Background and Statement of Work: The purpose of this task order is to secure timber marking and cruising on the Truckee Ranger District of the Tahoe National Forest located in Truckee, CA. This contract applies to the Cabin Creek Project, located east of Truckee, CA. Within the treatment boundaries, there are approximately 787.8 acres of Individual Tree Mark (ITM) units that require sawtimber marking and Sample Tree (STR) cruising. This acreage includes Jeffrey pine and subalpine red fir vegetation types. Residual basal area targets for Jeffrey pine stands is 50-110 Sq. Ft./acre, and 140-170 Sq. Ft./acre in red fir stands. Additionally, Leave Area and Opening Treatment Polygons will be delineated with tags. Units can be accessed on existing Forest Service system roads and existing open temporary roads using four-wheel drive vehicles. Access to some units may require up to a ¼ mile hike in steep and brushy terrain. Elevation ranges from 5,880 to 7,840 feet with an average elevation of 6,500 feet. Treatment units have slopes ranging from 10-40% with an average of 25%.

Information Requested

If interested in this project, please provide a bid for the above statement of work by providing approach, work experience, and cost. Please also include your capacity for this project and efficiency in timber marking and cruising projects in the past, if any.

This is a request for proposals only and quotations furnished are not offers. This request does not commit the National Forest Foundation to pay any costs incurred in the preparation of submission of the quotation or to contract for supplies or services.

General Specifications

(a) Description of Work – This Request for Proposals is for restoration services related timber marking and cruising of the Cabin Creek Project, including the following (see Appendix E for further detail):

1. Timber Marking and Cruising
2. Unit delineation

The Contractor shall identify which efforts and materials they can supply in terms of materials, labor, equipment, supplies, supervision, quality control, and incidentals required to complete the work described. The Contractor shall perform all work in a safe and conscientious manner.
(b) **Project Location** - The Project is located in the vicinity of Cabin Creek Road, along the western flank of Highway 89, immediately south and west of Truckee, and north of Lake Tahoe. The proposed project area boundaries may be viewed in *Appendix C – Map*.

(c) **Work Schedule** - Work is to begin upon award, as early as July 2022, and is to be completed by March 1, 2023.

**Pricing Schedule**

Contractor shall price work according to the schedule below.

<table>
<thead>
<tr>
<th>Description</th>
<th>Unit</th>
<th>Unit Cost</th>
<th>Quantity</th>
<th>Total Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Timber Marking and Cruising</td>
<td>Acre</td>
<td></td>
<td>787.8</td>
<td></td>
</tr>
<tr>
<td>Unit Delineation</td>
<td>Lump Sum</td>
<td></td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

**Other Project Requirements and Specifications**

(a) **Utilities** – In many locations there will be no or limited sanitation, water, electrical or housing services available. The Contractor shall make its own arrangements for temporary facilities if needed.

(b) **Specifications** – Project work shall be accomplished in accordance with specifications outlined in *Appendix E – Schedule of Service Items and Specifications*.

**Contractor Qualifications**

(a) **References** – Please provide three references.

(b) **Past Experience** – Please provide a brief explanation of previous work experience with land management agencies.

**Insurance Requirements**

Upon selection of the winning bid, chosen contractor will be asked to affirm that it has and shall maintain State minimum workers’ compensation insurance coverage for its employees, if any. The selected contractor shall also maintain broad form general liability, property damage, and automotive liability insurance in the minimum amount of $1,000,000 for bodily injury, death, or damage to property of any person and $2,000,000 for bodily injury, death, or damage to property of more than one person. The Contractor shall name NFF an Additional Named Insured and provide NFF with documentation evidencing such coverages.

**Prohibited Telecommunications Services and Equipment**

The Contractor is responsible for compliance with the prohibition on certain telecommunications and video surveillance services or equipment identified in 2 CFR 200.216.
Bid Submission
Submit bids via email to dalvey@nationalforests.org by July 1, 2022.

Contractor Selection Process
The NFF will use the Evaluation Factors below to review each submitted bid. Based on the outcomes of that selection process, the NFF will notify successful and unsuccessful bidders by July 15, 2022 and will prepare a separate contract document.

Point of Contact
For questions about the details of producing the bid, please contact:

Dan Alvey  
National Forest Foundation Program Coordinator – Tahoe Area  
530-247-5443  
dalvey@nationalforests.org

Evaluation Factors and Relative Importance

<table>
<thead>
<tr>
<th>Level 3 Criteria</th>
<th>Level 2 Criteria</th>
<th>Level 1 Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Price / cost</td>
<td>• Technical proposal / proposed approach to project</td>
<td>• Benefits to the local community</td>
</tr>
<tr>
<td>• Equipment and contractor capability</td>
<td>• Overall strategic benefits to meeting NFF goals and grant needs, requirements, and timelines</td>
<td>• Relationship to local community</td>
</tr>
<tr>
<td>• Timing of when contractor can begin and/or finish the project</td>
<td></td>
<td></td>
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<tr>
<td>• Past performance, references, and USFS feedback</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Equal Opportunity Provider
In accordance with Federal law and U.S. Department of Agriculture policy, the National Forest Foundation is prohibited from discriminating on the basis of race, color, national origin, sex, age, religion, political beliefs, or disability.
1. DESCRIPTION OF WORK

The purpose of this task order is to secure timber marking and cruising on the Truckee Ranger District of the Tahoe National Forest located in Truckee, CA. This contract applies to the Cabin Creek Project, located east of Truckee, CA. Within the treatment boundaries, there are approximately 787.8 acres of Individual Tree Mark (ITM) units that require sawtimber marking and Sample Tree (STR) cruising. This acreage includes Jeffrey pine and subalpine red fir vegetation types. Residual basal area targets for Jeffrey pine stands is 50-110 Sq. Ft./acre, and 140-170 Sq. Ft./acre in red fir stands. Additionally, Leave Area and Opening Treatment Polygons will be delineated with tags. Units can be accessed on existing Forest Service system roads and existing open temporary roads using four-wheel drive vehicles. Access to some units may require up to a ¼ mile hike in steep and brushy terrain. Elevation ranges from 5,880 to 7,840 feet with an average elevation of 6,500 feet. Treatment units have slopes ranging from 10-40% with an average of 25%.

This contract will involve two mandatory items:

Mandatory Items:

1. **TIMBER MARKING AND CRUISING ITM UNITS** – Units 10A, 11A, 11B, 11C, 13A, 13B, 14, 16, 21, 22, 23 and 24 shall be cut tree marked using BLUE tracer paint. These units shall be cruised using the Sample Tree (STR) method. Cut trees shall be determined based upon the marking guidelines contained below.

2. **TREATMENT POLYGONS IN ITM UNITS** – Units 10A, 11A, 11B, 11C, 13A, 13B, 14, 16, 21, 22, 23 and 24 shall have treatment polygons created and delineated with white and orange tags in accordance with the guidelines contained below.

Tracer paint will be given weekly, and the amount needed will be estimated by the Contractor. All acreages will be traversed using a Global Positioning System and a contract map will be provided to the Contractor. All thinning unit boundaries have been previously painted with orange tracer paint and flagged with blue ribbon.

