

TIMBER SALE REPORT & APPRAISAL

COTTONWOODS SALVAGE SALE

Grand Mesa National Forest

Grand Valley Ranger District

October 2014

Prepared by: _____ Date: _____
Forester

Recommended By: _____ Date: _____
TMA

Approved By: _____ Date: _____
District Ranger

SUMMARY OF RECOMMENDATIONS

The following lists the major recommendations and results of the appraisal.

Net Volume (Cruise report):

ES Sawtimber	1,020.43 CCF
ESD Sawtimber	589.03 CCF
TF Sawtimber	29.51 CCF
POL	<u>5.84 CCF</u>
Total Volume	1,644.81 CCF

Net Volume (Appraised and Contract):

Live & Dead ES & Other Sawtimber	1,639 CCF
Live & Dead ES & Other POL	<u>6 CCF</u>
Total Volume	1,645 CCF

Quadratic Mean DBH (Sawtimber) =	16.6 inches
Quadratic Mean DBH (ES Sawtimber) =	15.5 inches
Quadratic Mean DBH (ESD Sawtimber) =	19.5 inches
Quadratic Mean DBH (TF Sawtimber) =	11.7 inches
Quadratic Mean DBH (POL) =	5.8 inches
Quadratic Mean DBH (Sale as a whole) =	16.0 inches

Net Acres = 96 acres Group Selection/Individual Tree Selection (ITM)

Gross Acres within Sale Area Boundary = 269 acres

Advertised Rates:

Live & Dead ES & Other Conifer Sawtimber	\$19.68
Live ES & Other Conifer POL	\$1.00

Specified Road Construct & Reconstruction = \$0.00

Required Deposits:

Slash Deposits	\$1.04
Surface Rock Replacement Deposit	\$5.47
Road Maintenance Deposit	\$2.11

KV Collections:

Essential KV = \$ 0.00

Contract Period is 3 years. Termination Date = October 31, 2018

Normal Operating Season = July 15 – October 31

DESCRIPTION

A. Location

The Cottonwoods Salvage Sale is located approximately 24 air miles northeast of Delta, Colorado. The legal location is; T. 11 S., R. 94 W., Sections 17, 18, 20 and 30, 6th Principle Meridian and T. 11 S., R95 W., Sections 24 and 25, 6th Principle Meridian Mesa County, Colorado. The sum acreage of the cutting units is approximately 96 acres ITM in a gross sale area of 269 acres.

B. Land Status

All harvest units are on National Forest System lands.

C. Basis for Selecting Area

The Cottonwoods Salvage Sale has been identified as a stand with a high population of spruce beetle infestation. The Cottonwoods Salvage Sale was analyzed in the Grand Valley Spruce Beetle and Sudden Aspen Decline Management EA. A Decision Notice was signed by the District Ranger on 12/08/2011.

D. Transportation Routes and Appraisal Points

Sawtimber and POL will be appraised to Montrose, Colorado.

CONDITIONS OF SALE

A. Planned Cutting Method

Four of the six units are to receive group selection with salvage and sanitation harvest to remove spruce beetle infested trees and wind throw to decrease the potential for the rapid increase in Engelmann spruce beetle population. Two of the six units will receive just salvage and sanitation treatment. Salvage harvest will be conducted in conjunction with group selection. POL material will be subject to agreement.

B. Sale Area Improvement Needs (SAI)

See the SAI Plan on Form FS-2400-50 and KV Plan Narrative for information.

C. Slash Treatment

See the Brush Disposal Treatment Plan FS-2400-62 and the mitigation section below for slash deposal details.

Design Criteria

The following design criteria, mitigation measures and monitoring requirements are listed in the Grand Valley Spruce Beetle and Sudden Aspen Decline Treatment Decision Notice and repeated here. Some design criteria are developed by resource specialists to address specific issues related to the proposed activities on the Grand Valley District.

Air Quality

Any potential burning would be conducted in a manner that complies with State of Colorado air quality guidelines.

Response: The Forest Service will be responsible for any burning and not the timber sale Purchaser. The Fire Management Officer will be required to obtain necessary smoke permits prior to burning.

Cultural Resources

Cultural resource surveys will occur prior to project implementation (see programmatic agreement, Grand Valley Spruce Beetle and SAD EA Project Record, Grand Valley Ranger District office).

Response: Adequate cultural resource surveys have been performed in accordance with the National Historical Preservation Act. There were no eligible sites within the sale.

If any new cultural resource sites are discovered during implementation, project activities would stop and the archeologist would be contacted immediately. The archeologist would evaluate the site and determine how the site would be protected.

Response: B6.24 – Protection Measures Needed for Plants, Animals, Cultural Resources, and Cave Resources and B8.33 – Contract Suspension and Modifications meet this requirement.

Activities involving hazardous tree removal, grapple piling, mechanical treatment, skid trails and landing areas: For all cultural resource sites located during the field inventory or previously known, no mechanical treatment will occur within the site boundary plus a 50 foot buffer around the site. If treatment is necessary, these sites and the 50 foot buffer will be hand treated to remove hazard trees and accumulated fuel build up, per Stipulation 5.B.b. ii and Stipulation 6.a and 6.b, Standard Treatments for Historic Properties, in the 2010 Programmatic Agreement for Bark Beetle, Hazardous Fuel and Tree Reduction Programs (Grand Valley Spruce Beetle and Sudden Aspen Decline Treatments EA project record, Grand Valley Ranger District office).

Response: No cultural resources were found within the harvest units or within 50ft of logging operation areas.

Activities involving temporary road construction and skid trails: For all cultural resource sites located during the field inventory or previously known, a 50 foot buffer around the site will be established. The road control line will be moved to avoid the site and the 50 foot buffer area. If the construction cannot physically be relocated and there is the potential for unidentified buried cultural remains, the construction activities in the area will be monitored by an archaeologist.

Response: Cultural resource surveys were conducted in areas where temporary roads, skid trails and landings would be located. No sites were found within or around these areas.

Fuels

Logging slash would be lopped and scattered to a depth of no more than 2 feet in most areas. Some areas may have constructed wildlife piles taller than 2 feet, if KV funding is available.

Response: C6.7# - Slash Treatment, provides a table of Purchasers responsibility. Wildlife pile will not be needed for this sale.

Sites used as log deck landings may accumulate a larger amount of fuel than the surrounding sale areas. This material is normally piled and burned or chipped as necessary (See silviculture design criteria).

Response: C6.7# - Slash Treatment, provides requirements for slash piles and landings. The Brush Disposal plan includes burning of the piles by the Forest Service.

The area may be opened as a fuel wood gathering site once the logging activity is completed. This activity would target wood debris in the 3” to 9” fuel category which contributes a high percentage of the overall fuel load within this post-harvest fuel type (FM 11).

Response: This will be accomplished with personal use and/or commercial use fuel wood permits once the sale is closed.

Temporary skid trails and haul roads would aid in breaking up the horizontal continuity of the fuel bed. If necessary, the road corridor could be treated by removing slash and brush thereby creating buffer strips throughout the sale area.

