne River Watershed Authority
And the
USDA FOREST SERVICE, Eldorado and Stanislaus National Forests

This Master Stewardship Agreement is hereby made and entered into by and between the Upper Mokelumne River Watershed Authority, hereinafter referred to as "UMRWA," and the USDA Forest Service, Eldorado and Stanislaus National Forests, hereinafter referred to as the "Forest Service," under the provisions of the Consolidated Appropriations Resolution, 2003, Public Law 108-7, sec 323, amending Public Law 105-277, sec. 347 (Stewardship Authority).

Background: In 2003 Congress authorized the Forest Service and the Bureau of Land Management to enter into stewardship contracts and agreements "to achieve land management goals for the national forests that meet local and rural community needs." The primary focus of this legislation is to achieve land management goals through stewardship projects awarded under contracts or agreements. Unique to the legislation is the ability to exchange goods for services that meet the land management objectives.

The area addressed in this Master Stewardship Agreement is known as the Cornerstone Collaborative Forest Landscape Restoration Project area on the Amador Ranger District, Eldorado National Forest and the Calaveras Ranger District, Stanislaus National Forest and lies within the borders of the State of California. This area includes an un-estimated number of acres to be treated during the term of this Master Stewardship Agreement.

The Mokelumne River Watershed is an important ecological, social, and economic resource whose value extends from the crest of the Sierra Nevada to the San Francisco Bay Area. The watershed produces high-quality water for agricultural, industrial and urban domestic use, including more than 1.4 million East Bay Area residents. In addition, the watershed provides habitat for several State and Federally listed threatened, endangered, sensitive and candidate plant and animal species. Several thousand people live in the wildland urban interface areas and the area includes historic and active Miwok and Washoe cultural sites as well as world-class recreation opportunities.

This forested mountain landscape has served as the region's socio-economic foundation for hundreds of years. The native Miwok and Washoe people were stewards of this land as they moved seasonally through the watershed and lived on its rich abundance of plants, fish, and animals. The miners of the 1849 California Gold Rush displaced tons of ore in search of gold. As the Gold Rush faded, cattle and sheep ranchers moved in to graze these forested slopes.

Settlement expanded, fire was excluded from the landscape and the desire for merchantable timber dominated forest management practices. Today, the forests of the Mokelumne Watershed have become overgrown and less resilient to fire while the number, type and values of resources at risk has grown. Many of the meadows have been encroached by conifers or dried out and no longer store the amount of water they historically did. Overly dense forested stands use more water that would otherwise flow downstream.

Many residents of the small communities of this watershed struggle with poverty since the near-collapse of the local timber industry. Local residents have deep ties to the land. They include Native American people who have called this area home for thousands of years, descendants of early miners and ranchers, families who made their living in the forest for generations. After all the various types of land management, these lands remain rich in forest products, clean water, fish, wildlife and recreation opportunities. These plentiful resources provide abundant opportunities for sustainable environments, communities, and economies.

The Upper Mokelumne River Watershed Authority (UMRWA) is a Joint Powers Authority whose member agencies include Alpine, Amador, and Calaveras Counties and Amador Water Agency, Calaveras County Water District, Calaveras Public Utility District, East Bay Municipal Utility District, and Jackson Valley Irrigation District. Each member agency is is vitally interested in securing dependable and affordable sources of water for its inhabitants and protecting the quality of water provided them, as well as the environment of the Upper Mokelumne River Watershed.

UMRWA's goals to enhance water supply and protect water quality and the environment are fulfilled in a variety of ways. Serving as the regional water management group for the Mokelumne-Amador-Calaveras Region, UMRWA has developed the MAC Plan, a state approved integrated regional water management plan. UMRWA also supports the Youth Watershed Stewardship Program, a public education program lead by Stewardship through Education, an organization of teachers. Looking inter-regionally, UMRWA is working with the Eastern San Joaquin Region on a Mokelumne watershed resource plan called MokeWISE to address resource issues in both the Upper and Lower watersheds.

I. PURPOSE:

The purpose of this Master Stewardship Agreement is to document the cooperative effort between the parties for landscape restoration activities within the Amador and Calaveras Ranger Districts in accordance with the following provisions and the hereby incorporated Template for Stewardship Supplemental Project Agreement (SPA), attached as Exhibit A.