The Contractor shall furnish all labor, equipment, supervision, transportation, supplies, materials, services, and any incidentals necessary to perform the work in accordance with the attached specifications.
2. PROJECT LOCATION:

The Cabin Creek Project is located on the Truckee Ranger District, Tahoe National Forest, east of the town of Truckee, CA and is located in all or portions of T17N, R16E, Sec. 20, 21, 28, 29, 30, 31, 32, and 33 & T16N, R16E, Sec. 4, and 6 Mt. Diablo Meridian.

3. SPECIFIC WORK REQUIREMENTS:

Contractor shall document paint batch numbers used in each unit and complete unit summary sheets on information specific to each unit (See Attachment).

3.1 Sawtimber Cruising.

The intent of the sawtimber cruise is to provide the Forest Service with a cruise report and files to facilitate the timber appraisal process. The Forest Service will create the cruise design and plan (attached). The Contractor shall adhere to the cruise design and plan, and all data collected shall meet the accuracy requirements in FSH 2409.12.

A. Cruise Requirements

1. The Contractor shall adhere to the guidelines within the Cabin Creek Cruise Design, below.

2. The Contractor will ensure each cruiser has written cruise instructions on how measure trees will be identified on the ground, how measure trees will be selected, measurements to be recorded, plot locations, boundary plot directions, and all other information necessary to conduct a proper cruise.

3. Field data recorders with the applicable Forest Service cruising software must be used during data collection for tree-based cruise methods. The Contractor shall provide and process cruise data using the most current versions of Forest Service cruising software. The applicable electronic cruise files (.cruise and .out files) will be provided to the Forest Service on a weekly or otherwise agreed to basis throughout the cruise implementation. In addition to electronic data collection, cruise plot data shall be recorded by hand on plot cards. The Forest Service will provide plot cards.

4. All measurements and defect determinations will be done in accordance with FSH 2409.12, Chapters 10 and 20. Document reasons for defect deductions on measure trees. Record all unusual features at plot locations which may influence cruise procedures, hence accuracy (excessive slope, blowdown patch, hazardous conditions, etc.).

5. The names of cruisers must be documented for each unit. Unless otherwise agreed, cruisers shall manually record cruise tree information and notes on a Timber Cruise Data Sheet that is available in the back of the Timber Cruise Reference Guide. It is recommended that Contractor record tallies and/or sum of KPI by sample group on a
daily basis to ensure timber cruise data can be re-entered into a field data recorder if the file becomes damaged.

B. Cruise Implementation:

1. Cruise the specific tree that is randomly or systematically selected as a measure tree by the cruise program.

2. Do not manipulate cruise tree selection (add or delete measure trees outside of the planned frequency) if the actual selection of measure trees appears higher or lower than planned. Notify the COR or designee if the design frequencies appear to be falling short of meeting the target errors or number of measure trees. Any frequency adjustments require a new stratum. All strata must meet the applicable error limits for a SCALED SALE. See Cruise Plan for error limits.

3. If a species is discovered that is not in the cruise file, add it into the applicable sample group for minor species in the cruise file(s) and notify the COR or designee.

4. Faulty equipment that is out of adjustment and not reading measurements correctly shall be replaced and measurements taken with this equipment shall be re-measured.

5. Plots are located on a systematic grid. Do not drop or move a boundary plot if the center falls inside the harvest unit. If this happens use the “walkthrough method” for recording borderline plots as described in the Cabin Creek Cruise Design, below.

C. Measure Tree Locations:

The Contractor shall document actual location of cruise trees and insurance trees with GPS. Cruise tree location shapefiles shall be provided to the COR or designee. Additionally, Contractor shall identify cruise trees as described in the Cruise Design.

D. Cruise Evaluation:

The cruise must be evaluated by a Forest Service check cruiser and meet standards described in FSH 2409.12. Chapter 60. The evaluation includes office data audits and field measurement comparisons. The number of samples checked during a field review depends on the cruise methods used but a minimum of 35 trees on a sale must be re-measured. If the results are unsatisfactory with the specified number checked, 10 additional trees per major species will be checked. If the results are still unsatisfactory, a complete or partial re-cruise may be required, depending on the issue(s) identified. A description of elements checked and associated tolerances can be found in Chapter 60, Section II.5.

3.2 Designation (Marking) of Cut trees

All marking shall meet the standards and guidelines in the Timber Cruising Handbook WO and R5 Supplements of FSH 2409.12, Chapter 70, and the forest’s Timber Theft Prevention Plan (TTPP).

When selecting cut trees, Contractor shall follow the provided Silvicultural prescriptions and/or Marking Guidelines. Silvicultural prescriptions may include pdf georeferenced maps
that delineate changes in prescription within the unit. These maps are considered part of the unit prescription and shall be utilized in conjunction with marking guidelines. In addition to the following:

a. The Contractor shall designate trees 10.0 inches and larger at DBH that meet the marking guidelines as cut trees for that unit. All trees over 29.9 inches at DBH shall be retained.

b. The Contractor shall avoid marking trees which cannot easily be accessed or removed due to proximity to other trees, rocks, archeology exclusion zones (delineated by blue and black striped flagging), riparian or hydrologically sensitive zones (delineated by blue and white striped flagging), and botany exclusion zones (delineated by orange flagging).

c. Cut trees in ITM units will be marked with blue tracer paint. Paint a highly visible attention band 2” wide at eye level. The attention mark shall be visible from 360 degrees and from at least 50 feet. The Contractor shall paint two personalized stump marks on all marked trees. The stump marks shall be placed in the furrows of the bark at ground level on the downhill and uphill sides of the trees. Stump marks should touch the ground and be at least 2” wide.

d. Measure tree designations for trees not in plots will include a painted band approximately 1 foot above the original mark and painted cruise tree numbers and cruiser’s initials at eye level and on uphill and downhill sides of the tree. If insurance trees are part of this project, paint the same as a cruise tree but add an (I) in front of the cruise tree number. Hang three yellow flags around the cruise tree. Write the cruise tree number, unit number and cruiser’s initials in permanent ink on one of the attention flags. GPS or mark on a map the location of the cruise tree.

e. Use BLACK tracer paint to cancel a mark on a tree. Apply black marks as X’s across the existing paint band(s), cruise tree number, and stump marks. The original marking shall be only partially obscured so it will be obvious that this tree was deleted from the timber sale. The black paint must be visible from all directions. Note areas with extensive deleted trees on a map.

f. Record the amount of marking paint used by color and batch number for each unit. This can be done on the Unit Summary Sheet.

Provide a list of cruisers and their unique stump marks.

If it becomes necessary to modify the cruise plan after implementation has begun, the Contractor shall notify the Contracting Officer.

3.3 **Treatment Polygon Delineation**

The Contractor shall identify and delineate locations of treatment polygons within units. Treatment polygons will consist of Leave Areas and Openings. A total of 17 acres of Leave Areas will be delineated, with an average size of 0.2 acres. A total of 185 acres of Openings will be delineated with an average size of 1.6 acres. The locations of these polygons shall meet the criteria described below. Leave Area boundary delineation shall be identified with white tags facing into the unit. Opening boundary delineation shall be identified with orange tags facing into the unit.
3.4 Unit Boundary Designation

All contract unit boundaries will be marked by Forest Service employees prior to Contractors beginning work.

Cutting unit boundaries shall be designated with orange tree marking paint containing the registered tracer element. Painted boundaries shall follow the flagged lines. All painted boundary trees will have attention marks applied at or above eye level and two stump marks below stump height. The line of sight between painted boundary trees is considered the official boundary.

