BEAVER RANCH Phase 3
Prescription/Scope of Work

Contents

Project Overview:
Beaver Ranch Community Park (Herein referenced to as "Park") covers 450 acres of Jefferson County Open Space land. It is operated by the Beaver Ranch Board, a 501(c)(3) non-profit. It is a free, open to the public Open Space, with baseball fields, a "Bark Park", Colorado's' longest Zip-line, and a Nationally ranked Frisbee Golf course. It is located in Conifer, CO.
This treatment will cover **90+** acres and has been broken into 4 noncontiguous units. The overall forest type is dry mixed conifer with pockets of ponderosa dominated and lodgepole pine stands. This prescription will focus on a restoration treatment framework favoring the rehabilitation of aspen stands and restoration of ponderosa habitat.

Pre-treatment composition for the entire area: 85.25 Ac.

Lodgepole pine - 54% of trees counted numerically,
Douglas Fir – 28%
Ponderosa pine – 9%
Aspen – 3%
Spruce – 6%

Trees vary from over 700 to 100 TPA, with BA ranging from 64 to 163 ft^2/ac. One particular area of ponderosa dominance displays both the lowest TPA, and the highest BA. Extremely large amounts of regeneration (< 3" dbh) exist in all areas, mastication where practical should be used to remove up to 80% of these small diameter trees. While maintaining a full range of size/age classes within the finished treatment areas, removal of this excess regeneration is desired. Duff depth rarely approaches 1" in any measured plot, with little to large amounts of dead and downed wood within the units. Slopes range from 10% to over 60%. The units each contain a diversity of forest and fuel types.

The units are marked to be completed as a single entry project. Certain zones will be substantially less expensive, others more so, one single overall price per acre is acceptable, as is different prices for

differing areas. Approximately **6.5** acres is being withheld from bid to be completed by CUSP and volunteers.

SECTION 1 Treatment by Unit

For the **treatment area 1,** 50 ac**, Mixed Conifer**, **Slopes:** 12% - 43%
Section 1 Management Prescription:
77% of this unit is considered Dry Mixed Conifer, with 23% being ponderosa dominant forest type. This forest consists of mostly north and northeast aspects, with southwest exposure occurring in the larger valleys. Species mixtures are extreme with nearly every tree type invading the habitat of each of the other. Thinning should be used to restore the proper species in the proper habitat. For example: ponderosa occurs often on northern slopes intermixed with fir, spruce and lodgepole. In this instance, removal of the ponderosa is desirable. In general, if there is no discernable grouping of ponderosa, or if the grouping is loose and less than ¼ acre in size- 100% removal is suggested. If groupings exceed 1/3 acre, than use of the ponderosa restoration prescription is desired . The same principles would apply to Doug fir/spruce groups, as well as with lodgepole stands.
Mastication is acceptable for slash treatment within the canopy of this unit as long as the depth does not exceed 4". Burn pile construction is recommended to reduce the amount of slash left on the forest floor and in openings. Lop and Scatter is acceptable on slopes greater than 55% if all possible bole wood is removed as well. **All bole wood is to be removed if possible.**
The post treatment unit should present as open fields. It is desirable to have *some* scattered trees remaining in openings, or park-like ponderosa stands with more dense stands retained in the gullies, ravines and deep north aspects. Any large residual stands covering a slope should be lodgepole pine, or aspen.
Inholdings (reserves) are areas of preserved interlocking crowns with very little treatment. Inholdings should be surrounded on all sides by treatment, should not exceed 1 ac in size, nor exceed 13% of the total area of the unit when combined together. Reserves in excess of 13% of the completed treatment unit size will be subtracted from the billable acres.
Detailed description of the species/size class removal for any given stand type is contained within the Pre, and - Post- stocking tables.

Mixed Conifer Pre-Treatment Stocking Levels:

dbh Range (inches)	**Lodgepole** Trees/acre	**Doug Fir** Trees/acre	**Spruce** Trees/acre	**Aspen** Trees/acre	**Pondo** Trees/acre	Basal area (ft^2/acre)
4	22	30	15	1	1	6.02
6	37	34	7	11	4	18.84
8	33	22	6	5	4	24.43
10	30	17	4	3	1	29.99
12	17	6	1		2	20.42
14	11	1				12.82
16		3	1			5.58
18		1				1.76

20						
22						
>24						
TOTAL	150	114	34	20	12	119.9
330 TPA avg.						**120 BA** avg.

~2600 trees under 3" dbh per acre

Mixed Conifer Post-Treatment Desired Stocking:

dbh Range (inches)	**Lodgepole** Trees/acre	**Doug Fir** Trees/acre	**Spruce** Trees/acre	**Aspen** Trees/acre	**Pondo** Trees/acre	Basal area (ft^2/acre)
4	10	10	5	1		2.26
6	15	12	2	11		7.85
8	18	8	3	5		11.86
10	15	9	2	3		15.81
12	13	5	1			14.92
14	10	1				11.75
16		3	1			5.58
18		1				1.76
20						
22						
>24						
TOTAL	81	49	14	20	0	71.8
164 TPA avg.						71.8 **BA** avg.