II. STATEMENT OF MUTUAL BENEFIT AND INTERESTS:

The Forest Service is a land management agency dedicated to the wise use and management of National Forest System (NFS) lands, including the responsibility for maintaining and improving resource conditions.

UMRWA's objectives include enhancement of watershed environmental values, water quality protection, increased water supply reliability, additional consumptive water supply and improved recreational opportunities.

The stewardship projects developed under this Master Stewardship Agreement are for the purpose of restoring the Mokelumne River Watershed and bringing economic opportunities to the local area including, but not limited to: thinning for hazardous fuels treatments and timber stand improvement; vegetation management to enhance habitat conditions through slashing, hand piling, and burning; meadow, stream, and riparian area restoration and protection; water quality enhancement; cultural site restoration and protection; removal and utilization of forest byproducts; noxious weed control; road maintenance, reconstruction, and/or removal; and improvement of recreational opportunities (e.g. trails and campgrounds)

This Master Stewardship Agreement will provide an opportunity for the parties to seek funding to expand partnership opportunities, and to garner new and additional support from partners, including but not limited to the timber industry, Federal and non-Federal entities, tribal entities, and UMRWA's members and volunteers. Mission accomplishment for both parties will be furthered by the restoration of natural resources across the landscape.

All projects conceived under this Master Stewardship Agreement will undergo a collaborative process to determine specific habitat improvements. The collaborative process will ensure that the benefits of undertaking restoration activities are mutually beneficial to UMRWA and the Forest Service as well as being beneficial to a wide diversity of interests involved in collaboration.

Both parties share an interest in improving the ecosystem condition and function of the landscape. A healthy landscape provides a variety of benefits beyond the needs of a single species, and therefore benefits both parties.

It is therefore mutually beneficial for the parties to work together to implement landscape restoration and enhancement projects.

In consideration of the above premises, the parties agree as follows:

III. THE PARTNER SHALL:

A. LEGAL AUTHORITY.

B. UMRWA shall have the legal authority to enter into this Master Stewardship Agreement, and the institutional, managerial, and financial capability to ensure proper planning, management, and completion of the project, which includes funds sufficient to pay the nonFederal share of project costs, when applicable.

C. In its discretion, explore opportunities for additioanl support from other parties for projects associated with this Master Stewardship Agreement.

D. Coordinate with the Forest Service to develop Supplemental Project Agreements (SPAs) under this master agreement.
E. Provide qualified personnel or contractors to implement tasks identified in SPAs under this master agreement.
F. Provide a Project Liaison who can act as UMRWA's representative and main contact for the Forest Service for project work conducted under this agreement. The Project Liaison should have the ability to direct UMRWA's contractors to ensure that projects are completed to Forest Service specifications, that projects are being completed in a safe manner and that quality and quantity of work are acceptable.

IV. THE U.S. FOREST SERVICE SHALL:

A. Have the Regional Forester or authorized designee approve all stewardship project proposals.

B. Complete all necessary National Environmental Policy Act (NEPA) requirements.

C. Inform UMRWA of any changes in stewardship policy, law and regulations.

D. Recognize UMRWA's contribution, in a manner acceptable to both parties, in news releases, interpretive signs, photographs, or other media as appropriate.

E. Coordinate with UMRWA to develop SPAs under this master agreement.
F. Provide a Project Liaison who can act as the representative and main contact for the Forest Service for all project work conducted under this agreement.
G. Coordinate design, layout, and preparation as required for projects occurring on National Forest system lands including, but not limited to property boundary surveys and designating treatment unit boundaries.
H. Explore opportunities for additional support for projects associated with this master agreement.

V. IT IS MUTUALLY AGREED AND UNDERSTOOD BY AND BETWEEN THE PARTIES THAT:

A. PRINCIPAL CONTACTS. Individuals listed below are authorized to act in their respective areas for matters related to this Master Stewardship Agreement.