Attention marks will be painted as follows: All unit boundaries shall be designated by painting two vertical dots facing into the unit and one dot (one on each side) facing along the unit boundary, at or above 4.5 feet.

Stump marks will be applied as follows: Two painted stump marks shall be placed in the furrows of the bark at ground level, one mark on the downhill side and one on the uphill side of the tree. The minimum stump mark dimension will be 2 inches by 4 inches or easily visible from a distance of 30 feet.

3.5 Paint Security

The Contracting Officer's Representative (COR), or inspectors, shall provide marking paint containing registered tracer(s). Tree marking paint is USDA Forest Service accountable property and shall be kept secured at all times. Access to paint shall be limited to the Contractor and/or designated representative. All Government-issued paint, aerosol and quarts, shall be securely locked when stored or transported in a vehicle. Paint shall be removed from any vehicle when someone uses the vehicle other than the Contractor or designated representative to whom the tracer paint was issued. The Forest Service may inspect Contractor's security of paint and accountability records at any time.

The Contractor shall notify the Government of the quantity of paint needed each week prior to commencing work. The paint needed for one week at a time will be transferred only to the Contractor, or designated representative at the designated US Forest Service office during normal business hours. The Contractor shall maintain a daily inventory of all paint cans. All cans received, used, and returned by the Contractor must be accounted for. The inventory will be signed and submitted to the COR on a weekly basis. All aerosol paint cans will be returned to the Forest Service with all propellant out of the can for drying purposes. All empty quart paint cans will be returned to the Forest Service on a weekly basis, emptied and dribbled for drying purposes. Failure to maintain adequate safeguards and security over the paint, or loss of tracer paint, will result in a law enforcement investigation and/or may result in Contractor liability for damages (i.e. fine $1500.00 per can and up), and/or default of the contract.
4. **INSPECTION AND ACCEPTANCE**

4.1 **Quality Control Plan**

The Contractor shall conduct inspections on all units in accordance with his/her Quality Control Plan (QCP). The Contractor’s Quality Control Plan shall be submitted and accepted by the Government prior to any work starting.

4.2 **Government Inspections**

Government inspections are for the purpose of satisfying the Government that the services are acceptable and do not relieve the Contractor of the responsibility for maintaining quality control.

The Contracting Officer's Representative or designated inspector will conduct all inspections. The Contractor (or designated representative) is encouraged to be present to observe inspections. Summary results will be made available on request.

The Contractor has the option of coordinating with the Forest Service during implementation of the contract for input and direction.

*Compliance Inspections.* Visual compliance inspections will be made on a periodic basis. Such inspections are not final and do not constitute acceptance by the Government.

*Final Inspections.* Final (formal) inspections for payment will be made on completed sub-items only. Contractor shall request final inspections in writing and give the Forest Service at least four working days advanced notice. Inspections will be completed within four working days after the notice is received. If the work is not ready for inspection at the time specified by the Contractor, the cost associated with the inspection attempt may be charged to the Contractor. Final inspection will involve a USFS check cruise. A check cruise will be conducted by the USFS Quality Control Group and must pass with 80 percent for each element and 85 percent overall or better. Check cruise that does not pass with 85 percent or better will need to be re-cruised at the Contractor’s expense. Refer to USFS Timber Cruising Handbook 2409.12 Chapter 60 for specific requirements. Final check cruise will be completed within 10 business days of receiving written request form Contractor.

*Disputed Inspection.* The Contractor may request reinspection without rework if the results are unacceptable. Reinspection must be requested in writing within 48 hours after receiving written notice of the inspection results. Reinspection will be accomplished within five working days after receipt of the Contractor's written request.

The same sampling and inspection procedures will be used, but new samples will be taken. The inspection pattern will be shifted so that new samples will not overlap previously inspected samples. Results will be rounded to the nearest whole percent.
If reinspection results are within five percentage points of the first inspection, the original inspection result will be used in determining acceptability and payment. If reinspection results are greater than five percentage points above or below the first inspection, the reinspection results will be used.

If the reinspection results are within five percentage points of the first inspection, the Contractor shall pay the actual costs of the reinspection.

Reinspection after Rework. Where rework after a failed inspection may improve the inspection results, the Contractor may rework the area and request (in writing) a second inspection. The Government will charge to the Contractor the cost of this additional inspection. Reinspection will be accomplished within five working days after the notice is received. The results of the second inspection will be final, and no further rework will be permitted. Areas not ready for reinspection at the time specified by the Contractor will not be reinspected, and the results of the first inspection will be final.

4.2-1 Sampling (Government’s inspection system)

[ ] Plots. At least one percent of each treatment area (unit) will be sampled by a random series of plots distributed over the entire area. Plot size will be:

- [ ] 1/250 acre
- [ ] 1/100 acre
- [ ] 1/50 acre
- [ ] 1/10 acre
- [ X ] other : 20 BAF variable plots

[ ] Transects.

[ ] Other (specify)

4.2-2 Specific Inspection Procedures

Compliance Inspections for Timber Marking and Treatment Polygon Delineation

A. Walk-throughs: Compliance inspections shall be held throughout the performance of the contract. Inspections may be in the form of “walk-throughs” to visually confirm the proper application of the contract specifications. The Government reserves the right to perform formal inspections for verification of compliance to contract specifications.

B. Formal Inspections: The Government will inspect marking to determine compliance with specifications. Formal inspection plots will be located using a grid created in GIS
and then navigated to using GPS units. An average of one plot for every ten acres will be sampled. Each inspection plot will use a 20 BAF variable radius plot and will determine the following on a per plot basis as well as the residual basal area:

A=Total number of trees marked
B=Number of trees marked that do not meet the marking guidelines.
C=Number of trees not marked that meet the marking guidelines.

Contract compliance for each unit will be calculated as follows:

\[(A-B) \times 100= \% \text{ COMPLIANCE} \]

\[(A+C)\]

**Treatment Polygon Delineation:** While completing formal inspection plots the Government will inspect treatment polygons to ensure boundary delineation has been established with white tags.

**Stump Marks:** Any plot that contains one or more marked trees without a proper stump mark will cause that plot to fail. If three or more plots in a unit fail due to improper stump marks, that unit will be remarked at no additional cost to the Government.

**Attention marks:** Any live tree in a plot that is marked with a paint band <2” in width will be considered an unmarked tree, and recorded as such during inspections.

Inspection results for each unit will stand on their own, and will not be combined with the results from any other unit.

**Upper limit DBH:** Any tree over 30.0” DBH in a plot or anywhere in the unit that is marked for cut, will result in automatic rework of the unit.

**Rust resistant Sugar Pine:** Any RRSP found that are marked for cut or not marked for leave (whichever applies) will result in automatic rework of the unit. RRSPs are painted with a red attention band and/or yellow or silver placards.

**Bearing trees, witness trees, and trees with section tags (K-tags):** Any bearing, witness or section tree that is found marked for cut will result in automatic rework of the unit.

**Residual Basal Area:** Compliance for the residual amount of basal area left in a unit as per the prescription, will be determined by the average of all of the plots in each unit.

### 4.3 Acceptance

#### 4.3-1 Acceptance Level

Work on this contract will be deemed acceptable when:
For all units, determination of acceptability of the work performed will be based on the Government inspections and shall be considered conclusive except as otherwise provided in the Contract. The inspection results of each unit will not be averaged with the results of any other unit. The Contractor or a designated representative is encouraged to observe inspections while they are underway.