Response: C5.34# - Obliteration of Temporary Roads, Skid Trails and Landings requires scattered material.

Noxious Weeds

Prior to entering the National Forest, all off-road logging equipment, machinery and vehicles would be cleaned to remove any plant material that that may have become attached to the vehicles. These vehicles would be inspected by a Forest Service administrator prior to entering the sale area.

Response: B6.35 – Equipment Cleaning is included into the contract and meets these requirements.

All seed and materials used for re-vegetation and reclamation (straw, mulches, matting, etc.) would be approved by the Forest Service and certified weed-free only.

Response: C6.601# - Erosion Control Seeding and C6.602# - Protection of Disturbed Areas from Establishment of Noxious Weed is included in the contract. The following list displays the recommended seed mixture for this area. Appropriate substitution can be made and are at the discretion of the rangeland management specialist based on availability at the time the seed is to be purchased.

Slender wheatgrass	3 lbs./acre
Mountain brome	5 lbs./acre
Thickspike wheatgrass	3 lbs./acre
Canby bluegrass	3 lbs./acre
Blue wildrye	5 lbs./acre

Other Facilities and Special Uses

Timber harvesting activities would be conducted in such a manner as to protect fences, ditches, structures, and other facilities within the analysis area.

Response: B6.22 – Protection of Improvements and B6.221 – Protection of Improvements not owned by Forest Service meet this requirement. Improvements to be protected will be designated on the Sale Area Map.

The Forest Service would ensure that private property boundary lines are located and/or marked.

Response: This sale is not associated with private land.

In order to identify the locations of specific use facilities and concerns the permittees themselves might have concerning the harvesting activities, the Forest Service would coordinate with those permittees early in the process once a specific timber sale area is identified.

Response: This sale was scoped for permittees and others that may have concerns. There were no issues on this sale.

Range

All existing structural range improvements would be protected during timber sale activities.

Response: B6.22 – Protection of Improvements and B6.221 – Protection of Improvements not owned by Forest Service meet this requirement. Improvements to be protected will be designated on the Sale Area Map.

Structural range improvements would be immediately repaired by the timber sale operator, to Forest Service standards, if damage occurs due to timber sale activity. Damage to cattle guards on access roads outside the sale area boundary would be included when it is determined to have been caused by timber sale activities.

Response: B6.22 – Protection of Improvements and B6.221 – Protection of Improvements not owned by Forest Service meet this requirement. Improvements to be protected will be designated on the Sale Area Map.

During the grazing season (varies from 5/15 – 11/15, depending on allotment and location), gates in existing fences between pastures or allotments would be kept closed during timber sale activities. If new gates are required in existing fences as a result of timber sale activities, the timber sale operator would install a temporary gate or cattle guard at the appropriate location.

Response: This is not applicable to this sale. There are no cattle guards or fences.

The Timber Sale Administrator would provide periodic updates to the Grand Valley District Rangeland Management Staff during the grazing season on all timber sale operation activities that could affect management of the grazing allotment.

Response: This is the responsibility of the Sale Administrator to contact the Rangeland Management Staff.

Temporary fencing would be implemented as necessary to protect aspen regeneration from grazing.

Response: This is not applicable to this sale.

Recreation

Temporary roads, which overlay designated cross-country ski trails, OHV / ATV trails, bike trail, or hiking trails, would not be obliterated across the entire width of the road. The width of the temporary road would be obliterated to the width of the trail prior to logging operations. The trail corridor would be free of slash and debris. Temporary roads, which use an existing obliterated road, would be obliterated to the condition prior to logging operations.

Response: This is not applicable to this sale.

During snowplowing operations, the timber purchaser would leave no less than four inches of snow on the roads and would provide a smooth travel surface. Roads would be plowed wide enough so that snowmobiles and log trucks can pass or turnouts would be plowed open. When snowplowing creates berms along designated snowmobile trails or at the junctions of designated snowmobile trails, the purchaser would remove the berms so that snowmobile riders can safely enter and exit trails.

Response: C5.36# - Snow Removal is included in the contract.

Winter operations would not occur in designated ski areas from November 15th - May 15th.

Response: This is not applicable to this sale.

Silviculture

Skid trail and landing locations will be located to avoid advanced regeneration to the greatest extent possible; however it is inevitable that some advanced regeneration will be lost from harvesting activities. This will be kept to a minimum by wider skid trail spacing and also by the silviculturist and wildlife biologist working with Forest Service Representative (FSR) to conserve as much natural regeneration as possible. Harvesting equipment operating off trails will be instructed to avoid natural regeneration and the FSR and silviculturist will continually evaluate this to assure compliance.

Response: Advanced regeneration is protected under B6.32 – Protection of Residual Trees and B6.42 – Skidding and Yarding.

Within group selection harvest units, slash would be scattered or piled so that at least 60 percent of the ground surface is covered by slash to promote establishment of natural regeneration.

Response: C6.7# - Slash Treatment, provides a table of Purchasers responsibilities.

Slash in group selection units should be no deeper than approximately two feet.

Response: C6.7# - Slash Treatment, provides a table of Purchasers responsibilities.

No more than 25% of the group selection unit covered with slash should be characterized as a “continuous” mat of fine slashed materials (foliage, small diameter branches) where germination and seedling establishment would be compromised.

Response: C6.7# - Slash Treatment, provides a table of Purchasers responsibilities.

Groups would be no larger than 2 acres and designed in such a way to reduce the potential for windthrow.

Response: Groups were designated within the harvest units that meet the criteria. Each group was plotted with GPS to determine acreage. Groups vary between .25 acres to 2 acres.

Scarification should occur on approximately 40% of the ground within a harvested group to promote regeneration. This would generally occur as an outcome of harvesting equipment operating in the group selection openings; however if operations occur in deep snow or frozen conditions, the operator or the Forest Service (with employees or contract crews) will return to these sites to complete scarification operations.

Response: This is included in the KV plan for site preparation if determined that harvest operations were not adequate.

Skid trails shall not be located within group selection openings.

Response: C6.42# - Skidding and Yarding (Special Objectives) is included in the contract. The location of skid trails and landings shall be agreed upon prior to construction through B6.422 – Landings and Skid Trails.

Skid trail spacing shall be no less than 75 feet apart, except where they converge at landings.

Response: C6.42# - Skidding and Yarding (Special Objectives) is included in the contract. The location of skid trails and landings shall be agreed upon prior to construction through B6.422 – Landings and Skid Trails.

If wild game are found to be adversely affecting aspen regeneration, big game repellent (BGR) would be applied to reduce damage.

Response: This is not applicable to this sale.

Snag Habitat and Down Woody Debris

Maintain 90 to 225 snags per 100 acres, 10 inches in diameter at breast height (dbh) or greater (where biologically feasible). Snags would be maintained away from structures, roads and trails so that they do not create safety hazards to the public.