Principal U.S. Forest Service Contacts:

U.S. Forest Service Stewardship Coordinator	U.S. Forest Service Grants & Agreements Contact

Name: Address: City, State, Zip: Telephone: FAX: Email:	Name: Address: City, State, Zip: Telephone: FAX: Email:

Principal Partner Contacts:

Partner Stewardship Coordinator	Partner Administrative Contact
Name: Address: City, State, Zip: Telephone: FAX: Email:	Name: Address: City, State, Zip: Telephone: FAX: Email:

B. ASSURANCE REGARDING FELONY CONVICTION OR TAX DELINQUENT STATUS FOR CORPORATE ENTITIES. This agreement is subject to the provisions contained in the Department of Interior, Environment, and Related Agencies Appropriations Act, 2012, P.L. No. 112-74, Division E, Section 433 and 434 regarding corporate felony convictions and corporate Federal tax delinquencies. Accordingly, by entering into this agreement UMRWA acknowledges that it: 1) does not have a tax delinquency, meaning that it is not subject to any unpaid Federal tax liability that has been assessed, for which all judicial and administrative remedies have been exhausted or have lapsed, and that is not being paid in a timely manner pursuant to an agreement with the authority responsible for collecting the tax liability, and (2) has not been convicted (or had an officer or agent acting on its behalf convicted) of a felony criminal violation under any Federal law within 24 months preceding the agreement, unless a suspending and debarring official of the United States Department of Agriculture has considered suspension or debarment is not necessary to protect the interests of the Government. If UMRWA fails to comply with these provisions, the Forest Service will annul this agreement and may recover any funds UMRWA has expended in violation of sections 433 and 434.

C. AVAILABILITY FOR CONSULTATION. Both parties will make themselves available at mutually agreeable times, for continuing consultation to discuss the conditions covered by this Master Stewardship Agreement and agree to actions essential to fulfill its purposes.

D. ANNUAL MEETING. At a minimum, the parties will meet annually to discuss potential stewardship projects and jointly review the active stewardship project proposal list.

E. SUPPLEMENTAL PROJECT AGREEMENTS. Nothing in this Master Stewardship Agreement obligates either party to offer or accept any project proposals under this Master Stewardship Agreement. Any projects added to this Master Stewardship Agreement must be by mutual consent of the parties through a specific SPA. At a minimum, an SPA must:

1. Include language stating that the SPA will be made a part of this Master Stewardship Agreement thereby subjecting it to the terms of this Master Stewardship Agreement.
2. Include a map and description of the project area, treatment activities and corresponding treated acres, and other activities which may include other resource related projects.
3. Specify a method of designating trees for removal.
4. Describe the desired end result of the project(s).
5. Specify the exchange of goods for services. The Forest Service may apply the value of timber or other forest products removed as an offset against the cost of services received by UMRWA.
6. Designate a Forest Service and UMRWA official to monitor their respective responsibilities outlined in the SPA.
7. Include a Financial Plan to identify each parties contributions for projects identified in the SPA.
8. Identify appropriate bonding requirements.
9. Include any necessary forest restrictions and closure dates to allow UMRWA to implement and complete the project(s) within the specified timeframes.
10. Provide necessary direction to UMRWA to ensure compliance with appropriate laws and regulations to fulfill the terms of the SPA.
11. Identify any reporting requirements.
12. Be reviewed and approved by a delegated timber contracting officer when forest products will be disposed.
13. Be reviewed and approved by a Forest Service Grants & Agreements Specialist.
14. Be mutually agreed to, in writing, by both parties and executed by the designated Forest Supervisor.

F. PERFORMANCE. The parties will perform in accordance with the approved SPAs.

G. EXCHANGE OF GOODS FOR SERVICES. SPA(s) may be completed where Forest Service goods are exchanged for UMRWA's services; Forest Service funds are exchanged for UMRWA's services; or a combination thereof.

H. TECHNICAL AND COST EVALUATION. Best approach determination is the evaluation method used by the Forest Service to approve stewardship agreement technical proposals. Such consideration shall primarily consider criteria other than cost. These non-price criteria include, but are not limited to:

1. The extent of mutual interest and benefit.
2. The advantages and effectiveness of mutual participation.
3. Joint expertise.
4. Past performance.
5. Technical approach
6. Factors relevant to cost such as volunteer participation, contribution from other parties, cost sharing, etc.
7. Ability to utilize, educate and/or train a local workforce.

8. Benefits to the local community
9. Ability to complete work in a timely manner.
10. Experience in performing similar work.
11. Ability to conduct work in an environmentally sound manner.

I. METHODS OF APPRAISAL: The value of timber and other forest products shall be determined using Forest Service standard guidelines, methods and techniques.

J. NOTICES. Any communications affecting the operations covered by this agreement given by the Forest Service or UMRWA is sufficient only if in writing and delivered in person, mailed, or transmitted electronically by e-mail or fax, as follows:

To the Forest Service Program Manager, at the address specified in this Master Stewardship Agreement.