4.3-2 Quality Assurance Plan

Acceptance of Timber Marking:

For all units, the Government will inform the Contractor or a designated representative of marking inspection results with 2 working days of completion. Unacceptable work will not be accepted and shall be corrected by the Contractor at no additional cost to the Government. The Contractor shall complete all corrections of unacceptable work within 10 calendar days following notification of unacceptable work. Unless otherwise agreed, each unit shall be at a satisfactory level of acceptance before the Contractor can start marking another unit.

Payment for marking work completed will be based on the following inspection results:

<table>
<thead>
<tr>
<th>Inspection score</th>
<th>% payment</th>
</tr>
</thead>
<tbody>
<tr>
<td>90 -100%</td>
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<tr>
<td>89</td>
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<td>81</td>
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</tr>
<tr>
<td>80</td>
<td>80</td>
</tr>
<tr>
<td>&lt;80% = UNACCEPTABLE.</td>
<td></td>
</tr>
</tbody>
</table>
5. COMMENCEMENT PROSECUTION, AND COMPLETION OF WORK (FAR 52.211-10) (APR 1984)

The Contractor shall be required to (a) commence work under this contract within 10 calendar days after the date the Contractor receives the notice to proceed, (b) prosecute the work diligently, and (c) complete the entire work ready for use not later than September 15th, 2022. The time stated for completion shall include final data package consisting of a three complete FS Version 2 .cruise data file, complete with biomass cruise data and sawtimber cruise data, GPS cruise tree/plot data, MUTD and ASC entered, all paper copies and Contract Map 2 of 2. Work is estimated to begin June 15th, 2022. ALL WORK MUST BE COMPLETE BY September 15th, 2022 REGARDLESS OF WHEN CONTRACTORS BEGIN WORK.

6. EVALUATION CRITERIA

Price, Availability, Technical Proposal, Past Performance, and Community Benefit will be considered for the “Best Value” evaluation. Technical proposal shall include technical approach, key personnel (by name), and performance work schedule showing project completion by 15 September 2022. Technical proposal shall be streamline to no more than 5 pages. Proposal shall not merely restate task order PWS requirements. The order of importance corresponds with each criteria’s preceding order of appearance.

7. CONTRACTOR FURNISHED CRITICAL ITEMS:

The Contractor shall provide all labor, housing, supervision, transportation, tools, and material (except Government-furnished Property) necessary to perform the requirements of the contract. Specifically, but not necessarily inclusive, the Contractor shall furnish:

1. Compass with azimuth settings calibrated in 2-degree increments, set to local declination.
2. Clinometers or other device enabling one to measure slope in percent and/or tree height.
3. Diameter tape/loggers tape for measuring tree diameter to the nearest tenth of an inch and calculating slope distance.
4. GPS units, capable of receiving GIS datafiles and collecting data points.
5. A field data recorder capable of running FS Cruiser Version 2, and keeping the data secure.
6. Yellow flagging.
7. White tags
8. Paint marking guns capable of utilizing quart size paint cans.
9. Phone, tablet, or similar device that is capable of uploading and viewing geolocated pdf maps and software that is capable of providing the user’s georeferenced location in reference to pdf map (Avenza or similar).
8. GOVERNMENT FURNISHED PROPERTY:

The Government will deliver to the Contractor the following listed materials, supplies, property, and/or services (hereinafter referred to as "Government-furnished property"). The Contractor shall be liable for all loss or damage of such Government-furnished property until completion and final acceptance of all work required under the contract. The Contractor shall sign a Transfer of Government property receipt upon acceptance of Government-furnished property. All Government-furnished property will be available at the pre-work meeting*.

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<thead>
<tr>
<th>Description</th>
<th>Location</th>
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<tr>
<td>Tracer Paint</td>
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<td>Timber Cruising Handbook, 2409.12 Chapters 10-60 and the R5 Timber Cruise Reference Guide</td>
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<td>Unit Prescriptions including pdf maps</td>
<td>Truckee Ranger District, Truckee, CA</td>
<td>Available at Pre-work</td>
</tr>
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</table>

9. CONTRACTING OFFICER'S REPRESENTATIVE:

Name: Dwight Clark               Telephone Number: (530) 587-3558
Email: dwight.clark@usda.gov

10. LIST OF ATTACHMENTS

The following attachments are available, below, as of this solicitation and any resultant contract.

<table>
<thead>
<tr>
<th>Title</th>
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<tbody>
<tr>
<td>Unit Summary Sheet</td>
</tr>
<tr>
<td>Cruise Plan</td>
</tr>
<tr>
<td>Silvicultural Prescriptions and Marking Guides</td>
</tr>
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<td>Project Area Map</td>
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Cabin Creek Unit Summary Sheet

Timber Sale / Stewardship Project: ________________

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<thead>
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<th>UNIT</th>
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<th>PRESCRIPTION/Mark Reviewed?</th>
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<tr>
<td>Tracer check (date and initials):</td>
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<tr>
<td>Other paint in unit?</td>
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</table>

<table>
<thead>
<tr>
<th>DESIGNATION: (sawtimber)</th>
<th>C</th>
<th>L</th>
<th>C</th>
<th>L</th>
<th>C</th>
<th>L</th>
<th>C</th>
<th>L</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cut or Leave Trees Marked:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Paint Color:</td>
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<td></td>
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<tr>
<td>Paint Batch:</td>
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<td></td>
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<td></td>
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<tr>
<td>Manufacturer and date of Mfr:</td>
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<td></td>
<td></td>
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<tr>
<td>Tracer check (date and initials):</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Other paint in unit?</td>
<td></td>
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<td></td>
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<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CREW LEADER:</th>
<th>Markers w/stump mark:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>2</td>
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<tr>
<td></td>
<td>3</td>
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<td>4</td>
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<td>5</td>
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<tr>
<td></td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>7</td>
</tr>
</tbody>
</table>

REMARKS: ____________________________

Ranger District: _____________________
Treatment Polygons

Leave Area (LA) Placement

In order to restore forest structure, promote heterogeneity, and create hiding and thermal cover for wildlife leave areas from 1/10 – ¼ acre in size will be retained on the landscape. Leave Areas (LA) will be delineated using white square tags provided by the Truckee Ranger District. These tags will be stapled to trees, facing the outside of the polygon, 10-20’ apart in such a manner that the perimeter of the polygon can be easily discerned from the outside. Leave Areas will also be GPS’d to capture the perimeter of the polygons and calculate acreage. Shapefiles showing completed LA polygons will be provided to the Truckee R.D.