Response: Snags are maintained in the stand matrix rather than within groups. Salvage/sanitation will occur within the matrix but it is limited to recently downed trees and Engelmann spruce trees infested with spruce beetle. Snag levels will be met from older dead spruce and dead fir. These trees are not marked and therefore not designated as wildlife trees under C2.32# - Protection of Reserve Trees.

Prior to beginning project activities, survey for and mark as wildlife-leave trees those snags containing nest cavities and other signs of wildlife use. Maintain 10 to 20 tons of logs and other downed woody material per acre, where it exists, for species dependent on this material.

Response: No wildlife trees containing nests, cavities and/or other signs of wildlife use were observed during marking. The timber sale administrator and wildlife biologist will need to monitor for wildlife trees when logging activities begin. The sale administrator will monitor tons of downed woody material per acre.

Soil and Water

The guidelines described in the Rocky Mountain Region Forest Service Handbook 2509.25 “Watershed Conservation Practices Handbook” (WCPH), or other superseding direction) would be the basis for design of watershed protection measures (BMP’s).

Response: These guidelines were used during the implementation of layout and marking of the sale.

During preparation of individual contracts or sales; stream courses, wetlands, and riparian areas would be identified and designated for protection on area maps; and if needed, appropriate water influence zone (WIZ) boundaries and prescriptions developed to protect or enhance stream health, riparian, or wetland conditions.

Response: B1.1 – Sale Area Map, requires these features to be shown on the sale area map. Wetlands and riparian areas were excluded with in the sale during layout.

Ground disturbance would be minimized to the extent possible within the water influence zone (WIZ). At least one end of the log would be suspended during skidding and skid trails would not be located within 50 feet of any stream or wetland.

Response: B6.62 – Wetlands Protection meets this requirement.

Temporary road alignments would be reviewed and appropriate BMP’s identified prior to construction or reconstruction.

Response: B5.1 – Authorization is included in the contract.

Structures required for temporary road crossings of channels shall be designed to prevent the restriction of expected flows, would be removed prior to snowmelt high flows, and permanently removed during obliteration.

Response: B6.3 – Temporary Roads requires the purchaser to place water bars, rolling dips, or ditch relief pipes as directed by the Forest Service. C6.6# - Erosion Prevention and Control requires the purchaser to construct cross ditches for road runoff and take other reasonable measures needed to prevent soil erosion and silt runoff.

Temporary roads and log landings would be de-compacted and seeded at the close of operations to facilitate infiltration.

Response: C5.34# - Obliteration of Temporary Roads, Skid Trails and Landings meets this requirement.

During the preparation of individual sales, wetlands, riparian areas, and poorly or very poorly drained soils found in valley floor or topographic depressions (soil type 127) would be identified and appropriate water influence zone (WIZ) boundaries and prescriptions developed to protect the wetland and riparian related resources.

Response: Wetlands, riparian areas, and poorly or very poorly drained soils found in valley floor or topographic depressions (soil type 127) were inventoried for this sale. There was nothing identified for protection.

Operation of heavy equipment associated with timber harvest activities and mechanical fuels treatments would avoid wet soil types and wetlands.

Response: B6.62 – Wetlands Protection meets this requirement.

All perennial and intermittent streams, lakes, reservoirs, designated wetlands, and wet soil types would be shown on the sale area map. Designated main skid trails would be required in units that are associated for each tractor harvest unit to minimize the area subject to soil disturbance. The area detrimentally impacted by tractor yarding would be limited to less than 15 percent of each cutting unit.

Response: B1.0 – Sale Area Map requires these to be included on the sale area map. The sale administrator will utilize B6.422 – Landings and Skid Trails to control the approval of skid trails and landings located in accordance with these design criteria. B6.4 – Conduct of Logging and B6.6 – Erosion Prevention and Control will also fulfill these requirements.

A special management zone extending up to a total of 300 feet may be established around functioning fens. The extent of this zone would be determined and documented during road location and unit layout.

Response: This does not apply to this sale. There are no fens within the sale.

Slash Treatment Operations

Opportunities for biomass harvesting may result in removal of most logging debris; however the Forest Plan minimum of 10 tons of residual biomass would be required to maintain soil productivity.

Response: The sale administrator will monitor tons of downed woody material per acre.

Spruce Beetle Prevention and Treatment (Control)

Within all treatment units: In order to prevent population increases in Engelmann spruce beetle, felled spruce shall be removed from the sale area by no later than October 31 of the year following felling.

Response: C6.46 – Conduct of Logging (Spruce Beetle Trap Areas) and C6.47 – Conduct of Logging (In Other Than Engelmann Spruce Beetle Trap Areas) is included in the timber sale contract.

All unutilized spruce material, 7 (seven) inches or larger in large end diameter, 8 (eight) feet or more in length, and with 50% (fifty percent) or more tight bark, shall be yarded to landings or other locations agreed to in writing and piled so that it can be burned by Forest Service within one year of the timber being cut. Unutilized spruce material 8 (eight) inches or larger in large end diameter, with 50% (fifty percent) or more tight bark, and less than 8 (eight) feet in length, shall be either (1) piled at landings; (2) bucked to 18 (eighteen) inches or shorter lengths, or (3) have the bark peeled on two sides.

Response: C6.7# - Slash Treatment, provides a table of Purchasers Responsibility.

At the landing, cull spruce logs exceeding 7 (seven) inches large end diameter with 50% (fifty percent) or more tight bark, and part to all of the other slash accumulated at landings, shall be piled. Piled logs exceeding 8 (eight) inches large end diameter shall be bucked into lengths no greater than 5 (five) feet long.

Response: C6.7# - Slash Treatment, provides a table of Purchasers Responsibility.

Units of a sale with high amounts of wind thrown spruce trees will be a priority for removal.

Response: This is not applicable to this sale. There are not high amounts of wind throw in this sale.

Designated spruce trees (trap trees) would generally consist of those trees designated to be cut under the silvicultural prescription or cleared for landings, road right-of-ways or skid trails. Trap trees would be removed preferably before October 31 of the following year, but no later than June 30 of the second year.

Response: C6.46 – Conduct of Logging (Spruce Beetle Trap Areas) requires the purchaser to fall trees to serve as trap trees as designated by the Sale Administrator.

Travel Management and Roads

Road maintenance of National Forest System Roads (NFSR) would be maintained by the Purchaser commensurate with use. This would include a deposit for surface rock replacement (gravel) on roads with a gravel surface and deposit for asphalt repair at a minimum if asphalt roads are being used for haul. Existing NFSRs currently open for use would also receive pre-haul maintenance depending upon on their condition and the needs of the project. Pre-haul maintenance would not include road reconstruction or repairs of an extraordinary nature but would include maintenance of drainage structures, grading the road surface, corrections to cut/fill failures, etc.

Response: B5.3 – Road Maintenance, C5.31# - Road Maintenance Requirements will meet this requirement.

All temporary road locations would be designed to minimize erosion by avoiding excessive grades (more than 12 percent) for long stretches (more than 200 feet).