To UMRWA, at UMRWA's address shown in this Master Stewardship Agreement or such other address designated within this Master Stewardship Agreement.

Notices will be effective when delivered in accordance with this provision, or on the effective date of the notice, whichever is later.

K. PARTICIPATION IN SIMILAR ACTIVITIES. This Master Stewardship Agreement in no way restricts the Forest Service or UMRWA from participating in similar activities with other public or private agencies, organizations, and individuals.

L. ENDORSEMENT. Any of UMRWA's contributions made under this Master Stewardship Agreement do not by direct reference or implication convey Forest Service endorsement of UMRWA's products or activities.

M. USE OF FOREST SERVICE INSIGNIA. In order for UMRWA to use the Forest Service insignia on any published media, such as a Web page, printed publication, or audiovisual production, permission must be granted by the Forest Service's Office of Communications (Washington Office). A written request will be submitted by Forest Service Region/Station/Area to the Office of communication Assistant Director, Visual Information and Publishing Services prior to use of the insignia. The Forest Service Region/Station/Area will notify when permission is granted.

G. NON-FEDERAL STATUS FOR PARTNER PARTICIPANT LIABILITY.

N. UMRWA agree(s) that any of UMRWA's employees, volunteers, and program participants shall not be deemed to be Federal employees for any purposes including Chapter 171 of Title 28, United States Code (Federal Tort Claims Act) and Chapter 81 of Title 5, United States Code (OWCP), and UMRWA hereby willingly agree(s) to assume these responsibilities.

H. Further, UMRWA shall provide any necessary training to UMRWA's employees, volunteers, and program participants to ensure that such personnel are capable of performing tasks to be completed.

UMRWA shall also supervise and direct the work of its employees, volunteers, and participants performing under this Master Stewardship Agreement.

O. MEMBERS OF U.S. CONGRESS. Pursuant to 41 U.S.C. 22, no member of, or delegate to, Congress shall be admitted to any share or part of this Master Stewardship Agreement, or benefits that may arise therefrom, either directly or indirectly.

P. DRUG-FREE WORKPLACE.

I. 1.

UMRWA agree(s) that it will publish a drug-free workplace statement and provide a copy to each employee who will be engaged in the performance of any project/program that receives Federal funding. The statement must

a. Tell the employees that the unlawful manufacture, distribution, dispensing, possession, or use of a controlled substance is prohibited in its workplace;

b. Specify the actions UMRWA will take against employees for violating that prohibition; and

c. Let each employee know that, as a condition of employment under any award, the employee:

(1) Shall abide by the terms of the statement, and

(2) Shall notify you in writing if he or she is convicted for a violation of a criminal drug statute occurring in the workplace, and must do so no more than five calendar days after the conviction.

J. 2.

UMRWA agree(s) that it will establish an ongoing drug-free awareness program to inform employees about

a. The dangers of drug abuse in the workplace;

b. The established policy of maintaining a drug-free workplace;

c. Any available drug counseling, rehabilitation and employee assistance programs; and

d. The penalties that you may impose upon them for drug abuse violations occurring in the workplace.

3. Without the Program Manager's expressed written approval, the policy statement and program must be in place as soon as possible, no later than the 30 days after the effective date of this Master Stewardship, or the completion date of this Master Stewardship Agreement, whichever occurs first.

K. 4.

UMRWA agree(s) to immediately notify the Program Manager if an employee is convicted of a drug violation in the workplace. The notification must be in writing, identify the employee's position title, the SPA number of each project which the employee worked. The notification must be sent to the Program Manager within ten calendar days after UMRWA learn(s) of the conviction.

5. Within 30 calendar days of learning about an employee's conviction, UMRWA shall either:

   a. Take appropriate personnel action against the employee, up to and including termination, consistent with the requirements of the Rehabilitation Act of 1973 (29 USC 794), as amended, or

   b. Require the employee to participate satisfactorily in a drug abuse assistance or rehabilitation program approved for these purposes by a Federal, State or local health, law enforcement, or other appropriate agency.

Q. NONDISCRIMINATION. The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or a part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means for communication of program information (Braille, large print, audiotape, and so forth.) should contact USDA's TARGET Center at (202) 720-2600 (voice and TDD). To file a complaint of discrimination, write to USDA, Director, Office of Civil Rights, 1400 Independence Avenue, S.W., Washington, D.C. 20250-9410 or call (800) 795-3272 (voice) or (202) 720-6382 (TDD). USDA is an equal opportunity provider and employer.

