APPENDIX A

TECHNICAL SPECIFICATIONS FOR SERVICE WORK ITEMS

SECTION I – DESCRIPTION OF WORK:

The objectives of this project are to increase forest health and vigor, reduce hazardous fuels in order to reduce the threat of catastrophic wildfire within the Wildland Urban Interface, and provide resources to the forest product industry and local communities by executing projects in priority areas on National Forest System lands within the boundaries of the Pike-San Isabel National Forest by accomplishing the following:

1. A reduction in mid-closed structural stages to encourage the development of more mid-open, late-open conditions.
2. Create a mosaic of forest conditions and structures that allow for wildfires to burn and other insect and disease and disturbance agents to occur at intensities and severities and scales within the natural range of variability for specific ecological systems.
3. Cut and Mechanically Pile described timber size classes.
4. Remove included Sawtimber and Non-sawtimber from the Contract Area.
5. Hand cut/pile/chip biomass and non-sawtimber conifers.

SECTION II – WORK ITEMS

Mandatory Item 1: Mechanical Pile:

Units 2a, 2c, 5, 6a, 6b, 7, 8, 9a (513 Acres)

Unit	Acres
2a	5
2c	41
5	97
6a	35
6b	66
7	71
8	49
9a	149

1. **Cutting Specifications:**

UNIT	REQUIREMENTS
2a, 2c, 5, 7, 8, 9a	Cut and mechanically pile all live conifer species 1 foot in height to 9.9 inches DBH. Cut and mechanically pile all standing dead 1 foot in height to 13.9 inches DBH.
6a, 6b	Cut and mechanically pile all live conifer species 1 foot in height to 7.9 inches DBH. Cut and mechanically pile all standing dead 1 foot in height to 13.9 inches DBH.

*Retain 2-3 snags per acre over 10 inches DBH.
*Retain any trees with nesting structures or cavities.

2. **Location of Mechanical Piles:**
Piles may be located within or adjacent to the group opening so long as the following criteria are met:

- Piles shall be a minimum of **15** feet from the crown or drip line of any tree or in the least impactful location among standing live trees. If conditions make it impracticle to locate a pile so that damage to residual green trees can be avoided, an area will be designated or additional trees may be cut, as approved of the Forest Service.
- Piles shall be located a minimum of **25** feet from physical improvements (such as roads, trails, and ditches) and **300** feet from private boundaries if improvments or other structures are present or **150** feet from private boundaries if no improvements or structures are present, unless otherwise approved by the Forest Service.
- Piles shall be located a minimum of **30** feet from perennial streams, lakes, ponds, wetlands, or riparian areas.
- Piles shall be placed so they are not on top of stumps, fire lines, or channels.

3. **Constuction and Size of Mechanical Piles**
   - Piles shall be constructed in a manner which provides for rapid ignition and complete consumption of all piled material.
   - Each pile shall be constructed by laying limbs, cut boles, and other slash in the pile so as to be a rounded mound in shape. Larger material shall be placed in such a manner that it cannot roll downhill when the pile is burned.
   - Piles shall be at least 13 feet in diameter and 7 feet in hieght. Piles shall be no larger than 20 feet in diameter and 12 feet in height, unless otherwise approved by the Forest Service. All piles shall be compact to facilitate burning and free of dirt.
   - All piles shall be trimmed; all objects which extend more than 4 feet in any direction from the pile profile will be cut off and returned to the pile.
   - Within 20 feet of the base of the pile, remove all woody debris greater than 4 inches in diameter.

Optional Item 2: Hand Thinning and Piling:

Units 1, 4, 10 (75 Acres)

Unit	Acres
1	17
4	52
10	6

Designated trees will be hand cut and piled according to the specifications described below. This material is Timber Subject to Agreement.

1. Cutting Specifications :

UNIT	REQUIREMENTS
1, 4, 10	Cut and pile all live conifer species, with the exception of Bristlecone Pine and Ponderosa pine, 1 foot in height to 7.9 inches DBH. Cut and pile all standing dead 1 foot in height to 7.9 inches DBH. Pile all sound ground fuels 3 inches in diameter to 7.9 inches in diameter.