Response: The sale administrator will monitor these design criteria and agree to road locations prior to construction (B5.1 – Authorization and C6.6# - Erosion Prevention and Control).

Temporary roads would be closed to public use by a closure order and signs during the life of the timber sale. Gates or barricades would be used at junctions of these roads with roads open to public use.

Response: C5.41# - Closure to Use by Others includes gates or barricades as needed.

Timber sale purchasers would be required to develop and implement a specific Traffic Control Plan prior to commencing timber sale operations. The Traffic Control Plan would be approved by the timber sale administrator. (standard timber sale contract provision)

Response: This is a standard contract provision, B6.33 – Safety

Timber sale purchasers would be required to furnish, install and maintain all temporary traffic controls that provide Forest users with adequate warning of hazardous or potentially hazardous conditions associated with timber sale activities. (standard timber sale contract provision)

Response: This is a standard contract provision, B6.33 – Safety

During periods of log haul, flaggers may be required as necessary at any intersections where log trucks are entering high traffic roads.

Response: This is not applicable to this sale.

Wildlife / Fisheries

Advanced regeneration would be maintained, as much as possible, in all treatment units, to provide foraging habitat for lynx.

Response: Advanced regeneration is protected under B6.32 – Protection of Residual Trees and B6.42 – Skidding and Yarding.

On-going surveys for amphibians and raptors (particularly northern goshawk and boreal owl) would be conducted prior to treatment operations, to determine locations of individuals or populations of these species and allow for the implementation of mitigation measures as appropriate.

Response: The District Wildlife Biologist will be responsible for surveys. B6.24 – Protection Measures Needed for Plants, Animals, Cultural Resources, and Cave Resources protects for “additional areas, resources, or members of species” discovered during Purchasers operations.

Created openings in group selection harvest units would be less than 2 tree lengths in width to provide special habitat requirements for some species.

Response: Groups were laid out during implementation to meet this requirement.

No activities shall be allowed within ¼ mile of an active northern goshawk nest from March 1 to July 31 if they would cause nesting failure or abandonment (Forest Plan standard and guideline) For the purposes of this project, the boreal owl shall also have a ¼-mile buffer placed around all active nests until the young have fledged or until the Wildlife Biologist determines that the activities would not disturb the nest and nesting pair.

Response: No goshawk or boreal owl nests have been found in the sale area. B6.24 and B8.33 provides for protection of “additional areas, resources, or members of species” discovered during Purchasers operations. The sale administrator and wildlife biologist will coordinate during the sale to ensure surveys are conducted as required.

Wet areas (seeps, ponds, and springs) within harvest units would be avoided by leaving small islands of leave trees to prevent disturbance of these areas.

Response: This design criterion was included in the silvicultural marking guide and implemented during marking. B6.62 – Wetlands Protection meets this requirement.

Adjacent to fish-bearing streams or fish-bearing lakes: no commercial removal of standing trees would be permitted within 50 feet of reservoirs, natural lakes, perennial and intermittent streams in

order to provide future recruitment of course woody debris; maintain stream or lakeside shading; and minimize wind throw potential.

Response: This is not applicable to this sale. There are not fish-bearing streams or lakes adjacent to the sale.

Project Implementation Monitoring

Implementation of the Grand Valley Spruce Beetle and Sudden Aspen Decline Treatments would be completed and monitored by qualified Forest Service personnel such as silviculturists, timber sale administrators, engineering representatives, pre-sale foresters, timber sale preparation crews, hydrologists, soil scientists, and wildlife biologists. Implementation would be documented in such reports as stand prescriptions, marking guides, marking checks, cruise designs, appraisal and contract reports, timber sale administration inspection reports, wildlife survey reports, site-visit reports, and project design checklists. The District Ranger would review and approve project development after completion of each major step of implementation (i.e. complete certification reports for timber sale gates 1 to 4).

Specific project implementation monitoring includes:

The timber sale administrator would monitor timber sale contracts and enforce contract provisions to protect resources in the sale area from adverse impacts, according to Forest Service policy.

Response: This is a standard operating procedure.

The timber sale administrator would locate and monitor temporary road locations, road drainage, and containment of sediment. Inspections would be ongoing during road construction; and road maintenance and erosion control monitoring would continue throughout the life of timber sale contract, according to Forest Service policy.

Response: This is a standard operating procedure.

The rangeland management specialist would monitor disturbed areas, such as roads, landings, and skid trails for at least two years for noxious weeds, after the disturbance occurred, which would include one inspection per year near the end of the growing season.

Response: This is incorporated in the KV plan.

Regeneration success would be monitored in treatment units. First, third, and fifth year regeneration surveys would be conducted by the timber staff, as required by Forest Service policy. If it is concluded that additional cultural treatments are required, these treatments would be scheduled by the silviculturist.

Response: This is incorporated in the KV plan.

The hydrologist will monitor fens and wetlands, if applicable to a specific treatment area. Inspections would occur yearly during operations, and yearly (for two years) after operations are completed.

Response: This is the responsibility of the hydrologist.

Sale Area Improvement

The Knutson-Vandenberg Act (P.L. 71-319) provides for the use of excess timber sale receipts (KV funds) to conduct sale area improvement work, including wildlife habitat enhancement. Utilizing this potential funding source, the following activities are proposed:

Regeneration surveys, appropriate planting of nursery stock in harvest units, or site preparation will be funded by KV collections. If additional cultural treatments (electric fencing, big-game repellent, etc) were determined to be necessary, KV funds could also be used to complete these activities.

Response: The KV plan includes required activities for this sale.

Timber sale area will be surveyed for two years for noxious weeds. Chemical, biological, cultural, and mechanical techniques will be used, as appropriate, to control populations of noxious weeds during this time period.

Response: Weed treatments are included in the KV plan.

Manipulations and placement of logging slash using seasonal or contractors may be done to enhance wildlife habitat.

Response: This is included in the KV plan.

CRUISE VOLUMES

This sale was laid out in the summer of 2013 and cruised in the summer of 2014. This was sampled using the sample tree cruise method with one sampling strata. Field data was entered and processed using the U.S Forest software NATCRS, Version 10.10.2012.

This is a scaled sale estimated to have a value of under \$95,000; therefore, the maximum sampling error for this sale as a whole is 30% or lower. This information can be found in Chapter 40 of the Timber Cruising Handbook (2409.12). The combined sampling error for this cruise is 22.15% (NATCRS DS1 report).

This Sale was check cruised by Kurt Stagner in October of 2014 and is satisfactory.

The final processing run was made 10/01/2014. NATCRS cruise report B1 shows the following net volumes:

Species	Product	Net Vol (CCF)	# trees	QMD	Net bf/cf ratio
ES	Live Sawtimber	1020.43	2530	15.5	5.42
ESD	Dead Sawtimber	589.03	1150	19.5	5.55
TF	Live Sawtimber	29.51	206	11.7	4.29
POL	POL	5.84	361	6.0	7.18

A. Cruise Volume Summary and Contract Volume Calculations

See the following worksheet computations for calculations of (A2) Appraised Volumes. Use of the TIM system creates a few CCF differences from the cruise results because TIM rounds before aggregating volumes. POL is grouped as Live & Dead ES & O POL (Reference FSH 2409.22, 06.6).