Leave Area Characteristics: Desirable characteristics of leave areas are:

- Continuous vertical and/ or horizontal cover
- Large downed woody debris
- Mixture of age classes, and multiple canopy layers
- Trees with advantageous wildlife features such as
  - Forked topped trees
  - Cavities
  - Large snags
  - Other platform features
  - Mistletoe brooms (if the species being impacted is not a desired retention species)

Areas may be late seral conditions with high levels of decadence and dead wood or may be mid-seral conditions with brush and medium sized tree cover

<table>
<thead>
<tr>
<th>Unit</th>
<th>Number Of Leave Areas</th>
<th>Leave Area Acres</th>
</tr>
</thead>
<tbody>
<tr>
<td>10a</td>
<td>&gt;16</td>
<td>4 ± .5</td>
</tr>
<tr>
<td>13A</td>
<td>&gt;13</td>
<td>3.2 ± .5</td>
</tr>
<tr>
<td>13B</td>
<td>&gt;6</td>
<td>1.4 ± .25</td>
</tr>
<tr>
<td>21</td>
<td>&gt;17</td>
<td>4.35 ± .5</td>
</tr>
<tr>
<td>22</td>
<td>&gt;25</td>
<td>6.55 ± 1</td>
</tr>
<tr>
<td>24</td>
<td>&gt;8</td>
<td>1.85 ± .25</td>
</tr>
</tbody>
</table>

Create Opening (CO) Placements:

In order to reduce wildfire severity and increase forest health, openings will be created within the project area. The goal of openings is to create a discontinuous canopy which will interrupt the advance of a crown fire, increase forest heterogeneity and allow for the successful establishment and survival of pine seedlings. Created Openings (CO) will be delineated using orange square tags provided by the Truckee Ranger District. These tags will be stapled to trees, facing the outside of the polygon, 10-20’ apart in a manner that the perimeter of the polygon can be easily discerned from the outside. Leave Areas will also be GPS’d to capture the perimeter of the polygons and calculate acreage. Shapefiles showing completed CO polygons will be provided to the Truckee R.D.

Location: Openings should be considered in the following area
- Adjacent to healthy vigorous pines where natural seeding of pines would be likely (locate opening so pines are not cut, or residual pines are greater than 30 inches DBH)
- Areas dominated by fir less than 30 inches DBH
- Disease pockets where pests or pathogens are present and could be eradicated
- Areas where trees do not appear to be growing vigorously or already open areas
- Expansion of existing openings
- Around areas where advanced pine regeneration is already present (to promote pine seedlings/ saplings)

**Size/ Proportion/ Distribution:** Generally, openings will range from ¼ - 3 acres in size. The majority of gaps should be less than 1 acre in size but gaps up to 3 acres should be created. Depending on forest composition and topography, openings should compose 5-15% of any given unit (See Table Below).

<table>
<thead>
<tr>
<th>Unit</th>
<th>Number of Openings</th>
<th>Acres in Openings</th>
</tr>
</thead>
<tbody>
<tr>
<td>10a</td>
<td>6-14</td>
<td>4.0-8.0</td>
</tr>
<tr>
<td>11A</td>
<td>5-10</td>
<td>3.2 - 6.4</td>
</tr>
<tr>
<td>11B</td>
<td>8-14</td>
<td>5.5 - 7</td>
</tr>
<tr>
<td>11C</td>
<td>4-6</td>
<td>2.8 - 4.2</td>
</tr>
<tr>
<td>13A</td>
<td>8-18</td>
<td>5.75 - 11.5</td>
</tr>
<tr>
<td>13B</td>
<td>8-16</td>
<td>6.65 - 9.975</td>
</tr>
<tr>
<td>14</td>
<td>4-6</td>
<td>2.5-3.25</td>
</tr>
<tr>
<td>21</td>
<td>6-10</td>
<td>4.35 - 8.7</td>
</tr>
<tr>
<td>22</td>
<td>15-25</td>
<td>13.1 - 19.65</td>
</tr>
<tr>
<td>23</td>
<td>7-10</td>
<td>6.0-6.5</td>
</tr>
<tr>
<td>24</td>
<td>2-8</td>
<td>1.85 - 3.7</td>
</tr>
</tbody>
</table>

**Shape:** Openings should incorporate a variety of shapes to promote heterogeneity on the landscape; however the majority of openings should consist of a larger round/ square-like opening which provides beneficial conditions for restoration and fire dynamics. Orientation of elongated openings along a North/ South aspect will also increase sunlight availability in openings.

<table>
<thead>
<tr>
<th>Patch Size (Acre)</th>
<th>Square</th>
<th>Round</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/4</td>
<td>104</td>
<td>118</td>
</tr>
<tr>
<td>1/2</td>
<td>148</td>
<td>167</td>
</tr>
<tr>
<td>3/4</td>
<td>181</td>
<td>204</td>
</tr>
<tr>
<td>1</td>
<td>209</td>
<td>236</td>
</tr>
<tr>
<td>1.5</td>
<td>256</td>
<td>288</td>
</tr>
<tr>
<td>2</td>
<td>295</td>
<td>333</td>
</tr>
</tbody>
</table>

General Field-Going Opening Size Guide Based on General Shape
Unit 10a

The goal for this unit is to reduce potential wildfire severity by reducing tree density, promoting old growth characteristics, and returning the stand to the natural range of variation. This unit is very variable with open conditions and large trees in the northern part of the unit and dense lodgepole pine and fir portions in the South. Aggressively promote JP over LP and WF and retain large JP and RF in the northern portion of the unit.


Density and Structure:

- Thin to residual BA of 90 (± 10) ft²/acre across the unit
  - Portions of the unit should vary from 50-140 BA at the sub-acre level depending on existing forest conditions
  - Areas (<1/4 acre) that have desirable species which are free of pests and pathogens, and/or have topographic features (small depressions, North aspects, drainage bottoms etc.) should be left in a denser condition (up to 140 BA)
  - Areas (<1/2 acre) with undesirable species, unhealthy individuals, have pests and pathogens, and/or have topographic features (rocky shallow soils, ridgetops, South aspects) should be thinned more aggressively (down to 50 BA)
  - Small areas (<1/10 acre) of desirable trees may be left with interlocking crowns but the area surrounding them should be thinned so crown fire could not spread

Individual Tree Characteristics

- No trees greater than 29.9 inches DBH will be thinned
- At the northern end of the unit large JP and RF should be promoted by thinning large WF – if present, encourage horizontal heterogeneity (existing clumps and openings)
- Along the Southern portion of the unit dense small LP and WF are present, aggressively thin these areas especially when JP is present
- Residual trees are vigorous and healthy with greater than 40% live crown ratio or higher – crowns should be dark green and not chlorotic
- Residual trees should generally be dominant or co-dominant in their strata, however smaller individuals which are healthy and vigorous and have growing space around them (sunlight hitting the top and sides of the tree) should be retained to encourage structural heterogeneity
- Residual trees should be free of obvious signs of pests and pathogens such as pitch tubes from bark beetles or mistletoe infection.
- Residual trees should generally have good form and be free of defect such as forks, dead tops, broken tops, and rot, however 3 – 5 wildlife trees which contain one or more of these features should be retained per acre

Tree retention preference is as follows

1. Sugar pine
2. Western white pine
3. Jeffrey pine
4. Incense cedar  
6. White fir  
5. Red fir  
7. Lodgepole pine

**Radial Thin**
- Thin all fir and lodgepole pine less than 30 inches DBH and other species less than 24 inches DBH which are within 15 feet of the dripline of any Jeffrey, sugar, western white pine or incense cedar > 24 inches DBH

**Aspen**
- All conifers less than 30 inches DBH within 50 feet of aspen (at least 3 individuals greater than 10 feet tall) will be thinned
  - From 50 – 100 feet away from aspen conifers will be thinned to 20-40 BA

**Unit 11a, 11b, 11c, 14, 23**

The goal for these units are to reduce potential wildfire severity by reducing tree density, promoting old growth characteristics, and returning the stand to the natural range of variation. These units have both natural conditions dominated by small diameter white fir and previously treated areas with larger QMDs