R. TRIBAL EMPLOYMENT RIGHTS ORDINANCE (TERO). The Forest Service recognizes and honors the applicability of the Tribal laws and ordinances developed under the authority of the Indian Self-Determination and Educational Assistance Act of 1975 (PL 93-638).

L. ELIGIBLE WORKERS.

M. UMRWA shall ensure that all employees complete the I-9 form to certify that they are eligible for lawful employment under the Immigration and Nationality Act (8 USC 1324a).

S. UMRWA shall comply with regulations regarding certification and retention of the completed forms. These requirements also apply to any contract or supplemental agreement awarded under this Master Stewardship Agreement.

T. STANDARDS FOR FINANCIAL MANAGEMENT.

1. Financial Reporting

N.

UMRWA shall provide complete, accurate, and current financial disclosures of the project or program in accordance with any financial reporting requirements, as set forth in the financial provisions.

2. Accounting Records

O.

UMRWA shall continuously maintain and update records identifying the source and use of funds. The records shall contain information pertaining to the agreement, authorizations, obligations, unobligated balances, assets, outlays, and income.

3. Internal Control

P.

Q. UMRWA shall maintain effective control over and accountability for all Forest Service funds.

UMRWA shall keep effective internal controls to ensure that all United States Federal funds received are separately and properly allocated to the activities described in the agreement and used solely for authorized purposes.

4. Source Documentation

R.

UMRWA shall support all accounting records with source documentation. These documentations include, but are not limited to, cancelled checks, paid bills, payrolls, contract documents. These documents must be made available to the Forest Service upon request.

5. Advance Payments

When applicable, UMRWA shall establish and maintain specific procedures to minimize the time elapsing between the advance of Federal funds and their subsequent disbursement.

U. OVERPAYMENT. Any funds paid to in excess of the amount entitled under the terms and conditions of this agreement constitute a debt to the Federal Government. The following must also be considered as a debt or debts owed by the Cooperator to the Forest Service:

1. Any interest or other investment income earned on advances of agreement funds; or

2. Any royalties or other special classes of program income which, under the provisions of the agreement are required to be returned.

If this debt is not paid according to the terms of the bill for collection issued for the overpayment, the Forest Service may reduce the debt by:

1. Making an aministrative offset against other requests for reimbursement.

2. Withholding advance payments otherwise due to .

3. Taking other action permissed by statute (31 U.S.C. 3716 and 7 CFR, Part 3, Subpart B).

Except as otherwise provided by law, the Forest Service may charge interest on an overdue debt.

S. AGREEMENT CLOSEOUT.

V. UMRWA Within 90 days after expiration or notice of termination the parties shall close out the award/agreement.

Any unobligated balance of cash advanced to the Recipient/Cooperator must be immediately refunded to the Forest Service, including any interest earned in accordance with 7CFR3016.21/2CFR 215.22.

Within a maximum of 90 days following the date of expiration or termination of this grant, all financial performance and related reports required by the terms of the agreement must be submitted to the Forest Service by the Recipient/Cooperator.

If this agreement is closed out without audit, the Forest Service reserves the right to disallow and recover an appropriate amount after fully considering any recommended disallowances resulting from an audit which may be conducted later.

T. RETENTION AND ACCESS REQUIREMENTS FOR RECORDS.

U. UMRWA shall retain all records pertinent to this Master Stewardship Agreement for a period of no less than three years from the expiration or termination date. As used in this provision, records include books, documents, accounting procedures and practice, and other data, regardless of the type or format.

W. UMRWA shall provide access and the right to examine all records related to this Master Stewardship Agreement to the Forest Service Inspector General, or Comptroller General or their authorized representative. The rights of access in this section must not be limisted to the required retention periond but must last as long as records are kept.

If any litigation, claim, negotiation, audit, or other action involving the records has been started before the end of the 3-year period, the records must be kept until all issues are resolved, or until the end of the regular 3-year period, whichever is later.

Records for nonexpendable property acquired in whole or in part, with Federal funds shall be retained for 3 years after its final disposition.

X. FREEDOM OF INFORMATION ACT (FOIA). Public access to Master Stewardship Agreement records must not be limited, except when such records must be kept confidential and would have been exempted from disclosure pursuant to "Freedom of Information" regulations (5 U.S.C. 552).