Ponderosa Dominant Pre-Treatment Stocking Levels:

dbh Range (inches)	**Pondorosa** Trees/acre	**Doug Fir** Trees/acre	**Lodgepole** Trees/acre	Basal area (ft^2/acre)
4	25	10	10	3.92
6	15	3	5	4.51
8	15	5	2	7.67
10	15		8	12.54
12	17	2	8	21.20
14	10			10.68

16	5	3		11.17
18	5			8.83
20	2	2		8.72
22	4			10.55
>24				
TOTAL	113	25	31	99.8
169 TPA avg.				99.8 **BA** avg.

~1500 trees under 3" dbh per acre

Ponderosa Dominant Desired Post-Treatment Stocking:

dbh Range (inches)	**Pondorosa** Trees/acre	**Doug Fir** Trees/acre	**Lodgepole** Trees/acre	Basal area (ft^2/acre)
4	12	2		1.22
6	7	1		1.57
8	7	1		2.79
10	8			4.35
12	10	1		8.63
14	8			8.68
16	4	2		8.38
18	4			7.07
20	2	2		8.72
22	4			10.55
>24				
TOTAL	66	9		61.96
75 TPA avg.				62 **BA** avg.

Priority 1) Aspen Rehabilitation:

In areas with a noticeable remnant of aspen, 2000' square feet or greater (1/20 ac.), the treatment shall consist of removal of ALL conifers from within the "grove". A buffer of 1-3 average tree lengths will be established outside of the grouping to reduce shading and slow competition/infiltration of non-poplar species (birch, if any, may be left contiguous to the aspen).

Priority 2) Mixed Conifer Restoration:

Target BA: 68-81/acre

Within the mixed conifer areas the composition is:

46% Lodgepole

34% Douglas fir

10% Spruce (mostly blue, some Engelmann)

6% Aspen

4% Ponderosa

Thinning for reduced basal area should be conducted by favoring groupings in ravines and on true northern aspects. Where ponderosa occurs mixed in with fir or lodgepole, it may be removed. Within Douglas fir/spruce groves, reductions may be made by favoring specimens over 14" dbh, and creating clearings within the canopy. A ravine may be left intact as a reserve inholding provided buffers are created on the slopes adjacent to it, equal in size to the inholding. Individual specimen trees and some regeneration may be left in the created openings, but regeneration should comprise no more than 20% of the BA of the reserve.

Lodgepole may be retained in areas where a grove of greater than 1 ac exists. In this case it should be thinned from within to a homogeneous size class, and other species removed to a level where there is less than 1% Douglas fir or spruce. No ponderosa should be left within the stand. In the case of a 2 ac or larger stand, patch cutting should be used to reduce basal area by 40%-50%. Patch cutting shall be formed as "fingers" simulating the mosaic pattern of a natural burn. Again, other species should be removed from the remnant stand. Lodgepole that occurs intermixed or scattered should be removed. Openings in lodgepole stands, or buffers, should be free of lodgepole, the occasional specimen tree of Douglas fir or spruce may remain, but again, the BA of the clearings should be insignificant. Detailed description of the species/size class removal for any given stand type is contained within the Pre, and - Post- stocking tables.

Priority 3) Ponderosa Restoration:
Target BA: 45-62/acre
Within ponderosa dominated areas, the average composition is:
Ponderosa pine: 66%
Lodgepole pine: 18%
Douglas fir: 14%
To release the ponderosa, all lodgepole pine will be removed as practical. Douglas-fir smaller than 12" dbh will be removed. Remnant regeneration should reflect 90% ponderosa, and 10% Doug-fir. Post treatment ponderosa stand levels reflect the re-configuration to groups and single specimens. The largest dbh ponderosas will be maintained, most as single trees. The heaviest removal will be of 8"-14" dbh trees, retaining climax specimens and clusters of smaller trees. The treatment will focus on the creation of irregular openings (meadows) with groups of various sizes based on the trees present. Meadows should range from 3/4 ac in size to 3-4 tree heights. Douglas-fir will be almost entirely removed. Some spruce will be maintained for species diversity. For more information of ponderosa restoration groups and spacing refer to: GTR310 and/or Desirable Forest Structures for a Restored Front Range.
Detailed description of the species/size class removal for any given stand type is contained within the Pre-, and Post- stocking tables.

Access:
The section is fairly accessible from the north, east and south via established Park access roads. Western access through private property would have to be negotiated if desired. Mid-slope is accessible with contractor constructed skid trails. All skid trails will need to be rehabilitated at project

completion following the guidelines below in: **Additional Performance Standards.**

Desired Outcome:

BA 72 ft²/ ac
Reduction in crown fire potential and fire intensity up the slope. Removal of diseased trees and reduction of stand stresses. Reintroduction of fire whether by natural occurrence or prescribed broadcast burning within 10 years.