**Marking Guide: Cut Tree Mark**

**Saw Logs:** Trees 10 – 29.9 inches DBH

**Density and Structure:**
- Thin to residual BA of 50-60/ acre across the unit
  - Portions of the unit should vary from 40-100 BA at the sub-acre level depending on existing forest conditions
  - Areas (<1/4 acre) that have desirable species which are free of pests and pathogens, and/or have topographic features (small depressions, North aspects, drainage bottoms etc.) should be left in a denser condition (up to 80 BA)
  - Areas (<1/2 acre) with undesirable species, unhealthy individuals, have pests and pathogens, and/or have topographic features (rocky shallow soils, ridgetops, South aspects) should be thinned more aggressively (down to 40 BA)
  - Small areas (<1/10 acre) of desirable trees may be left with interlocking crowns but the area surrounding them should be thinned so crown fire could not spread

**Individual Tree Characteristics**
- No trees greater than 29.9 inches DBH will be thinned
- Within WF dominated areas retain the largest, healthiest white fir with full crowns, and aggressively promote JP where present
- Within the previously treated areas with higher proportions of Jeffrey pine in the co-dominant and dominant strata, promote dominate and co-dominate JP by aggressively thinning fir species and lodgepole pine
- Residual trees should generally be dominant or co-dominant in their strata, however smaller individuals which are healthy and vigorous and have growing space around them (sunlight hitting the top and sides of the tree) should be retained to encourage structural heterogeneity
- Residual trees should be free of obvious signs of pests and pathogens such as pitch tubes from bark beetles or mistletoe infection. Thin all LP less than 30 inches DBH with mistletoe
- Residual trees should generally have good form and be free of defect such as forks, dead tops, broken tops, and rot, however 3 – 5 wildlife trees which contain one or more of these features should be retained per acre

**Tree retention preference is as follows**

1. Sugar pine
2. Western white pine
3. Jeffrey pine
4. Incense cedar
5. Red fir
6. White fir
7. Lodgepole pine

**Radial Thin**

- Thin all fir and lodgepole pine less than 30 inches DBH and other species less than 24 inches DBH which are within 15 feet of the dripline of any Jeffrey, sugar, western white pine or incense cedar greater than 24 inches DBH

**Aspen**

- All conifers less than 30 inches DBH within 50 feet of aspen (at least 3 individuals greater than 10 feet tall) will be thinned
  - From 50 – 100 feet away from aspen conifers will be thinned to 20-40 BA

**Unit 13a**

The goal for this unit is to reduce potential wildfire severity by reducing tree density, promoting old growth characteristics, and returning the stand to the natural range of variation. This unit is variable and **has a significant mistletoe infestation on the west side of the unit**. The unit generally transitions from west to east from large diameter RF, JP, and WF into dense stands of second growth WF/JP.

**Marking Guide:**

**Saw Logs:** Trees 10 – 29.9 inches DBH

**Density and Structure:**

- Thin to residual BA of 90 (± 10)ft/acre across the unit
  - Portions of the unit should vary from 50-140 BA at the sub-acre level depending on existing forest conditions
  - Areas (<1/4 acre) that have desirable species which are free of pests and pathogens, and/or have topographic features (small depressions, North aspects, drainage bottoms etc.) should be left in a denser condition (up to 140 BA)
  - Areas (<1/2 acre) with undesirable species, unhealthy individuals, have pests and pathogens, and/or have topographic features (rocky shallow soils, ridgetops, South aspects) should be thinned more aggressively (down to 50 BA)
  - Small areas (<1/10 acre) of desirable trees may be left with interlocking crowns but the area surrounding them should be thinned so crown fire could not spread

**Individual Tree Characteristics**

- No trees greater than 29.9 inches DBH will be thinned
- Promote 30”+ DBH RF and JP by aggressively thinning WF and LP while attempting to promote exiting horizontal heterogeneity on west side of unit
- Within denser sections on west side of the unit aggressively thin WF to promote JP while retaining or creating heterogeneity
- Residual trees are vigorous and healthy with greater than 40% live crown ratio or higher – crowns should be dark green and not chlorotic
• Residual trees should generally be dominant or co-dominant in their strata, however smaller individuals which are healthy and vigorous and have growing space around them (sunlight hitting the top and sides of the tree) should be retained to encourage structural heterogeneity
• Residual trees should be free of obvious signs of pests and pathogens such as pitch tubes from bark beetles or mistletoe infection. **Thin all LP less than 30 inches DBH with mistletoe**
• Residual trees should generally have good form and be free of defect such as forks, dead tops, broken tops, and rot, however 3 – 5 wildlife trees which contain one or more of these features should be retained per acre

Tree retention preference is as follows
1. Sugar pine
2. Western white pine
3. Jeffrey pine
4. Incense cedar
5. Red fir
6. White fir
7. Lodgepole pine

**Radial Thin**
• Thin all fir and lodgepole pine less than 30 inches DBH and other species less than 24 inches DBH which are within 15 feet of the dripline of any Jeffrey, sugar, western white pine or incense cedar greater than 24 inches DBH

**Aspen**
• All conifers less than 30 inches DBH within 50 feet of aspen (at least 3 individuals greater than 10 feet tall) will be thinned
  o From 50 – 100 feet away from aspen conifers will be thinned to 20-40 BA

**Unit 13b**

The goal for this unit is to reduce potential wildfire severity by reducing tree density, promoting old growth characteristics, and returning the stand to the natural range of variation. This unit is variable with doghair thickets of WF to the west and previously treated JP and WF dominated portions with higher QMDs to the west. Some JP plantations are present

**Marking Guide:**

**Saw Logs:** Trees 10 – 29.9 inches DBH

**Density and Structure:**
• Thin to residual BA of 90 (± 10)ft/ acre across the unit
  o Portions of the unit should vary from 50-140 BA at the sub-acre level depending on existing forest conditions
  o Areas (<1/4 acre) that have desirable species which are free of pests and pathogens, and/ or have topographic features (small depressions, North aspects, drainage bottoms etc.) should be left in a denser condition (up to 140 BA)
  o Areas (<1/2 acre) with undesirable species, unhealthy individuals, have pests and pathogens, and/ or have topographic features (rocky shallow soils, ridgetops, South aspects) should be thinned more aggressively (down to 50 BA)
  o Small areas (<1/10 acre) of desirable trees may be left with interlocking crowns but the area surrounding them should be thinned so crown fire could not spread

**Individual Tree Characteristics**
• No trees greater than 29.9 inches DBH will be thinned
• Within dense WF areas retain largest, healthiest individuals with the fullest crowns and promote JP where present
• Within the previously treated area toward the east side of the unit, promote dominate and co-dominant JP
• Residual trees should generally be dominant or co-dominant in their strata, however smaller individuals which are healthy and vigorous and have growing space around them (sunlight hitting the top and sides of the tree) should be retained to encourage structural heterogeneity
• Residual trees should be free of obvious signs of pests and pathogens such as pitch tubes from bark beetles or mistletoe infection. Thin all LP less than 30 inches DBH with mistletoe
• Residual trees should generally have good form and be free of defect such as forks, dead tops, broken tops, and rot, however 3 – 5 wildlife trees which contain one or more of these features should be retained per acre

Tree retention preference is as follows
1. Sugar pine 4. Incense cedar 7. lodgepole pine
2. Western white pine 5. Red fir