Volume Worksheet Computations Sawlog and POL Volume (CCF)

Species	ES	TF	POL	Total
Cruised Gross Volume from NATCRS B1	1903.12	33.53	5.84	1942.49
Net Volume from NATCRS	1609.46	29.51	5.84	1644.81
Difference	293.66	4.02	0	297.68
Total Defect 1/	15.43%	12.00%	0	15.32%
[1-Defect]	[.8457]	[.88]	[0]	[.8468]

1/Report B1 truncates the defect. Decimal places are calculated by [gross-net] / [gross]

Unseen defect and breakage were included in the cruise run as follows (based on cruisers estimate): 3% for ES, 7% for ESD, 3% for TF and 0% for POL.

Unit volumes are calculated by the TIM program from cruise data that included tree counts by units.

Acreage of the cutting units was determined using Global Positioning System (GPS) in 2013 with 96 acres. Total Gross Sale Area determined by ArcGIS is 269 acres.

Unit Volume: Harvest Unit Acres and Net Volume (CCF)

Unit	Acres	Net Live& Dead ES	TF	Total Sawtimber	ES&O POL
1	18	218.19	2.58	220.77	.60
2	27	485.61	8.45	494.06	2.18
3	2	55.86	0.00	55.86	.03
4	2	47.35	1.43	48.77	.13
5	7	52.78	.29	53.07	.02
6	40	749.68	16.76	766.44	2.88
Total	96	1609.47	29.51	1638.97	5.84

1638.97 CCF / 96 acres = 17.07 CCF Average Net Volume/Acre (ST)

5.84 CCF / 96 acres = .06 CCF Average Net Volume/Acre (POL)

1644.81 / 96 acres = 17.13 CCF Average Net Volume/Acre (Combined)

163897 CF/ 3886 trees = 42.17 CF/tree (ST)

584 CF / 361 trees = 1.61 CF/tree (POL)

164481 CF / 4247 trees = 38.72 CF/tree (Combined)

Quadratic Mean Diameter : 16.6 from Report CP1 of NATCRS printout (ST)

5.8 from Report CP1 of NATCRS printout (POL)

16.0 from Report CP1 of NATCRS printout (combined)

Net Board Foot/Cubic Foot Ratio: 5.0883 BF/CF for ST (calculated from cruise volumes)

1638.97 CCF/ .50883 = 3221 MBF Sawtimber

4.0 Net BF/ CF for POL (standard conversion rate)

5.84 CCF / .40 = 14 MBF POL

APPRAISAL

A. Appraisal Data

Current TE sawtimber Appraisal Data – FSH 2409.22, 51.3; Bulletin No. BU231014, Zone 3 effective November 7, 2014. The conifer sawlog appraisal direction is located in chapter 50 of FSH 2409.22, amended by 2409.22-96-5.

Sawtimber-

Basic Data Period: 4th QTR CY 13 – 3rd QTR CY 14

	<u>Live ES</u>
Base Period Price	\$17.08
Market Adjustment	\$1.45
Adjusted Base Period Price	\$18.53
Base Haul	\$70.13
Base RD Maintenance	\$6.28
Base Slash	\$0.88
Base Temp. RD	\$2.36

POL-

Current TE POL Appraisal Data – FSH 2409.22, 51.3; Bulletin No. BU231014, Zone 3 effective November 7, 2014. The products other than sawlogs (POL) appraisal direction is located in chapter 71 and 74 of FSH 2409.22.

Basic Data Period: 4th QTR CY 13 – 3rd QTR CY 14

	<u>Live & Dead ES & O</u>
Base Period Price	\$1.00
Market Adjustment	\$0.00
Adjusted Base Period Price: All Except PP & Aspen:	\$1.00
Base Haul	\$0.00
Base RD Maintenance	\$4.48
Base Slash	\$0.63
Base Temp. RD	\$2.50

B. Skid/Yard

The skid/yard cost adjustment (formerly called the logging cost adjustment) is now figured on the TEA Appraisal System. It is based on the difference between the appraised sale and

Regional average sale diameter and sale volume per acre. (Reference FSH 2409.22, 51.3 and 51.61)

Database average dbh = 10.9

Database average volume per acre = 18.8 CCF/acre

Sale quadratic mean diameter = 16.0

Sale average volume per acre = 17.13 CCF/acre

$D = 10.9'' - 16.0'' = -5.1''$ dbh difference

$V = 18.8 \text{ CCF/acre} - 17.13 \text{ CCF/acre} = 1.67 \text{ CCF/acre}$ difference

$$\text{SYA} = -1.0 \times \frac{3.96432D - 0.18968D^2 + 2.10508(V/2) - 0.08880(V/2)^2}{2} \times 1.337$$

Skid/yard cost adjustment = \$ -8.98/CCF (applied to sawtimber volume only)

C. Haul Cost Calculation

Round Trip Minutes Time Per Mile and from FSM 2406.22 Sec. 44.1 Exhibit 1

1) Sawtimber: Haul to Montrose, CO

Road Segment FSR. No	From	To	Haul Class	% Grade	RTM	One Way Mile	% Vol	% Delay	Adj. RTM
Temp Rd.	U6	257	5B3	-10 to 4	6.5	.6	47.0	0	1.8
257	Temp Rd.	U5	2C2	-6 to 2	4.2	2.3	47.0	0	4.5
257	U5	U4	2C2	-6 to 2	4.2	.5	50.0	0	1.1
257	U4	U3	2C2	-6 to 2	4.2	.1	53.0	0	.2
257	U3	Existing Log Rd	2C2	-6 to 2	4.2	.2	57.0	0	.5
Existing Log Rd	U2	U1	5C3	-10 to 5	6.5	.5	30.0	0	1.0
Existing Log Rd	U1	257	5C3	-10 to 5	6.5	.7	43.0	0	2.0
257	Existing Log Rd	121	2C2	-6 to 2	4.2	1.2	100.0	0	5.0
121		129	2B2	-4 to 1	3.6	5.5	100.0	0	19.8
129		123	3C2	-9 to 4	5.8	3.5	100.0	0	20.3
123		Hwy 65	3C2	-9 to 4	5.8	3.3	100.0	0	19.1
Hwy 65		Hwy 92	2C1	-6 to 2	4.2	9.2	100.0	0	38.6
Hwy 65		Hwy 92	2C1	-6 to 2	4.2	1.7	100.0	25	8.9
Hwy 65		Hwy 92	2B1	-4 to 1	3.6	9.9	100.0	0	35.6
Hwy 92		Hwy 50	1A1	0	2.8	3.8	100.0	0	10.6
Hwy 50		San Juan Ave.	1A1	0	2.8	1.0	100.0	100	5.6
Hwy 50		San	1A1	0	2.8	19.9	100.0	0	55.7

		Juan Ave.							
San Juan Ave.		6530 Rd.	2B1	0	3.6	1.0	100.0	0	3.6
6530 Rd.		Mill Rd	2B1	0	3.6	1.7	100.0	0	6.1
Mill Rd.			3B2	0	4.9	0.1	100.0	0	.5
Total						66.7			240.5

(Reference FSH 2409.22 ,44.1) Miles X % volume X (% increase + 100) x RT min./mi. / 10000.