Slash **treatment for unit 1**:

Mastication will be done to these specifications _**uniform distribution, not greater than 2" depth**_.
Lop and scatter will be done to these specifications ___**On slopes > 55%, remove bole wood**__.
Chipping will be done to these specifications_____N/A_____.
Burn piles may be constructed in clearings **no greater than 8'X 8' X 10' in height.** Please refer to the Colorado pile construction guide at: http://co.grand.co.us/DocumentCenter/View/5641 and Slash From The Past.

Merchantable material will be removed in the following manner(s) **Whole tree and/or bole removal**; and processed in the following manner(s) at the specified location(s) ____**TBD w/contractor**_____.

Unmerchantable material at any processing sites will be treated in the following manner:__**mastication in place, lop and scatter if necessary and burn piles in openings**_____.

Some material may be left or park manager to sell to campers as firewood- left near main office in 8'-10' lengths. All other material will be disposed of.

For the **treatment area 2,** 34.5 ac, **Lodgepole/Mixed Conifer Slopes:** 21% - 64%
Section 2 Management Prescription:
57% of this unit is considered lodgepole stands, with 43% being dry mixed conifer dominant forest type. This forest consists of mostly north and northwest aspects. Ponderosa occurs in small areas on the south/east border of the unit. Species mixtures are extreme with nearly every tree type invading the habitat of each of the others. Thinning should be used to restore the proper species in the proper habitat. For example: Doug-fir may occur on north aspect slopes intermixed with lodgepole and

spruce. In this instance, the dominant specie(s) should be determined, numerically and favored. In general, if the stand is composed of 70% + lodgepole, the Doug-fir and spruce should be removed and the remnant stand treated as lodgepole. The same principles would apply to instances where lodgepole is thinly dispersed within a mixed Doug-fir/spruce stand. Aspen, where encountered should be treated for rehabilitation.

Mastication is acceptable for slash treatment within the canopy of this unit as long as the depth does not exceed 2". Lop and scatter is also acceptable on slopes greater than 55%, provided all bole wood is removed, as practical. Burn pile construction is recommended to reduce the amount slash left on the forest floor and in openings. All bole wood is to be removed if possible.

The post treatment unit should present as open fields with dense lodgepole stands of a near uniform size. The margins and mixed conifer areas will be thick in the valleys and draws, with an open spacing on hillsides. In the few areas where ponderosa is encountered, ponderosa restoration is desirable if there exists enough density to create a stand.

Inholdings (reserves) are areas of preserved interlocking crowns with very little treatment. Inholdings should be surrounded on all sides by treatment, should not exceed 1 ac in size, nor exceed 13% of the total area of the unit when combined together. Reserves in excess of 13% of the completed treatment unit size will be subtracted from the billable acres.

Detailed description of the species/size class removal for any given stand type is contained within the Pre, and - Post- stocking tables.

Lodgepole Dominant Pre-Treatment Stocking Levels:

dbh Range (inches)	**Lodgepole** Trees/acre	**Doug Fir** Trees/acre	**Pondo** Trees/acre	Basal area (ft^2/acre)
4	29	14	3	4.01
6	57	7	3	13.15
8	69	4		25.47
10	64	5	2	38.72
12	33	2		27.48
14	9			9.61
16			1	1.39
18			1	1.76
20				
22				
>24				
TOTAL	261	32	10	121.59
306 TPA avg				122 BA avg

~60 trees under 3" dbh per acre

Lodgepole Post-Treatment Desired Stocking:

dbh Range (inches)	**Lodgepole** Trees/acre	**Doug Fir** Trees/acre	**Pondo** Trees/acre	Basal area (ft^2/acre)
4	10	8	1	1.65
6	18	5	1	4.71
8	18	4		7.67
10	32	5	1	20.72
12	30	2		25.12
14	9			9.61
16			1	1.39
18			1	1.76
20				
22				
>24				
TOTAL	125	24	5	72.63
154 TPA avg				73 BA avg

Mixed Conifer Pre-Treatment Stocking Levels:

dbh Range (inches)	**Lodgepole** Trees/acre	**Doug Fir** Trees/acre	**Pondo** Trees/acre	**Aspen** Trees/acre	**Spruce** Trees/acre	Basal area (ft^2/acre)
4	25	60	4	7	8	9.06
6	38	15	3		6	12.17
8	35	22		8	4	24.08
10	15	22			5	22.90
12	7	12			1	14.92
14	1	3				4.27
16						
18						
20						
22						
>24						
TOTAL	121	134	7	15	24	87.10
301 TPA avg.						87 **BA** avg.

~300 trees under 3” dbh per acre

Mixed Conifer Post-Treatment Desired Stocking:

dbh Range (inches)	**Lodgepole** Trees/acre	**Doug Fir** Trees/acre	**Pondo** Trees/acre	**Aspen** Trees/acre	**Spruce** Trees/acre	Basal area (ft^2/acre)
4	10	15	0	7	4	3.13
6	14	8	0		3	4.90
8	22	11		8	3	15.35
10	12	14			3	15.81
12	7	8			1	12.56
14	1	3				4.27
16						
18						
20						
22						
>24						
TOTAL	66	59	0	15	14	56.02
154 TPA avg.						56 **BA** avg.