Radial Thin
• Thin all fir and lodgepole pine less than 30 inches DBH and other species less than 24 inches DBH which are within 15 feet of the dripline of any Jeffrey, sugar, western white pine or incense cedar greater than 24 inches DBH

Aspen
• All conifers less than 30 inches DBH within 50 feet of aspen (at least 3 individuals greater than 10 feet tall) will be thinned
  o From 50 – 100 feet away from aspen conifers will be thinned to 20-40 BA

Unit 16

Marking Guide: Cut Tree Mark

*Pockets of mistletoe are present in Jeffrey pine along the southern and western portions of the unit*

Saw Logs: Trees 10 – 29.9 inches DBH

Density and Structure:
• Thin to residual BA of 50-60 / acre across the unit
  o Portions of the unit should vary from 40-80 BA at the sub-acre level depending on existing forest conditions
  o Areas (<1/4 acre) that have desirable species which are free of pests and pathogens, and/or have topographic features (small depressions, North aspects, drainage bottoms etc.) should be left in a denser condition (up to 80 BA)
  o Areas (<1/2 acre) with undesirable species, unhealthy individuals, have pests and pathogens, and/or have topographic features (rocky shallow soils, ridgetops, South aspects) should be thinned more aggressively (down to 40 BA)
  o Small areas (<1/10 acre) of desirable trees may be left with interlocking crowns but the area surrounding them should be thinned so crown fire could not spread

Individual Tree Characteristics
No trees greater than 29.9 inches DBH will be thinned
Jeffrey and sugar pines should be promoted over other species
Along the eastern and southern edges of the unit white fir and lodgepole should be aggressively thinned to meet desired density, structure, and composition conditions
Along the western edge of the unit Jeffrey pine have been infected by dwarf mistletoe.
  - Reduce the prevalence of mistletoe by thinning heavily infected trees (Hawksworth rating >3) and/ or retaining other vigorously growing species
  - Retain a minimum BA of 40
Residual trees are vigorous and healthy with greater than 40% live crown ratio or higher – crowns should be dark green and not chlorotic
Residual trees should generally be dominant or co-dominant in their strata, however smaller individuals which are healthy and vigorous and have growing space around them (sunlight hitting the top and sides of the tree) should be retained to encourage structural heterogeneity
Residual trees should generally have good form and be free of defect such as forks, dead tops, broken tops, and rot, however 3 – 5 wildlife trees which contain one or more of these features should be retained per acre

Tree retention preference is as follows
1. Sugar pine
2. Western white pine
3. Jeffrey pine
4. Incense cedar
5. Red fir
6. White fir
7. Lodgepole pine

Radial Thin
- Thin all fir and lodgepole pine less than 30 inches DBH and other species less than 24 inches DBH which are within 15 feet of the dripline of any Jeffrey, sugar, western white pine or incense cedar greater than 24 inches DBH

Aspen
- All conifers less than 30 inches DBH within 50 feet of aspen (at least 3 individuals greater than 10 feet tall) will be thinned
  - From 50 – 100 feet away from aspen conifers will be thinned to 20-40 BA

Unit 21 & 22
The goal for this unit is to reduce potential wildfire severity by reducing tree density, promoting old growth characteristics, and returning the stand to the natural range of variation. These units are dominated by fir species with sporadic patches of pine intermixed. Natural fir doghair thickets, openings, and previously treated areas are present.

Marking Guide:

Saw Logs: Trees 10 – 29.9 inches DBH

Density and Structure:
- Thin to residual BA of 90 (± 10)ft/ acre across the unit
  - Portions of the unit should vary from 50-140 BA at the sub-acre level depending on existing forest conditions
  - Areas (<1/4 acre) that have desirable species which are free of pests and pathogens, and/ or have topographic features (small depressions, North aspects, drainage bottoms etc.) should be left in a denser condition (up to 140 BA)
Areas (<1/2 acre) with undesirable species, unhealthy individuals, have pests and pathogens, and/or have topographic features (rocky shallow soils, ridgetops, South aspects) should be thinned more aggressively (down to 50 BA)

Small areas (<1/10 acre) of desirable trees may be left with interlocking crowns but the area surrounding them should be thinned so crown fire could not spread

Individual Tree Characteristics
- No trees greater than 29.9 inches DBH will be thinned
- Where possible promote JP, SP, and WWP by radially thinning fir around healthy individuals
- Promote RF over WF and promote largest, healthiest individuals with the fullest crown for retention in these circumstances
- Residual trees should generally be dominant or co-dominant in their strata, however smaller individuals which are healthy and vigorous and have growing space around them (sunlight hitting the top and sides of the tree) should be retained to encourage structural heterogeneity
- Residual trees should be free of obvious signs of pests and pathogens such as pitch tubes from bark beetles or mistletoe infection. Thin all LP less than 30 inches DBH with mistletoe
- Residual trees should generally have good form and be free of defect such as forks, dead tops, broken tops, and rot, however 3 – 5 wildlife trees which contain one or more of these features should be retained per acre

Tree retention preference is as follows
1. Sugar pine
2. Western white pine
3. Jeffrey pine
4. Incense cedar
5. Red fir
6. White fir
7. lodgepole pine

Radial Thin
- Thin all fir and lodgepole pine less than 30 inches DBH and other species less than 24 inches DBH which are within 15 feet of the dripline of any Jeffrey, sugar, western white pine or incense cedar greater than 24 inches DBH

Aspen
- All conifers less than 30 inches DBH within 50 feet of aspen (at least 3 individuals greater than 10 feet tall) will be thinned
  - From 50 – 100 feet away from aspen conifers will be thinned to 20-40 BA

Unit 24
The goal for this unit is to reduce potential wildfire severity by reducing tree density, promoting old growth characteristics, and returning the stand to the natural range of variation. This unit is dominated by red fir with white fir, lodgepole pine, and western white pine present. The east portion of the unit is currently close to desired conditions and efforts should be made to preserve the existing structure and promote western white pine (WWP). The western portion of the unit is overly dense and homogenous and should be thinned to resemble the eastern portion of the unit.

Marking Guide:
Saw Logs: Trees 10 – 29.9 inches DBH

Density and Structure:
- Thin to residual BA of 140 (± 10)ft²/ acre across these units
This ecosystem and desired conditions are defined by variability with small dense clumps of red fir present surrounded by interspace. Efforts should be made to preserve and enhance this structure in red fir clusters and to promote western white pine.