67 (Rounded) Miles = 241 (Rounded up) RTM
 241 RTM + 60 min delay time = **301 RTM**
 301 RTM X .1130/ccf/min = **\$34.01/ccf for sawtimber**
 Haul for POL = 67 – 52 = 15 X \$0.1700 = **\$2.55/ccf**

D. Road Maintenance Cost

Road Maintenance: Costs are from the Cost Estimating Guide for Road Construction for Regions 2, 3, and 4, dated March 2013. All wage rates were downloaded from the Division of Labor website as instructed by the Cost Guide (pg 7). Rate will be increased for two years for inflation at 3% to 2015. All costs reduced 23% for construction overhead, profit and risk, increased account from inflation, and increased 31.54% for timber purchaser overhead (TPOH).

1) *Pre-haul and Post-Haul Maintenance:* Purchaser responsibility (Existing Log Road Only)

Pre-haul maintenance and post-haul maintenance will be needed on Existing Log Rd. This will include ditch cleaning (T-802), Surface Blading (T-803), Surfacing Repair (T-804), Drainage Structures (T-805), and Miscellaneous Structures (T-808). This will also include T-Specs 800 and 809.

“Times maintained” in the following table includes pre-haul maintenance.

Road	Segment miles	Times maintained	Maintained miles
Existing Log Rd.	1.28	1 (Pre Haul)	1.28
Existing Log Rd.	1.28	1 (Post Haul)	1.28

Assumptions:

1. Roads to be maintained per B5.3 and C5.31#
2. Blade one mile in 2.0 hours
3. Labor to clean culverts, remove rocks, etc.
4. Labor and operator have other work to round out days when full days are not worked on road maintenance.

5. Use pickup truck 2 hours per 10 hours of work
6. Move in cost figured for 1 time equaling 2 hours. This assumes pre-haul and post-haul maintenance will occur in the same season.
7. 2.4 miles x 2 hours per mile for grader and labor = 4.8 hours
8. Pick up use 2 hours per 10 hours = 2 hour

Road Maintenance			
Work Item	Equipment Rental Rates	Hours	Item Cost
Laborer	\$ 15.00/Hour*	2	\$ 30.00
4x4 gas PU	\$ 23.09/Hour*	2	\$ 46.18
Grader Operator	\$ 34.89/Hour*	4.8	\$ 167.47
Deer 770C II Grader	\$ 56.20/Hour*	4.8	\$ 269.76
Semi/Lowboy Driver	\$ 24.31/Hour*	2	\$ 48.62
Truck w/lowboy (50 ton capacity)	\$ 112.35/Hour*	2	\$ 224.70
Subtotal			\$ 786.73
Less OH, profit / risk @ 23%.			\$ 639.62
Increase 31.54% for TPOH			\$841.36

* Inflated @3% for 2 years from 2013 cost guide.

- 2) *Post-haul Maintenance:* Forest Service Responsibility (FSR. 257 and FSR. 121)
 Post Haul Maintenance will be needed on a portion of FSR. 257 and FSR. 121. Additionally, a deposit will be made for final grading done by the county. Therefore, no move-in cost will be calculated.

Native surface and temporary roads generally need grading once every 500 CCF. Graveled roads generally need grading once every 1000 CCF.

“Times maintained” in the following table include post-haul maintenance.

Road	Segment miles	CCF	Maintained Miles	Hours
FSR. 257	1.2	1,645	1.2	2.4
FSR. 121	12.3	1,645	12.3	24.6

Road Maintenance			
Work Item	Equipment Rental Rates	Hours	Item Cost
Grader Operator	\$ 34.89/Hour*	27.0	\$942.03
Deer 770C II Grader	\$ 56.20/Hour*	27.0	\$1,517.40
<i>Subtotal</i>			\$2,459.43
<i>Less OH, profit / risk @ 23%.</i>			\$1,999.54
<i>Increase 31.54% for TPOH</i>			\$2,630.19

* Inflated @3% for 2 years from 2013 cost guide.

3) Surface Rock Replacement

Rock Replacement collections will be made for the gravel portions of the haul route according to the following worksheets. Rock replacement is sale as a whole, thus the cost will be distributed over all the volume.

Total Net Appraisal Volume: 1645 CCF (all products and species)
 Road: NFSR 257 = 1.2 miles
 NFSR 121 = 12.3 miles

AVERAGE HAUL

Dead Haul = 20.0 mi. from Austin, CO (Rock Source)

Center of project = 6.15 mi. NOTE: Case No. 1 from Haul Distance Calculations below.

Contact S.O. Engineering to determine mileages.

Average Haul = Dead Haul + Haul to Center of Project
 Average Haul = 20.0 mi. + 6.15 mi. = 26.15 mi.

Rock Cost (local cost) 2/ = \$ 10.0 /cu. yd.

Apply (Process, water, & compact) = \$ 1.60 /cu. yd.

Subtotal Cost/cu. yd. = \$ 32.52 /cu. yd. (Present Cost)

Add 24.5% of Present Cost 3/ = \$ 7.97 (Govt. O.H.)

TOTAL ROCK COST = \$ 40.49 / cu.yd. (A)

1/ Use previous graph for haul costs per cu. yd. per mile.

2/ Use local costs if forest average is not applicable.

3/ GMUG Supplement to FSM 6520.42, Chapter 20 (CWFS)

CUBIC YARD LOSS CALCULATION

Gravel loss = 100 cu. yd./ MMCF/mile,
20 cu. yd./MMBF/mile,
or 0.100 cu. yd. /Semi-Truck Load/mile.

Miles of Gravel Road = 13.5 mi.

Total Gravel Loss = 100 cu. yd./MMCF/mile X 0.1645 MMCF X 13.5 miles =
222.08 cu.yd. (B)

COST SUMMARY

\$ 40.49 /cu. yd. X 222.08 cu. yd. = \$8,992.02 Total SRR Cost.
(A) (B)

\$8,992.02/1645 CCF = **\$5.47/CCF**

\$5.47/CCF x 1645 CCF = **\$8,998.15**

1) Snow Removal

It is unlikely that snow plowing will be necessary during the normal Operating Season, therefore, a cost adjustment is not necessary for this timber sale. (FSH 2409.22, Section 44.23)

2) Road Maintenance Summary

Purchaser Pre-haul Maintenance =	\$ 841.36
Forest Service Road Maintenance (Post haul) =	\$ 2,630.19
Surface Rock Replacement Deposit =	\$ 8,998.15
Snow Removal =	\$ 0.00
Total Cost =	\$ 12,469.70

$\$3,471.55/1645 \text{ CCF} = \mathbf{\$2.11/CCF}$ total for Road Maintenance Deposit

$\$8,998.15/1645\text{CCF} = \mathbf{\$5.47/CCF}$ total for Surface Rock Replacement

E. Sale Slash Disposal

See the Brush Disposal Treatment Plan FS-2400-62 for calculations of the contract deposit costs. Allowance is not accounted for piling slash and scarification within group selections openings. Normally this is accomplished during operations.