Public access to culturally sensitive data and information of Federally-recognized Tribes may also be explicitly limited by P.L. 110-234, Title VIII Subtitle B §8106 (2008 Farm Bill).

Y. TEXT MESSAGING WHILE DRIVING. In accordance with Executive Order (EO) 13513, "Federal Leadership on Reducing Text Messaging While Driving," any and all text messaging by Federal employees is banned: a) while driving a Government owned vehicle (GOV) or driving a privately owned vehicle (POV) while on official Government business; or b) using any electronic equipment supplied by the Government when driving any vehicle at any time. All cooperators, their employees, volunteers, and contractors are encouraged to adopt and enforce policies that ban text messaging when driving company owned, leased or rented vehicles, POVs or GOVs when driving while on official Government business or when performing any work for or on behalf of the Government.

V. PUBLIC NOTICES. It is Forest Service's policy to inform the public as fully as possible of its programs and activities.

Z. UMRWA is/are encouraged to give public notice of the receipt of this award/Master Stewardship Agreement and, from time to time, to announce progress and accomplishments. Press releases or other public notices should include a statement substantially as follows:

" of the Forest Service, Department of Agriculture, ."

W.

X. UMRWA may call on Forest Service's Office of Communication for advice regarding public notices.

UMRWA is/are requested to provide copies of notices or announcements to the Forest Service Program Manager and to Forest Service's Office Communications as far in advance of release as possible.

AA. RIGHT TO TRANSFER EQUIPMENT AND SUPPLIES. Equipment approved for purchase under this Master Stewardship Agreement is available only for use as authorized. The Forest Service reserves the right to transfer title to the Federal government of any equipment with a current per-unit fair market value of $5,000 or more purchased with Forest Service funding. Upon expiration of this Master Stewardship Agreement, UMRWA shall forward an equipment inventory to the Forest Service, listing all equipment purchased with Forest Service funding throughout the life of the project. Disposition instructions must be issued by the Forest Service within 120 calendar days from termination date of this Master Stewardship Agreement.

BB. FUNDING EQUIPMENT AND SUPPLIES. Federal funding under this Master Stewardship Agreement are not available for reimbursement of UMRWA's purchase of equipment and supplies. Equipment is defined as having a fair market value of over $5,000 per unit and a useful life of over one year.

CC. PROPERTY IMPROVEMENTS. Improvements placed on National Forest System land at the direction or with approval of the Forest Service becomes property of the United States. These improvements are be subject to the same regulations and administration of the Forest Service as would other National Forest improvements of a similar nature. No part of this Master Stewardship Agreement entitles UMRWA to any interest in the improvements, other than the right to use and enjoy them under applicable Forest Service regulations.

DD. CONTRACT REQUIREMENTS. Any contract under this agreement must be awarded following UMRWA's established procedures, to ensure free and open competition, and avoid any conflict of interest (or appearance of a conflict). UMRWA shall maintain cost and price analysis documentation for potential Forest Service review. UMRWA is encouraged to utilize small businesses, minority-owned firms and women's business enterprises.

Y. GOVERNMENT-FURNISHED PROPERTY .

Z. UMRWA may only use Forest Service property furnished under this Master Stewardship Agreement for performing tasks assigned in this Master Stewardship Agreement.

EE. UMRWA shall not modify, cannibalize, or make alterations to Forest Service property. A separate document, Form AD-107, must be completed to document the loan of Forest Service property. The Forest Service shall retain title to all Forest Service-furnished property. Title to Forest Service property must not be affected by its incorporation into or attachment to any property not owned by the Forest Service, nor must the property become a fixture or lose its identity as personal property by being attached to any real property.

Partner Liability for Government Property.

1. Unless otherwise provided for in the Master Stewardship Agreement, UMRWA shall not be liable for loss, damage, destruction, or theft to the Government property furnished or acquired under this contract, except when any one of the following applies—

a. The risk is covered by insurance or UMRWA is/are otherwise reimbursed (to the extent of such insurance or reimbursement).

AA. b. The loss, damage, destruction, or theft is the result of willful misconduct or lack of good faith on the part of UMRWA's managerial personnel.

UMRWA's managerial personnel, in this clause, means UMRWA's directors, officers, managers, superintendents, or equivalent representatives who have supervision or direction of all or substantially all of UMRWA's business; all or substantially all of UMRWA's operation at any one plant or separate location; or a separate and complete major industrial operation.

BB. 2.