*Retain snags with cavities and nesting structures.

2. Location of Hand Piles:

Piles may be located within or adjacent to the group opening so long as the following criteria are met:

- Piles shall be a minimum of **10** feet from the crown or drip line of any tree or in the least impactful location among standing live trees.
- Piles shall be spaced as far apart from other piles as possible, with a minimum distance of **10** feet.
- Piles shall be located a minimum of **25** feet from physical improvements (such as roads, trails, and ditches) and private boundaries.
- Piles shall be located a minimum of **30** feet from perennial streams, lakes, ponds, wetlands, or riparian areas.
- Piles shall be placed so they are not on top of logs, stumps, rocks, fire lines, or channels.

3. Construction and Size of Hand Piles

- Piles shall be constructed in a manner which provides for rapid ignition and complete consumption of all piled material.
- Each pile shall be constructed by laying limbs, cut boles, and other slash in the pile so as to be a rounded mound in shape. Larger material shall be placed in such a manner that it cannot roll downhill when the pile is burned.
- Piles shall be at least 6 feet in diameter and 6 feet in height. Piles shall be no larger than 10 feet in diameter by 10 feet in height. Pile width shall not be more than two times the overall pile height. All piles shall be compact to facilitate burning.
- All piles shall be trimmed; all objects which extend more than **4** feet in any direction from the pile profile will be cut off and returned to the pile.
- All piles will be cleared of slash and other burnable material at least **5** feet from the base of the pile.
- Where slash produced by operations is too nominal to construct a pile of minimum size (i.e., low stand density, single trees), slash will either be dragged from within a 20-30 feet radius to create a pile or dragged and incorporated into an existing pile within the same radius. In cases where these standards cannot be met, the cut trees will be limbed, bucked, and scattered to a height of less than 18 inches above the ground.

Optional Item 3: Hand Thinning and Chipping:

Unit 3 (31 Acres)

Designated trees will be hand cut and chipped in the woods by hand according to the specifications described below. This material is Timber Subject to Agreement.

1.

UNIT	REQUIREMENTS
3	Cut and chip all live conifer species, with the exception of Bristlecone Pine and Ponderosa pine, 1 foot in height to 7.9 inches DBH. Cut and chip all standing dead 1 foot in height to 7.9 inches DBH. Pile all sound ground fuels 3 inches in diameter to 7.9 inches in diameter.

*Retain all live conifers 5 inches DBH and above within 10 feet of the water's edges of the Protected Streamcourse, as identified on the CAM.
*Retain snags with cavities and nesting structures.

2. Chipped material must be distributed evenly within the treatment unit to a depth not to exceed **2** inches and individual piece length not to exceed **1** foot.
3. Chipped material must be kept at least **10** feet from the edge of any stream, identified as either actively running water or as shown on the CAM.

4. Campsites, open roads, trails, and other existing protected improvements must be kept clear of chipped material, to a distance of at least **30** feet, as to avoid any potential for damage to the protected improvements and to keep campsites usable.

Optional Item 4: Cut and Remove Included Timber:

Units 2b, 2d and 9b (71 Acres)

Unit	Acres
2b	31
2d	22
9b	18

Cut and remove from Contract Area sawtimber and non-sawtimber trees which meet the minimum tree specifications as identified in Appendix B. All Appendix B clauses are applicable to this item. Road Maintenance shall be commensurate with use per the requirements of Appendix C.

Optional Item 5: Non-system Trail Closure:

Non-system Trail, as shown on CAM (0.21 Miles, non-sequential), adjacent to Unit 1

1. Lop and scatter biomass and non-sawtimber sized conifers, with the exception of Ponderosa pine and Bristlecone pine, 1 foot in height to 7.9 inches DBH, to make the trail impassable to motorized vehicle access from surrounding private communities.

Trail Termini, as shown on CAM (200 feet, non-sequential), within Unit 8

2. 100 feet from the termini of the trail, trail must be ripped and slashed, retaining sufficient slash to impede vehicle traffic but allow for proper vegetation establishment.