Required deposits: \$1.04/CCF

Note: Refer to the Unusual Adjustment section of this report for a calculated cost allowance to complete slash disposal resulting from YUM yarding requirements specific to ES sawtimber only.

F. Temporary Roads

As estimated in the Logging Plan, .6 miles (3,168 ft.) of temporary road will be needed to complete this sale. See Logging Plan Map for estimated locations.

Costs are from the Cost Estimating Guide for Road Construction for Regions 2, 3, and 4, dated March 2013. All wage rates were downloaded from the Division of Labor website as instructed by the Cost Guide (pg. 7). Rate will be increased for two years for inflation at 3% to 2015. All costs reduced 23% for construction overhead, profit and risk, increased account from inflation, and increased 31.54% for timber purchaser overhead (TPOH).

Assumptions:

1. Average slopes are less than 15%.
2. Timber volume on temporary road sites is approximately 50 mbf or 26 CCF / acre. There is timber along the full length of temp road, therefore, clearing and grubbing will be estimated for the entire length of temp road.

3. Estimate of 6 drainage dips will be installed on temporary roads.

1) Road Location

Based on professional experience of the estimator, road location costs are estimated at \$375 per mile.

\$375.00 / 1.25 = \$300 (25% reduction from Davis-Bacon)

Newly constructed portion - \$300 x .6 = \$180

2) Clearing, Grubbing, Windrowing

All roads are on 0 to 10% slopes.

Area within clearing limits = 3,168 feet (.6 mi) of road x 16 feet wide = 50,688ft² / 43,560 = 1.2 acres.

Acres to be cleared = **1.2**

Subtract fell, buck, and skid costs from the clearing cost (FSH 2409.22, 44.3).

It is estimated the road location contained a gross volume of 20 CCF per acre.

$(\$20.13^*/CCF + \$27.77^*/CCF) \times 20 \text{ CCF/ac} = \$958.00/\text{ac}$.

**- Inflated from 1996 data, last known appraised rate (@ 1% for 17 years). Actual inflation has likely surpassed this; however this would reflect increased efficiency, new technology.*

Clearing , Grubbing and Slash Treatment	
Description	Units / estimated cost
14 foot corridor for temp road	1.9 acres / mile
Vegetation class for 11 MBF per acre (section 202). 10hr/acre	\$ 1950.00 / acre
Percentage labor (section 201)	50%
Davis Bacon wage adjustment	none
Topographic factor for 10% slope	.8
Slash cleanup factor**	1.25
	1.9 x 1950.00 x .8 x 1.25 = 3,705.00
Total cost per mile	\$ 3,705.00
Fall, Buck and Skid costs deduction / acre	\$ 958.00
Fall, Buck and Skid costs deduction / mile of temp road	\$ 1,820.20
	3,311.43 - 1,820.20 = 1,491.23
Clearing and Grubbing less Fall, Buck and Skid / mile.	\$ 1,491.23

Total cost = \$1,491.23 x .6 mile = **\$894.74**

3) Excavation and Finishing

Excavation	
Description	Units / estimated cost
Temporary road length	.6 miles
Excavation quantity for < 15% side-slope (Table 22).	620 CY
Base Excavation costs (page 55).	\$ 1.66/CY
Excavation and Embankment adjustment factors (page 55) – small glacial boulders	1.75
Percent Labor (page 24).	20%
Davis-Bacon Adjustment Factors (Mesa Co.)	none
	620 x 1.66 x 1.75 = 6,937.14
Total cost per mile	\$ 1,801.10

Total cost = \$ 1,801.10 x .6 mile = **\$ 1,080.66**

4) Seeding Costs

Seeding	
Description	Units / estimated cost
Temporary road length	.6 mile
Acres of seeding per mile (16' width).	1.9 acres per mile.
Cost of seeding with no fertilizer (section 625).	\$ 600 / acre.
Percent Labor (section 625 pg.102).	35%
Davis-Bacon Adjustment Factors (Mesa Co.)	none
	1.9 x 600
Total cost per mile	\$ 1,140.00

Total cost = \$ 1,140.00 x .6 miles = **\$ 684.00**

5) Drainage and erosion control

Rolling dips or drainage cuts will be installed every 500' on constructed temporary roads (page 58 of the 2010 Cost Guide). The cost of each rolling dip is expected to be \$110.00 from Section 204 of the Cost Guide.

Rolling dip installation	
Description	Units / estimated cost
Temporary road.	3,168 feet
Number of rolling dips	6
Cost of installation per dip.	\$ 110
Davis-Bacon Adjustment Factors (Mesa Co.)	none

Total cost per rolling dip	\$ 110.00
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Total cost = \$ 110.00 x 6 dips = **\$ 660.00**

6) Obliteration of temporary roads

All temporary roads used for this sale will be closed. B6.63 requires the purchaser to remove bridges and culverts, eliminate ditches, out-slope roadbed, remove ruts and berms, block the road to normal traffic, and build cross ditches and water bars as directed. Fills are to be removed to the extent necessary to permit normal maximum flow of water. C5.34# requires the purchaser to obliterate temporary roads by "all methods in B6.63 plus restore to original contour where feasible, rip and seed the roadbed, pull material from the fill slope and brow of the cut slope onto the running surface of the road, scatter slash, stumps, or cull logs on the roadway for the entire length of the road, and scatter large rocks or other barriers on the beginning section of the road."

Move-in costs are estimated for one time = 2 hours

Temporary road obliteration	
Description	Estimated Cost
Temporary road.	.6 miles
Out-slope road.	\$ 1,200.00/mile
Rip road bed.	\$ 350.00/mile
Full re-contour. (300 ft)	\$ 600.24
Semi/Lowboy Driver (2 hrs.)	\$ 48.62
Semi w/Lowboy (2 hrs.)	\$ 224.70
Davis-Bacon Adjustment Factors (Delta Co.) 25% labor.	none
	720.00 + 210.00 + 600.24 + 48.62 + 224.70 = 1,803.56
Total cost	\$ 1,803.56

*Note: Numbers were calculated using figures from the March 2013 Cost Estimating Guide for Road Construction.

7) Mobilization costs

Mobilization costs are estimated to be 10% of total temporary road costs, and cover all mobilization costs of road work to be performed.