CC. UMRWA shall take all reasonable actions necessary to protect the Government property from further loss, damage, destruction, or theft.

UMRWA shall separate the damaged and undamaged Government property, place all the affected Government property in the best possible order, and take such other action as the Property Administrator directs.

DD. 3.

UMRWA shall do nothing to prejudice the Government's rights to recover against third parties for any loss, damage, destruction, or theft of Government property.

4. Upon the request of the G&A Specialist, UMRWA shall, at the Government's expense, furnish to the Government all reasonable assistance and cooperation, including the prosecution of suit and the execution of Master Stewardship Agreements of assignment in favor of the Government in obtaining recovery.

FF. PURCHASE OF ASSETS. Any assets (such as equipment, property, or improvements) purchased by the Forest Service with Cooperator contributions must become the property of the Forest Service.

GG. OFFSETS, CLAIMS, AND RIGHTS. Any and all activities entered into or approved by this Master Stewardship Agreement will create and support afforestation/ reforestation efforts within the National Forest System without generating carbon credits. The Forest Service does not make claims of permanence or any guarantees of carbon sequestration on lands reforested or afforested through UMRWA's assistance. The Forest Service will provide for long-term management of reforested and afforested lands, according to applicable Federal statute regulations and forest plans.

EE. FOREST SERVICE ACKNOWLEDGED IN PUBLICATION AND AUDIOVISUALS.

HH. UMRWA shall acknowledge Forest Service support in any publications, audiovisuals, and electronic media developed as a result of this Master Stewardship Agreement.

FF. NONDISCRIMINATION STATEMENT – PRINTED, ELECTRONIC, OR AUDIOVISUAL MATERIAL.

II. UMRWA shall include the following statement, in full, in any printed, audiovisual material, or electronic media for public distribution developed or printed with any Federal funding.

"In accordance with Federal law and U.S. Department of Agriculture policy, this institution is prohibited from discriminating on the basis of race, color, national origin, sex, age, or disability. (Not all prohibited bases apply to all programs.)

To file a complaint alleging discrimination, write USDA, Director, Office of Civil Rights, 1400 Independence Avenue, SW, Washington DC 20250-9410 or call toll free voice (866) 632-9992, TDD (800)877-8339, or voice relay (866) 377-8642. USDA is an equal opportunity provider and employer."

If the material is too small to permit the full statement to be included, the material shall, at minimum, include the following statement, in print size no smaller than the text:

"This institution is an equal opportunity provider."

JJ. REMEDIES FOR COMPLIANCE RELATED ISSUES. If UMRWA materially fail(s) to comply with any term of the Master Stewardship Agreement, whether stated in a Federal statute or regulation, an assurance, the Master Stewardship Agreement, the Forest Service may take one or more of the following actions:

1. Temporarily withhold cash payments pending correction of the deficiency by UMRWA or more severe enforcement action by the Forest Service;

2. Disallow (that is, deny both use of funds and matching credit for) all or part of the cost of the activity or action not in compliance;

3. Wholly or partly suspend or terminate the current Master Stewardship Agreement for UMRWA's program;

4. Withhold further awards for the program, or

5. Take other remedies that may be legally available, including debarment procedures under 2 CFR part 417.

KK. TERMINATION BY MUTUAL AGREEMENT. This Master Stewardship Agreement may be terminated, in whole or part, as follows:

- When the Forest Service and UMRWA agree upon the termination conditions, including the effective date and, in the case of partial termination, the portion to be terminated.

- By 30 days written notification by UMRWA to the Forest Service setting forth the reasons for termination, effective date, and in the case of partial termination, the portion to be terminated. If the Forest Service decides that the remaining portion of the Master Stewardship Agreement must not accomplish the purpose for which the Master Stewardship Agreement was made, the Forest Service may terminate the award upon 30 days written notice in its entirety.

Upon termination of an Master Stewardship Agreement, UMRWA shall not incur any new obligations for the terminated portion of the Master Stewardship Agreement after the effective date, and shall cancel as many outstanding obligations as possible. The Forest Service shall allow full credit to UMRWA for the Forest Service share of obligations that cannot be canceled and were properly incurred by UMRWA up to the effective date of the termination. Excess funds shall be refunded within 60 days after the effective date of termination.