Priority 1): Aspen rehabilitation:
In areas with a noticeable remnant of aspen, 2000' square feet or greater (1/20 ac), the treatment shall consist of removal of ALL conifers from within the "grove". A buffer of 1-3 average tree lengths will be established outside of the grouping to reduce shading and slow competition/infiltration of non-poplar species (birch, if any, may be left contiguous to the aspen).

Priority 2): Lodgepole patch cutting:
Target BA: 68- 78/acre
Within the lodgepole dominant areas the composition is:
86% Lodgepole
11% Douglas-fir
3% Ponderosa

Lodgepole should be thinned from within to a homogeneous size class, and other species removed to a level where there is less than 1% Douglas-fir or spruce. Patch cutting should be used to reduce basal area by 50%. Patch cuts should be formed as "fingers" simulating the mosaic pattern of natural fire. Again, other species should be removed from the remnant stand. Lodgepole that occurs intermixed or scattered among other dominant species should be removed. Openings in lodgepole stands, or buffers, should be free of lodgepole, the occasional specimen tree of Douglas-fir or spruce may remain, and aspen that was previously buried in the logdepole can be released and left in openings. This is a good way to determine opening locations- if aspen is found, remove lodgepole around it and create an opening.
Detailed description of the species/size class removal for any given stand type is contained within the Pre, and - Post- stocking tables.

Priority 3): Mixed conifer restoration:

Target BA: 50-70/acre
Within the mixed conifer areas the composition is:
45% Douglas-fir
40% Lodgepole
5% Spruce (mostly blue, some Engelmann)
5% Aspen
2% Ponderosa
Thinning for reduced basal area should be conducted by favoring groupings in ravines and on true northern aspects. Where ponderosa occurs mixed in with fir or lodgepole it may be removed.
Within Douglas-fir/spruce groves, reductions may be made by favoring specimens over 14" dbh, and creating clearings within the canopy. A ravine may be left intact as a reserve inholding provided buffers are created on the slopes adjacent to it, equal in size to the inholding. Individual specimen trees and some regeneration may be left in the created openings, but it should have no more than 20% of the BA of the reserve.
Lodgepole may be retained in areas where a grove of greater than 1 ac exists. In this case it should be thinned from within to a homogeneous size class, and other species removed to a level where there is less than 1% Douglas-fir or spruce. No ponderosa should be left within the stand.
Detailed description of the species/size class removal for any given stand type is contained within the Pre, and - Post- stocking tables.

Priority 4): Ponderosa restoration:
There are no areas of ponderosa dominance, however there are a few sites where there is enough ponderosa and a southern aspect where definition of ponderosa stands is possible

To release the ponderosa almost all other species will be removed, as practical. Due to the scarcity of ponderosa, groupings should be left mostly intact. Only reduce groups if they exceed 9 trees within a single tree length diameter. Remnant regeneration should reflect 90% ponderosa, and 10% Doug-fir within these reclaimed ponderosa zones.
Detailed description of the species/size class removal for any given stand type is contained within the Pre, and - Post- stocking tables.

Access:
The section is fairly accessible from the top, through the existing campground access roads, and from the bottom in many areas. Access from the bottom will have to be pioneered with a portable bridge to cross Castro creek. CUSP and Beaver Ranch will work with the contractor to obtain and place an appropriate sized crossing for the equipment needed for this access. Access from the south will be from the main Beaver Ranch Road. Interior skid roads can be created by the contractor. All skid trails will need to be rehabilitated at project completion, following the guidelines below under **Additional Performance Standards.**

Desired Outcome:

BA 68 ft²/ ac
Reduction in crown fire potential and fire intensity up the slope. Removal of diseased trees and reduction of stand stresses. Reintroduction of fire whether by natural occurrence or prescribed broadcast burning within 10 years.

Slash **treatment for unit 2**:

Mastication will be done to these specifications _**uniform distribution, not greater than 2" depth**_.
Lop and scatter will be done to these specifications ___**On slopes > 55% all bole wood removed**____.
Chipping will be done to these specifications_____N/A_____.
Burn piles may be constructed in clearings no greater than 8'X 8' X 10' in height. Please refer to the Colorado pile construction guide at: http://co.grand.co.us/DocumentCenter/View/5641 and Slash From The Past.

Merchantable material will be removed in the following manner(s) **Whole tree and/or bole removal**; and processed in the following manner(s) at the specified location(s) ____**TBD w/contractor**_____.

Unmerchantable material at any processing sites will be treated in the following manner:__**mastication in place, lop and scatter if necessary and burn piles in clearings**_____.

Some material may be left for park manager to sell to campers as firewood- left near main office in 8'-10' lengths. All other material will be disposed of.