Mobilization costs	
Project cost items	Units / estimated cost
Temporary road location.	\$ 180.00
Grubbing, clearing costs.	\$ 894.74
Excavation.	\$ 4,162.28
Seeding / fertilization.	\$ 684.00
Rolling dips.	\$ 900.00
Obliteration.	\$ 1,803.56

Total costs for temporary roads	\$ 8,624.58
10.5% for mobilization costs to purchaser.	\$ 905.58

Total mobilization costs = **\$ 905.58**

Sum of all Temporary Road Cost Allowances to Purchaser

Temporary road costs	
Project cost items	Units / estimated cost
Temporary road location.	\$ 180.00
Grubbing, clearing costs.	\$ 894.74
Excavation.	\$ 1,080.66
Seeding / fertilization.	\$ 684.00
Rolling dips.	\$ 660.00
Obliteration.	\$ 1,803.56
Mobilization.	\$ 905.58
Total costs for temporary roads	\$ 6,208.54
Less profit (10%) (divide by 1.10)	\$ 564.41
Subtotal	\$ 5,644.13
Increase TPOH (31.54%)	\$ 1,780.16
Total Temporary Roads Cost Allowance	\$ 7,424.29
Total Temporary Roads Cost Allowance / mile	\$ 10,941.63
Total Temporary Roads Cost Allowance / CCF (1645CCF)	\$ 4.51

G. Unusual Adjustments

1. Skid Distance Adjustment (FSH 2409.22, 51.6)

The average skid distance for this sale is 550 feet; therefore no adjustment.

2. Sorting and Handling (FSH 2409.22, 51.6)

This sale contains a total of 6 CCF of POL (<1% of sale volume). No adjustments for sorting and handling.

3. High Risk (FSH 2409.22, 51.6)

Normal operating season is more than 4 months. No adjustments are needed.

4. Deterioration Live Unusual Adjustment (FSH 2409.22, 51.6):

Calculations to determine deteriorating live sawtimber is based on a letter from the Regional Office dated August 11, 2004. The letter states “the appraiser will estimate the amount of the recent dead volume that will move into the older dead category by the mid-point of the contract term.”

Refer to Adjustment for Deteriorating Timber spreadsheet for calculations

Live ES, 50% deterioration for bark beetle attacks

ESR, 50% deterioration at midpoint to dead

From spreadsheets

ES = (-) \$18.90 applied to ES & Other sawtimber

5. Skidding Adjustment: Designated skid trails will be spaced at least 75 feet apart. This will result in strips between skid trails that may require some pulling cable from the skidder, in order to minimize damage to residual stems.

Assumptions:

1/6 of the sale volume would need to be cabled.

10 CCF a day for a laborer

8 hours per day for a laborer

$1645 \text{ CCF} / 6 = 274 \text{ CCF} / 10 \text{ CCF per day} = 27.4 \text{ days}$

Laborer at \$15.00/hour X 8 hours X 27.4 days = \$3,288.00

X 1.3154 = \$4,325.04

/1645 CCF = (-)\$2.63/CCF

6. Adverse Skid Adjustment: Skidding will pull wood uphill to existing non-system roads within portion of units 1 and 2. An estimation of 15% of the sale will require adverse skidding. An unusual adjustment of 15% of the average skid cost will be made for the sawtimber volume only.

Average skid cost = \$38.76/CCF (FSH 2409.22_42)

Adjustment = \$38.76 X .15 = **\$5.81/CCF**

Total Unusual Adjustments:

ES & O sawtimber: \$18.90 + \$2.63 + \$5.81 = (-) \$27.34

POL: = (-) \$0.00

H. Quality Adjustment (BU230213)

Haul cost adjustment for each species will be capped at +\$25.00. If the base cost for species exceeds the sale haul cost for that species by more than \$25.00, a negative quality adjustment will be made for the amount by which the Sale Haul Cost Adjustment exceeds \$25.00.

ES – Base Haul Cost = \$70.13
ES – Sale Haul Cost = \$34.01

\$70.13 - \$34.01 = \$36.12
\$36.12 - \$25.00 = - **\$11.12 quality adjustment for ES**

I. Competition Factor (FSH 2409.55, 51.3, BU231014)

Live & Dead ES & O sawtimber	\$1.85/CCF
All except PP and Aspen POL	\$0.10/CCF

J. Specified Roads

There is no specified construction related to this sale.

K. Base Rates (FSM 2431.31b)

Live & Dead ES & O sawtimber	\$5.00/CCF
All except PP and Aspen POL	\$1.00/CCF

L. Fire Precautionary Period (AT9)

June 1 – November 30

M. Fire Suppression Reinforcement (AT10)

From the furthest corner of the sale to the appraised mill is 66 miles; rounded to the next 5 miles, 71 miles will be used.

N. Purchasers Obligation for fire (AT11)

Western Area Wage Rate for AD-C, type 2 firefighter = \$17.40/hr (FSH 5109.34 – Interagency Fire Business Handbook, section 13.6, ID 5109.34-2007-1)

Estimate: woods crew = 5 people

5 people X \$17.40/hr X 12 hr shift X 3 Days = \$3,132.00
Rounded to the nearest hundred = \$3,100.00

O. Termination Date (AT12)

Termination date for this sale will be October 31, 2018. (R2 supplement No. 2409.18-2006-2, section 53.4)

P. Performance Bond Calculation (AT14)

There are two methods of calculating the performance bond per FSH 2409.18, 54.1. The larger of the two calculations is used for the minimum performance bond.

Method I – Bond based on 10% of Advertised Stumpage Value:

\$3,226.15 Calculated in bid guarantee section
Round up to the next thousand \$4,000.00

Method II – Bond based on Penal Sum, work required for 1 logging season (w/o TPOH):

Assumptions:

- a) Sale Volume/ 1 season: 1644 CCF / 3 operating seasons = 548 CCF
- b) Seeding costs for all temporary roads in one season (all roads in a season typically seeded in the Fall) .6 miles of temporary roads = **\$ 684.00** (seeding cost).
- c) Regular road maintenance for 1/3 of one season. Total road maintenance costs are \$2,630.19. Divide by three seasons X 33.3%. **\$ 875.85**
- d) Erosion control (rolling dips). .6 miles of temporary roads. 6 rolling dips (every 500 feet) = **\$ 660.00**

** This is for road maintenance before TPOH and FSOH, and does not include rock replacement, dust abatement, or regular maintenance deposits, estimated for one season.

Total = **\$2,219.85**

Round up to next thousand → **\$3,000.**

The greater of Method I or Method II is: **\$4,000.**

Q. Distribution of Funds

Stumpage at advertised rates:

Live & Dead ES & Other sawtimber	\$19.68/CCF X 1639 CCF = \$32,255.52
Live & Dead ES & Other POL	\$1.00/CCF X 6 CCF = \$6.00

Minimum to NFF (\$0.25/CCF X 1645 CCF):	\$ 411.25
Less Essential KV:	\$ 0.00
Remainder available for NFF, KV or SSF:	\$31,850.27
Less non-essential KV:	\$12,000.00 (includes 35.5% OH)
Remainder available for SSF:	\$19,850.27