LL. ALTERNATE DISPUTE RESOLUTION – PARTNERSHIP AGREEMENT. In the event of any issue of controversy under this Master Stewardship Agreement, the parties may

pursue Alternate Dispute Resolution procedures to voluntarily resolve those issues. These procedures may include, but are not limited to conciliation, facilitation, mediation, and fact finding.

GG. DEBARMENT AND SUSPENSION.

MM. UMRWA shall immediately inform the Forest Service if they or any of their principals are presently excluded, debarred, or suspended from entering into covered transactions with the Federal government according to the terms of 2 CFR Part 180. Additionally, should UMRWA or any of their principals receive a transmittal letter or other official Federal notice of debarment or suspension, then they shall notify the Forest Service without undue delay. This applies whether the exclusion, debarment, or suspension is voluntary or involuntary.

HH. COPYRIGHTING.

NN. UMRWA is/are granted sole and exclusive right to copyright any publications developed as a result of this Master Stewardship Agreement. This includes the right to publish and vend throughout the world in any language and in all media and forms, in whole or in part, for the full term of copyright and all renewals thereof in accordance with this Master Stewardship Agreement.

No original text or graphics produced and submitted by the Forest Service must be copyrighted. The Forest Service reserves a royalty-free, nonexclusive, and irrevocable right to reproduce, publish, or otherwise use, and to authorize others to use the work for Federal government purposes. This right must be transferred to any subcontracts.

This provision includes:

1. The copyright in any work developed by UMRWA under this Master Stewardship Agreement.
2. Any right of copyright to which UMRWA purchase(s) ownership with any Federal contributions.

II. PUBLICATION SALE.

OO. UMRWA may sell any publication developed as a result of this Master Stewardship Agreement. The publication may be sold at fair market value, which is initially defined in this Master Stewardship Agreement to cover the costs of development, production, marketing, and distribution. After the costs of development and production have been recovered, fair market value is defined in this Master Stewardship Agreement to cover the costs of marketing, printing, and distribution only. Fair market value must exclude any in-kind or Federal government contributions from the total costs of the project.

JJ. When UMRWA is seeking bids for product removal and/or stewardship items, both parties agree that the product rates and stewardship item costs used at the approval of the SPA may be based upon tentative value and planned costs. Both parties agree to establish actual rates for both product and stewardship items prior to commencement of operations.

PP. UMRWA will notify the Forest Service in writing days in advance to request appraisal prior to seeking formal bids. Both parties agree to modify the SPA with these

actual values and costs. Modified product values shall be greater than or equal to the reappraised rates and value.

Post commencement of work, if there is a change from the established stewardship item rates, the SPA will be modified to increase or decrease the amount of services provided by UMRWA, accordingly. Post commencement of work product value rate redeterminations are subject to authorizing regulation.

QQ. MODIFICATION. Modifications within the scope of this Master Stewardship Agreement must be made by mutual consent of the parties, by the issuance of a written modification signed and dated by all properly authorized, signatory officials, prior to any changes being performed. Requests for modification should be made in writing, at least days prior to implementation of the requested change. The Forest Service is not obligated to fund any changes not properly approved in advance.

RR. COMMENCEMENT/EXPIRATION DATE. This Master Stewardship Agreement is executed as of the date of the last signature and is effective through 12/31/2026 at which time it will expire. The expiration date is the final date for completion of all work activities under this agreement.

SS. AUTHORIZED REPRESENTATIVES. By signature below, each party certifies that the individuals listed in this document as representatives of the individual parties are authorized to act in their respective areas for matters related to this Master Stewardship Agreement. In witness whereof, the parties have executed this Master Stewardship Agreement as of the last date written below.

_____

, Date

_____

, Date

U.S. Forest Service,

The authority and format of this Master Stewardship Agreement have been reviewed and approved for signature.

_____

Date

U.S. Forest Service Grants Management Specialist

Burden Statement

According to the Paperwork Reduction Act of 1995, an agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a valid OMB control number. The valid OMB control number for this information collection is 0596-0217. The time required to complete this information collection is estimated to average 4 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or part of an individual's income is derived from any public assistance. (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at 202-720-2600 (voice and TDD).

To file a complaint of discrimination, write USDA, Director, Office of Civil Rights, 1400 Independence Avenue, SW, Washington, DC 20250-9410 or call toll free (866) 632-9992 (voice). TDD users can contact USDA through local relay or the Federal relay at (800) 877-8339 (TDD) or (866) 377-8642 (relay voice). USDA is an equal opportunity provider and employer.