- Portions of the unit should vary from 100-200 BA at the sub-acre level depending on existing forest conditions:
  - Small areas (<1/2 acre) with desirable tree species and healthy individuals may be left at a higher density (up to 200 BA) to promote heterogeneity
  - Small areas (<1/4 acre) may be thinned more aggressively (down to 100 BA) where undesirable tree species are present, individuals are unhealthy, pests or pathogens are present, or advanced regeneration of desirable species are present

Generally, areas on North facing slopes, and drainage bottoms at a higher density (~1800 BA) while ridgelines and upper slopes should be thinned to a lower density (~130 BA)

**Individual Tree Characteristics**

- No trees greater than 29.9 inches DBH will be thinned
- Promote WWP which is free of blister rust, in the eastern portion of unit thin some RF clumps removing unhealthy or fading individuals
- Within the western portion of the unit create a clump/ interspace structure similar to current conditions in the eastern portion
- Residual trees should generally be dominant or co-dominant in their strata, however smaller individuals which are healthy and vigorous and have growing space around them (sunlight hitting the top and sides of the tree) should be retained to encourage structural heterogeneity
- Residual trees should be free of obvious signs of pests and pathogens such as pitch tubes from bark beetles or mistletoe infection. Thin all LP less than 30 inches DBH with mistletoe
- Residual trees should generally have good form and be free of defect such as forks, dead tops, broken tops, and rot, however 3 – 5 wildlife trees which contain one or more of these features should be retained per acre

**Tree retention preference is as follows**

1. Sugar pine  
2. Western white pine  
3. Jeffrey pine  
4. Incense cedar  
5. Red fir  
6. White fir  
7. lodgepole pine

**Radial Thin**

- Thin all firs and lodgepole pine less than 30 inches DBH which are within 30 feet of the bole of any Jeffrey, sugar, or western white pine that’s free of white pine blister rust greater than 24 inches DBH or Red fir greater than 30 inches DBH
Cruise Plan

Project Description

The project lies within T17N R16E, Sections 20, 21, 28, 29, 30, 31, 32, 33 and T16NR16E Sections 4, 6. The project area is made up of approximately 1,854 acres: 809 acres of Digital Prescription Guide (DPG) and 731 acres of Individual Tree Mark (ITM). The remaining acres are un-cruised biomass removal units. The sawtimber acres will be treated to remove an estimated 6.4 MMBF of sawtimber or 12,000 CCF total saw timber. The timber type is primarily Jeffrey Pine and Red fir/White Fir with a mix of Lodgepole Pine, Sugar Pine, and Western White Pine.

Designation of Harvest Trees, Leave Trees

Cutting units 10A, 11A, 11C, 13A, 13B, 14, 16, 21, 22, 23, and 24 will be Cut Tree Marked (ITM). Trees being designated for removal within these units will be marked with Blue tracer paint. ITM units will also have biomass volume cruised via a plot-based method (see stratum 3 below).

Trees being designated via ITM will have paint applied as follows: a horizontal band at or above DBH on the uphill and downhill sides of the tree and the individual markers unique identifier on the uphill and downhill side of the tree at ground level. Reference: Timber Cruising Handbook, 2409.12, Chapter 70 - Designating Timber for Cutting, 71.21 - Marking With Paint, 71.6 – Trespass Prevention, 71.7 – Stump Marks. All trees designated for leave and/or removal will correspond with the unit-specific Marking Guidelines. ITM units will be marked using unit-specific variable-density marking prescriptions.

Designation of Unit Boundaries

Cutting unit boundaries will be designated with Orange tracer paint. Boundary paint will be applied as follows: two vertically arranged dots at or above DBH facing into the unit along with a single dot on either side of the boundary tree, facing in the direction of the boundary line. Unit numbers will be designated on “Cutting Unit Boundary” cards at corners and intermittently along the boundary line.

Stream Protection Zones will be designated with white and blue striped flagging and/or white “Equipment Exclusion Zone” signs. Heritage sites will be designated with blue and black striped flagging. Invasive plant exclusion zones will be designated with orange flagging with the words, “Noxious Weeds” in black. Sensitive plant exclusion zones will be designated with orange and white striped flagging with the words, “Special Treatment Zone” in white.

Tracer Paint - Colors and Batch/Lot Number

Blue – batch/lot numbers M0313, M0029 and H0763. Orange – batch/lot numbers K0439 and J0552. Black – batch/lot numbers J0911, J0375 and K0296. White – E0880 and B0223. All batch/lots of paint have been tracer checked and recorded into the paint inventory.

Product Minimum Merchantability Specifications
The minimum sawlog specifications are; 10 inches at DBH, 6 inches top DIB at a 10 foot minimum length. Minimum miscellaneous convertible product specifications are 3” at DBH, 1” to top DIB.

Trees greater than 10 inches DBH, up to 18 inches DBH that do not contain a minimum utilizable sawlog will also be considered miscellaneous convertible products (biomass) and cruised with stratum 3.

**Maximum Allowable Errors**

The Cabin Creek SA includes Digital Prescription Guide (DPG) units and will thus be sold as a scaled sale per FSH-2400-40-2020-1. The cruise will be designed to meet Regional and National Standards for sampling error. Sawtimber will be designed to meet or be below a 40% sampling error per stratum and meet or be below a 30% combined sampling error for product 01 sawtimber, at a confidence level of 95%. Biomass will be designed to meet a 35% or lower sampling error. The value of this sale, $84,707 was determined by Transaction Evidence Appraisal (TEA) in which estimated volumes from pre-cruise and historical cruise were used. Costs were not subtracted in order to obtain a maximum possible value for the sale.

**Cruise Design**

The Cabin Creek SA cruise consists of two sawlog stratum and one biomass stratum. Only Stratum 1 is part of a cruise contract.

**Stratum 1 - Sawlog – (STR) Within units 10A, 11A, 11C, 13A, 13B, 16, 21, 22, 23, and 24 - sawlogs will be sampled using the Sample Tree sampling system.**

**Stratum 1 – Sample Tree (STR) – Sawlog**

This stratum consists of approximately 731 acres of individual tree selection units. Volumes will be determined using a tree based Sample Tree sampling system. Units will be Cut Tree Marked (CTM). Trees being designated for removal within these units will be marked with blue tracer paint. Blue tracer paint will also be used to identify measure trees.

This design was created to collect 20 samples of Jeffrey Pine, 24 samples of White Fir/Red Fir and Lodgepole Pine and 100% of minor species (Incense Cedar and Sugar Pine). Volumes will be determined using a tree based Sample Tree sampling system. Cruise plan was developed with the Cruise Design Program version 2019.09.17, using the Big Jack East cruise data as a historical cruise for strata 1. The Big Jack East sale area lies in a similar stand type just 2 miles from the Cabin Creek sale area.

**Frequency:**

Volumes will be determined using Sample Tree sampling with individual sample groups for each species. The sampling intensities are as follows: for Jeffrey Pine/Ponderosa Pine is 1 in 200; White Fir/Red Fir is 1 in 150; Lodgepole Pine is 1 in 25; and Sugar Pine and Incense Cedar are 1 in 1. Each sample group within strata 1 has a primary product of 01, sawtimber and a secondary product of 20, green biomass.
Measure Trees:

Measure trees will be identified with two blue bands and the tree number painted on the uphill and downhill sides of the trees along with the cruiser’s initials. Yellow flagging will be tied near eye level in adjacent trees to each measure tree with the following information written in black sharpie: tree number, unit number, and cruiser’s initials. Cruise tree data will be recorded in cruise books. Insurance trees will be measured but left with the designation “I” in FS cruiser. If needed to meet error, insurance tree designations will be changed from “I” to “M” to include them in the cruise computation.

Record all measure tree data in cruise books.

GPS the location of all measure trees, including insurance trees.

EQUIPMENT LIST

Each crew will need the following equipment:

- Copy of the cruise plan
- Data recorder
- Tablet with Cabin Creek Units and Plots
- Cabin Creek SA Plot Maps
- Laser Hypsometer

Each cruiser will need the following equipment:

- Logger’s tape
- Compass
- Clinometer
- Calculator
- Pencil/pen
- Notebook for Cruise Tree recording

Certified Cruisers

All cruisers working on the Cabin Creek SA have current R5 cruisers certification.

Truckee Ranger District certified cruisers working on this sale are: Rich Steffke, Dwight Clark, Sonya Lucatero and Emily Enochs.