For the **treatment area 3,** 1.5 ac, **Aspen Rehabilitation Slopes:** 21% - 54%
Section 3 Management Prescription:
Priority 1): Aspen rehabilitation:
For this entire unit is the treatment shall consist of removal of ALL conifers from within the "grove". A buffer of 1-3 average tree lengths will be established outside of the grouping to reduce shading and slow competition/infiltration of non-poplar species (birch, if any, may be left contiguous to the aspen). ONLY 2-3 single specimen trees of either spruce or Douglas fir may be left on the edges of this unit.
Access:
The section is fairly accessible from the bottom, through existing trails, and from the main road and parking areas. Interior skid roads can be created by the contractor. All skid trails will need to be rehabilitated at project completion, following the guidelines below under **Additional Performance Standards.**

Slash **treatment for unit 3**:

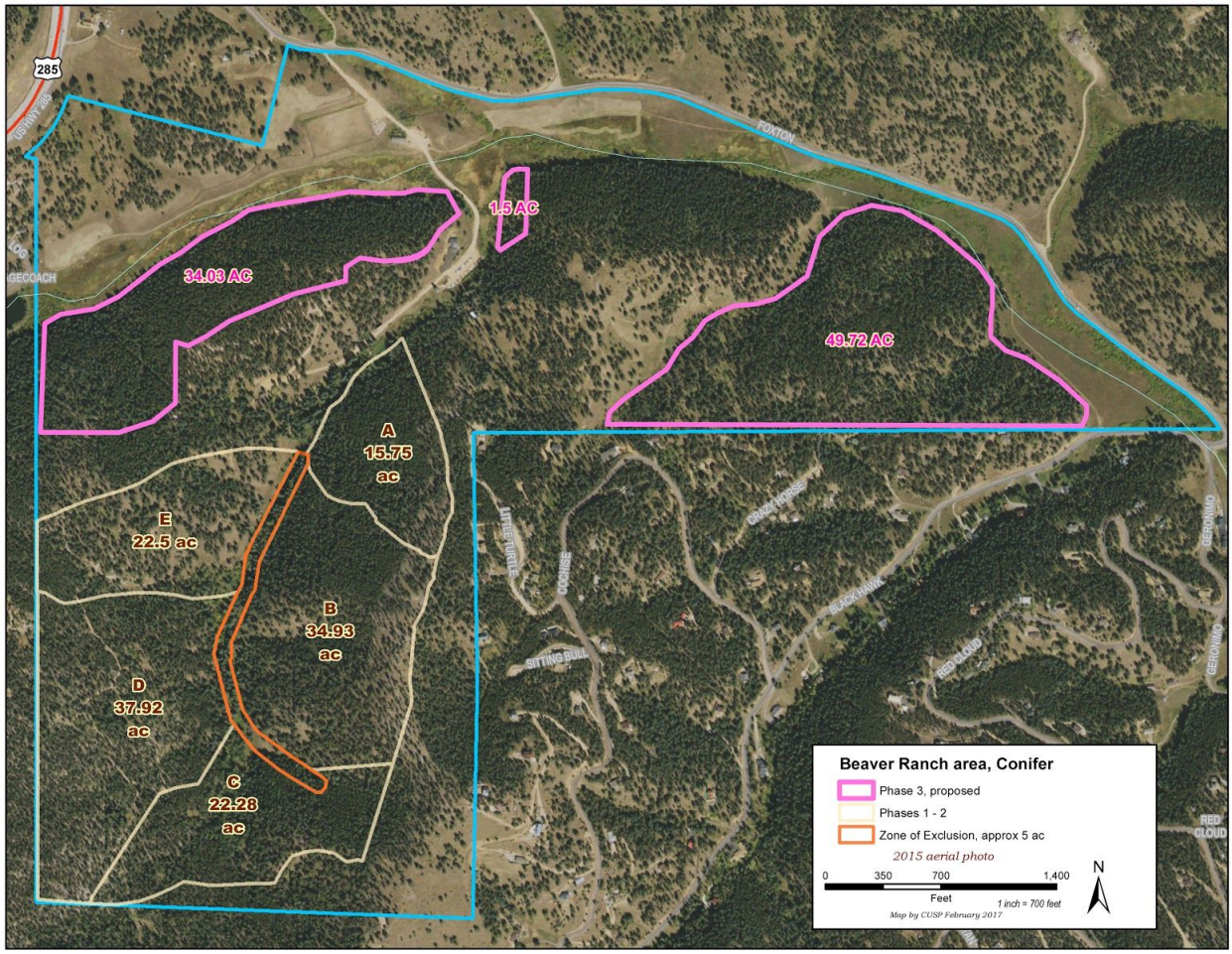
Mastication will be done to these specifications **_uniform distribution, not greater than 2" depth_**.
Lop and scatter will be done to these specifications **___On slopes > 55% all bole wood removed____**.
Chipping will be done to these specifications_____N/A_____.
Burn piles may be constructed in clearings no greater than 8'X 8' X 10' in height. Please refer to the Colorado pile construction guide at: http://co.grand.co.us/DocumentCenter/View/5641 and Slash From The Past.

Merchantable material will be removed in the following manner(s) **Whole tree and/or bole removal**; and processed in the following manner(s) at the specified location(s) ____**TBD w/contractor**_____.

Unmerchantable material at any processing sites will be treated in the following manner:__**mastication in place, lop and scatter if necessary and burn piles in clearings**_____.