Optional Item 6: Non-system Trail Closure:

Non-system Trail, as shown on CAM (0.86 Miles), within Unit 9a

1. For full length of trail, trail must be ripped and slashed half the width of existing trail footprint to make it impassable to motorized vehicle traffic but to still allow for foot traffic, retaining sufficient slash to allow for proper vegetation establishment.

SECTION III – CONTROL OF WORK

The Contractor agrees to conduct its operations under this contract and other related business activities in compliance with Federal, State, and local statutes, standards, orders, permits and other regulations.

The Contractor shall meet all State and local environmental quality laws applicable to National Forest system lands.

Work may be done any time during the term of the contract, except under the following conditions:

(1) When conditions are such that operations shall be restricted or ceased due to increased fire risk.

(2) All operating restrictions as shown on the Contract Area Map (CAM) and listed in the solicitation under Protection Measures needed for Plants, Animals, Cultural Resources, and Cave Resources would apply as indicated.

(3) If new wildlife sites are discovered. All new nesting and denning sites for threatened, endangered, or Forest Service sensitive species observed prior to or during implementation would be reported immediately to the COR and appropriate protection measures will be implemented.

(4) When soil moisture conditions create excessive risk of damage to the soil,

(5) When snow depth creates a situation where requirements cannot be met and/or work cannot be inspected, as determined by the COR.

(6) The government reserves the right to prioritize the order in which Units are treated.

(7) If any cultural or archeological sites are discovered during operations of this contract, work will be suspended in the immediate vicinity of the site until a reconnaissance survey is completed by the Forest Archeologist. Areas excluded from treatment shall be deleted from the contract.

SECTION IV – INSPECTION AND ACCEPTANCE

For All Work Items:
At any point during the project, the Contractor and/or Project Manager may request (documented through email, text, or hand-written request) an in the field consultation with the Forest Service to inspect work progress, review contract specifications, or clarify issues. The Forest Service shall respond to Contractor's request within 5 working days, excluding weekends and federal holidays.

GOVERNMENT QUALITY ASSURANCE SURVEILLANCE PLAN

Government Inspection Procedures - The COR, or a designated inspector (GTM), will make periodic inspections while work is in progress, usually daily at first, as needed to ensure work is proceeding satisfactorily. The Contractor shall notify the COR when units are started, when problems are encountered and when contract work needs government oversight.

1. Each unit will be inspected as a separate unit. Unit will not be averaged with other units for acceptance or payment.

2. When units are completed and ready for government inspection, Contractor's designated Project manager shall request unit inspection in writing, prior to moving out of the general area.

3. The COR, or designated inspector, will determine compliance with contract specifications through informal visual inspections. In the event visual inspection indicates work to be in non-compliance with specifications, prompt corrective action and/or rework shall be required.

Government Inspection Procedures – Formal (Plots)

1. In the event visual inspection indicates work and / or rework to be in non-compliance with contract specifications, a series of verification plots shall be installed by the Government to determine compliance with specifications and percent of satisfactory work for treatment of each unit not meeting specification as observed with visual inspection.

2. Government verification plots will consist of a series of fixed area plots and variable radius plots along transects to record whether density, basal area, best tree selection, and other requirements are being met and to what extent.

3. Plots and grid will be distributed so that a representative sample is obtained.

4. The COR or designated inspector will mark the center of each plot on the ground using flagging, stakes, or pin flags. Additional flagging will be hung near the plot center so that it may be seen from a distance. The inspector will include the plot number, their initials and date on the flagging.

5. Plots will be numbered to correlate with the inspection form and transects on a unit map.

6. The minimum number of verification plots, per treatment unit, shall be as follows:

Unit Acreage	Minimum No. of Plots
1 – 9	1 plot per 2 acres
10 – 29	10 plots
30 – 59	1 plot per 4 acres
60 – 99	20 plots
100	1 plot per 5 acres

7. Determination of acceptability of the work performed will be based on Government verification inspections and will be considered conclusive.

8. At each plot, the Government will examine the plot area and record findings on the items listed below:

   a. Plot number
   b. Number of trees to be left on plot.
   c. Number of trees left on plot.
   d. Number of satisfactory trees.
   e. Number of deficient trees.
   f. Number of excess trees.

   - Stumps containing live limbs which are not in accordance with specifications herein will be counted as excess trees.
   - Cut trees which are still attached at the stump will be counted as excess trees
   - Trees meeting cut specifications will be counted as excess trees
   - Trees in excess of trees to be left will be counted as excess

9. <u>Work quality</u> will be calculated on the form as follows:

$$\frac{\text{No. Trees Deficient} + \text{No. Excess Trees}}{\text{No. Trees to be left}} = \%\ \text{Unsatisfactory work}$$

100% – % Unsatisfactory work = % <u>Work Quality</u>

<u>Unsatisfactory Cutting</u>

1. If the work quality falls below 85 percent, the COR will immediately notify the Contractor, in writing, and order him to improve the quality of subsequent tree cutting. If the quality of subsequent tree cutting is not

raised above the 85 percent minimum acceptable standard within 24 business hours after receipt of such written notice, the Contractor's right to proceed may be terminated and the contract considered in default.

2. When the work quality falls below 90 percent as a result of excess trees, the Government may elect to do one of the following:

   (a) Order rework to be performed and withhold payment until excess trees are cut and the results of a post-rework Government inspection show work quality to be at least 85 percent or more. No rework shall be performed unless ordered or authorized by the COR.

   (b) Order that no rework be performed and payment will either be made at a reduced rate, or not at all, as determined from the Thinning Inspection Report.

3. Repeated failure to produce work quality at or above the 85 percent minimum acceptable standard will be considered reason for contract termination and default action.

Reinspection Upon Contractor Request

1. If Government inspection results are unacceptable to the Contractor, a reinspection may be requested, in writing, within 5 business days after receipt of notice of said inspection results. The same inspection procedure will be used; however, the inspection pattern will be shifted so that new inspection plots will not overlap previously inspected plots.

2. If reinspection results – rounded up to the nearest whole percent – indicate a variance of more than 5 percent from the first inspection, the results of the second inspection will be used to calculate work quality and payment, and the Government will bear the cost of reinspection.

3. If reinspection results – rounded up to the nearest whole percent – are within 5 percent of the first inspection, plots from the initial inspection and the reinspection will be combined and used to calculate work quality and payment, and the Contractor shall bear the cost of reinspection.

Government Inspection Procedures – Items 1-6

Table 1 – Minimum Acceptable Quality Levels (AQL) of Work

ITEM	DESCRIPTION	SCHEDULE	UNIT	Min AQL
1	Mechanical Pile	MANDATORY	ACRE	90%
2	Hand Thinning and Hand Piling	OPTIONAL	ACRE	90%
3	Hand Thinning and Chipping	OPTIONAL	ACRE	90%
4	Cut and Remove Included Timber	OPTIONAL	ACRE	90%
5	Non-system Trail Closure	OPTIONAL	MILE	90%
6	Non-system Trail Closure	OPTIONAL	MILE	90%

SECTION V – PAYMENT METHODS

Method of Measurement for Acreages

Acreages were determined by using Global Positioning Systems (GPS) or digitized using GIS mapping. Some unit boundaries are flagged, the majority of boundaries are virtual.

Discernable Boundaries are boundary locations that are readily identifiable features on the ground in locations shown on the Contract Area Map. A Geo-Fence is a location on the ground corresponding to the boundary location

shown on a mobile mapping device using a Global Positioning System (GPS) Receiver using a digital vector file/shapefile. The digital vector file/shapefile will be provided as an attachment to the Contractor by the Forest Service at award. A digital list of the coordinates can be provided upon request.

Contractor is responsible for obtaining a GPS receiver(s) that is capable of determining the location of the geo-fence boundary within the contract tolerance. Allowable contract tolerance is **30** feet.

Forest Service inspection of treatment boundaries shall be conducted to determine treatments are within the allowable contract tolerance using the digital vector file/shapefile referenced above using a GPS Receiver with a minimum, tested accuracy in a Light- Medium canopy of 20 feet.

National Technology Development Program GPS Receiver accuracy reports by GPS manufacturer and model are available at: https://www.fs.usda.gov/database/gps/mtdcrept/accuracy/index.htm. Forest Service determination of boundary location will be final.

In case of a major disruption in GPS service, or lack of GPS coverage on the Contract Area beyond the control of the Contractor, as determined by the Contracting Officer, extension of time may be granted by Contracting Officer when requested in writing by Contractor in accordance with 52.212-4 (f) Excusable Delays. To resolve major disruption of GPS service, or lack of GPS coverage on the Contract Area, the Forest Service may elect to Mark Geo-Fence boundaries on the ground, in which case the Forest Service's determination of boundary location will be final.

The acreage for each work item will be rounded to the nearest acre and is final unless:

a. The contract is modified or,
b. The Government makes a determination to remeasure or,
c. The Contractor exercises his/her option under the following Remeasurement provisions:

Remeasurement

1. The Contractor may request, in writing, remeasurement of any units under this contract if he/she feels that acreage stated on the project maps is incorrect. The remeasurement must be within the existing perimeter of the respective unit. No variance of the unit perimeters as laid out on the ground for this contract will be allowed. All requests for remeasurement must be made prior to payment for each completed unit. Remeasurement will be performed by the Government.
2. If remeasurement indicates that a variance of ten percent or less exists on units of 1 to 5 acres, five percent or less exists on units of more than five but less than 20 acres, or if three percent or less exists on units of 20 acres or larger, the Contractor shall pay for the actual costs of the remeasurement. Under this condition, payment will be made on the acreage stated on the project maps. If the remeasurement indicates the actual acreage varies by more than the above factors from that stated on the project maps, the payment will be made on the remeasured acreage and the Forest Service will pay for the cost of the remeasurement.

Acceptance and Payment – Items 1 – 6

1. Percentages as calculated herein shall be rounded to the nearest whole percent.
2. No allowance for variation or portion of a variation will be added which will create a percentage greater than 100 percent.
3. Payment rate for work quality at or above 85% will be calculated as follows:

% Work Quality + 5 % Statistical Variation (SV) = % Payment rate

4. **Examples:**

(a) 2 Trees Deficient + 4 Trees Excess 6
---------- = --------- = 5.22% = 5% Unsatisfactory work
115 Trees to be left 115

100% – 5% = 95% Work Quality
95% + 5% (SV) = 100% Payment rate

(b) 2 Trees Deficient + 9 Trees Excess 11
---------- = --------- = 11.96% = 12% Unsatisfactory work
92 Trees to be left 92

100% – 12% = 88% Work Quality
88% + 5% (SV) = 93% Payment rate

2 Trees Deficient + 14 Trees Excess 16
---------- = --------- = 16.84% = 17% Unsatisfactory work
95 Trees to be left 95

100% – 17% = 83% Work Quality - - No payment made

*** Stewardship Credits will be earned first, whenever practical. Forest Service Funds will be used if the availability of Stewardship Credits is exhausted or if appropriated dollars are obligated to a specific item.**

SECTION VI – DEFINITIONS

ACCEPTABLE QUALITY LEVEL (AQL): Acceptance of work will be based on compliance with all specifications corresponding to the appropriate task(s). A minimum AQL is required for all service work – hand or mechanical. The minimum AQL will receive a satisfactory performance rating.

ADVANCED CONIFER REGENERATION: areas with at least 25 individual conifer stems between 1 and 8 feet tall in a 1/25th acre area.

ASPEN CLONE: areas with at least 25 individual aspen stems greater than 2 inches of DBH in a 1/10th acre area.

BIOMASS TREES: Any conifer material 2 feet in height to 4.9 inches DBH.

BOLE SPACING: The horizontal distance in feet from the edge of one leave tree bole to another leave tree bole, measured from the outside bark of each tree.

BOLE WOOD: (refers to hand piling specs) Logs and segments of logs that are 5 inches in diameter at the large end and 4 feet or greater in length.

BRUSH: Vegetation consisting of shrub species with single or multi-stems originating at or near ground level not normally reaching more than 15 feet in height.

CIRCULAR PLOT: A sample plot within a thinning unit that is used to determine the number of desirable trees and other contract specifications.

COARSE WOODY DEBRIS: Woody material left on the ground to meet wildlife habitat requirements.

CROWN RATIO: The ratio of live crown length (tip of leader to base of the crown) to total tree length/height.

CROWN SPACING: The horizontal distance in feet between the dripline of a live crown to another live crown.

CUT TREES: Trees that do not possess the characteristics of desirable leave trees and are required to be cut. As described by the contract or otherwise marked to be cut.

CUTTING UNIT: See Treatment Unit definition

DAMAGED TREES: Trees damaged beyond recovery. A tree that is larger than 2 feet in height, and has the top knocked out, is leaning more than 10 degrees, has less than one half of its original limbs, or has approximately 50% of bark removed from the circumference of the bole.

DBH: Diameter at breast height, measured at a point of 4.5 feet above the ground level on the uphill side of the tree.

DECKING: Stockpiling of trees in a designated area.

DEAD/DYING TREES: Trees with the crown foliage changing from green to red, yellow, or needleless. Any tree that has pitch tubes indicating Mountain Pine Beetle infestation.

DESIGNATION BY SPECIES AND DIAMETER (DXSD): A cutting prescription in which species and diameter are used to determine which trees will be left and which will be cut.

DIB: Diameter inside bark.

DRIPLINE: The imaginary line on the ground that outlines the edge of the tree's canopy.

HANG-UP TREE: Any cut tree suspended above ground level.

HEALTHY REGENERATION: Young, healthy, dwarf mistletoe free conifers, less than 4.9 inches in diameter, free of defect or characteristics.

LEAVE TREE: Trees that possess desirable characteristics and that serve to create the basis for designated spacing requirements or are otherwise designated to be left.

LOPPING AND/OR SCATTERING: Cutting limbs from trunks of cut trees, bucking, and moving and rearranging of slash concentrations to reduce the fuel bed height as specified.

NON-SAWTIMBER TREE: For all conifer species, minimum diameter of 5 inches DBH to minimum diameter by species identified in Appendix B, Division A.

OVERSTORY REMOVAL: A cutting prescription where all trees greater than a specified size are cut. Trees less than the specified size are protected.

PAYMENT UNIT: See Treatment Unit.

PILING: Gathering and stacking of downed wood and activity slash by hand or mechanical methods into piles constructed and located as indicated by technical specification and project maps.

PROGRESSION OF WORK: Work conducted in a progressive, workmanlike and orderly manner by the Contractor.

RESERVE CLUMPS: Groups of trees within a treatment area that are protected from cutting, may also include Individual Reserve trees.

ROAD PRISM: The three-dimensional area of a roadway from the top of slope to the toe of slope that has been previously disturbed during road construction. This can include bridges, drainage culverts, walls, ditches, road surfaces, road shoulders, and road fill.

SAWTIMBER TREE: Included timber meeting sawlog size specifications as defined in Appendix B, Division A.2.

SLASH: Woody material existing or created that has accumulated on the forest floor. Woody material includes logs, pieces of logs, tops, and branches.

TEMPORARY ROADS: Non-permanent roads that are constructed by Contractor for the purpose of treatment unit access.

TPA: Trees per acre.

TREATMENT UNIT: An individual area on the ground in which activities will be performed and which may appear as a separate pay item in the Schedule of Items.

TREES WITH GOOD FORM AND VIGOR: Trees with no sign of pest and/or disease, not being suppressed by other crown classes, with crown ratios of 30% or more, and free of damaging agents such as broken or dead tops.

UNIT: See Treatment Unit.

UNSATISFACTORY WORK: If work quality falls below the AQL, the COR will issue a work order or notice of noncompliance to the Contractor in writing. Untreated or unsatisfactory treated areas shall be reworked to obtain satisfactory work quality.

VIRTUAL BOUNDARY: A unit boundary that is shown on the map but is not demarcated on the ground. The contractor must use mapping applications in order to locate these boundaries in the unit.

WHOLE TREE YARDING: Whole tree logging includes cutting tree and removing the entire tree, including tops and branches, to the landing.

WILDLIFE TREE: Standing tree marked to be reserved as a wildlife tree. Used by birds and small mammals for shelter, nesting, perching, etc.