Some material may be left for park manager to sell to campers as firewood- left near main office in 8'-10' lengths. All other material will be disposed of.

Map:



Appendix: Stocking Tables

Complete stocking tables attached

Treatment Equipment Recommendations:

- Because project covers different forest types, prescriptions and topography it is recommended that a multi-equipment approach be used. Equipment should be able to masticate up to 8" diameter trees, cut, limb, skid and process logs.

  Any unique trees, regardless of species, may be marked to be maintained; this includes, but is not limited to: unique morphology, extreme dbh, or possible culturally important trees.

  Recommended equipment –

  Cable/grapple skidder or yarder

  Masticator - tracked or wheeled – 125 HP or more

  Tree processor

- Previously dead and down woody material will be mulched (jackpots of dead wood and small diameter aspen).
- Larger diameter down logs should be left intact as much as possible.
  Retain 2-3 snags per acre with a minimum diameter of 8 inches for cavity nesting birds. Larger whole tree snags on the ground will be retained for wildlife purposes (10" and greater).
  Vegetation with nests will be retained and left undisturbed.
- Wherever practicable, contractor will grind or cut stumps to ground level. Where slope, rocks, or other features prohibit grinding to ground level, then a maximum of 4" on the uphill side will be acceptable. If necessary, stumps will be hand cut with chainsaws to meet this standard.
- All pruned limbs will be masticated.
- Contractor will propose the type of equipment to meet specifications regarding removals, chip size, topography, etc...
- With this kind of equipment treatment is limited to slopes less than 50%.
- The vehicle and trailer used to haul the masticating equipment may be left at a designated area in the treatment units.

Contract Period

- Contractor may operate seven days a week, between the hours of 8:00 am and 5:00 pm. No equipment or log truck access or egress from Friday at 3pm to Monday at 8am.
- Operations will not occur on black out date TBD (weekends with weddings)
- Project must be completed by Dec 31, 2017
- Any follow-up seeding must be completed by end of the contract period.

Additional Performance Standards

- The project area is divided into 2 units (Units 1 and 2). The contract administrator must approve each completed unit, including all required repairs to improvements, before work may begin on the next unit. Once each unit is approved by the contract administrator the contractor may submit an invoice for the completed unit(s) as specified in the contract. At the time of signing, start and end dates will be established for each unit. Contractor will only be paid if the units are completed by the agreed upon dates.
- Fuel, hydraulic fluid or other chemical spills will be reported to CUSP immediately. Soil contaminated by loss of fuel, oil, grease, hydraulic fluid, coolant, or other fluids shall either be removed and placed in covered drums or other acceptable containers for proper disposal by the contractor or left in place and mixed with an encapsulating product such as RamSorb I, depending on the amount of contamination. No change of oil, hydraulic fluid, coolant or other fluids will be permitted on the Park property.
- Areas for refueling of chainsaws will be designated by the contract administrator. Refueling areas will be cleared of all combustible material to mineral soil. No chainsaw or other motorized equipment will be started within 15 feet of any refueling area.
- Chainsaws or other equipment will be allowed to cool for a minimum of ten minutes before being refueled.
- In areas where machines have used a path repeatedly, water-bars will be installed by the contractor if the contract administrator determines they are necessary.
- If any sign, gate or fence should need to be removed for the operation, it will be taken

down and re-installed by the contractor.

- Chips will be removed from roads and trails on a daily basis.
- Smoking will only be allowed in vehicles and contractor will follow all current fire restrictions.
- Each vehicle must have an operable Class A 10 lbs fire extinguisher. The contractor will maintain on each work site a minimum of one fire tool per crew member and five gallons of water.
- All vehicles and motorized equipment must utilize effective manufacturer-certified spark arresters and muffler systems.
- In order to quickly request assistance in the event of a fire or medical emergency, each crew working on the site will be required to have immediate access to a cellular phone.
- Any fire started or observed on the Park will be immediately reported in the following order of priority:

  1) To the Local Fire at: 303-816-9385

  The Contractor will immediately call the local emergency services dispatch center (911);

  2) To the CSFS Golden (303) 279-8757

  3) CUSP at (719)-748-0033

- Neither trash nor litter will be left by the contractor anywhere on the Park, access route, or vicinity. Daily hauling of any trash generated by the contractor is the contractor's responsibility.
- No camping will be allowed on Park property.
- It is the responsibility of the contractor to follow all rules and regulations established for the Beaver Ranch Property – This information is available at: http://jeffco.us/open-space/regulations/
- All issues and concerns of adjacent property owners and others shall be referred to the contract administrator.
- Site should be left in a safe manner at the end of every work day.
- Any exposed root balls created during this project will be removed by the contractor.

Roads:

- Any roads altered from current conditions by the contractor must be repaired by the contractor within 10 working days of notification by the project administrator.
- All access roads will be kept passable at all times.
- Roads, trails, tables, benches and other improvements will be rehabilitated to the same condition as found prior to the start of work. All roads, trails, and fencing will be inspected and in working condition prior to final acceptance of the project. Any improvements installed by the contractor will become property of Beaver Ranch and/or CUSP.
- Any temporary skid trails will be approved by contract administrator prior to development.
- All temporary skid trails will be re-contoured to original condition. Placement of water bars and rolling dips (as necessary) will be the responsibility of the contractor.
- Any stream crossing will need an adequate culvert pipe.
- Any ruts or depressions caused by the contractor that are equal to or greater than eight inches deep will be repaired by the contractor before the end of the working day.

• No road, skid trail, or other temporary trail will be established without the prior approval of the project administrator. Any road, skid trail or other temporary trail will be rehabilitated and re-contoured to the original condition. Placement of water bars and/or rolling dips, as directed by the project administrator, will be the responsibility of the contractor.

Damage

• Trees: Trees with significant damage (broken top, multiple equipment scars on one tree, equipment scarring in excess of 12"x 6" on trunk) must be cut and chipped to contract specifications. Contractor will be fined $50/tree for the following specific damage: residual trees >12"dbh with excessive damage (12" x 6" scar) within sight of buildings or trails.

• Improvements: Any road, fence or other improvement altered from its current conditions by the contractor must be repaired to a like or better condition by the contractor. This repair may include drainage ditches/cutbanks or repairing damaged road surfacing. The project administrator will determine if road repair is necessary.

• Damaged gates, fences, or signs will be repaired to a like or better condition or replaced by the contractor, at the discretion of the contract administrator. Contractor is responsible for correcting anything altered from its current condition within ten days of the alteration.

Refueling

• Contractor will be responsible for supplying fuel for all equipment owned by the contractor.

Visitor Safety

Safety of Park staff and visitors will be paramount at all times. The contractor will exercise due caution to safeguard the safety of visitors and staff at all times. In addition the contractor will take the following precautions on a daily basis:

• At the beginning of each work day, the contractor will inform CUSP project manager where the work will be taking place on that day.

• When working within 100 feet of any campground, picnic area or structure, it shall be the duty of the contractor to inform the users that he/she will be working in the vicinity.

• When working within 100 feet of any road, the contractor shall post signs at least 100 feet in advance of the work area on each direction of travel. Such signs shall have a minimum dimension of two feet by two feet. If necessary flagman will be placed along the road to control or stop traffic if there is any danger to motorists or workers.

• When working within 100 feet of any trail, the contractor shall post signs closing the trail at least 100 feet in advance of the work area on each direction of travel. Such signs shall have a minimum dimension of one foot by one foot.

The site should be left in a safe manner at the end of every work day, and the contractor will take all reasonable precautions injury to the public. The following precautions will be required:

1. All equipment will be safely stored at the end of every work day or when unattended. Ignition keys will be removed from chippers, or other equipment and removed from the site. The hitch of all chippers or other towed vehicles will be closed and locked at the end of every work day

or when unattended.
2. All vehicles and chippers or other towed vehicles will be safely parked on level ground with the wheels blocked and locked at the end of each work day or when unattended.
3. Chainsaws, gasoline and oil will be locked inside a vehicle or secured in a locked metal box at the end of each work day or when unattended

Damage Penalty

The contractor shall conduct all operations in a timely manner and in accordance with the Plan of Operations, which is attached hereto and incorporated herein, the same as if set forth in full, and shall take all necessary precautions to protect the remaining forest stand, soils, and any improvements. Excessive damage to the remaining forest stand (rub or bump trees, trees contacted by mastication head, etc.), or the removal of undesignated products will be paid for at the rate of $50.00. All damaged trees less than the prescribed diameter may be designated for removal by the project administrator. Penalties may also be assessed for damages to soils, improvements or other elements of the forest stand. Determination of damage is at the sole discretion of the project administrator.

Subcontracting

- All subcontractors must be approved by CSFS/ CUSP in writing prior to contract signing and bid approval.

Best Management Practices

Forestry Best Management Practices to Protect Water Quality in Colorado, CSFS (http://static.colostate.edu/client-files/csfs/pdfs/ForestryBMP-CO-2010.pdf) is the standard to be used in design, implementation, and monitoring of site-specific Best Management Practices for erosion control and water quality.

Contractor is expected to adhere to CUSP Best Management Practices for Invasive Species control.

Weed prevention / Rehabilitation / Reclamation:

- The undercarriage and tires of all trucks and equipment must be washed offsite before entering the project area to reduce the spread of noxious weeds from other projects. The vehicles will be inspected by the contract administrator prior to entering the Park to ensure compliance.
- Machine operators during the project will avoid driving through any excessively weedy areas and will notify contract officer of its location.
- No major reseeding effort is expected to be necessary for this project; however reseeding will be completed by the contractor in areas where work has exposed bare soil and in areas as may be deemed necessary by the contract administrator. Any and all reseeding will be done with seed mix specifications provided by CUSP.
- All seed mixes, straw, hay materials used in revegetation must meet Colorado Weed-Free specifications.

Endangered and Sensitive Species

- The contractor is required to comply with all Endangered Species Act (ESA) and other relevant

state and federal species protection laws or regulations.

Sensitive Areas

All work will occur in accordance to

- Ephemeral drainage areas will not be used as primary travel route

Archeological/Cultural Resources to Avoid

- If unidentified cultural resources are discovered during project activities, work must be halted until the resources have been evaluated in terms of Federal Register criteria, 36 CFR 60.4, in consultation with the Colorado Historical Society.

INDEMNIFICATION

CONTRACTOR agrees to protect, defend, indemnify and hold harmless the CUSP, its divisions, boards, the State of Colorado, and each of their officers, officials, employees, representatives, agents, successors and assigns against any and all losses, penalties, injuries, claims, fines, legal actions, damages, settlements, costs, charges, professional fees, attorney's fees or other expenses or liabilities of every kind and character incurred by said listed parties and/or arising out of or relating to any and all claims, liens, demands, obligations, actions, proceedings, or causes of action of every kind and character, in connection with, or arising directly or indirectly out of CONTRACTOR's negligence, intentional act, professional error, mistake, omission, performance or failure to perform and/or default or breach under the terms of this Agreement, or fault of CONTRACTOR during the performance of this Agreement. Without limiting the generality of this Section, in any and all such claims or actions relating to personal injury, or of any other tangible or intangible personal or

property right, or actual or alleged violation of any applicable statute, ordinance, administrative order or directive, order, rule or regulation, CONTRACTOR shall respond to and defend any such claims or actions at its sole expense with counsel approved by CUSP and agrees to bear all other costs and expense related thereto, and attorney's fees, even if such claim is groundless, false or fraudulent.

LIABILITY INSURANCE REQUIREMENTS

During the entire term of Project, the CONTRACTOR shall maintain, at its own expense, insurance in at least the following minimum amounts and classifications:

Workers' Compensation/ Employer's Liability
Not less than that required by statute

Comprehensive General Liability (including blanket contractual liability insurance):

Bodily Injury	$ 500,000 each person; $1,000,000 each occurrence
Property damage	$ 600,000
General aggregate	$ 2,000,000

Comprehensive Automobile Liability

Bodily Injury	$ 500,000 each person; $1,000,000 each occurrence
Property damage	$ 600,000

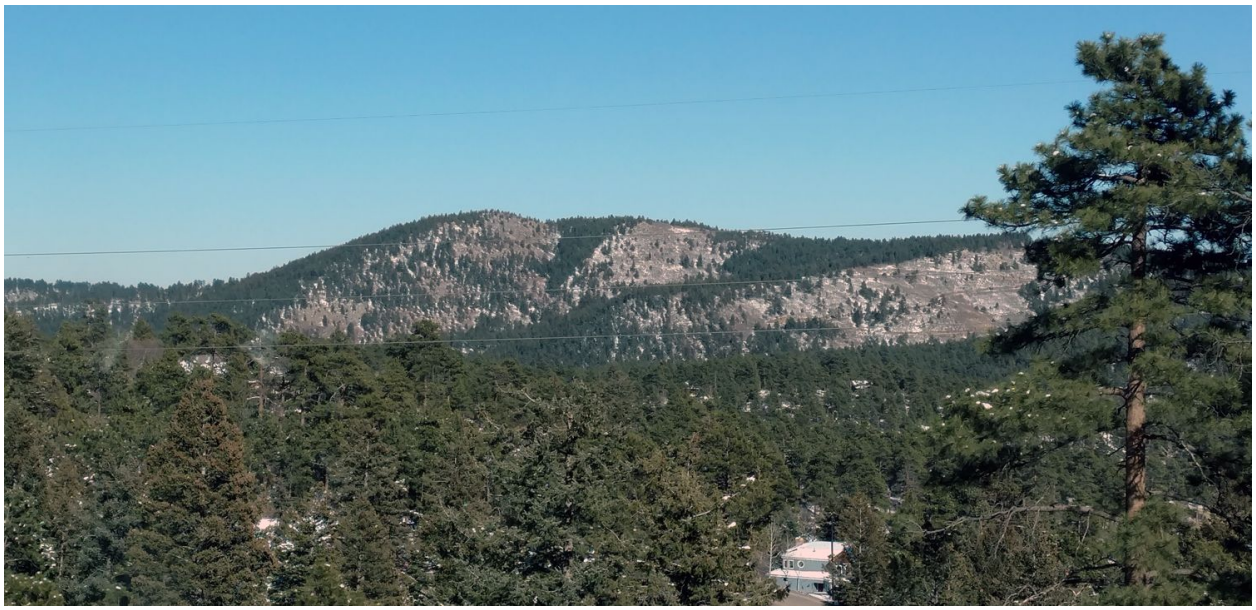
The CONTRACTOR shall furnish certificates of such insurance to CUSP representative prior to performance of this Agreement. CUSP shall be named as an additional insured on all policies of liability insurance.

CONTRACTOR understands that no such insurance will be provided by CUSP.

REFERENCE PHOTOS

Samples of target forest canopy configuration:

Sample one:



Sample2: