UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
Tillamook Field Office
4610 3rd Street
Tillamook, OR 97141

Timber Town Timber Sale
ORN04-TS-2024.0401
Date: November 15, 2023

PROSPECTUS

ORAL AUCTION
SBA SET-ASIDE

THIS IS A PROSPECTUS ONLY. ATTACHMENTS MAY NOT INCLUDE ALL EXHIBITS REFERRED TO IN THE CONTRACT. THE COMPLETE CONTRACT, INCLUDING ALL EXHIBITS, IS AVAILABLE FOR INSPECTION AT THE TILLAMOOK FIELD OFFICE.

NOTICE IS HEREBY GIVEN that the Bureau of Land Management will offer for sale timber as described herein for oral auction, pursuant to Instructions to Bidders, as stated on Form No. 5440-9. Written and oral bids will be received by the District Manager, or representative, in the timber sale room at the Northwest Oregon District Office, 1717 Fabry Road, S.E., Salem, Oregon. Written Bids and deposits will be accepted beginning at 8:30am and timber sale oral auction will commence at 9:00 a.m., on Wednesday, November 15, 2023

THIS PROSPECTUS does not constitute the decision document for purposes of protest and appeal of a forest management decision. Consistent with 43 CFR Subpart 5003.2(b), the date the BLM posts the forest management decision on the BLM's ePlanning website establishes the effective date of the decision for purposes of an administrative appeal. The decision was posted to the BLM's ePlanning website on June 5, 2023, referring to the Upper Willamina Forest Management Project, DOI-BLM-ORWA-N040-2020-0001-EA.

AN ENVIRONMENTAL ASSESSMENT was prepared for Timber Town timber sale tract, and a Finding of No Significant Impact has been documented. These documents are available for inspection as background for each timber sale tract at the Tillamook Field Office.

A WRITTEN BID on Form 5440-9 at not less than the appraised price on a unit basis per species and the required minimum bid deposit shall be required to participate in sealed bidding.

THE SUCCESSFUL BIDDER, as a condition of award, will be required to sign Form 5430-11, a certification that the bid was arrived at by the bidder or offeror independently, and was tendered without collusion with any other bidder or offeror. Also, Form 5450-17, Export Determination must be completed by the successful bidder. To expedite procedure, this form should be completed and submitted with the written bid.

FOR SBA SET-ASIDE TRACTS, the bidder must not have been determined by the Small Business Administration to be ineligible for preferential award for set-aside sales and must accompany the bid deposit with a self-certification statement (Form 5430-1) that the bidder is qualified as a small business concern as defined by the Small Business Administration in its regulations, Title 13, Chapter I, Part 121 (Revision 7) as amended, of the Code of Federal Regulations. The successful bidder will be required to sign SBA Form 723 "Small Business Certification Required on All Preferential Sales of Set-Aside Timber" at the time the timber sale contract is signed. Section 2(a) of Form 723 requires that successful bidders on SBA set-aside tracts must comply with delivery requirements pertaining to timber volume. No more than 30 percent of the timber volume from a set-aside sale may be delivered for manufacturing to a business that is not a small business, as defined by the SBA (13 CFR 121.507 (a)).

THE VOLUMES LISTED herein are estimates only. The sale volumes listed are based on 16-foot taper breaks which must be taken into consideration if comparisons are made with volume predictions based on other standards. The volumes based on 32-foot taper breaks are shown for comparison purposes. No sale shall be made for less than the advertised appraised price. The Purchaser shall be liable for the total purchase price, without regard to the amount bid per unit, even though the quantity of timber cut or removed or designated for taking is more or less than the estimated volume or quantity so listed.

THIS TIMBER SALE has been cruised based upon Eastside Scribner board foot measure. The minimum bid figures shown by species are dollars per thousand board feet (MBF). The minimum bid increment will be $0.10 per MBF.

A PERFORMANCE BOND in an amount not less than 20 percent of the total purchase price will be required for all contracts of $2,500 or more. A minimum performance bond of not less than $500 will be required for all installment contracts less than $2,500.

PRE-AWARD QUALIFICATIONS. The high bidder may be required to furnish information to determine the ability to perform the obligations of the contract. If the high bidder is determined not qualified, responsible or refuses to respond within fifteen (15) days of a request for information pertaining to qualifications, the contract may be offered and awarded for the high bid of the highest bidder who is qualified, responsible, and willing to accept the contract.

LOG EXPORT AND SUBSTITUTION: All timber sales, including timber from Federal rights-of-ways, shall be subject to the restrictions relating to the export and substitution of unprocessed timber from the United States in accordance with P.L. 94-165 and 43 CFR 5400 and 5420, as amended.

LOG EXPORT AND SUBSTITUTION RESTRICTIONS: Excepting Port-Orford-cedar, all timber offered for sale hereunder is restricted from export from the United States in the form of unprocessed timber and is prohibited from being used as a substitute for exported private timber. The BLM has revised the log export restrictions special provision to reduce the log branding and painting requirements. The new requirements include branding of one end of all logs with a scaling diameter of over 10 inches. All loads of 11 logs or more, regardless of the diameter of the logs, will have a minimum of 10 logs branded on one end. All logs will be branded on loads of 10 logs or less. One end of all branded logs will be marked with yellow paint. At the discretion of the Contracting Officer, the Purchaser may be required to brand and paint all logs. The Purchaser shall bear any increased costs for log branding and painting.

CONTRACT MODIFICATION, SUSPENSION OR TERMINATION: A revised Special Provision has been added to the contract which enables the Contracting Officer to suspend the contract to facilitate protection of certain plant or animal species, and/or to modify or terminate the contract when necessary to: (1) Comply with the Endangered Species Act or to prevent incidental take of northern spotted owls in accordance with management direction in the Record of Decision (ROD) and Resource Management Plan (RMP), or; (2) Comply with a court order, or; (3) Protect species which were identified for protection through survey and manage and/or protection buffer standards and guidelines or management direction established in the ROD and RMP.

ADDITIONAL INFORMATION concerning this timber sale tract is available at the above District Office. A copy of the timber sale contract is also available for inspection at the District Office. The prospectus for this sale is also available online at: https://www.blm.gov/programs/natural-resources/forests-and-woodlands/timber-sales. The prospectus includes maps and tables that cannot be made Section 508 compliant. For help with its data or information, please contact the Tillamook Field Office at 503-815-1109.

TIMBER SALE NOTICE

SBA SET-ASIDE

NORTHWEST OREGON DISTRICT
TILLAMOOK FIELD OFFICE
COLUMBIA MASTER UNIT

Sale Date: November 15, 2023

CONTRACT NO.: ORN04-TS-2024.0401, Timber Town Timber Sale, Lump Sum
YAMHILL COUNTY, OREGON: O&C: **Oral Bid**
BID DEPOSIT REQUIRED: **$195,000.00**

All timber designated for cutting on: W½NE¼, W½NW¼, W½SW¼, NW¼SE¼, **Sec. 29;** NE¼NE¼, S½NE¼, Lot 1, Lot 2, N½SE¼, **Sec. 31,** T. 4 S., R. 6 W.; SE¼SW¼, SW¼SE¼, **Sec. 24**; NW¼NE¼, NE¼NW¼, S½NW¼, SW¼, SW¼SE¼, **Sec. 25;** N½NE¼, SE¼NE¼, NE¼NW¼, NE¼SE¼, **Sec. 36,** T. 4 S., R. 7 W. WM., Oregon.

THIS TIMBER SALE HAS BEEN CRUISED BASED UPON EASTSIDE SCRIBNER MEASURE.
Minimum bid figures shown by species are dollars per thousand board feet (MBF). The minimum bid increment will be $0.10 per MBF.

Approx. No. Merchantable Trees	Est. Vol. MBF 32' Log	Species	Est. Vol. MBF 16' Log	Appraised Price Per MBF	Estimated Volume Times Appraised Price
36,565	8,033	Douglas Fir	9,853.0	$197.70	$1,947,938.10
804	44	Red Alder	61.0	$26.00	$1,586.00
480	3	Bigleaf Maple	4.0	$22.90	$91.60
37,849	**8,080.0**		**9,918.0**		**$1,949,615.70**

*Minimum Stumpage values were used to compute the Appraised Price/MBF (10% of Pond Value)

LOG EXPORT AND SUBSTITUTION RESTRICTIONS: All timber offered for sale hereunder is restricted from export from the United States in the form of unprocessed timber and prohibited from substitution of exported private timber.

CRUISE INFORMATION: The timber volumes for the harvest units were based on a variable plot cruise for estimating the board foot volume of trees. Plots were measured using a 40 basal area factor (BAF) for regen units, RW, and thinning units with 30 MBF/ac. or greater. A 20 (BAF) was used in the rest of the thinning harvest units. None of the total sale volume is salvage material. For merchantable Douglas- fir trees the average DBHOB is 15.1` inches; the average gross merchantable log contains 61 bf (board feet); the total gross volume is approximately 10,397 MBF; and 97% recovery is expected.

CUTTING AREA: Twenty (20) units totaling approximately four hundred thirty-six (436) acres, of which forty-eight (48) acres shall be regeneration harvest and three hundred eighty-eight (388) acres shall be partial cut harvest. These acres are inclusive of Patch Cut and Clump Areas as shown on Exhibit A. In addition, approximately seventeen (17) acres of right-of-way shall be cut. Acres shown on Exhibit A have been calculated based on Global Positioning System traverse procedures including differential correction.

DURATION OF CONTRACT: Contract length will be 48 months for cutting and removal of timber.

LOCATION: The contract area is located approximately seven (7) air miles north of Willamina, Oregon. Starting in Willamina, Oregon, head west on NE Main Street/Willamina Creek Road for 6.3 miles. Take a slight right to stay on Willamina Creek Rd for .7 miles. Turn right onto SW East Creek Rd and continue for 2 miles where you will encounter Unit 10 of the Timber Sale. Consult a project location map.

SPECIAL PROVISIONS TO NOTE

SBA CONSIDERATION: (Sec. 44.nn.) The Purchaser agrees not to sell and/or exchange more than 30 percent of the timber or log volume from this preferential sale to concerns that do not meet the Small Business Administration small business size standard (13 CFR 121).

The Purchaser understands that in addition to other penalties which may be imposed for violating the foregoing, the Purchaser may be declared ineligible to participate in future Federal timber sales that are set-aside for preferential bidding by small business qualified concerns for two semi-annual triggered periods succeeding the violation.

Purchaser shall provide a current, interim Log Scale and Disposition of Timber Removed Report (Form 5460-15) upon request by the Authorized Officer at any time during the contract period for cutting and removal specified in Section 4 of this contract as amended.

BUYOUT SECURITIES (Sec. 44. ll.): The Purchaser shall create coarse woody debris in accordance with Section 44.kk. The Purchaser shall have the option of completing this work, or in lieu thereof, may make a buyout security deposit to the Bureau of Land Management in the amount of two hundred fifteen thousand, one hundred twenty-three and 25/100 dollars ($215,123.25), and upon making such deposit, the Purchaser shall be relieved of the obligations set out in this subsection. The purchaser may, alternately, complete the basal-girdle and felling coarse woody debris portion of Exhibit F and make a buyout security deposit in lieu of completing the topping, cavity creation, and high-girdling portion of Exhibit F in the amount of one hundred fifty-nine thousand, one hundred thirty-nine and 52/100 dollars ($159,139.52). The Purchaser shall notify the Authorized Officer of their intention to make this deposit prior to the date of execution of this contract and the Authorized Officer shall establish a required schedule of payments.

ACCESS AND ROAD MAINTENANCE:
Access is provided by Hampton Tree Farms, Inc., Tristar Northwest Oregon Timberlands, LLC., Boston Timber Opportunities, LLC., Golden Pond Timberlands, LLC., Weyerhaeuser Timber Holdings, Inc., and the Bureau of Land Management (BLM) owned roads. All roads used in conjunction with this sale will be maintained by the Purchaser. The Purchaser will be required to pay a rockwear obligation of twelve thousand one hundred sixty and 86/100 ($12,160.86) dollars to the Government and spread **630 CY** crushed rock on BLM roads for maintenance requirements.

In the use of Hampton Tree Farms, Inc., owned roads, under Right-of-Way Agreement No. S-700 (OR044680) and as listed in section 43, the Purchaser will be required to enter into a license agreement which requires: (a) Purchaser maintenance of all Hampton Tree Farms, Inc., owned roads, (b) Purchaser pay a road use obligation fee of nine-thousand two hundred eighty-seven and 46/100 ($9,287.46) dollars, (c) Purchaser pay a rockwear fee of one hundred fifty-four and 93/100 ($154.93) dollars, (d) Purchaser provide proof of insurance with limit of $1,000,000/$1,000,000/$1,000,000 and a performance bond of $500.00. Prior to the use of said roads, the Purchaser shall furnish the Authorized Officer a copy of the executed license agreement.

In the use of Tristar Northwest Oregon Timberlands, LLC., owned roads, under Right-of-Way Agreement No. S-682 (OR045816) and as listed in section 43, the Purchaser will be required to enter into a license agreement which requires: (a) Purchaser maintenance of all Tristar Northwest Oregon Timberlands, LLC., owned roads, (b) Purchaser pay a road use obligation fee of two thousand eight hundred six and 00/100 ($2,806.00) dollars, (c) Purchaser pay a rockwear fee of four hundred seventy-four and 25/100 ($474.25) dollars, (d) Purchaser provide

proof of insurance with limit of $1,000,000/$1,000,000/$1,000,000 and a performance bond of $500.00. Prior to the use of said roads, the Purchaser shall furnish the Authorized Officer a copy of the executed license agreement.

In the use of Boston Timber Opportunities, LLC., owned roads, under Right-of-Way Agreement No. S-682C (OR068009) and as listed in section 43, the Purchaser will be required to enter into a license agreement which requires: (a) Purchaser maintenance of all Boston Timber Opportunities, LLC., owned roads, (b) Purchaser pay a road use obligation fee of two thousand eight hundred six and 00/100 ($2,806.00) dollars, (c) Purchaser pay a rockwear fee of one thousand three hundred forty-one and 62/100 ($1,341.62) dollars, (d) Purchaser provide proof of insurance with limit of $1,000,000/$1,000,000/$1,000,000 and a performance bond of $1,000.00. Prior to the use of said roads, the Purchaser shall furnish the Authorized Officer a copy of the executed license agreement.

In the use of Golden Pond Timberlands, LLC., owned roads, under Right-of-Way Agreement No. S-682D (OR068010) and as listed in section 43, the Purchaser will be required to enter into a license agreement which requires: (a) Purchaser maintenance of all Golden Pond Timberlands, LLC., owned roads, (b) Purchaser pay a road use obligation fee of six thousand one hundred forty-six and 00/100 ($6,146.00) dollars, (c) Purchaser pay a rockwear fee of seven hundred forty and 90/100 ($740.90) dollars, (d) Purchaser provide proof of insurance with limit of $1,000,000/$1,000,000/$1,000,000 and a performance bond of $500.00. Prior to the use of said roads, the Purchaser shall furnish the Authorized Officer a copy of the executed license agreement.
In the use of Weyerhaeuser Timber Holdings, Inc., owned roads, under Right-of-Way Agreement No. S-805 (OR044601) and as listed in section 43, the Purchaser will be required to enter into a license agreement which requires: (a) Purchaser maintenance of all Weyerhaeuser Timber Holdings, Inc., owned roads, (b) Purchaser pay a road use obligation fee of two thousand eight hundred six and 00/100 ($2,806.00) dollars, (c) Purchaser pay a rockwear fee of seven hundred sixty and 94/100 ($760.94) dollars, (d) Purchaser provide proof of insurance with limit of $1,000,000/$1,000,000/$1,000,000 and a performance bond of $1,000.00. Prior to the use of said roads, the Purchaser shall furnish the Authorized Officer a copy of the executed license agreement.

The designated haul route, as shown on Exhibit E, for Unit 1 through 20 is East Creek Road to Willamina Creek Road towards Willamina.

Road use obligations and rockwear fees have been calculated using timber volumes based on the actual BLM timber sale cruise volume. Additional fees for road use obligations and rockwear will be calculated at the agreed upon rates (in the license agreement) for additional timber volume for non-BLM controlled roads. Additional fees for rockwear will be calculated at the current rate for additional timber volume for BLM controlled roads and be charged to the Purchaser. Purchaser maintenance shall include frequent blading and shaping of road surface; ditch, culvert and catch basin cleaning; removal of minor slides and other debris. Roads shall be left in a condition to withstand adverse weather at the end of the seasonal operations.

Purchaser shall also spread **235 CY** crushed rock on non-BLM roads as needed and instructed by the Authorized Officer.

ROAD CONSTRUCTION, IMPROVEMENT, AND RENOVATION: The Purchaser will be required to do all work set forth below. The Purchaser shall supply all materials unless otherwise indicated.

1. New Road Construction:
   Total Length: 185+34 Stations.
   Road construction work to be performed is described in detail in Exhibit C and as shown on Exhibit A and C maps.

2. Renovation:
   Total Length: 615+75 Stations
   Road renovation work to be performed is described in detail in Exhibit C and as shown on Exhibit A and C maps.

3. Improvement:

Total Length: 19+22Stations

Road improvement work to be performed is described in detail in Exhibit C and as shown on Exhibit A and C maps.

4. Estimated Quantities:

a. Clearing, Grubbing, and Brushing:

29.97 acres of Clearing and Grubbing
10.6 miles of Brushing

b. Culverts: Reference Exhibit C for details

2,130 feet of 18-inch Corrugated Plastic Pipe (CPP) – Type S--(60 Pipes)
120 feet of 18-inch Corrugated Plastic Pipe (CPP) – Type C--(12 Pipes)
355 feet of 24-inch Corrugated Plastic Pipe (CPP) – Type S— (8 Pipes)
40 feet of 24-inch Perforated Aluminized Steel Pipe (CMP) – (1 Pipe)
315 feet of 30-inch 14-gauge Aluminized Steel Pipe (CMP) – (6 Pipes)
35 feet of 30-inch Perforated Aluminized Steel Pipe (CMP) – (1 Pipe)
135 feet of 36-inch 14-gauge Aluminized Steel Pipe (CMP) – (2 Pipes)
70 feet of 48-inch 14-gauge Aluminized Steel Pipe (CMP) – (1 Pipe)
Neoprene sleeves or flat gaskets for 30-inch, 36-inch, and 48-inch Pipe Bands Installations
93 Metal "T" Post Inlet Markers
24 Metal "T" Posts for Downspouts Installations
36 Straw Bales for Sediment Catch Basin w/ Bale Installations

c. Aggregate Material & Rock Source: Reference Exhibit C and D for details

Commercial Source:

9,552 CY 6" Jaw Run Base Rock
4,318CY 1 ½"-0" Crushed Rock
140 CY 1 ½"-3/4" Crushed Drain Rock
185 CY 6"- 4" Crushed Rock
10 CY PitRun Rock
760 CY Class 5 Rip-Rap

All rock required for project work shall be obtained from a commercial source.

Other:

- Compaction of all final grades will be required.
- Right of way debris will be disposed of by scattering adjacent to all roads, outside of clearing limits.
- All roads shall be decommissioned as follows:
  The Purchaser shall decommission 7,162 feet of road by subsoiling, installing non-drivable waterbars, scattering slash, removing culverts, spreading grass seed, and blocking. The Purchaser shall decommission 11,528 feet of road by installing non-drivable waterbars, removing culverts, spreading grass seed, and blocking. The Purchaser shall stabilize 4.709 miles of road by installing drivable waterdips.
- Grass seeding will be required on all newly disturbed areas. Grass seed will be furnished by the Government.
- Straw mulch will be required on all disturbed/seeded soils that are wet and/or within 50 feet each side

of "Live stream" locations and all disposal sites. Grass straw for mulch will be furnished by the Government.

- All waste from re-establishing ditchlines on rock surfaced roads shall be bunched and end-hauled to designated waste area.
- All slide removal material shall be end-hauled to designated waste areas.
- All culverts removed upon road renovation shall be disposed of in a legal fashion off BLM Land.
- All culverts removed upon road decommissioning shall be salvaged and delivered to the BLM Maintenance Facility at the SW ¼ of Section 5, T. 3 S., R. 6 W., W.M.

SEASONAL RESTRICTION MATRIX:

Restricted Times are Shaded

Activity	JAN		FEB		MAR		APR		MAY		JUN		JUL		AUG			SEP		OCT		NOV		DEC	
	1	16	1	16	1	16	1	16	1	16	1	16	1	16	6	7	16	1	16	1	16	1	16	1	16
Mechanized falling and **Ground-Based yarding**																									
Log haul, rock haul, and water haul. Restriction may be waived if Purchaser elects to upgrade roads, at their expense, to all-season haul requirements as approved by authorized officer (Sec. 44.m.)																									
Maintenance Activities and Roadside brushing																									
Road renovation, construction, and decommissioning																									
In-Stream Activities in the Yamhill River watershed																									

Sec. 43. Wood Products Reserved from Cutting

RESERVED

a. All timber in the Reserve and Clump Areas shown on Exhibit A and all trees that are painted orange, and/or posted, which mark the boundaries of the Reserve Area.

b. All trees marked with orange paint above and below stump height within the boundaries of the Cutting Areas shown on Exhibit A.

c. All trees not marked for cutting with blue paint above and below stump height within the boundaries of the timber sale units 3 and 6 shown on Exhibit A, except within road right-of-way posters.

d. All conifer trees less than seven (7) inches diameter at breast height (dbh), and all hardwoods not listed on Exhibit B in the Contract Area shown on Exhibit A. If any are felled, they shall be retained on site.

e. Existing down logs and snags in the Contract Area shown on Exhibit A, which do not present a safety hazard. All down logs and felled snags shall be retained on site.

f. Trees felled within road rights-of-way, which are marked with yellow paint above and below stump height shall remain on site and be placed outside of the road prism as directed by the Authorized Officer.

Sec. 44. *Special Provisions*

LOGGING

a. Before beginning operations on the Contract Area for the first time or after a shutdown of seven (7) or more days, the Purchaser shall notify the Authorized Officer in writing of the date they plan to begin operations. This written notification must be received by the Authorized Officer no less than seven (7) days prior to the date the Purchaser plans to begin or resume operations. The Purchaser shall also notify the Authorized Officer in writing if they intend to cease operations for any period of seven (7) or more days.

b. Prior to the commencement of operations, the Purchaser shall obtain from the Authorized Officer approval of a written operations and logging plan commensurate with the terms and conditions of the contract which shall include measures needed to assure protection of the environment and watershed. A pre-work conference between the Purchaser's authorized representative and the Authorized Officer must be held before the logging plan will be approved. All logging shall be done in accordance with the approved logging plan. The Purchaser shall provide a minimum of seven (7) days' notice when requesting the scheduling of a pre-work conference.

c. Excessive damage to reserve timber, as determined by the Authorized Officer, will result in suspension of yarding and felling operations until corrective measures to prevent further damages have

been approved by the Authorized Officer.

d. No falling, yarding, or loading is permitted in or through the Reserve Areas, shown on Exhibit A, unless otherwise approved by the Authorized Officer.

e. Prior to attaching any logging equipment to a reserve tree, the Purchaser shall obtain approval from the Authorized Officer, and shall take precautions to protect the tree from damage as directed by the Authorized Officer.

f. The Purchaser shall provide flaggers to control traffic on East Creek Road whenever hazardous conditions are present from operations in accordance with Sec.29. The Purchaser shall not block or close East Creek Road.

g. At all landings, all non-merchantable logs more than eight (8) inches in diameter at the large end and exceeding eight (8) feet in length shall be scattered or decked at a location designated by the Authorized Officer.

h. In skyline harvest areas all yarding shall be done with a skyline or similar cable system equipped with a carriage capable of transporting the leading end of the logs clear of the ground. The carriage shall be capable of being held in position on the skyline during all lateral yarding and shall be able to pass intermediate support jacks as required. Full suspension is required within fifty (50) feet of streams. The rigging of tail or lift trees, intermediate supports and use of tail holds outside the Cutting Areas shall be required where necessary to meet this requirement. Space designated skyline corridors at a minimum of one hundred fifty (150) feet apart unless otherwise agreed to in writing by the Authorized Officer.

i. Ground-based operations are limited to slopes of thirty-five (35) percent or less. The Authorized Officer may approve the use of specialized, ground-based, mechanized equipment (machines specifically designed to operate on slopes greater than 35%) on slopes of fifty (50) percent or less, except within two hundred ten (210) feet of streams. All skidding shall be done by equipment operated entirely on skid trails that have been approved by the Authorized Officer and use existing skid trails where available. The area composed of skid trails shall not exceed fifteen (15) percent of the total yarding area within a unit. Excavation on designated skid trails shall be limited to a maximum cut of one (1) foot unless otherwise approved by the Authorized Officer. The Purchaser shall directionally fall trees into the lead with the skidding direction and winch or carry the logs to the skid trails. Temporary logging roads, skid trails, and harvester/forwarder trails would be water barred and blocked as directed by the Authorized Officer, after each operating season before the fall wet season begins. Temporary logging roads, skid trails, and harvester/forwarder trails will be de-compacted/tilled and covered with slash as directed by the Authorized Officer.

j. Before cutting and removing any trees necessary to facilitate logging in the Cutting Areas shown on Exhibit A, the Purchaser shall identify the location of skid trails, cable yarding roads, and tail hold, tieback, guy line, lift, intermediate support, and danger trees on the ground in a manner approved by the Authorized Officer at the pre-work conference and documented in the Logging Plan. Said Purchaser identification of trees to be cut and removed does not constitute authority to proceed with cutting and removal. In addition, before proceeding the following conditions must be met:

1. All skid roads and/or cable yarding roads upon which timber is identified by the Purchaser to be cut and removed in accordance with this special provision must be necessary for the safe and expeditious removal of timber sold under this contact and shall be limited to the minimum width necessary for yarding of logs with a minimum of damage to reserve trees, however, unless otherwise approved in writing by the Contracting Officer, the width of each skid road and/or cable yarding road shall be limited to twelve (12) feet.

2. The Purchaser may immediately cut and remove additional timber to clear skid trails and cable yarding roads; and provide tail hold, tieback, guy line, lift and intermediate support trees when the trees have been marked with blue or green paint above and below stump height by the Authorized Officer and thereby approved for cutting and removal by the Authorized Officer. When trees are marked with yellow paint above and below stump height, they may be cut but must remain on site. The volume of the timber to be sold will be determined by the Authorized Officer in accordance with Bureau of Land Management prescribed procedures. No timber may be cut or removed under terms of this provision unless sufficient installment payments have been made in accordance with Sec. 3(b) of the contract or sufficient bonding has been provided in accordance with Sec. 3(d) of the contract.

3. The Purchaser agrees that sale of this additional timber shall be accomplished by a unilateral modification of the contract executed by the Contracting Officer and that such timber shall be sold at the unit prices shown in Exhibit B of this contract unless: the value of the timber must be reappraised subject to the terms for contract extension set forth in Sec. 9. of the contract, or the Authorized Officer determines that the tree species are not listed in Exhibit B of this contract and otherwise reserved in Sec. 43. of the contract or any tree that exceeds forty (40) inches dbh shall be appraised and sold by bilateral modification of the contract at current fair market value in accordance with Sec. 8. of the contract.

4. This authorization for the Purchaser to cut and remove additional timber prior to the execution of a modification may be withdrawn by the Contracting Officer if the Authorized Officer determines that the Purchaser has cut and removed any tree not previously marked and approved for cutting by the Authorized Officer, which under Sec. 10. of the contract constitutes a violation of the contract and under Sec. 13. of the contract may constitute a trespass rendering the Purchaser liable for damages under applicable law.

5. If authorization is withdrawn, the Contracting Officer shall issue a written notice to the Purchaser that the sale of additional timber under this special provision is no longer approved. In this case, the Purchaser shall inform the Authorized Officer at least one (1) working day prior to the need for cutting and removing any additional timber and execute a bilateral modification prior to cutting for such additional approved timber at the unit prices shown in Exhibit B of the contract or in accordance with Sec. 8. or Sec. 9. of the contract as determined by the Authorized Officer in accordance with this provision. The Contracting Officer may issue a written order to the Purchaser to suspend, delay, or interrupt any or all contract work for the period deemed necessary and appropriate for the Government to safely measure and mark additional timber.

SEASONAL RESTRICTIONS

k. No road renovation (except roadside brushing, which is permitted year-round), road construction, road improvement, or road decommissioning, shown on Exhibit C, shall be conducted during the wet season (generally between October 16 of one calendar year to May 31 of the following calendar year), or during periods of wet soil conditions, as determined by the Authorized Officer.

l. No mechanized falling or ground-based equipment operation within harvest units shown on Exhibit A during the wet season (generally October 16 of one calendar year to May 31 of the following calendar year) and during periods of wet soil conditions as determined by the Authorized Officer. Based on site specific considerations, as determined by the Authorized Officer, some of these activities may be allowed during the seasonal restriction.

m. No log hauling, water hauling, or rock hauling during the wet season (generally October 16 of one calendar year to May 31 of the following calendar year) and during periods of wet soil conditions as determined by Authorized Officer. Cable yarding and hauling may be allowed if the Purchaser, at their expense, elects to complete road work necessary to allow for wet season cable yarding and hauling, as determined by the Authorized Officer. Necessary road work will be determined on a road-by-road basis and may include, but is not limited to, rock surfacing, improving drainage features, and more frequent road maintenance.

n. No road maintenance, as shown on Exhibit E, and described in Exhibit D, shall be conducted during periods of wet soil conditions and/or when there is a potential for sediment delivery to streams as determined by the Authorized Officer.

o. No work in live streams shall be conducted between October 1 of one calendar year and July 14 of the following calendar year in the Yamhill River watershed, both days inclusive, unless BLM receives a waiver from the Oregon Department of Fish and Wildlife and is approved by the Authorized Officer.

ROAD CONSTRUCTION, RENOVATION, IMPROVEMENT, MAINTENANCE AND USE

p. The Purchaser shall haul only on the designated haul route, shown in the tables below and in Exhibit E, unless an alternative route is approved by the Authorized Officer. The designated haul route for Unit 1 through 20 is East Creek Road to Willamina Creek Road towards Willamina.

q. The Purchaser shall construct natural surfaced roads: 4-6-29.4, 4-6-29.6, 4-6-29.7, 4-6-29.8, 4-6-29.9, 4-6-30.1 (Sta. 11+08 – 18+68), 4-6-31.4 (Sta. 8+77 – 24+32), 4-6-31.6, 4-6-31.7, 4-6-31.8, 4-6-31.9, 4-6-31.10, 4-6-31.11, 4-7-25.2, 4-7-25.3, 4-7-25.4, 4-7-25.5, 4-7-25.6, 4-7-25.7 and 4-7-36.1. The Purchaser shall construct rocked surfaced roads: 4-6-29.5, 4-6-29.10 and 4-6-32.5. The Purchaser shall renovate natural surfaced roads: 4-6-31.3 and 4-6-31.5 (Sta. 1+05 – 13+50). The Purchaser shall renovate rocked surfaced roads: 4-6-20.1 (Sta. 3+47 – 9+17), 4-6-29.0 (MP 0.000 – 0.490) & (MP 0.577 – 1.135), 4-6-29.1, 4-6-29.2, 4-6-29.11, 4-6-30.0, 4-6-30.1 (Sta. 0+00 -11+08), 4-6-31.0, 4-6-31.1, 4-6-31.2, 4-6-32.1, 4-6-32.4 (MP 0.00 – 1.438) & (MP 1.478 -1.825), 4-7-25.0 & 4-7-25.1. The Purchaser shall improve natural surfaced road: 4-6-31.5 (Sta. 0+00 – 1+05) & (Sta. 13+50 – 15+45) The Purchaser shall improve rocked surfaced roads: 4-6-20.1 (Sta. 0+00 – 3+47) & (Sta. 9+17 – 12+81), 4-6-29.0 (MP 0.490 - 0.577) & (MP 1.135 – 1.181) and 4-6-32.4 (MP 1.438 – 1.478). Construction, renovation, and improvement shall be done in strict accordance with the plans and

specifications shown on Exhibit C, which is attached hereto and made a part hereof.

r. Any required construction, renovation, and improvement shall be completed and accepted prior to the removal of any timber, except right-of-way timber, over the road.

s. Any required construction, renovation, and improvement shall be completed and accepted prior to rock haul outside of the dry season (generally June 1 – October 15).

t. The Purchaser shall decommission 4-6-29.4, 4-6-31.10, 4-6-31.11, 4-7-25.2, 4-7-25.3, 4-7-25.4, 4-7-25.5, 4-7-25.6, 4-7-25.7 and 4-7-36.1, as shown on Exhibit C, by subsoiling, installing non-drivable waterbars, scattering slash, removing culverts, spreading grass seed, and blocking. The Purchaser shall decommission 4-6-29.6, 4-6-29.7, 4-6-29.8, 4-6-29.9, 4-6-30.1 (Sta. 11+08 – 18+68), 4-6-31.3, 4-6-31.4 (Sta. 8+77 – 24+32), 4-6-31.5, 4-6-31.6, 4-6-31.7, 4-6-31.8, 4-6-31.9, as shown on Exhibit C, by installing non-drivable waterbars, removing culverts, spreading grass seed, and blocking. The Purchaser shall stabilize 4-6-29.0 (MP 0.000 – 0.382) and 4-6-31.1, as shown on Exhibit C, by installing drivable waterdips. Subsoiling shall consist of loosening the soil to a depth of eighteen (18) inches utilizing excavator attachments, log loader tongs, or other approved equipment acceptable to the Authorized Officer. No subsoiling shall be required where the road traverses rock outcroppings. All natural water courses shall be opened to prevent erosion of the road. Barriers shall be constructed and clearing debris shall be placed on and around the barriers to prevent further use of the road by vehicles as shown on Exhibit C. Decommissioning and stabilization shall be completed within thirty (30) days of completion of yarding and hauling operations on that road.

u. The Purchaser is authorized to use the roads listed below and shown on Exhibit E which are under the jurisdiction of the Bureau of Land Management for the removal of Government timber sold under the terms of this contract and/or the hauling of rock and water as required in Exhibit C, Exhibit D, and Exhibit E provided the Purchaser complies with the condition set forth in Section 44.v.

Road No. and Segment	Length Used	Road Control	Road Surface Type	Maintenance Responsibility
4-6-29.0 A2	0.382 mi.	BLM	Rocked	Purchaser
4-6-29.2 D1 & D2	0.026 mi.	BLM	Rocked	Purchaser
4-6-29.4	770 ft.	BLM	Natural	Purchaser
4-6-25.5 A & B	1,330 ft.	BLM	Rocked	Purchaser
4-6-29.6 A – B2	1,065 ft.	BLM	Natural	Purchaser
4-6-29.7	595 ft.	BLM	Natural	Purchaser
4-6-29.8 A1 & A2	220 ft.	BLM	Natural	Purchaser
4-6-29.9	155 ft.	BLM	Natural	Purchaser
4-6-29.10	166 ft.	BLM	Rocked	Purchaser
4-6-30.1 B1 & B2	760 ft.	BLM	Natural	Purchaser
4-6-31.0 A1 – B1	4,648 ft.	BLM	Rocked	Purchaser
4-6-31.1 A1 – C4	4.327 mi.	BLM	Rocked	Purchaser
4-6-31.2 A1 & A2	0.660 mi.	BLM	Rocked	Purchaser
4-6-31.3	486 ft.	BLM	Natural	Purchaser
4-6-31.4 A2 & B1	1,555 ft.	BLM	Natural	Purchaser
4-6-31.5 A1 & A2	1,545 ft.	BLM	Natural	Purchaser

4-6-31.6 A1 & A2	2,444 ft.	BLM	Natural	Purchaser
4-6-31.7	1,393 ft.	BLM	Natural	Purchaser
4-6-31.8	960 ft.	BLM	Natural	Purchaser
4-6-31.9	350 ft.	BLM	Natural	Purchaser
4-6-31.10	1,350 ft.	BLM	Natural	Purchaser
4-6-31.11	319 ft.	BLM	Natural	Purchaser
4-6-32.1 B1 & B2	0.423 mi.	BLM	Rocked	Purchaser
4-6-32.4 B	0.176 mi.	BLM	Rocked	Purchaser
4-6-32.5	379 ft.	BLM	Rocked	Purchaser
4-7-25.0 A1 – B2	0.394 mi.	BLM	Rocked	Purchaser
4-7-25.1	0.032 mi.	BLM	Rocked	Purchaser
4-7-25.2	542 ft.	BLM	Natural	Purchaser
4-7-25.3	270 ft.	BLM	Natural	Purchaser
4-7-25.4	1010 ft.	BLM	Natural	Purchaser
4-7-25.5 A1 – A2	680 ft.	BLM	Natural	Purchaser
4-7-25.6	770 ft.	BLM	Natural	Purchaser
4-7-25.7	446 ft.	BLM	Natural	Purchaser
4-7-36.1	1005 ft.	BLM	Natural	Purchaser

v. The Purchaser shall perform any road repair and maintenance work on roads used and designated above, under the terms of Exhibit D, "Road Maintenance Specifications" of this contract which is attached hereto and made a part hereof. Purchaser shall spread **630** cubic yards of crushed rock on BLM controlled roads as directed by the Authorized Officer and as part of maintenance requirements. Purchaser shall also pay a rockwear fee of twelve thousand one hundred sixty and 86/100 **($12,160.86)** dollars to the Government. Additional fees for rockwear will be calculated at the current rate for additional timber volume for BLM controlled roads and be charged to the Purchaser and be paid prior to contract termination. Final maintenance shall be completed no later than one (1) year after contract expiration unless otherwise approved by the Authorized Officer.

w. In the use of the roads listed below and shown on Exhibit E, the Purchaser shall comply with the conditions of Right-of-Way and Road Use Agreement S-700 (OR044680) between the United States of America and Hampton Tree Farms, Inc. The Purchaser will be required to enter into a license agreement with Hampton Tree Farms, Inc. prior to commencement of operations. The Purchaser shall furnish to the Authorized Officer a copy of the required executed license agreement. The license agreement conditions include: 1) Purchaser pay a road use lump sum amount of nine thousand two hundred eighty-seven and 46/100 ($9,287.46) dollars. Road use fees have been calculated using the actual BLM timber sale cruise volume. 2) Purchaser pays a rockwear fee to Hampton Tree Farms, Inc. of one hundred fifty-four and 93/100 ($154.93) dollars. Rockwear fees have been calculated using the actual BLM timber sale cruise volume. Additional fees for rockwear will be calculated at the agreed upon rates (in the license agreement) for additional timber volume for non-BLM controlled roads. 3) The Purchaser shall perform any road repair and maintenance work on Hampton Tree Farms, Inc. controlled roads listed below under the terms of Exhibit D, "Road Maintenance Specifications", of this contract which is attached hereto and made a part hereof. 4) Default by the Purchaser of said Right-of-Way and Road Use Agreement or any license agreement executed pursuant thereto, shall be considered a violation of this contract. The amount of unpaid fees shall be considered as the amount of damage suffered by the Government as a result of the violation of this provision. The Purchaser will be required to carry liability

insurance with the limits of $1,000,000/$1,000,000/$1,000,000 and a performance bond of $5,000.

Road No. and Segment	Length Used	Road Control	Road Surface Type	Maintenance Responsibility
4-6-30.0 (Seg. A1)	0.122 mi.	Hampton	Rocked	Purchaser
4-6-30.1 (Seg. A1)	0.210 mi.	Hampton	Rocked	Purchaser
4-6-31.4 (Seg. A)	0.166 mi.	Hampton	Rocked	Purchaser

x. In the use of the roads listed below and shown on Exhibit E, the Purchaser shall comply with the conditions of Right-of-Way and Road Use Agreement S-682 (OR045816) between the United States of America and Tristar Northwest Oregon Timberlands, LLC. The Purchaser will be required to enter into a license agreement with Tristar Northwest Oregon Timberlands, LLC. prior to commencement of operations. The Purchaser shall furnish to the Authorized Officer a copy of the required executed license agreement. The license agreement conditions include: 1) Purchaser pay a road use lump sum amount of two thousand eight hundred six and 00/100 ($2,806.00) dollars. Road use fees have been calculated using the actual BLM timber sale cruise volume. 2) Purchaser pays a rockwear fee to Tristar Northwest Oregon Timberlands, LLC. of four hundred seventy-four and 25/100 ($474.25) dollars. Rockwear fees have been calculated using the actual BLM timber sale cruise volume. Additional fees for rockwear will be calculated at the agreed upon rates (in the license agreement) for additional timber volume for non-BLM controlled roads. 3) The Purchaser shall perform any road repair and maintenance work on Tristar Northwest Oregon Timberlands, LLC. controlled roads listed below under the terms of Exhibit D, “Road Maintenance Specifications”, of this contract which is attached hereto and made a part hereof. 4) Default by the Purchaser of said Right-of-Way and Road Use Agreement or any license agreement executed pursuant thereto, shall be considered a violation of this contract. The amount of unpaid fees shall be considered as the amount of damage suffered by the Government as a result of the violation of this provision. The Purchaser will be required to carry liability insurance with the limits of $1,000,000/$1,000,000/$1,000,000 and a performance bond of $5,000.

Road No. and Segment	Length Used	Road Control	Road Surface Type	Maintenance Responsibility
4-6-29.1 (Seg. A3)	0.170 mi.	Tristar	Rocked	Purchaser
4-6-29.11 (Seg. A2)	0.242 mi.	Tristar	Rocked	Purchaser
4-6-32.4 (Seg. C1-C2, E)	0.328 mi.	Tristar	Rocked	Purchaser

y. In the use of the roads listed below and shown on Exhibit E, the Purchaser shall comply with the conditions of Right-of-Way and Road Use Agreement S-682C (OR068009) between the United States of America and Boston Timber Opportunities, LLC. The Purchaser will be required to enter into a license agreement with Boston Timber Opportunities, LLC. prior to commencement of operations. The Purchaser shall furnish to the Authorized Officer a copy of the required executed license agreement. The license agreement conditions include: 1) Purchaser pay a road use lump sum amount of two thousand eight hundred six and 00/100 ($2,806.00) dollars. Road use fees have been calculated using the actual BLM timber sale cruise volume. 2) Purchaser pays a rockwear fee to Boston Timber Opportunities, LLC. of one thousand three hundred forty-one and 62/100 ($1,341.62) dollars. Rockwear fees have been calculated using the actual BLM timber sale cruise volume. Additional fees for rockwear will be calculated at the agreed upon rates (in the license agreement) for additional timber volume for non-BLM controlled roads. 3) The Purchaser shall perform any road repair and maintenance work on Boston Timber

Opportunities, LLC. controlled roads listed below under the terms of Exhibit D, "Road Maintenance Specifications", of this contract which is attached hereto and made a part hereof. 4) Default by the Purchaser of said Right-of-Way and Road Use Agreement or any license agreement executed pursuant thereto, shall be considered a violation of this contract. The amount of unpaid fees shall be considered as the amount of damage suffered by the Government because of the violation of this provision. The Purchaser will be required to carry liability insurance with the limits of $1,000,000/$1,000,000/$1,000,000 and a performance bond of $1,000.

Road No. and Segment	Length Used	Road Control	Road Surface Type	Maintenance Responsibility
4-6-29.2 (Seg. A1-A2, C)	0.257 mi.	Boston Timber	Rocked	Purchaser
4-6-32.4 (Seg. G8-G1)	0.868 mi.	Boston Timber	Rocked	Purchaser

z. In the use of the roads listed below and shown on Exhibit E, the Purchaser shall comply with the conditions of Right-of-Way and Road Use Agreement S-682D (OR068010) between the United States of America and Golden Pond Timberlands, LLC. The Purchaser will be required to enter into a license agreement with Golden Pond Timberlands, LLC. prior to commencement of operations. The Purchaser shall furnish to the Authorized Officer a copy of the required executed license agreement. The license agreement conditions include: 1) Purchaser pay a road use lump sum amount of six thousand one hundred forty-six and 00/100 ($6,146.00) dollars. Road use fees have been calculated using the actual BLM timber sale cruise volume. 2) Purchaser pays a rockwear fee to Golden Pond Timberlands, LLC. of seven hundred forty and 90/100 ($740.90) dollars. Rockwear fees have been calculated using the actual BLM timber sale cruise volume. Additional fees for rockwear will be calculated at the agreed upon rates (in the license agreement) for additional timber volume for non-BLM controlled roads. 3) The Purchaser shall perform any road repair and maintenance work on Golden Pond Timberlands, LLC. controlled roads listed below under the terms of Exhibit D, "Road Maintenance Specifications", of this contract which is attached hereto and made a part hereof. 4) Default by the Purchaser of said Right-of-Way and Road Use Agreement or any license agreement executed pursuant thereto, shall be considered a violation of this contract. The amount of unpaid fees shall be considered as the amount of damage suffered by the Government as a result of the violation of this provision. The Purchaser will be required to carry liability insurance with the limits of $1,000,000/$1,000,000/$1,000,000 and a performance bond of $500.00.

Road No. and Segment	Length Used	Road Control	Road Surface Type	Maintenance Responsibility
4-6-32.1 (Seg. A2)	0.096 mi.	Golden Pond	Rocked	Purchaser
4-6-32.1 (Seg. A3)	0.040 mi.	Golden Pond	Rocked	Purchaser
4-6-32.4 (Seg. A)	0.042 mi.	Golden Pond	Rocked	Purchaser
4-6-32.4 (Seg. D, F1-F3)	0.411 mi.	Golden Pond	Rocked	Purchaser

aa. In the use of the roads listed below and shown on Exhibit E, the Purchaser shall comply with the conditions of Right-of-Way and Road Use Agreement S-805 (OR044601) between the United States of America and Weyerhaeuser Timber Holdings, Inc. The Purchaser will be required to enter into a license agreement with Weyerhaeuser Timber Holdings, Inc. prior to commencement of operations. The Purchaser shall furnish to the Authorized Officer a copy of the required executed license agreement. The license agreement conditions include: 1) Purchaser pay a road use lump sum amount of two thousand eight hundred six and 00/100 ($2,806.00) dollars. Road use fees have been calculated using the actual

BLM timber sale cruise volume. 2) Purchaser pays a rockwear fee to Weyerhaeuser Timber Holdings, Inc. of seven hundred sixty and 94/100 ($760.94) dollars. Rockwear fees have been calculated using the actual BLM timber sale cruise volume. Additional fees for rockwear will be calculated at the agreed upon rates (in the license agreement) for additional timber volume for non-BLM controlled roads. 3) The Purchaser shall perform any road repair and maintenance work on Weyerhaeuser Timber Holdings, Inc. controlled roads listed below under the terms of Exhibit D, "Road Maintenance Specifications", of this contract which is attached hereto and made a part hereof. 4) Default by the Purchaser of said Right-of-Way and Road Use Agreement or any license agreement executed pursuant thereto, shall be considered a violation of this contract. The amount of unpaid fees shall be considered as the amount of damage suffered by the Government because of the violation of this provision. The Purchaser will be required to carry liability insurance with the limits of $1,000,000/$1,000,000/$1,000,000 and a performance bond of $1,000.00.

Road No. and Segment	Length Used	Road Control	Road Surface Type	Maintenance Responsibility
4-6-29.0 (Seg. B1-B5)	0.799 mi.	Weyerhaeuser	Rocked	Purchaser
4-6-29.2 (Seg. E1-E2)	0.253 mi.	Weyerhaeuser	Rocked	Purchaser
4-6-29.2 (Seg. B1-B2)	0.094 mi.	Weyerhaeuser	Rocked	Purchaser
4-6-20.1 (Seg. A)	0.243 mi.	Weyerhaeuser	Rocked	Purchaser

bb. The Purchaser agrees that if they request to use any other private road, subject of a right-of-way agreement with the Government for the removal of Government timber sold under the terms of this contract, and is approved by the Authorized Officer, Purchaser shall request and agree to the modification of this contract to provide for such use and for allowances for amortization of the Government's shares of the capital investment of any such road.

cc. With the prior written approval of the Authorized Officer, the Purchaser may arrange for cooperative maintenance with other users of roads included in Exhibit E; provided, that such cooperative arrangement shall not relieve the Purchaser of his liability for the maintenance and repair of such roads resulting from wear or damage, in accordance with this contract. The Purchaser shall furnish the Authorized Officer a copy of any cooperative maintenance agreements entered with other users of these roads.

dd. The Purchaser shall be responsible for repair of any damage to roads or structures caused by the use of overweight or over-dimension vehicles or equipment: (1) without written approval; (2) in violation of the conditions of a written approval; or (3) in a negligent manner. The amount of actual damage shall be determined by the Authorized Officer following a technical inspection and evaluation.

ee. The Purchaser shall perform any road repair and maintenance work on roads used (and designated as Purchaser Maintenance), under the terms of Exhibit D, "Road Maintenance Specifications", of this contract which is attached hereto and made a part hereof. Purchaser shall spread **235** cubic yards of crushed rock on non-BLM roads used for this timber sale, as directed by the Authorized Officer as part of maintenance requirements.

ff. Tracked type equipment shall not be allowed to cross over concrete bridge decks, other concrete surfaced structures, or asphalt surfaced roads without the proper protection of that surface. Prior

approval shall be obtained from the Authorized Officer when crossing with protective devices. No loading or yarding from asphalt surfaces is permitted.

ENVIRONMENTAL PROTECTION

gg. To prevent the spread of noxious weeds, the Purchaser shall pressure wash all road construction equipment (except dump trucks) and wash all ground-based logging equipment that will be used off of existing roads, as well as loaders and mechanically propelled brush cutters, prior to each entry onto the BLM Land shown on Exhibit A, as directed by the Authorized Officer. Cleaning shall be defined as removal of all dirt, grease, plant parts and material that may carry noxious weed seeds.

FIRE PREVENTION

hh. Primarily for purposes of fire prevention and control, the Purchaser shall, prior to the operation of power-driven equipment in construction or logging operations under this contract during the fire season or periods of fire danger, prepare a fire prevention and control plan to the satisfaction of the Authorized Officer. Purchaser shall take such measures for prevention and suppression of fire on the contract area and other adjacent Government lands used or traversed by Purchaser in connection with operations as are required by applicable laws and regulations. However, when in the opinion of the Authorized Officer, weather and other conditions affecting fire incidence and control make special precautions necessary to protect the contract area and said Government lands, Purchaser shall take such additional or other fire prevention and control measures as may be required by the Authorized Officer. The Purchaser shall comply with Oregon Department of Forestry Industrial Fire Precaution Level (IFPL) I Fire Season requirements. At IFPL II and III, additional fire prevention and control provisions may be added as determined by the Authorized Officer and specified in written instructions to the Purchaser to mitigate dry fuel and weather conditions.

LOGGING RESIDUE REDUCTION

ii. In addition to the requirements of Sec. 15 of this contract, and notwithstanding the Purchasers satisfactory compliance with State laws and regulations regarding offsetting or abating the additional fire hazard created by this operation and the States willingness to release the Purchaser from liability for such hazard, the Purchaser shall remain responsible to the Government for performance of the following hazard reduction measure(s) required by this contract: Perform logging residue reduction and site preparation work on approximately one hundred and thirty-nine (139) acres of harvest area located within Cutting Areas. The required work shall consist of any treatment or combination of treatments, as determined by the Authorized Officer, and specified in writing by the Contracting Officer. The number of acres of each treatment shall be determined by the Authorized Officer. Prior to commencement of any operation under this Section of the contract, a slash disposal and pre-work conference between the Purchaser's Representative and the Authorized Officer must be held at a location designated by the Authorized Officer. The number of acres of each treatment shall be determined by the Authorized Officer. All slash disposals shall be done in accordance with the plans developed at this pre-work conference. Slash, as defined for this section, shall mean all material (brush, limbs, tops, unmerchantable stems, and chunks) severed or knocked over because of Purchaser's operations under the terms of this contract.

1. Machine pile and burn approximately eighty (80) acres of slash within ground-based portion and along roads as directed by the Authorized Officer. Slash shall be piled by an excavator equipped with a hydraulic thumb. Avoid creating piles greater than sixteen (16) feet in height or diameter. Finished piles shall be tight and free of dirt.

a. Unmerchantable logs greater than six (6) inches on the small end shall be left in place or positioned so that they will not be burned.

b. Slash less than six (6) inches in diameter would be less than one (1) foot in height.

c. Machine piles shall be located as far as possible from retention trees, snags, or unit boundaries to minimize damage.

d. Machine piles shall be kept free of dirt and other non-wood debris and constructed as compactly as possible. There should be an adequate supply of finer fuels located within and under the covered area of the pile to ensure ignition of the larger fuels.

e. A minimum 10-foot by 10-foot cover of four (4) mil (0.004) inch thick polyethylene shall cap each machine pile to maintain a dry ignition point. The cover shall be firmly fixed to each pile to hold it in place. Plastic shall be held in place with woody debris or tied with rope or twine. The plastic must be secured so that it is held in place during strong wind conditions. The Purchaser is required to furnish the covering materials. Covering shall be completed as directed by the Authorized Officer.

f. Cutting Areas shall be piled during the same season that they are logged.

2. Slashing of approximately twenty-one (21) acres shall be completed as directed by the Authorized Officer.

a. All standing woody vegetation (brush), whips, and designated trees over one (1) foot in height shall be felled (slashed) and lopped into four (4) foot or smaller lengths in harvest units as directed by the Authorized Officer. Designated trees to be slashed include red alder and big leaf maple which are not otherwise reserved in Section 43 of this contract.

b. All logging slash and slashed woody vegetation that is greater than four (4) feet in length and between one (1) inch and six (6) inches in diameter shall be lopped if not being machine piled. Larger material which has a portion meeting this specification must be bucked at the six (6) inch diameter.

c. All woody vegetation, whips, and designated trees shall be completely severed from the stump(s). Stump height shall not exceed six (6) inches measured on the uphill side.

d. All conifers, Pacific madrone, Pacific dogwood, Oregon ash, and Oregon white oak, and Pacific yew trees shall be reserved and undamaged.

3. Pile and burn landing slash within thirty (30) feet of the edge of each landing, all tops, broken pieces, limbs, and debris more than one (1) inch in diameter at the large end and longer than three (3) feet in length shall be piled within fifteen (15) days of completion of hauling logs from that landing. Approximately seventeen (17) acres will be landing piled and burned. Landing piles shall be kept free of dirt and located adjacent to roads at least twenty (20) feet from any Reserve Tree and/or as directed by the Authorized Officer. Upon completion of landing piling, the Purchaser shall prepare the landing piles for burning by securely covering each landing pile with four (4) mil (0.004) inch thick polyethylene plastic film at least 10 feet wide. Landing piles shall be covered sufficiently to allow for ignition in wet conditions as approved by the Authorized Officer. The plastic shall be oriented southwest to northeast. Pieces of burnable material shall be placed on top of the plastic to secure it from moving and to prevent it from blowing off during strong wind episodes. The Purchaser is required to furnish the covering materials. The timing of this covering work shall be in accordance with instructions from the Authorized Officer. No landing debris shall be dozed off the landing and covered with dirt. Debris which has been buried and is determined to be the source of holdover fire shall be excavated by the Purchaser, at the Purchaser's expense, with a tractor and/or hydraulic excavator as directed by the Authorized Officer. If the structure of the landing piles will not permit adequate consumption of piled debris by burning, the Purchaser shall re-pile them at the direction of the Authorized Officer.

4. Hand pile and cover up to twenty-one (21) acres of slash concentrations of Cutting Areas as directed by the Authorized Officer. Slash shall be piled by hand. Finished piles shall be tight and free of dirt.

a. Hand piles shall be located as far as possible from reserve trees or unit boundaries to minimize damage. Slash shall not be piled on down logs, stumps, drainage ditches, turnouts, shoulders, cut banks, or within 10 feet of any other pile.

b. Slash between two (2) inches and six (6) inches in diameter on the large end, having a minimum length of two (2) feet shall be piled as directed by Authorized Officer. Piles shall be constructed by aligning individual pieces in the same direction and placing the heavier slash on top. Piles shall have a stable base to prevent toppling. The long axis of individual pieces shall be oriented up and down the slope. Pile size shall be a maximum of 8 feet in diameter by 8 feet in height, and minimum pile size shall be 6 feet in diameter by 5 feet in height at the time of final inspection by the Government. Slash left on the ground shall not exceed 6 inches in depth.

c. All piles shall be covered with black four (4) Mil polyethylene plastic to cover at least ninety (90) percent of the surface of each pile, minimum plastic size of 5' x 5'. There should be an adequate supply of finer fuels located within and under the covered area of the pile to ensure ignition of the larger fuels. Plastic shall be held in place with woody debris or tied with combustible cord. The plastic must be secured so that it is held in place during strong wind conditions and maintains coverage for at least one year. The Purchaser is required to furnish the covering materials. Covering shall be done at time of piling.

d. Cutting Areas shall be piled within 30 days upon receiving notification from Authorized Officer.

jj. Notwithstanding the provisions of Sec. 15 of this contract, the Government shall assume all obligations for disposal or reduction of fire hazards created by Purchaser's operations on Government lands, except for burning and mop-up assistance as required herein, and measures required in Section 44(ii). The Purchaser shall, under supervision of the Authorized Officer or designated representative, assist in preparing units for burning, burning, mop-up, and patrol by furnishing, at the Purchaser's own expense, the services of personnel and equipment on each unit as shown below:

1. For Igniting, Burning, Mop-up of Piles on Units:

1. One work leader(s) Firefighter Type 1 (FFT1) qualified according to National Wildfire Coordinating Group (NWCG) Wildland Fire Qualifications System guide, PMS 310-1) to supervise crew and equipment operations, and to serve as Purchaser's representative.

2. Five-person crew Firefighter Type 2 (FFT2) qualified according to National Wildfire Coordination Group (NWCG) Wildland Fire Qualifications System guide, PMS 310-1, with sufficient fuel for burning, six (6) drip torches, one (1) power saw, and one (1) backpack pump, one (1) tool for each crew member.

3. The crew shall arrive on the project area with radios capable of inter-crew communications and communication with a BLM representative at a ratio of one (1) radio per every five (5) crewmembers.

4. All ignition and mop-up personnel will be directly supervised by a BLM representative.

Aircraft and pilots used for Logging Residue Reduction or the suppression of escaped fires from Logging Residue Reduction operations, shall be acquired from a list of aircraft and pilots approved (i.e., carded for these specific activities) by the Office of Aircraft Services or the U.S. Forest Service. This list is available from BLM District Offices upon request.

All listed personnel shall be physically fit, experienced, and fully capable of functioning as required. In addition, all listed personnel shall be qualified according to the National Wildfire Coordinating Group (NWCG) Wildland Fire Qualification System Guide, PMS-310-1 and provide documentation of these qualifications. On the day of ignition all listed personnel shall be fluent in speaking and understanding English, clothing shall consist of long pants and long-sleeved shirts and be of approved aramid fabric (Nomex™ or equivalent), as well as being free of diesel fuel oil. All personnel shall wear lug sole boots with minimum eight (8) inch tall uppers that provide ankle support, approved hardhats, and leather gloves. Personnel who do not meet these requirements or do not have proper clothing and personal protective equipment (PPE) will not be allowed to participate. All listed tools and equipment shall be in good usable condition. All power-driven equipment shall be fully fueled and available for immediate use. During periods of use under this subsection, the Purchaser shall provide fuel and maintenance for all such power-driven equipment.

Except as provided hereafter for fire escapement, the Purchaser shall continue the required assistance in mop up on each cutting unit shown on Exhibit A for seventy-two (72) hours, as directed by the Authorized Officer within a five (5) day period commencing at 8:00 a.m. the day following the completion of ignition in that unit, or until released from such service by the Government, whichever occurs first.

In event of a fire escapement, the Purchaser's personnel and equipment shall, under supervision of the Authorized Officer, take action to control and mop up the escaped fire until released from such service by the Government. If it becomes necessary to use furnished personnel and equipment for the suppression of a fire which escapes from the prescribed fire area for a period beyond the remainder of the day in which the fire escapes, then the Government shall, at its option: (1) reimburse the Purchaser for such additional use of personnel and equipment at wage rates shown in the current Administratively Determined Pay Rates for the Western Area and at equipment rates shown in the current Oregon-Washington Interagency Fire Fighting Equipment Rental Rates schedule until the Purchaser is released from such service by the Government; or (2) release the Purchaser from additional suppression work and assume responsibility for suppressing the escaped fire.

In situations where an escaped fire is controlled and contained by an adequate fire break (i.e., trail, road, stream, rock formation, etc.), the Government may permit the Purchaser to remove personnel for that day, provided that all mop up work on the escaped fire is included with mop up work on the prescribed fire area. In such an event, the Purchaser must sign a statement of agreement to complete mop up work on all escaped fire areas concurrently with mop up work on the prescribed fire area.

In case of injury to personnel or damage to equipment furnished as required by this subsection, liability shall be borne by the Purchaser, unless such injury or damage is caused by Government negligence.

Time is of the essence in complying with this provision. In the event the Purchaser fails to provide the personnel and equipment required herein, the Purchaser shall be responsible for all additional cost incurred by the Government in disposing of slash including but not limited to the wages and other costs of providing federal employees and others as substitute labor force, the cost of providing substitute equipment and appropriate additional overhead expenses. If the Purchaser's failure results in a deferral of burning and new conditions necessitate additional personnel and equipment to accomplish the planned burn, the Purchaser also shall be responsible for such additional costs.

CREATION OF COARSE WOODY DEBRIS

kk. In the Coarse Woody Debris Creation Units shown on Exhibit F, the Purchaser shall, upon completion of yarding, select and fall, top, high-girdle, cavity create, or basal-girdle three thousand eighty-one (3,081) live trees in accordance with Exhibit F. No adjustments of volume or value shall be made to meet these requirements. Coarse wood creation will be completed within one year of contract expiration.

BUYOUT SECURITIES

ll. The Purchaser shall create coarse woody debris in accordance with Section 44.kk. The Purchaser shall have the option of completing this work, or in lieu thereof, may make a buyout security deposit to the Bureau of Land Management in the amount of two hundred fifteen thousand, one hundred twenty-three and 25/100 dollars ($215,123.25), and upon making such deposit, the Purchaser shall be

relieved of the obligations set out in this subsection. The purchaser may, alternately, complete the basal-girdle and felling coarse woody debris portion of Exhibit F and make a buyout security deposit in lieu of completing the topping, cavity creation, and high-girdling portion of Exhibit F in the amount of one hundred fifty-nine thousand, one hundred thirty-nine and 52/100 dollars ($159,139.52). The Purchaser shall notify the Authorized Officer of their intention to make this deposit prior to the date of execution of this contract and the Authorized Officer shall establish a required schedule of payments.

LOG EXPORT RESTRICTION

mm. Unless otherwise authorized in writing by the Contracting Officer, the Purchaser shall brand clearly and legibly one end of all logs with a scaling diameter (small end inside bark) of over ten (10) inches, prior to the removal of timber from the contract area. All loads of eleven (11) logs or more will have a minimum of ten (10) logs clearly and legibly branded on one end regardless of the diameter of the logs. All logs will be branded on loads of ten (10) logs or less. One end of all branded logs to be processed domestically will be marked with a three (3) square inch spot of highway yellow paint. The purchaser will stop trucks for accountability monitoring at mutually agreed upon locations when notified by the Authorized Officer.

If multiple trailers (mule trains) are used, each bunked load shall be considered an individual load, and these guidelines will apply to each bunked load. If a flatbed stake trailer is used, each bundle will be treated as a separate load.

At the discretion of the Contracting Officer, the Purchaser may be required to brand and paint all logs. Any increased costs for log branding and painting shall be the responsibility of the Purchaser.

MISCELLANEOUS

nn. The Purchaser agrees not to sell and/or exchange more than 30 percent of the timber or log volume from this preferential sale to concerns that do not meet the Small Business Administration small business size standard (13 CFR 121).

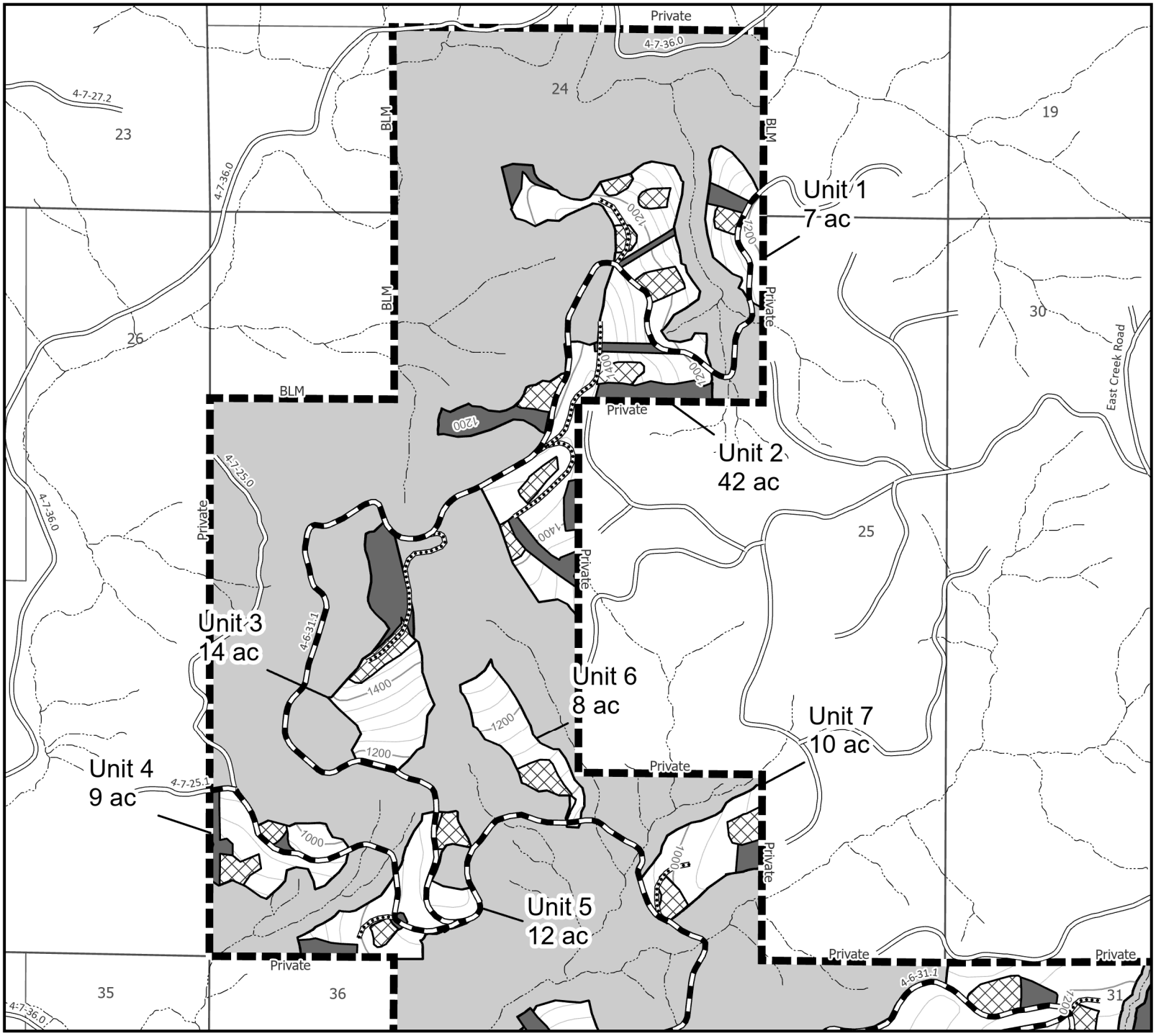
The Purchaser understands that in addition to other penalties which may be imposed for violating the foregoing, the Purchaser may be declared ineligible to participate in future Federal timber sales that are set-aside for preferential bidding by small business qualified concerns for two semi-annual triggered periods succeeding the violation.

Purchaser shall provide a current, interim Log Scale and Disposition of Timber Removed Report (Form 5460-15) upon request by the Authorized Officer at any time during the contract period for cutting and removal specified in Section 4 of this contract as amended.

United States Department of the Interior
BUREAU OF LAND MANAGEMENT
TIMBER SALE CONTRACT MAP

10/4/2023

T. 4S. R. 7W, Sections 24 & 25 W. M.



Partial Cut Area	388 acres
Regeneration Cut Area	48 acres
Right-of-Way	17 acres
Reserve Area	778 acres
Clump Area	49 acres
Patch Cut Area	45 acres
Total Contract Area	1231 acres

0 500 1,000 2,000 3,000 Feet

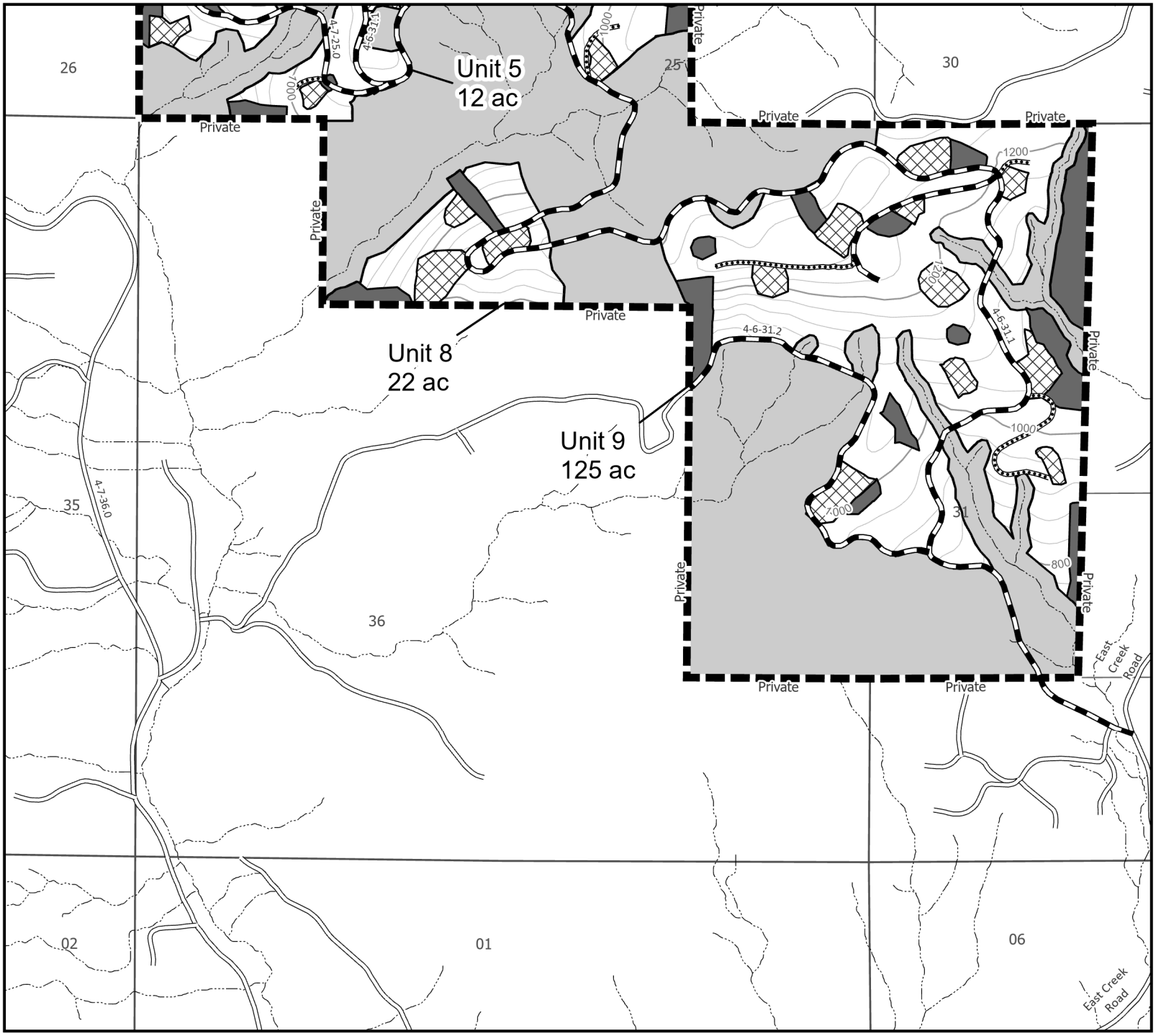
- Contract Area
- Reserve Area
- Partial Cut Area
- Regeneration Cut Area
- Patch Cut Area
- Clump Area
- Road Construct
- Road Improve
- Road Renovate
- Existing Road
- Streams

Contour Interval: 40 feet

United States Department of the Interior
BUREAU OF LAND MANAGEMENT
TIMBER SALE CONTRACT MAP

10/4/2023

T. 4S. R. 7W, Section 36 W. M.; T. 4S. R. 6W, Section 31 W. M.



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- Road Improve
- Road Renovate
- Existing Road
- Streams

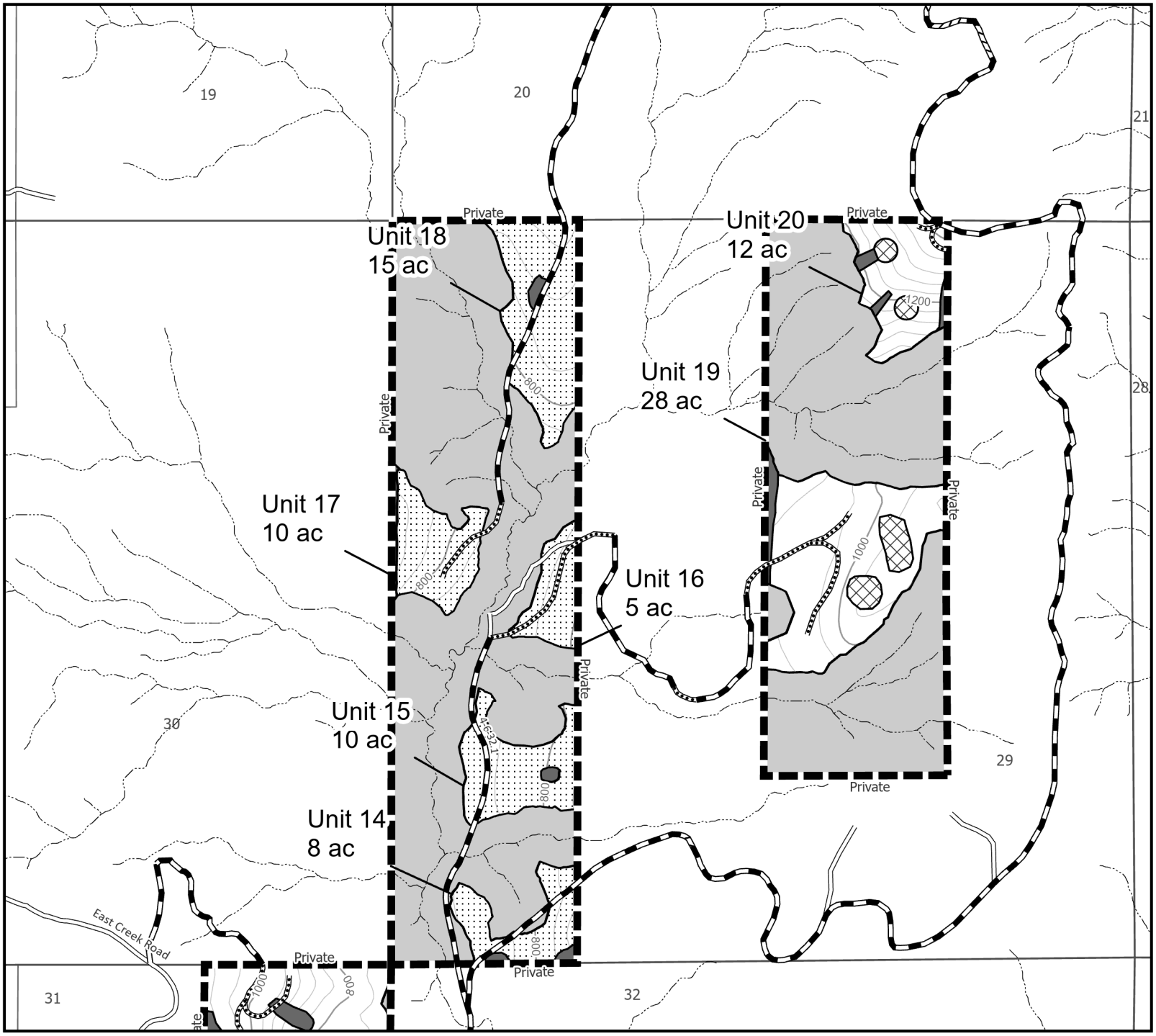
Contour Interval: 40 feet

No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual or aggregate use with other data. Original data were compiled from various sources and may be updated without notification. Note: Boundaries of harvest areas are painted/flagged in orange and posted. Right-of-ways (ROW) are posted. Harvest area acres do not include existing roads.
Prepared By: dtyler

United States Department of the Interior
BUREAU OF LAND MANAGEMENT
TIMBER SALE CONTRACT MAP

10/4/2023

T. 4S. R. 6W, Section 29 W. M.



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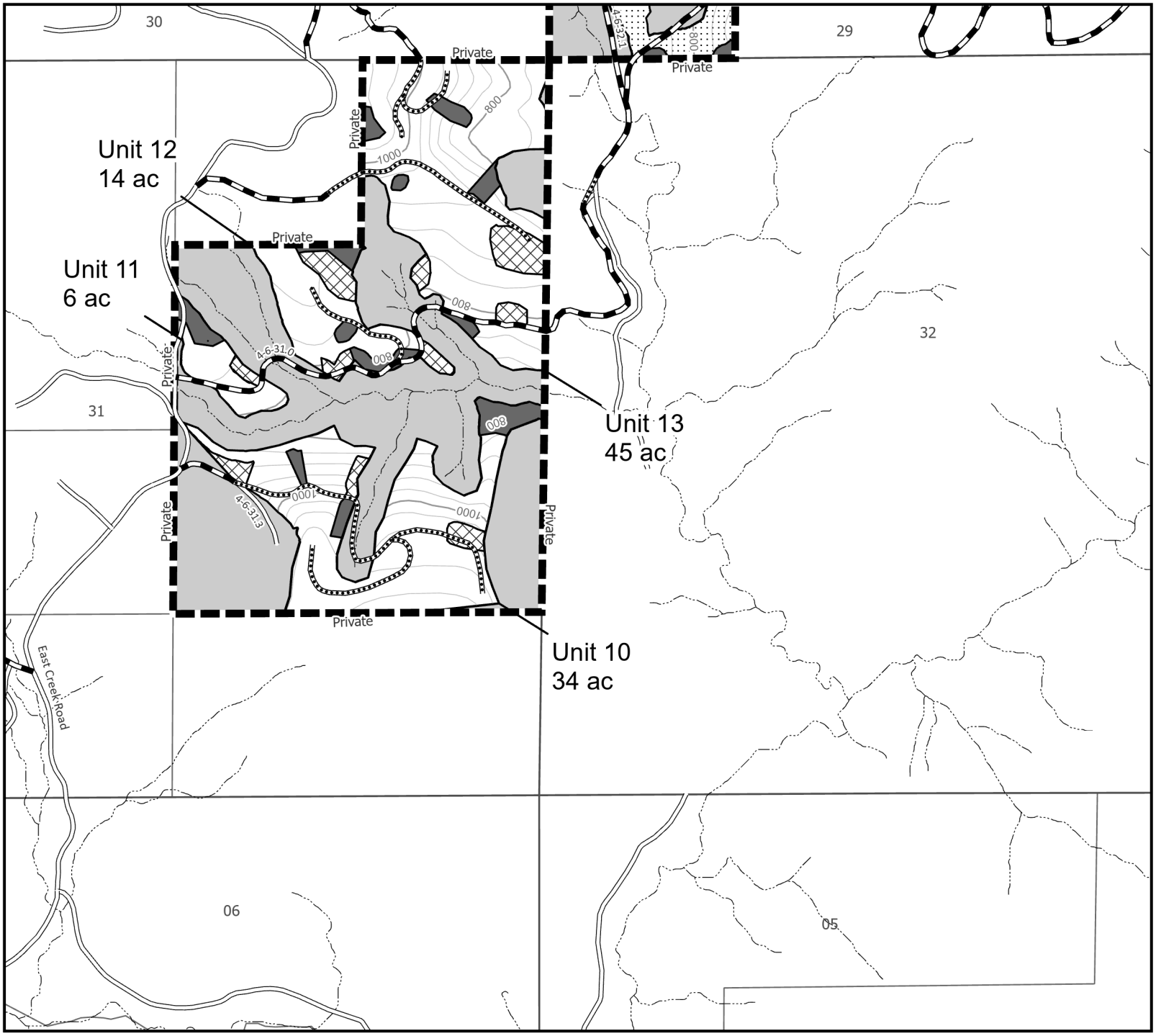
Prepared By: dtyler

United States Department of the Interior
BUREAU OF LAND MANAGEMENT
TIMBER SALE CONTRACT MAP

10/4/2023

T. 4S. R. 6W, Section 31 W. M.



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 Note: Boundaries of harvest areas are painted/flagged in orange and posted. Right-of-ways (ROW) are posted. Harvest area acres do not include existing roads.
Prepared By: dtyler

Form 5450-003a

(February 1986)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

EXHIBIT B / PRE-SALE

5450-003

Contract No.

ORN04-TS-2024.0401

Timber Town

The following estimates and calculations of value of timber sold are made solely as an administrative aid for determining: (1) adjustments made or credits given in accordance with Secs. 6, 9, or 11; (2) when payments are due; and (3) value of timber subject to any special bonding provisions. The value of timber will be determined by multiplying the value per acre as shown below, times the amount of acreage as determined by the Authorized Officer, which has been cut or removed or designated for taking. Except as provided in Sec. 2, Purchaser shall be liable for total purchase price even though quantity of timber actually cut or removed or designated for taking is less than the estimated volume or quantity shown. Cutting areas are shown on **Exhibit A.**

SPECIES	ESTIMATED VOLUME OR QUANTITY *(Units Specified)*		PRICE PER UNIT	ESTIMATED VOLUME OR QUANTITY X UNIT PRICE
Douglas Fir	9,853.0	MBF	$197.70	$1,947,938.10
Red Alder	61.0	MBF	$26.00	$1,586.00
Bigleaf Maple	4.0	MBF	$22.90	$91.60
TOTALS	9,918.0	MBF		$1,949,615.70

The apportionment of the total purchase price is as follows:

Unit 1

Red Alder	1.0 MBF	X	$26.00	=	$26.00	
Douglas Fir	131.0 MBF	X	$197.70	=	$25,898.70	
Total	132.0 Mbf				$25,924.70	÷ 7.0 acres = $3,703.53/Acre

Unit 2

Red Alder	6.0 MBF	X	$26.00	=	$156.00	
Douglas Fir	615.0 MBF	X	$197.70	=	$121,585.50	
Total	621.0 Mbf				$121,741.50	÷ 42.0 acres = $2,898.61/Acre

Unit 3

Douglas Fir	479.0 MBF	X	$197.70	=	$94,698.30	
Total	479.0 Mbf				$94,698.30	÷ 14.0 acres = $6,764.16/Acre

Unit 4

Red Alder	2.0 MBF	X	$26.00	=	$52.00	
Douglas Fir	149.0 MBF	X	$197.70	=	$29,457.30	
Total	151.0 Mbf				$29,509.30	÷ 9.0 acres = $3,278.81/Acre

Unit 5

Red Alder	2.0 MBF	X	$26.00	=	$52.00	
Douglas Fir	205.0 MBF	X	$197.70	=	$40,528.50	
Total	207.0 Mbf				$40,580.50	÷ 12.0 acres = $3,381.71/Acre

Unit 6

Douglas Fir	383.0 MBF	X	$197.70	=	$75,719.10	
Total	383.0 Mbf				$75,719.10	÷ 8.0 acres = $9,464.89/Acre

Form 5450-003a
(February 1986)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

EXHIBIT B / PRE-SALE

5450-003

Contract No.
ORN04-TS-2024.0401
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Unit 7						
Red Alder	2.0 MBF	X	$26.00	=	$52.00	
Douglas Fir	168.0 MBF	X	$197.70	=	$33,213.60	
Total	170.0 Mbf				$33,265.60	÷ 10.0 acres = $3,326.56/Acre
Unit 8						
Red Alder	4.0 MBF	X	$26.00	=	$104.00	
Douglas Fir	354.0 MBF	X	$197.70	=	$69,985.80	
Total	358.0 Mbf				$70,089.80	÷ 22.0 acres = $3,185.90/Acre
Unit 9						
Red Alder	20.0 MBF	X	$26.00	=	$520.00	
Douglas Fir	1,995.0 MBF	X	$197.70	=	$394,411.50	
Total	2015.0 Mbf				$394,931.50	÷ 125.0 acres = $3,159.45/Acre
Unit 10						
Red Alder	6.0 MBF	X	$26.00	=	$156.00	
Douglas Fir	578.0 MBF	X	$197.70	=	$114,270.60	
Total	584.0 Mbf				$114,426.60	÷ 34.0 acres = $3,365.49/Acre
Unit 11						
Red Alder	1.0 MBF	X	$26.00	=	$26.00	
Douglas Fir	93.0 MBF	X	$197.70	=	$18,386.10	
Total	94.0 Mbf				$18,412.10	÷ 6.0 acres = $3,068.68/Acre
Unit 12						
Red Alder	2.0 MBF	X	$26.00	=	$52.00	
Douglas Fir	224.0 MBF	X	$197.70	=	$44,284.80	
Total	226.0 Mbf				$44,336.80	÷ 14.0 acres = $3,166.91/Acre
Unit 13						
Red Alder	8.0 MBF	X	$26.00	=	$208.00	
Douglas Fir	802.0 MBF	X	$197.70	=	$158,555.40	
Total	810.0 Mbf				$158,763.40	÷ 45.0 acres = $3,528.08/Acre

Form 5450-003a

(February 1986)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

EXHIBIT B / PRE-SALE

5450-003

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ORN04-TS-2024.0401

Timber Town

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Unit 14						
Douglas Fir	335.0 MBF	X	$197.70	=	$66,229.50	
Total	335.0 Mbf				$66,229.50	÷ 8.0 acres = $8,278.69/Acre
Unit 15						
Douglas Fir	479.0 MBF	X	$197.70	=	$94,698.30	
Total	479.0 Mbf				$94,698.30	÷ 10.0 acres = $9,469.83/Acre
Unit 16						
Douglas Fir	239.0 MBF	X	$197.70	=	$47,250.30	
Total	239.0 Mbf				$47,250.30	÷ 5.0 acres = $9,450.06/Acre
Unit 17						
Douglas Fir	431.0 MBF	X	$197.70	=	$85,208.70	
Total	431.0 Mbf				$85,208.70	÷ 10.0 acres = $8,520.87/Acre
Unit 18						
Douglas Fir	718.0 MBF	X	$197.70	=	$141,948.60	
Total	718.0 Mbf				$141,948.60	÷ 15.0 acres = $9,463.24/Acre
Unit 19						
Red Alder	5.0 MBF	X	$26.00	=	$130.00	
Douglas Fir	504.0 MBF	X	$197.70	=	$99,640.80	
Bigleaf Maple	2.0 MBF	X	$22.90	=	$45.80	
Total	511.0 Mbf				$99,816.60	÷ 28.0 acres = $3,564.88/Acre
Unit 20						
Red Alder	2.0 MBF	X	$26.00	=	$52.00	
Douglas Fir	205.0 MBF	X	$197.70	=	$40,528.50	
Bigleaf Maple	2.0 MBF	X	$22.90	=	$45.80	
Total	209.0 Mbf				$40,626.30	÷ 12.0 acres = $3,385.53/Acre

Form 5450-003a

(February 1986)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

EXHIBIT B / PRE-SALE

5450-003

Contract No.

ORN04-TS-2024.0401

Timber Town

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Unit RW

Douglas Fir	766.0 MBF	X	$197.70	=	$151,438.20	
Total	766.0 Mbf				$151,438.20	÷ 17.0 acres = $8,908.13/Acre

TABLE OF CONTENTS

U.S. DEPARTMENT OF THE INTERIOR
Bureau of Land Management
SALEM DISTRICT – OREGON
TIMBER SALE CONTRACT
ROAD SPECIFICATIONS

Road Number	New Construction (Stations and Miles)	Improvement (Stations and Miles)	Renovation (Stations and Miles)
4-6-20.1		7+11 Sta. = 0.135 Miles	5+70 Sta. = 0.108 Miles
4-6-29.0		7+02 Sta. = 0.133 Miles	55+33 Sta. = 1.048 Miles
4-6-29.1			8+98 Sta. = 0.170 Miles
4-6-29.2			33+26 Sta. = 0.630 Miles
4-6-29.4	7+70 Sta. = 0.146 Miles		
4-6-29.5	13+30 Sta. = 0.252 Miles		
4-6-29.6	10+65 Sta. = 0.202 Miles		
4-6-29.7	5+95 Sta. = 0.113 Miles		
4-6-29.8	2+20 Sta. = 0.042 Miles		
4-6-29.9	1+55 Sta. = 0.029 Miles		
4-6-29.10	1+66 Sta. = 0.031 Miles		
4-6-29.11			12+80 Sta. = 0.242 Miles
4-6-30.0			6+44 Sta. = 0.122 Miles
4-6-30.1	7+60 Sta. = 0.144 Miles		11+08 Sta. = 0.210 Miles
4-6-31.0			46+48 Sta. = 0.880 Miles
4-6-31.1			228+47 Sta. = 4.327 Miles
4-6-31.2			34+85 Sta. = 0.660 Miles
4-6-31.3			4+86 Sta. = 0.092 Miles
4-6-31.4	15+55 Sta. = 0.295 Miles		8+77 Sta. = 0.166 Miles
4-6-31.5		2+98 Sta. = 0.056 Miles	12+47 Sta. = 0.236 Miles
4-6-31.6	24+44 Sta. = 0.463 Miles		
4-6-31.7	13+93 Sta. = 0.264 Miles		
4-6-31.8	9+60 Sta. = 0.182 Miles		
4-6-31.9	3+50 Sta. = 0.066 Miles		
4-6-31.10	13+50 Sta. = 0.256 Miles		
4-6-31.11	3+19 Sta. = 0.060 Miles		
4-6-32.1			29+52 Sta. = 0.559 Miles
4-6-32.4		2+11 Sta. = 0.040 Miles	94+25 Sta. = 1.785 Miles
4-6-32.5	3+79 Sta. = 0.072 Miles		
4-7-25.0			20+80 Sta. = 0.394 Miles
4-7-25.1			1+69 Sta. = 0.032 Miles
4-7-25.2	5+42 Sta. = 0.103 Miles		
4-7-25.3	2+70 Sta. = 0.051 Miles		
4-7-25.4	10+10 Sta. = 0.191 Miles		

4-7-25.5	**6+80 Sta. = 0.129 Miles**		
4-7-25.6	**7+70 Sta. = 0.146 Miles**		
4-7-25.7	**4+46 Sta. = 0.084 Miles**		
4-7-36.1	**10+05 Sta. = 0.190 Miles**		

GENERAL – 100

101 - Pre-work Conference(s):

A pre-work conference will be held prior to the start of new construction, renovation, improvement, quarry development, and decommissioning operations. The Purchaser shall request the conference at least forty-eight (48) hours prior to the time it is to be held. The conference will be attended by the Purchaser and/or their representatives, subcontractors or their representatives and the Authorized Officer and/or their representatives.

The purpose of the prework conference will be to review the required work, exhibits and specifications, and to establish a work schedule and a list of the Purchaser's representatives and subcontractors.

102 - Definitions:

AASHTO - American Association of State Highway and Transportation Officials. Current editions of tests and specifications.

ACI - American Concrete Institute

Apparent Opening Size (AOS) - Number of the U.S. Bureau of Standard sieve (or its opening size in millimeters or inches) having openings closest in size to the diameter of uniform particles which will allow five (5) percent by weight to pass through the geotextile material when shaken in a prescribed manner. This is also referred to as Equivalent Opening Size (EOS).

ASTM - American Society for Testing and Materials.

Base Course - Surfacing structure consisting of crushed gravel or stone, crushed sandstone, pit-run rock, bank or river-run gravels, etc., to provide support and, in the event no surface course is placed, the running surface for traffic load.

BLM - Bureau of Land Management

Borrow - Excavated material required for embankments and other portions of the work.

Burst Strength - The resistance of a geotextile material to rupture from pressure applied at right angles to the plane of the geotextile material under specified conditions, usually expressed as the amount of pressure causing failure. Rupture or burst results from tensile failure of the geotextile material.

Culvert - A pipe, pipe-arch, arch, or box structure constructed of metal, concrete, plastic or wood which provides an opening under the roadway primarily for the conveyance of liquids, pedestrians or livestock.

Curve Widening - Widening required on inside of curves to accommodate long log and equipment hauling trucks.

Embankment - A structure of soil, aggregate, or rock material placed on a prepared ground surface and constructed to subgrade.

End Haul - Excavated material moved, other than by dozer, to an embankment or waste area to prevent side casting material outside of the road prism.

Excess Excavation - Material from the roadway in excess of that needed for construction of the designed roadway (waste).

Grading - Leveling to grade, shaping and smoothing of a road subgrade; the shaping of roadside ditches as to grade and contour. In some instances, includes smoothing of the cut bank.

Overhaul - Distance excavated material is transported in excess of the distance included in the cost for excavation.

Pioneer Road - Temporary construction access built along the route of the project.

Piping - The process by which soil particles are washed in or through pore spaces in drains and filters or poorly compacted fill/backfill material.

Plans - The approved drawings, or exact reproductions thereof which show the locations, character, dimensions, and details of the work to be done.

Purchaser - The individual, partnership, joint venture, or corporation contracting with the Government under the terms of a Timber Sale Contract and acting independently or through their, or its agents, employees, or contractors.

Reasonably Close Conformity - Compliance with reasonable and customary manufacturing and construction tolerances where working tolerances are not specified.

Roadbed - The graded portion of the road within top and side slopes, prepared as a foundation for the pavement structure and shoulders.

Road Centerline - The longitudinal center of a roadbed.

Road Improvement - Work done to an existing road which improves it over its original design standard.

Road Renovation - Work done to an existing road which restores it to its original design.

Roadway - The portion of a road within limits of construction. Usually from the toe of the fill slope to a point where the cut slope intersects natural ground line. Synonym - road prism.

Scale - In quarrying, consists of the removal of loose or overhanging rock adhering to the solid face after a shot or a round of shots has been fired.

Scarification - The process of loosening or breaking up of the surface layer of soil or road, usually to a specified depth.

Shoulder - The portion of the roadbed contiguous with the traveled way designed for accommodation of stopped vehicles, safety, and lateral support of base and surface courses.

Slope ratio notation (horizontal: vertical) - Slope ratios for constructed cut and fill slopes are expressed as a ratio of horizontal units to vertical units.

Spalls - Flakes or chips of stone.

Specifications - A general term applied to all directions, provisions, and requirements pertaining to performance of the work.

Specific Gravity - The ratio of the density of a material to the density of water obtained by weighing known volumes of both items in air. A specific gravity less than one implies that the material will float.

Structures - Bridges, culverts, catch basins, retaining walls, underdrains, flumes, splash pads, downspouts, and other project features which may be involved in the work and not otherwise classified in these specifications.

Sub-base - Reinforcement of the subgrade with large particles of pit-run rock or crushed stone. Usually confined to roads having wet subgrades or subgrades with weak support characteristics.

Surface Course - Top layer of a road structure consisting of finely crushed gravels or asphalt designed to provide a smooth-running surface for traffic load.

Subgrade - The top surface of a roadbed upon which the traveled way and shoulders are constructed.

Timber - Standing trees, downed trees, or logs which can be measured in board feet.

Traveled Way - The portion of the roadbed used for the movement of vehicles, exclusive of shoulders.

Typical Cross Sections - Cross-sectional plane of a typical roadway; showing natural ground line and designed roadway in relation to cut and fill, through cut, and through fill.

Turnout - Extra widening of the roadbed at appropriate intervals on single-lane roads for passing purposes.

102a - Tests Used in These Specifications:

AASHTO T 11 Quantity of rock finer than No. 200 sieve.

AASHTO T 27 Sieve analysis of fine and coarse aggregate using sieves with square openings; gradation.

AASHTO T 89 Liquid limit of material passing the No. 40 sieve. Water content at which the soil passes from a plastic to a liquid state.

AASHTO T 90 Plastic limits and plasticity index of soil.
a. Plastic limit - lowest water content at which the soil remains plastic.
b. Plasticity index - range of water content, within which the material is in a plastic state. Numerical difference between the liquid and plastic limits of the soil.

AASHTO T 96 Resistance to abrasion of small size coarse aggregate by use of the Los Angeles machine.

AASHTO T 99 Relationship between soil moisture and density of soil.
Method A - 4" mold, soil passing a No. 4 sieve
25 blows/layer & 3 layers.
Method C - 4" mold, soil passing a 3/4-inch sieve
25 blows/layer & 3 layers.
Method D - 6" mold, soil passing a 3/4-inch sieve. 56 blows/layer & 3 layers.

AASHTO T 119 Slump of hydraulic cement concrete.

AASHTO T 152 Air content of freshly mixed concrete.

AASHTO T 166 Specific Gravity of compacted Bituminous Mixtures.

AASHTO T 176 Shows relative portions of fine dust or claylike materials in soil or graded aggregate.

AASHTO T 180 (OSHD 106-71) moisture density relationship of soil same as AASHTO T 99 proctor but uses a 10-lb rammer & 18-in drop height.

AASHTO T 191 Sand Cone. Density of soil in place: For subgrade use 6-inch or 12-inch cone. For rock surfacing for 1-1/2-inch minus to 3-inch minus use 12-inch cone.

AASHTO T 205 Rubber balloon. Density of soil in place. Use for compacted or firmly bonded soil.

AASHTO T 209 Maximum Specific Gravity of Bituminous Paving Mixtures.

AASHTO T 210 Durability of aggregates based on resistance to produce fines.

AASHTO T 224 Correction for coarse particles in the soil.

AASHTO T 238 Density of Soil and Soil-Aggregate in place by nuclear methods.

AASHTO T 248 Reducing field samples of aggregate to testing size by mechanical splitter, quartering, or miniature stockpile sampling.

ASTM D 4564 Determination of relative density of cohesion less soils.

DMSO (dimethyl sulfide) Determines volume of expanding clays in aggregates. Usually associated with marine basalts.

103 - Compaction equipment shall meet the following requirements:

103b - Sheepsfoot/Tamping rollers. A tamping roller unit shall consist of two (2) watertight metal drums mounted in frames in such manner as to be fully oscillating, together with a tractor having sufficient weight and power under actual working conditions to pull the roller drums at a minimum speed of two and a half (2.5) miles per hour. The drums shall be no less than sixty (60) inches in diameter and no less than fifty-four (54) inches in length, measured at the drum's surface, and shall be studded with tamping feet projecting not less than seven (7) inches from the face of the drums.

The distance between circumferential rows of tamper feet shall be such that the diagonal distance from any foot to the nearest foot in each adjacent row shall be not more than twelve (12) inches. The cross-sectional area of the face of each tamper foot, measured perpendicular to the axis of the stud, shall be not less than 5-1/2 square inches nor more than eight (8) square inches.

The weight of the tamping-roller unit shall be such as to exert a minimum pressure of two hundred fifty (250) pounds per square inch on the ground area in contact with the tamping feet, and the roller shall be so designed that the weight may be increased to exert a pressure up to five hundred (500) pounds per square inch on the ground area in contact with the tamping feet.

The ground pressure shall be determined by dividing the total weight of the roller unit, not including the weight of the tractor, by the total cross-sectional area of the tamping feet in one (1) row of tamping feet parallel to the axis of the roller.

103f - Vibratory roller. The drum diameter shall be not less than forty-eight (48) inches, the drum width not less than fifty-eight (58) inches and have a turning radius of fifteen (15) feet or less. Vibration frequency shall be regulated in steps to 1400, 1500, and 1600 vibrations per minute (VPM), corresponding to engine speeds of 1575, 1690, and 1800 RPM. The centrifugal force developed shall be seven (7) tons at 1600 RPM. It shall be activated by a power unit of not less than twenty-five (25) horsepower. The vibratory roller shall be self-propelled or drawn by a vehicle of sufficient horsepower to enable the unit to travel through a loose layer of material at a speed ranging from 0.9 mile to 1.8 miles per hour, as directed by the Authorized Officer.

The towing vehicle and roller or self-propelled unit meeting the above requirements shall be considered a vibratory roller unit.

103g - Vibratory compactor. Vibratory compactors shall consist of multiple or gang-type compacting units or pads with a minimum variable width of two (2) feet. It shall be self-contained and capable of compacting material as required.

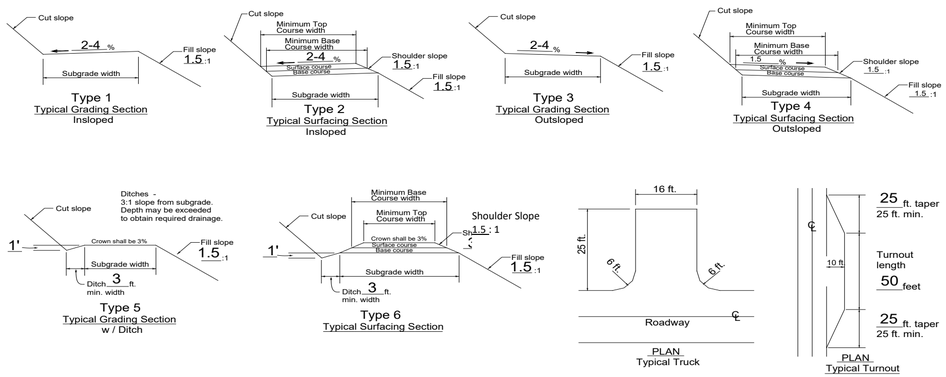
103h - Drum drive self-propelled vibratory grid roller. The unit shall consist of one cylindrical drum with a drum diameter of not less than fifty-six (56) inches, nor shall be more than sixty-six (66) inches and the drum width be eighty-four (84) inches. Vibratory frequency shall be regulated in seeps from 1200 to 1800 vibrations per minute (VPM), and the centrifugal force developed shall be at least 40,000 pounds at 1800 RPM. The vibratory grid roller shall be

self-propelled and have a power unit of not less than 112 horsepower. The "grid" design shall be a herringbone or z-bar pattern around the circumference of the drum. The grid bars shall be one (1) inch in height and spaced not more than eight and one half (8-1/2) inches apart.

103i - Other. Compaction equipment approved by the Authorized Officer.

150: ROAD PLAN AND DETAIL SHEET

Road Number	Start Station or Milepost	End Station or Milepost	Total Length	Typical Cross Section	Min. Curve Radius	ROAD WIDTH		GRADIANT		SURFACING (*5)										Remarks
										BASE COURSE					SURFACE COURSE					
						Subgrade	Ditch	Max. Favorable	Max. Adverse	Min. Width	Comp. Depth	Surface Type (*3)	Grading Size (*3)	Number of Lifts	Min. Width	Comp. Depth	Surface Type (*3)	Grading Size (*3)	Number of Lifts	
4-6-20.1	0+00	3+47	3+47	5		14'	2'	16%	16%	--	--	ABC	D	--	--	--	ASC	C	--	Improvement. Establish ditchline as directed and haul material to designated waste area. Cut and drift material back from 1+00 - 3+47 and use as fill between 0+00 - 1+00. Haul excess material to designated waste area. Construct 2 ditchouts at Sta. 1+00 as marked and directed. Spread 20 CY of 6" Jaw Run Base Rock as marked. Spread 10 CY of 1 1/2"-0" Crushed Rock as marked. Place 20 CY Class 5 RipRap as stabilization wall to contain fill as marked. Waterline for the City of Sheridan is buried 3' deep next to road. Purchaser must coordinate with Authorized Officer and City of Sheridan representative prior to work.
	3+47	9+17	5+70	5		14'	2'	--	--	--	--	--	--	--	--	--	--	--	--	Renovation. Re-establish ditchline and haul material to desingated waste area as directed. Shift centerline of the road to the left 6' to achieve desired horizontal alignment from Sta. 4+15 - 5+76. Construct 1 ditchout at Sta. 4+56 as marked and directed. Construct a truck turnout at Sta. 6+93. **Waterline for the City of Sheridan is buried 3' deep next to road. Purchaser must coordinate with Authorized Officer and City of Sheridan representative prior to work.**
	9+17	12+81	3+64	5		14'	2'	16%	16%	--	--	ABC	D	--	--	--	ASC	C	--	Improvement. Establish ditchline as directed and haul material to designated waste area. Construct 1 ditchout across road as needed at Sta. 9+17. Cut material from Sta. 9+17 - 12+81 to achieve desired grade and haul to designated waste area. Spread 20 CY of 6" Jaw Run Base Rock as marked. Spread 10 CY of 1 1/2"-0" Crushed Rock as marked.
4-6-29.0	0.000	0.490	0.490	6		14'	2'	--	--	--	--	ABC	D	--	--	--	ASC	C	--	Renovation. Re-establish ditchline and haul material to designated waste area as directed. Construct a waterbar behind junction to allow proper drainage on existing ditchline at MP. 0.000. Construct ditchouts at MP. 0.109 and 0.293 as marked and directed. Construct a truck turnout at MP 0.033 as marked. Construct a waste area at MP. 0.146 as marked and directed. Construct a roadside landing at MP. 0.293 as marked and directed. Construct a truck turnaround at MP. 0.393 as marked and directed. Spread 50 CY of 6" Jaw Run Base Rock as marked. Spread 35 CY of 1 1/2"-0" Crushed Rock as marked. Place 30 CY of 1 1/2"-0" Crushed Bedding/Backfill Rock as marked. Install 2 culverts . Construct one lead-off ditch as marked. Install 2 inlet markers.
	0.490	0.577	0.087	6		16'	2'	16%	16%	13'	9"	ABC	D	1	12'	4"	ASC	C	1	Improvement. Establish ditchline as directed and haul material to designated waste area. Cut material from MP. 0.490 - 0.577 to achieve desired grade and haul material to desingated waste area. Construct 2 ditchouts at MP. 0.497 as marked and directed. Excavate and blend material at MP. 0.562 to maintain access at each junction. Spread a 9" lift of 6" Jaw Run Base Rock (approx. 246 CY) as marked. Spread a 4" lift of 1 1/2"-0" Crushed Rock (147 CY) as marked. Remove and salvage culvert to the left in ditchline across adjacent road, since road will be lowered. Re-install culvert with additional 10' of CPP with a lead off ditch as marked and directed.
	0.577	1.135	0.558	6		14'	2'	--	--	--	--	ABC	D	--	--	--	ASC	C	--	Renovation. Re-establish ditchline and haul material to designated waste area as directed. Construct truck turnouts at MP. 0.674 and 0.885. Construct 4 ditchouts at MP. 0.859, 0.951, and 1.023 as marked and directed. Construct sediment catch basins with straw bales at MP. 0.747, 0.758, 0.859, and 1.071 as marked and directed. Repair road failure caused by water flow at MP. 0.915 as marked and directed. Construct a waste area at MP. 1.023 as marked and directed. Excavate inlet and outlet of existing CPP at MP 0.907 as directed. Spread 40 CY of 6" Jaw Run Base Rock as marked. Spread 30 CY of 1 1/2"-0" Crushed Rock as marked. Place 40 CY of 1 1/2"-0" Crushed Bedding/Backfill Rock as marked. Place 50 CY of Class 5 RipRap as fill armor/energy dissipater as marked. Replace 1 culvert & install 1 culvert as marked. Install 4 inlet markers.
	1.135	1.181	0.046	6		16'	2'	16%	16%	13'	9"	ABC	D	1	--	--	--	--	--	Improvement. Eliminate existing ditchline and establish a new ditchline as directed and haul material to designated waste area. Shift centerline of road to the left as marked. Excavate down this portion of road to match the grade of the existing 4-6-29.0 road, haul excess material to designated waste area. Spread a 9" lift of 6" Jaw Run Base Rock (approx. 138 CY) as marked.
4-6-29.1	0.000	0.170	0.170	6		14'	2'	--	--	--	--	ABC	D	--	--	--	ASC	C	--	Renovation. Re-establish ditchline as directed and haul material to designated waste area. Construct a ditchout at MP. 0.021 as marked and directed. Construct 2 sediment catch basins with straws bales at MP. 0.147 and 0.157 as marked and directed. Excavate and blend material at MP . 0.170 to create smooth transition and tie junction/ditches together. Spread 20 CY of 6" Jaw Run Base Rock as marked. Spread 10 CY of 1 1/2"-0" Crushed Rock as marked.
4-6-29.2	0.000	0.630	0.630	6		14'	2'	--	--	--	--	ABC	D	--	--	--	ASC	C	--	Renovation. Re-establish ditchline as directed and haul material to designated waste area. Construct 3 truck turnouts at MP. 0.027, 0.205, and 0.552 as marked and directed. Construct 2 ditchouts at MP. 0.088 and 0.205 as marked and directed. Heavy excavation required to the left from MP. 0.121 - 0.205, cut bank is too steep and needs to be excavated to achieve desired road width, bank slope, and to maintain ditchline. Haul excess material to designated waste area. Between MP. 0.600 - 0.630, cut and blend material to maintain access to all junctions. Excavate buried inlet and outlet at MP. 0.347 as directed. Spread 50 CY of 6" Jaw Run Base Rock as needed and directed. Spread 30 C Y of 1 1/2"-0" Crushed Rock as needed and directed. Install 1 inlet marker.
4-6-29.4	0+00	7+70	7+70	3		14'	0'	--	--	--	--	ABC	D	--	--	--	ASC	C	--	New construct. Cut and fill material as needed to achieve desired grade. Construct a truck turnaround/roadside landing at Sta. 5+21 as marked and directed. Construct a 50' diameter landing at Sta. 7+70 as marked and directed. Spread 40 CY of 6" Jaw Run Base Rock as marked. Spread 25 CY of 1 1/2"-0" Crushed Rock as marked. Place 20 CY of 1 1/2"-0" Crushed Bedding/Backfill Rock as marked. Install 1 culvert as marked. Install 1 inlet marker.
4-6-29.5	0+00	13+30	13+30	4		15'	0'	--	--	13'	9"	ABC	D	1	--	--	ASC	C	--	New construct. Cut and fill material as needed to achieve desired grade. Construct a truck turnaround/roadside landing at Sta. 5+54 as marked and directed. Construct a truck turnout at Sta. 9+47 as marked and directed. Spread a 9" lift of 6" Jaw Run Base Rock as marked. (approx. 722 CY). Spread 40 CY of 6" Jaw Run Base Rock as marked. Spread 20 CY of 1 1/2"-0" Crushed Rock as marked. Construct a French-drain at Sta. 8+28 as marked and with Authorized Officer on-site. The structures dimensions are 40' long, 25' wide, and 4' deep at centerline. Place 120 CY of 1 1/2"-3/4" Drain Rock as marked wrapped with 60 SY of geo-synthetic non-woven fabric. Install 1 perforated CMP as marked. Install 1 inlet marker.
4-6-29.6	0+00	3+32	3+32	5		14	2'	18%	--	--	--	ABC	D	--	--	--	ASC	C	--	New construct. Cut and fill material as needed to achieve desired grade. Establish ditchline and haul material to designated waste area. Construct a ditchout at Sta. 1+20 as marked and directed. Spread 20 CY of 6" Jaw Run Base Rock as marked. Spread 10 CY of 1 1/2"-0" Crushed Rock as marked.
4-6-29.6	3+32	10+65	7+33	3		14	0'	12%	--	--	--	--	--	--	--	--	--	--	--	New construct. Cut and fill material as needed to achieve desired grade. Construct a truck turnout/turnaround at Sta. 7+77 as marked and directed. Construct a 50' diameter landing at Sta. 10+65 as marked and directed.
4-6-29.7	0+00	5+95	5+95	3		14	0	12%	--	--	--	--	--	--	--	--	--	--	--	New construct. Cut and fill material as needed to achieve desired grade. Construct a truck turnout/turnaround at Sta. 4+30 as marked and directed. Construct a 50' diameter landing at Sta. 5+95 as marked and directed.



*NOTES

1. Extra subgrade widths
   Add to each shoulder: 1 ft. for fills of 1-6 ft. and 2 ft. for fills over 6 ft. Widen the inside shoulder of curves as follow:
   (See Road Plan Map, Exhibit C)

2. Backslopes

Materials	Cut slopes	Fill slopes
Solid rock	1/4:1	Angle of repose
Soft rock and shale	1/2:1	
Common		
Slopes under 55%	1:1	1-1/2:1
Slopes over 55%	3/4:1	1-1/2:1

   Note:
   Full bench construction is required on side slopes exceeding 60%.

3. Surface type

	Grading	
PRR - Pit run rock	A - 3"	
GRR - Grid rolled rock	B - 2"	(base course)
SRN - Screened rock	C - 3" jaw run	
JRR - Jaw run rock	D - 6" jaw run	
ABC - Aggr. base course	C - 1 1/2" - 0"	
ASC - Aggr. surface course	D - 1"	(surface course)
WC - Wood chips	E - 3/4"	

4. Turnouts
   Width - 10 ft. in addition to subgrade width, or as shown on the plans.
   Located approximately as shown on the plans. Intervisible and not more than 750ft. apart.

5. Surfacing
   Turnouts, curve widening and road approach aprons shall be surfaced.

6. Clearing width
   See Section 200.

7. As posted and painted for Right-of-Way:

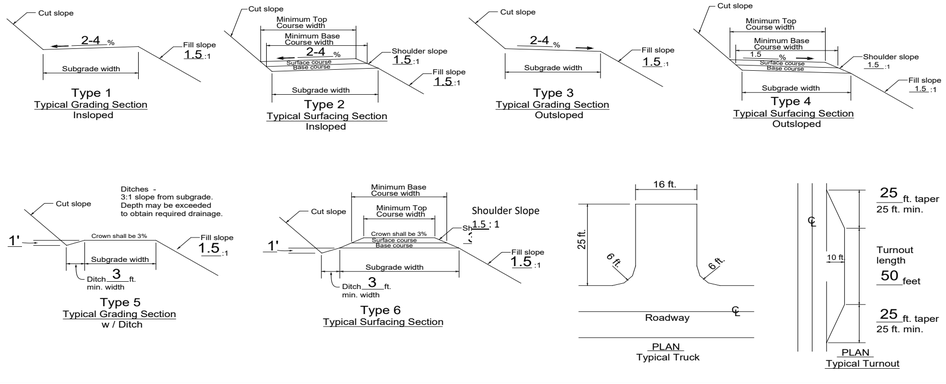
8. Drainage
   See Culvert List

10. Compaction
    See Sections 300 and 400

*Clearing Limits as posted on ground

150: ROAD PLAN AND DETAIL SHEET

Road Number	Start Station or Milepost	End Station or Milepost	Total Length	Typical Cross Section	Min. Curve Radius	ROAD WIDTH		GRADIANT		SURFACING (*5) BASE COURSE					SURFACE COURSE					Remarks
						Subgrade	Ditch	Max. Favorable	Max. Adverse	Min. Width	Comp. Depth	Surface Type (*3)	Grading Size (*3)	Number of Lifts	Min. Width	Comp. Depth	Surface Type (*3)	Grading Size (*3)	Number of Lifts	
4-6-29.8	0+00	2+20	2+20	3		14'	0'	10%	10%	--	--	ABC	D	--	--	--	ASC	C	--	New construct. Excavate and blend matarial at Sta. 0+22 to create smooth transition at junction. Construct a 50' diameter landing at Sta. 2+20 as marked and directed. Spread 20 CY of 6" Jaw Run Base Rock as marked. Spread 10 CY of 1 1/2"-0" Crushed Rock as marked.
4-6-29.9	0+00	1+55	1+55	3		14'	0'	12%	12%	--	--	--	--	--	--	--	--	--	--	New construct. Cut and fill material as needed to achieve desired grade. Construct a 40' diameter landing at Sta. 1+55 as marked and directed.
4-6-29.10	0+00	1+66	1+66	6		16'	2'	10%	10%	13'	9"	ABC	D	1	--	--	ASC	C	--	New construct. Establish ditchline and haul material to designated waste area. Spread a 9" lift of 6" Jaw Run Base Rock (approx. 91 CY) as marked. Spread 20 CY of 6" Jaw Run Base Rock as marked. Spread 25 CY of 1 1/2"-0" Crushed Rock as marked. Place 20 CY of 1 1/2"-0" Crushed Bedding/Backfill Rock as marked. Install 1 culvert as marked.
4-6-29.11	0+00	12+80	12+80	6		16'	2'	--	--	13'	9"	ABC	D	1	--	--	ASC	C	--	Renovation. Re-establish ditchline and haul material to designated waste area. Construct a truck turnout at Sta. 0+60 as marked and directed. Construct 3 sediment catch basins with straw bales at Sta. 3+00 and 3+24. Construct a waste area at Sta.4+67 as marked and directed. Construct a waterbar past junction to capture ditchline flow and disconnect past junction at Sta. 12+80. Spread a 9" lift of 6" Jaw Run Base Rock (approx. 720 CY) as marked. Spread 20 CY of 6" Jaw Run Base Rock as marked. Spread 45 CY of 1 1/2"-0" Crushed Rock as marked. Place 20 CY of 1 1/2"-0" Crushed Bedding/Backfill Rock as marked. Install 1 culvert as marked. Install 1 inlet marker.
4-6-30.0	0.000	0.122	0.122	6		14'	2'	--	--	--	--	--	--	--	--	--	ASC	C	--	Renovation. Re-establish ditchline and haul material to designated waste area. Scatter or move existing down logs at MP. 0.000. Construct a ditchout at MP. 0.078 as marked and directed. Wrap ditchline and tie with ditchline on 4-6-30.1 road at MP. 0.122. Spread 20 CY of 1 1/2"-0" Crushed Rock as marked.
4-6-30.1	0+00	11+08	11+08	6		14'	2'	--	--	--	--	ABC	D	--	--	--	ASC	C	--	Renovation. Re-establish ditchline and haul material to designated waste area. Construct a ditchout at Sta. 1+11 as marked and directed. Excavate buried inlet and outlet at Sta. 3+13 as directed. Construct a truck turnout at Sta. 4+03 as marked and directed. Excavate and slope back cutbank to achive desired cut slope, haul material to designated waste area. Construct 1 sediment catch basin with straw bale at Sta. 6+88 as marked and directed. Spread 40 CY of 6" Jaw Run Base Rock as marked. Spread 25 CY of 1 1/2"-0" Crushed Rock as marked. Place 20 CY of 1 1/2"-0" Crushed Rock as marked. Install 1 culvert as marked. Install 1 inlet marker.
4-6-30.1	11+08	18+68	7+60	3		14'	0'	16%	16%	--	--	--	--	--	--	--	--	--	--	New construct. Cut and fill material as needed to achieve desired grade. Construct a truck turnaround/roadside landing at Sta. 13+58 and 17+18 as marked and directed. Construct a waste area at Sta. 14+21 as marked and directed. Construct a 50' diameter landing at Sta. 18+68 as marked and directed.
4-6-31.0	0+00	36+70	36+70	6		16'	2'	--	--	13'	9"	ABC	D	1	--	--	ASC	C	--	Renovation. Re-establish ditchline and haul material to designated waste area. Construct 3 ditchouts at Sta. 3+02 and 7+00 as marked and directed. Construct a roadside landing/truck turnout at Sta. 4+17 as marked and directed. Construct 3 sediment catch basins with straw bales at Sta. 9+38, 22+97, and 23+79 as marked and directed. Construct a waste area/truck turnout at Sta. 13+45 as marked and directed. Construct a truck turnaround/roadside landing at Sta. 20+15 as marked and directed. Construct 1 truck turnout at Sta. 27+65 as marked and directed. Construct a step landing at Sta. 29+41 as marked and directed. Shift road to the left 10' from Sta. 32+97 - 33+77 to improve horizontal alignment. Spread a 9" lift of 6" Jaw Run Base Rock (approx. 2,126 CY) as marked. Spread 40 CY of 6" Jaw Run Base Rock as marked. Spread 180 CY of 1 1/2"-0" Crushed Rock as marked. Place 235 CY of 1 1/2"-0" Crushed Bedding/Backfill Rock as marked. Place 10 CY of PitRun for ditchline armoring as marked. Place 160 CY of Class 5 RipRap as marked. Install 13 culverts and 4 downspounts as marked. Install 13 inlet markers.
4-6-31.0	36+70	46+48	9+78	6		16'	2'	--	--	13'	9"	ABC	D	1	12'	4"	ASC	C	1	Renovation. Re-establish ditchline and haul material to designated waste area. Construct 1 ditchout at Sta. 46+48 as marked and directed. Construct 1 truck turnout at Sta. 39+14 as marked and directed. Excavate cutbank at Sta. 44+05 to achieve desired width and haul material to designated waste area. Spread a 9" lift of 6" Jaw Run Base Rock (approx. 538 CY) as marked. Spread a 4" lift of 1 1/2"-0" Crushed Rock (approx. 211 CY) as marked. Place 20 CY of 1 1/2"-0" Crushed Bedding/Backfill Rock as marked. Install 2 culverts and 2 downspouts as marked. Install 2 inlet markers.
4-6-31.1	0.000	4.327	4.327	6		14'	2'	--	--	--	--	ABC	D	--	--	--	ASC	C	--	Renovation. Re-establish ditchline and haul material to designated waste area. Wrap existing ditchline into existing road to the left at MP. 0.026 and direct to existing waterbar. Re-establish lead-off ditch at MP. 0.070. Construct 5 truck turnouts at MP. 0.270, 1.290, 2.395, 2.972, and 3.219 as marked and directed. Construct 5 ditchouts at MP. 0.294, 0.970, 1.596, 1.666, and 3.063 as marked and directed. Construct 4 waste areas at MP. 0.342, 1.570, 2.085, and 3.089 as marked and directed. Construct 11 sediment catch basins with straw bales at MP. 0.542, 0.834, 2.010, 2.161, 2.177, 2.244, 2.364, 4.059, 4.072, 4.141, and 4.159 as marked and directed. Construct 2 truck turnout/roadside landing at MP. 0.859 and 1.639 as marked and directed. Remove existing waterbars at MP. 0.978, 1.202, 1.261, 1.324, 1.441, 1.479, 1.518, 1.575, 1.666, 1.709, 1.751, 1.844, 1.956, 1.993, 2.161, 2.182, 2.252, 2.325, 2.389, 2.445, 2.511, 2.772, 2.921, 3.010, 3.273, 3.366, 3.484, 3.550, 3.943, and 3.993 as marked and directed. Construct 1 roadside landing/turnout/turnaround at MP. 1.061 as marked and directed. Construct 6 truck turnarounds at MP. 1.405, 2.085, 2.194, 2.623, 3.823, and 4.823 as marked and directed. Construct 2 roadside landings/truck turnarounds at MP. 1.596 and 3.904 as marked and directed. Construct 5 roadside landings at MP. 1.629, 1.666, 1.702, 2.258, and 4.283 as marked and directed. Construct 3 truck turnouts/turnarounds at MP. 2.757, 2.853, and 3.304 as marked and directed.Excavate buried inlet and outlet of existing CMP as directed. Remove downed tree and correct road alignment at MP. 2.904. Spread 1,200 CY of 6" Jaw Run Base Rock as marked and needed. Spread 715 CY of 1 1/2"-0" Crushed Rock as marked and needed. Place 545 CY of 1 1/2"-0" Crushed Bedding/Backfill Rock as marked. Place 375 CY of Class 5 RipRap as marked. Replace 30 culverts as marked. Install 1 culvert and 5 downspouts as marked. Install 44 inlet markers.
4-6-31.2	0.000	0.660	0.660	6		14'	2'	--	--	--	--	ABC	D	--	--	--	ASC	C	--	Renovation. Re-establish ditchline and haul material to designated waste area. Construct 1 ditchout at MP. 0.129 as marked and directed. Rip and obliterate OHV trail between MP. 0.129 - 0.142 as marked and directed. Construct 1 roadside landing/truck turnaround at MP. 0.292 as marked and directed. Construct 2 sediment catch basins with straw bales at MP. 0.407 and 0.484 as marked and directed. Construct 1 truck turnaround at MP. 0.660 as marked and directed. Spread 85 CY of 6" Jaw Run Base Rock as marked. Spread 60 CY of 1 1/2"-0" Crushed Rock as marked. Place 65 CY of 1 1/2"-0" Crushed Bedding/Backfill Rock as marked. Place 10 CY of Class 5 RipRap as marked. Repalce 4 culverts as marked. Install 4 inlet markers.
4-6-31.3	0+00	4+86	4+86	3		14'	0'	--	--	--	--	ABC	D	--	--	--	ASC	C	--	Renovation. Construct a stockpile site at Sta. 1+05 as marked and directed. Construct a truck turnaround at Sta. 1+05 as marked and directed. Construct a ditchout at Sta. 3+39 as marked and directed. Spread 20 CY of 6" Jaw Run Base Rock as marked. Spread 10 CY of 1 1/2"-0" Crushed Rock as marked.



*NOTES

1. Extra subgrade widths
   Add to each shoulder: 1 ft. for fills of 1-6 ft. and 2 ft. for fills over 6 ft. Widen the inside shoulder of curves as follow:
   (See Road Plan Map, Exhibit C)

2. Backslopes

Materials	Cut slopes	Fill slopes
Solid rock	1:4:1	Angle of repose
Soft rock and shale	1/2:1	
Common		
Slopes under 55%	1:1	1-1/2:1
Slopes over 55%	3/4:1	1-1/2:1

   Note:
   Full bench construction is required on side slopes exceeding 60%.

3. Surface type

		Grading	
PRR - Pit run rock		A - 3"	
GRR - Grid rolled rock		B - 2"	(base course)
SRN - Screened rock		C - 3" jaw run	
JRR - Jaw run rock		D - 6" jaw run	
ABC - Aggr. base course		C - 1 1/2" - 0"	
ASC - Aggr. surface course		D - 1"	(surface course)
WC - Wood chips		E - 3/4"	

4. Turnouts
   Width - 10 ft. in addition to subgrade width, or as shown on the plans.
   Located approximately as shown on the plans. Intervisible and not more than 750ft. apart.

5. Surfacing
   Turnouts, curve widening and road approach aprons shall be surfaced.

6. Clearing width
   See Section 200.

7. As posted and painted for Right-of-Way:

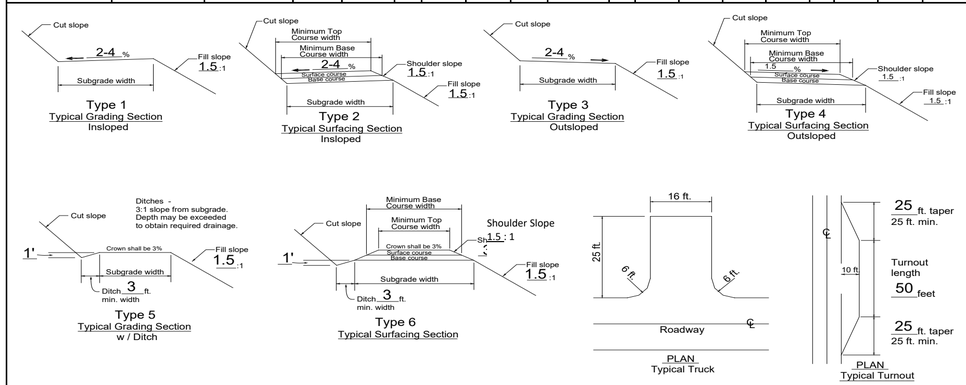
8. Drainage
   See Culvert List

10. Compaction
    See Sections 300 and 400

*Clearing Limits as posted on ground

150: ROAD PLAN AND DETAIL SHEET

Road Number	Start Station or Milepost	End Station or Milepost	Total Length	Typical Cross Section	Min. Curve Radius	ROAD WIDTH		GRADIANT		SURFACING (*5)										Remarks
										BASE COURSE					SURFACE COURSE					
						Subgrade	Ditch	Max. Favorable	Max. Adverse	Min. Width	Comp. Depth	Surface Type (*3)	Grading Size (*3)	Number of Lifts	Min. Width	Comp. Depth	Surface Type (*3)	Grading Size (*3)	Number of Lifts	
4-6-31.4	0+00	3+46	3+46	6		14'	2'	--	--	--	--	ABC	D	--	--	--	ASC	C	--	Renovation. Re-establish ditchline and haul material to designated waste area. Pull material at Sta. 0+96 out of ditchlne and direct flow to culvert. Spread 20 CY of 1 1/2"-0" Crushed Rock as marked. Place 5 CY of Class 5 RipRap as marked. Install 1 inlet marker.
	3+46	8+77	5+31	4		14'	0'	--	--	--	--	--	--	--	--	--	--	--	--	Renovation.
	8+77	24+32	15+55	3		14'	0'	18%	18%	--	--	--	--	--	--	--	--	--	--	New construct. Cut and fill material as needed to achieve desired grade. Construct a truck turnout at Sta. 20+07 as marked and directed. Construct a truck turnaround at Sta. 21+52 as marked and directed. Construct a 50' diameter landing at Sta. 24+32 as marked and directed.
4-6-31.5	0+00	1+03	1+03	5		14'	2'	--	--	--	--	ABC	D	--	--	--	ASC	C	--	Improvement. Establish ditchline and haul material to designated waste area. Spread 40 CY of 6" Jaw Run Base Rock as marked. Spread 25 CY of 1 1/2"-0" Crushed Rock as marked. Place 20 CY of 1 1/2"-0" Crushed Bedding/Backfill Rock as marked. Install 1 culvert as marked.
	1+03	5+72	4+69	3		14'	0'	--	--	--	--	--	--	--	--	--	--	--	--	Renovation. Construct a truck turnout at Sta. 4+00 as marked and directed.
	5+72	13+50	7+78	5		14'	2'	--	--	--	--	ABC	D	--	--	--	ASC	C	--	Renovation. Re-establish ditchline and haul material to designated waste area. Cut and fill material as needed to achieve desired grade. Construct a ditchout at Sta. 6+70 as marked and directed. Spread 30 CY of 6" Jaw Run Base Rock as marked. Spread 20 CY of 1 1/2"-0" Crushed Rock as marked. Place 30 CY of 1/1/2"-0" Crushed Bedding/Backfill Rock as marked. Install 2 culverts as marked. Install 2 inlet markers.
	13+50	15+45	1+95	3		14'	0'	--	--	--	--	--	--	--	--	--	--	--	--	Improvement. Construct a truck turnaround at Sta. 13+50 as marked and directed. Construct a 50' diameter landing at Sta. 15+45 as marked and directed.
4-6-31.6	0+00	0+80	0+80	3		14'	0'	14%	14%	--	--	--	--	--	--	--	--	--	--	New construct. Cut and fill material as needed to achieve desired grade.
	0+80	15+43	14+63	5		14'	2'	18%	18%	--	--	ABC	D	--	--	--	ASC	C	--	New construct. Establish ditchline and haul material to designated waste area. Cut and fill material as needed to achieve desired grade. Excavate material and remove existing through cut at Sta. 0+80. Construct 1 truck turnout at Sta. 8+95 as marked and directed. Construct a sediment catch basin with a straw bale at Sta. 13+95 as marked and directed. Spread 50 CY of 6" Jaw Run Base Rock as marked. Spread 40 CY of 1 1/2"-0" Crushed Rock as marked. Place 50 CY of 1 1/2"-0" Crushed Bedding/Backfill Rock as marked. Place 10 CY of Class 5 RipRap as marked. Install 3 culverts and 1 downspout as marked. Install 3 inlet markers.
	15+43	24+44	9+01	3		14'	0'	14%	14%	--	--	--	--	--	--	--	--	--	--	New construct. Cut and fill material as needed to achieve desired grade. Construct a roadside landing at Sta. 19+60 as marked and directed. Construct a roadside landing/truck turnaround at Sta. 20+94 as marked and directed. Construct a truck turnout at Sta. 23+26 as marked and directed. Construct a 50' diameter landing at Sta. 24+44 as marked and directed.
4-6-31.7	0+00	13+93	13+93	3		14'	0'	16%	16%	--	--	--	--	--	--	--	--	--	--	New construct. Cut and fill material as needed to achieve desired grade. Construct a waste area at Sta. 2+71 as marked and directed. Construct a truck turnaround at Sta. 8+30 as marked and directed. Construct ditchouts as needed and directed. Construct a 50' diameter landing at Sta. 13+93 as marked and directed.
4-6-31.8	0+00	3+94	3+94	5		14'	2'	16%	16%	--	--	ABC	D	--	--	--	ASC	C	--	New construct. Establish ditchline and haul material to designated waste area. Cut and fill material as needed to achieve desired grade. Construct a ditchout at Sta. 0+22 as marked and directed. Spread 20 CY of 6" Jaw Run Base Rock as marked. Spread 10 CY of 11 /2"-0" Crushed Rock as marked.
	3+94	9+60	5+66	3		14'	0'	16%	16%	--	--	--	--	--	--	--	--	--	--	New construct. Cut and fill material as needed to achieve desired grade. Construct a truck turnaround/roadside landing at Sta. 4+45 as marked and directed. Construct a truck turnaround at Sta. 8+00 as marked and directed. Construct a 50' diameter landing at Sta. 9+60 as marked and directed.
4-6-31.9	0+00	3+50	3+50	3		14'	0'	15%	15%	--	--	--	--	--	--	--	--	--	--	New construct. Cut and fill material as needed to achieve desired grade. Construct a 50' diameter landing at Sta. 3+50 as marked and directed.
4-6-31.10	0+00	9+02	9+02	5		14'	2'	16%	16%	--	--	ABC	D	--	--	--	ASC	C	--	New construct. Establish ditchline and haul material to designated waste area. Cut and fill material as needed to achieve desired grade. Construct a ditchout at Sta. 8+50 as marked and directed. Spread 35 CY of 6" Jaw Run Base Rock as marked. Spread 20 CY of 1 1/2"-0" Crushed Rock as marked. Place 15 CY of 1 1/2"-0" Crushed Bedding/Backfill Rock as marked. Install 1 culvert as marked. Install 1 inlet marker.
	9+02	13+50	5+08	3		14'	0'	12%	12%	--	--	--	--	--	--	--	--	--	--	New construct. Cut and fill material as needed to achieve desired grade. Construct a truck turnaround/roadside landing at Sta. 9+62 as marked and directed. Construct a truck turnaround at Sta.11+37 as marked and directed. Construct a 50' diameter landing at Sta. 13+50 as marked and directed.
4-6-31.11	0+00	3+19	3+19	3		14'	0'	10%	10%	--	--	ABC	D	--	--	--	ASC	C	--	New construct. Cut and fill material as needed to achieve desired grade. Construct a 50' diameter landing at Sta. 3+19 as marked and directed. Spread 20 CY of 6" Jaw Run Base Rock as marked. Spread 10 CY of 1 1/2"-0" Crushed Rock as marked.
4-6-32.1	0.000	0.559	0.559	6		16'	2'	--	--	13'	9"	ABC	D	1	--	--	ASC	C	--	Renovation. Re-establish ditchline and haul material to designated waste area. Excavate cut bank at MP. 0.000 to achive desired road width and side slope, haul material to designated waste area. Construct 8 ditchouts at MP. 0.029, 0.154, 0.187, 0.217, 0.272, 0.304, 0.431, and 0.546 as marked and directed. Construct 5 sediment catch basins with straw bales at MP. 0.050, 0.069, 0.272, 0.286, and 0.546 as marked and directed. Remove large log at inlet at MP. 0.060 as directed. Cut and remove 5' of shotgunned outlet on existing CPP at MP. 0.278 as directed. Construct a truck turnout/turnaround/roadside landing at MP. 0.376 as marked and directed. Construct a waste area at MP. 0.488 as marked and directed. Spread a 9" lift of 6" Jaw Run Base Rock (approx. 1,616 CY) as marked. Spread 20 CY of 6" Jaw Run Base as marked. Spread 100 CY of 1 1/2"-0" Crushed Rock as marked. Place 25 CY of 1 1/2"-0" Crushed Bedding/Backfill Rock as marked. Place 70 CY of Class 5 RipRap as marked. Replace 1 culvert as marked. Install 1 culvert as marked. Install 3 inlet markers.



*NOTES

1. Extra subgrade widths
   Add to each shoulder: 1 ft. for fills of 1-6 ft. and 2 ft. for fills over 6 ft. Widen the inside shoulder of curves as follow:
   (See Road Plan Map, Exhibit C)

2. Backslopes

Materials	Cut slopes	Fill slopes
Solid rock	1/4:1	Angle of repose
Soft rock and shale	1/2:1	———
Common		
Slopes under 55%	1:1	1-1/2:1
Slopes over 55%	3/4:1	1-1/2:1

   Note:
   Full bench construction is required on side slopes exceeding 60%.

3. Surface type

	Grading	
PRR - Pit run rock	A - 3"	
GRR - Grid rolled rock	B - 2"	(base course)
SRN - Screened rock	C - 3" jaw run	
JRR - Jaw run rock	D - 6" jaw run	
ABC - Aggr. base course	C - 1 1/2" - 0"	
ASC - Aggr. surface course	D - 1"	(surface course)
WC - Wood chips	E - 3/4"	

4. Turnouts
   Width - 10 ft. in addition to subgrade width, or as shown on the plans.
   Located approximately as shown on the plans. Intervisible and not more than 750ft. apart.

5. Surfacing
   Turnouts, curve widening and road approach aprons shall be surfaced.

6. Clearing width
   See Section 200.

7. As posted and painted for Right-of-Way:

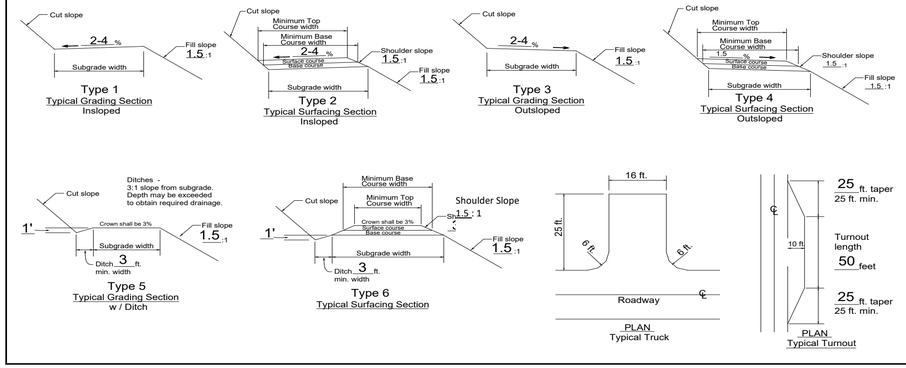
8. Drainage
   See Culvert List

9. Compaction
   See Sections 300 and 400

*Clearing Limits as posted on ground

150: ROAD PLAN AND DETAIL SHEET

Road Number	Start Station or Milepost	End Station or Milepost	Total Length	Typical Cross Section	Min. Curve Radius	ROAD WIDTH		GRADIANT		SURFACING (*5)										Remarks
										BASE COURSE					SURFACE COURSE					
						Subgrade	Ditch	Max. Favorable	Max. Adverse	Min. Width	Comp. Depth	Surface Type (*3)	Grading Size (*3)	Number of Lifts	Min. Width	Comp. Depth	Surface Type (*3)	Grading Size (*3)	Number of Lifts	
4-6-32.4	0.000	0.907	0.907	4		14'	0'	--	--	--	--	ABC	D	--	--	--	ASC	C	--	Renovation. Widen road to the right at MP. 0.000 to improve horizontal alignment. Construct 2 truck turnouts at MP. 0.064, and 0.312 as marked and directed. Construct a ditchout at MP. 0.358 as marked and directed. Construct a truck turnout/waste area at MP. 0.481 as marked and directed. Remove and scatter large root wad at MP. 0.668. Spread 20 CY of 6" Jaw Run Base Rock as marked. Spread 10 CY of 1 1/2"-0" Crushed Rock as marked. **Waterline for the City of Sheridan is buried 3' deep next to road. Purchaser must coordinate with Authorized Officer and City of Sheridan representative prior to work.**
	0.907	1.227	0.320	6		14'	2'	--	--	--	--	ABC	D	--	--	--	ASC	C	--	Renovation. Re-establish ditchline and haul material to designated waste area. Construct 3 ditchouts at MP. 0.961 and 1.167 as marked and directed. Construct a truck turnout at MP. 1.012 as marked and directed. Spread 50 CY of 6" Jaw Run Base Rock as marked. Spread 35 CY of 1 1/2"-0" Crushed Rock as marked. Place 30 CY of 1 1/2"-0" Crushed Bedding/Backfill Rock as marked. Replace 2 culverts as marked. Install 2 inlet markers. **Waterline for the City of Sheridan is buried 3' deep next to road. Purchaser must coordinate with Authorized Officer and City of Sheridan representative prior to work.**
	1.227	1.438	0.211	4		14'	0'	--	--	--	--	--	--	--	--	--	--	--	--	Renovation. Construct a ditchout at MP. 1.322 as marked and directed.
	1.438	1.478	0.040	6		16'	2'	--	--	13'	9"	ABC	D	1	--	--	--	--	--	Improvement. Shift road to the left to change alignment as marked and directed. Establish ditchline and haul material to designated waste area. Cut and fill material as needed to achieve desired grade. Spread a 9" lift of 6" Jaw Run Base Rock (approx. 110 CY) as marked.
	1.478	1.583	0.105	6		16'	2'	--	--	--	--	ABC	D	--	--	--	ASC	C	--	Renovation. Re-establish ditchline and haul material to designated waste area. Excavate and blend material to create smooth transition at MP. 1.478. Construct a truck turnout at MP. 1.528 as marked and directed. Blade and open up existing truck turnaround at MP. 1.583 as directed. Spread 10 CY of 6" Jaw Run Base Rock as marked. Spread 10 CY of 1 1/2"-0" Crushed Rock as marked. Place 10 CY of 1 1/2"-0" Crushed Bedding/Backfill Rock as marked. Install 1 culvert as marked. Install 1 inlet marker.
	1.583	1.825	0.347	6		16'	2'	--	--	13'	9"	ABC	D	1	--	--	ASC	C	--	Renovation. Re-establish ditchline and haul material to designated waste area. Construct 5 ditchouts at MP. 1.618, 1.625, 1.658, 1.705, and 1.783 as marked and directed. Construct a roadside landing/truck turnout at MP. 1.625 as marked and directed. Construct a truck turnaround/turnout at MP. 1.699 as marked and directed. Construct a roadside landing at MP. 1.740 as marked and directed. Spread a 9" lfit of 6" Jaw Run Base Rock (approx. 728 CY) as marked. Spread 20 CY of 6" Jaw Run Base Rock as marked. Spread 10 CY of 1 1/2"-0" Crushed Rock as marked. Place 30 CY of 1 1/2"-0" Crushed Bedding/Backfill Rock as marked. Install 1 culverts as marked.
4-6-32.5	0+00	3+79	3+79	6		16'	2'	13%	13%	13'	9"	ABC	D	1	--	--	ASC	C	--	New construct. Establish ditchline and haul material to designated waste area. Cut and fill material as needed to achieve desired grade. At Sta. 1+56 - 2+09, excavate 1' down on existing ground across entire length, place 240 SY of woven geo-synthetic fabric in excavated parallel with running surface of road (60' long x 35' wide). Place 50 CY of 6" Jaw Run Base Rock on top of woven fabric to create firm base. Then construct a French-drain with Authorized Officer on-site with a 30' x 35' perforated CMP. Wrap 185 CY of 4"-6" Drain Rock with 450 SY of non-woven fabric, also running parallel with running surface (approx. 53' x 35' x 3.5'). Additionally, encase the culvert with 20 CY 1 1/2"-3/4" Drain Rock to buffer around 4"-6" Drain Rock. Use suitable on-site material to backfill over French-drain. Construct a truck turnout at Sta. 3+29. Spread a 9" lift of 6" Jaw Run Base Rock (approx. 207 CY) as marked. Spread 20 CY of 6" Jaw Run Base Rock as marked. Spread 10 CY of 1 1/2"-0" Crushed Rock as marked. Install 1 inlet marker.
4-7-25.0	0.000	0.394	0.394	6		14'	2'	--	--	--	--	ABC	D	--	--	--	ASC	C	--	Renovation. Re-establish ditchline and haul material to designated waste area. Cut and fill as needed to achieve desired grade. Remove existing waterbars at MP. 0.016, 0.111, 0.184, 0.238, 0.309, and 0.333. Construct a truck turnaround at MP. 0.081 as marked and directed. Construct 2 ditchouts at MP 0.114 and 0.132 as marked and directed. Construct 4 sediment catch basins with straw bales at MP. 0.148, 0.157, 0.177, and 0.184 as marked and needed. Transition road grade in and out of lowest elevation point between MP. 0.255 - 0.281 as directed. Construct a waste area at MP. 0.312 as marked and directed. Construct a truck turnaround/roadside landing at MP. 0.323 as marked and directed. Excavate cutbank material at MP. 0.346 and haul material to designated waste area. Repair road failure and excavate material to achieve deisred alignment and grade at MP. 0.356 - 0.368 as directed. Spread 80 CY of 6" Jaw Run Base Rock as marked. Spread 105 CY of 1 1/2"-0" Crushed Rock as marked. Place 95 CY of 1 1/2"-0" Crushed Bedding/Backfill Rock as marked. Place 60 CY of Class 5 RipRap as marked. Replace 4 culverts as marked. Install 5 inlet markers.
4-7-25.1	0.000	0.032	0.032	6		14'	2'	--	--	--	--	--	--	--	--	--	ASC	C	--	Renovation. Re-establish ditchline and haul material to designated waste area. Construct a truck turnaround at MP. 0.014 as marked and directed. Construct 2 rolling dips across road to relieve ditchline at MP. 0.014 and 0.032 as directed. Spread 30 CY of 1 1/2"-0" Crushed Rock as marked.
4-7-25.2	0+00	5+42	5+42	3		14'	0'	12%	12%	--	--	ABC	D	--	--	--	ASC	C	--	New construct. Cut and fill material as needed to achieve desired grade. Heavy excavation required at Sta. 0+00 - 1+28, excavate down and create smooth transisiton at junction. Construct a truck turnaround/roadside landing at Sta. 3+40 as marked and directed. Construct a 50' diameter landing at Sta. 5+42 as marked and directed. Spread 20 CY of 6" Jaw Run Base Rock as marked. Spread 10 CY of 1 1/2"-0" Crushed Rock as marked.
4-7-25.3	0+00	2+70	2+70	3		14'	0'	14%	14%	--	--	ABC	D	--	--	--	ASC	C	--	New construct. Cut and fill material as needed to achieve desired grade. Construct a truck turnout/roadside landing at Sta. 2+70 as marked and directed. Spread 20 CY of 6" Jaw Run Base Rock as marked. Spread 10 CY of 1 1/2"-0" Crushed Rock as marked.
4-7-25.4	0+00	10+10	10+10	3		14'	0'	14%	14%	--	--	ABC	D	--	--	--	ASC	C	--	New construct. Cut and fill material as needed to achieve desired grade. Excavate into cutbank to create smooth transition at junction. Construct a truck turnout/roadside landing at Sta. 2+90 as marked and directed. Construct a truck turnout/turnaround at Sta. 7+08 as marked and directed. Construct a 50' diameter landing at Sta. 10+10 as marked and directed. Spread 20 CY of 6" Jaw Run Base Rock as marked. Spread 10 CY of 1 1/2"-0" Crushed Rock as marked.
4-7-25.5	0+00	6+80	6+80	3		14'	0'	15%	15%	--	--	ABC	D	--	--	--	ASC	C	--	New construct. Cut and fill material as needed to achieve desired grade. Excavate into cutbank to create smooth transition at junction. Construct a roadside landing/turnaround at Sta. 6+50 as marked and directed. Construct a 50' diameter landing at Sta. 6+80 as marked and directed. Spread 20 CY of 6" Jaw Run Base Rock as marked. Spread 10 CY of 1 1/2"-0" Crushed Rock as marked.
4-7-25.6	0+00	7+70	7+70	3		14'	0'	16%	16%	--	--	--	--	--	--	--	--	--	--	New construct. Cut and fill material as needed to achieve desired grade. Construct a turck turnaround/turnout/roadside landing at Sta. 4+65 as marked and directed. Construct a 50' diameter landing at Sta. 7+70 as marked and directed.
4-7-25.7	0+00	4+46	4+46	3		14'	0'	18%	18%	--	--	ABC	D	--	--	--	ASC	C	--	New construct. Cut and fill material as needed to achieve desired grade. Construct a 50' diameter landing at Sta. 4+46 as marked and directed. Spread 20 CY of 6" Jaw Run Base Rock as marked. Spread 10 CY of 1 1/2"-0" Crushed Rock as marked.
4-7-36.1	0+00	10+05	10+05	3		14'	0'	10%	10%	--	--	--	--	--	--	--	--	--	--	New construct. Cut and fill material as needed to achieve desired grade. Construct a roadside landing/turnout at Sta. 2+57 as marked and directed. Construct a truck turnaround at Sta.5+80 as marked and directed. Construct a 50' diameter landng at Sta. 10+05 as marked and directed.



*NOTES

1. Extra subgrade widths
   Add to each shoulder: 1 ft. for fills of 1-6 ft. and 2 ft. for fills over 6 ft. Widen the inside shoulder of curves as follow:
   (See Road Plan Map, Exhibit C)

2. Backslopes

Materials	Cut slopes	Fill slopes
Solid rock	1/4:1	Angle of repose
Soft rock and shale	1/2:1	
Common		
Slopes under 55%	1:1	1-1/2:1
Slopes over 55%	3/4:1	1-1/2:1

   Note:
   Full bench construction is required on side slopes exceeding 60%.

3. Surface type
   PRR - Pit run rock
   GRR - Grid rolled rock
   SRN - Screened rock
   JRR - Jaw run rock
   ABC - Aggr. base course
   ASC - Aggr. surface course
   WC - Wood chips

   Grading
   A - 3" (base course)
   B - 2"
   C - 3" jaw run
   D - 6" jaw run
   C - 1 1/2" - 0" (surface course)
   D - 1"
   E - 3/4"

4. Turnouts
   Width - 10 ft. in addition to subgrade width, or as shown on the plans.
   Located approximately as shown on the plans. Intervisible and not more than 750 ft. apart.

5. Surfacing
   Turnouts, curve widening and road approach aprons shall be surfaced.

6. Clearing width
   See Section 200.

7. As posted and painted for Right-of-Way:

8. Drainage
   See Culvert List

9. Compaction
   See Sections 300 and 400

*Clearing Limits as posted on ground

CLEARING AND GRUBBING - 200

201 - This work shall consist of clearing, grubbing, removing and disposing of vegetation, debris, surface objects, and protruding obstructions within the clearing limits in accordance with these specifications and conforming to the lines, grades, dimensions and typical cross sections shown on the plans and as marked on the ground.

201a - This work shall consist of clearing, grubbing, removing and disposing of vegetation, debris, surface objects, and protruding obstructions from borrow pits, quarries, channel changes, stockpile sites, etc., in accordance with these specifications and as staked on the ground.

202 - Where clearing limits have not been staked, established by these specifications or shown on the plans, the limits shall extend ten (10) feet back of the top of the cut slope and five (5) feet out from the toe of the fill slope.

202b - Where clearing limits for channel changes and waste areas have not been staked or shown on the plans, the limits shall extend ten (10) feet back of the top of the cut slope and five (5) feet outside of the outside slope lines.

203 - Clearing shall consist of the removal and disposal of trees, logs, rotten material, brush, and other vegetative materials and surface objects in accordance with these specifications and within the limits established for clearing as specified under Subsections 202 and 202b, as shown on the plans, and as marked on the ground.

203b - Standing trees and snags to be cleared shall be felled within the limits established for clearing, unless otherwise authorized. Felled snags shall be left as down woody debris outside of the clearing limits.

203c - Disposal of logs from private timber cleared within the limits established shall consist of decking at a location designated by the Authorized Officer.

204 - Grubbing shall consist of the removal and disposal of stumps, roots, and other wood material embedded in the ground and protruding obstacles remaining as a result of the clearing operation. Undisturbed stumps, roots and other solid objects which will be a minimum of four (4) feet below subgrades or slope surfaces or embankments are excluded.

204a - Stumps, including those overhanging cut banks, shall be removed within the required excavation limits.

205 - Clearing and grubbing debris shall not be placed or permitted to remain in or under road embankment sections.

206a - Notwithstanding Subsections 204 and 205, clearing and grubbing debris resulting from landing construction, waste area construction, turnaround construction, or log fill replacement shall be placed at disposal sites and shall not be covered with excavated material. Location of disposal sites will be determined by the Authorized Officer.

210 - Disposal of clearing and grubbing debris, stumps and cull logs shall be by scattering over government owned lands outside of established clearing limits in a manner acceptable to the Authorized Officer. The areas for such scattering shall have the prior approval of the Authorized Officer.

210a - Disposal of clearing and grubbing debris, stumps, and cull logs on non-government property shall be by scattering over non-government owned lands outside of established clearing limits in a manner acceptable to the Authorized Officer.

212 - No grading will be permitted prior to completion and approval by the Authorized Officer of the required clearing and grubbing work, except that stump grubbing may proceed with the excavation of the road prism.

213 - No clearing or grubbing debris shall be left lodged against standing trees.

EXCAVATION AND EMBANKMENT - 300

301 - This work shall consist of excavating, overhaul, placement of embankments, backfilling, borrowing, leveling, ditching, grading, outsloping, crowning and scarification of the subgrade, compaction, disposal of excess and unsuitable and slide materials, and other earth-moving work in accordance with these specifications and conforming to the lines, grades, dimensions, and typical cross sections shown on the plans.

302 - Excavation shall also consist of the excavation of road and landing cut sections, borrow sites, backfilling, leveling, ditching, grading, compaction, and other earth moving work necessary for the construction of the roadway in accordance with these specifications and conforming to the lines, grades, dimensions, and typical cross sections shown on the plans and as marked on the ground.

303 - Suitable material removed from the excavation shall be used in the formation of embankment subgrade, shoulders, slopes, bedding, backfill for structures, and for other purposes as shown on the plans.

304 - Borrow shall consist of suitable material required for the construction of embankments or for other portions of the work; such material shall be obtained from sources selected by the Purchaser at his option and approved by the Authorized Officer.

305 - Embankment construction shall consist of the placement of excavated and borrowed materials, backfilling, leveling, grading, compaction, and other earth-moving work necessary for the construction of the roadway and landings in accordance with these specifications and conforming to the lines, grades, dimensions, and typical cross sections shown on the plans and as marked on the ground.

305a - Material used in the construction of embankment sections shall be free of stumps, cull logs, brush, muck, sod, roots, frozen material, and other deleterious materials and shall be placed and compacted as specified.

305b - Embankment materials shall be placed in successive parallel layers on areas cleared of stumps, cull logs, brush, sod, and other vegetative and deleterious materials, except as provided under Subsection 204. Roadway embankments of earth material shall be placed in horizontal layers not exceeding eight (8) inches in depth.

305d - Where embankments are constructed predominantly of blasted rock material, depth of layers shall not exceed (4) feet. Rock fragments having dimensions greater than 4 feet will be permitted provided that they have no dimensions greater than (6) feet and that clearance between adjacent fragments is adequate for the placing and compacting of material in horizontal layers as specified, and that no part of the larger fragments comes within (4) feet of subgrade.

306 - Layers of embankment and selected borrow, as specified under Subsections 305a, 305b, and 317 shall be moistened or dried to a uniform optimum moisture content suitable for maximum density and compacted to full width with compacting equipment conforming to requirements of Subsections 103b, 103g, or 103i. Final Subgrades shall be moistened or dried to a uniform optimum moisture content suitable for maximum density and compacted to full width with compacting equipment conforming to requirements of Subsections 103f or 103i and approved by the Authorized Officer.

306a - Minimum compaction for each layer of embankment, selected borrow, and selected roadway excavation material placed at optimum moisture shall have a minimum compaction of six (6) passes over each full-width layer, or fraction thereof.

308 - In the case of rock fills, placement of material in layers is not required and such material may be placed by end-dumping or other methods approved by the Authorized Officer provided that the rock be reasonably prevented from escaping beyond the embankment toe.

311 - In solid rock cuts where pockets that will not drain are formed by blasting below the subgrade elevation, drainage shall be provided by ditching to the edge of the subgrade and backfilling to grade and compacting the pockets and the ditch with rock fragments, gravel, or other suitable porous material.

313 - In cut areas where solid rock is encountered at, or near subgrade, the rock shall be excavated to a minimum depth of six (6) inches below subgrade elevation and the excavated area backfilled with suitable material. The backfill material shall be processed to the optimum moisture content suitable for maximum density and compacted to full width in accordance with the requirements of Subsection 306.

314 - When heavy clays, muck, clay shale, or other deleterious material for forming the roadbed is encountered in cuts at subgrade, it shall be excavated to a minimum depth of two (2) feet below the subgrade elevation and the excavated area backfilled with a selected borrow material approved by the Authorized Officer. The backfill material shall be uniformly moistened

or dried to the optimum moisture content suitable for maximum density in accordance with the requirements of Subsection 306. Unsuitable material shall be disposed of as directed by the Authorized Officer.

315 - Borrow material required for the construction of embankment or for other portions of the work shall be obtained from sources adjacent to the roadway.

316 - Borrow material from sources selected at the Purchaser's option shall be inspected and approved in writing by the Authorized Officer prior to placement.

317 - Selected borrow shall consist of talus material, finely broken rock, gravel, or other material of granular or favorable characteristics from sources shown on the plans.

320 - Ditches shall conform to the slope, grade, dimensions, and shape of the required cross section shown on the plans. Roots, stumps, rocks, and other projections shall be removed to form smooth, even slopes.

321 - Excess excavated, unsuitable, or slide materials shall not be disposed of on areas where the material will encroach on a stream course or other body of water. Such materials shall be disposed of in accordance with Subsection 321c. Materials not disposed of in this manner shall be retrieved and disposed of at the Purchaser’s expense and at the direction of the Authorized Officer.

321c - End-dumping will be permitted for the placement of excess materials under Subsection 321 in designated disposal areas or within areas approved by the Authorized Officer. Watering, rolling, and placement in layers are not required. Materials placed shall be sloped, shaped, and otherwise brought to a visible condition acceptable to the Authorized Officer.

322 - When so indicated on the plans, selected coarse rock encountered in the excavation shall be conserved for slope protection or special rock embankment purposes and placed in accordance with the requirements and details of Section 1400 of these specifications and as shown on the plans.

323 - In the construction of channel changes and stream-crossing embankment sections, natural stream flow shall be maintained unless otherwise provided.

324 - Excavated material shall not be allowed to cover boles of standing trees to a depth in excess of a half (1/2) feet on the uphill side.

327 - The finished grading shall be approved by the Authorized Officer in segments or for the total project. The Purchaser shall give the Authorized Officer three (3) days’ notice prior to final inspection of the grading operations.

328 - The Purchaser shall adopt methods and procedures in using explosives, which will prevent damage to adjacent landscape features, and which will minimize scattering rocks and other debris outside the road prism.

328a - The Purchaser shall establish and be responsible for blasting techniques and shall furnish the Authorized Officer, prior to starting drilling operations, a blasting plan specifying drill-hole diameter, drill-hole spacing, depth of drilling, type of explosive to be used, loading pattern, sequence of firing, the location where the plan is to be used, and other relevant data. Acceptance of the drilling and blasting plan does not relieve the Purchaser of responsibility or liability for the results of the blasting.

PIPE CULVERTS - 400

401 - This work shall consist of furnishing and installing pipe culverts, downspouts, and other erosion control devices in accordance with these specifications and conforming to the lines, grades, dimensions, and typical cross sections shown on the plans. Individual lengths and locations are approximate; final lengths and locations will be determined by the Authorized Officer upon completion of the roadbed and upon installation of the appurtenance structures. Additional pipe and erosion control devices may be required at the option of the Authorized Officer, in which case a reduction in the total purchase price shall be made to offset the cost of furnishing and installing such items. Costs will be based upon the unit prices set forth in the current BLM Timber Appraisal Production Cost Schedule.

403 - Grade culverts shall have a gradient from two (2) percent to four (4) percent greater than the adjacent road grade. Grade culverts shall be skewed down grade thirty (30) degrees as measured from the perpendicular to the centerline unless otherwise specified on the plans.

404 - Damage to the spelter, or burn back in excess of three-eighths (3/8) inch, shall be wire brushed and painted with two coats of zinc-rich paint on zinc-coated steel pipe.

405a - Corrugated-(aluminized) steel-welded pipe culverts and pipe-arch culverts and special sections shall conform to the requirements of AASHTO M 36 and AASHTO M 218, AASHTO M 274, or AASHTO M 289 as specified on the plans.

405e - Corrugated-polyethylene pipe for culverts 18-inch through 24-inch diameter shall meet the requirements of AASHTO M 294, Type S.

Corrugated-polyethylene pipe for culverts to be used for downspouts 18-inch through 24-inch diameter shall meet the requirements of AASHTO M 294, Type C.

Installation will be subject to the same specification as other pipe materials.

406 - Coupling bands shall conform to the requirements of AASHTO M 36 and AASHTO M 274 with the exception of band widths and the "Hugger"-type band which shall conform to the details, dimensions, and typical diagram shown on the plans.

406a - "Hugger"-type coupling bands shall only be used with annular corrugated pipe and pipe-arch culverts, or helically corrugated pipe and pipe-arch culverts having annular reformed ends. Annular reformed ends shall consist of two annular corrugations.

406e - Neoprene gaskets shall be used to join aluminum pipe culverts.

408 - Pipe culverts shall be placed on the bed starting at the downstream end with the inside circumferential laps pointing downstream and with the longitudinal laps at the side or quarter points. Coupling bands of the type required under these specifications shall be installed so as to provide the circumferential and longitudinal strength necessary to preserve the pipe alignment, prevent separation of the pipe sections, and minimize infiltration of fill material.

409 - Structural-plate pipe culverts and pipe-arch culverts shall be installed in accordance with the plans and detailed erection instructions furnished by the manufacturer. One copy of the erection instructions shall be submitted to the Authorized Officer (3) days prior to erection.

410 - Pipe shall be unloaded and handled with reasonable care. If the Authorized Officer determines any structure is damaged to the extent that it is unsuitable for use in the road construction, it shall be replaced at the Purchaser's expense.

411 - Trenches necessary for the installation of pipe culverts shall conform to the lines, grades, dimensions, and typical diagram included in the plans and the Culvert Installation Detail Sheet.

412 - Where ledge rock, boulders, soft, or spongy soils are encountered, they shall be excavated a minimum of twenty-four (24) inches below the invert grade for a width of at least one (1) pipe diameter or span on each side of the pipe and shall be backfilled with selected granular or fine readily compactable soil material or crushed rock material.

413 - All pipe culverts shall be bedded on a 1-1/2”-0” crushed rock material in accordance with Section 1200 gradation. Bedding shall have a depth of not less than six (6) inches as shown on plans. Foundation material shall be of uniform density throughout the length of the structure and shall be shaped to fit the pipe.

414a - The invert grade of the bedding shall be cambered at the middle ordinate a minimum of 1 percent of the total length of the drainage structure. Camber shall be developed on a parabolic curve.

415 - Inspection of pipe culverts having a diameter of (30) inches and pipe-arch culverts having a height of (40) inches or a cross sectional area of (13) or larger shall be made before backfill is placed. Culverts found to be out of alignment or damaged shall be replaced, reinstalled or repaired as directed by the Authorized Officer at the Purchaser's expense.

416 - Side-fill material for pipe culverts shall be placed within one (1) pipe diameter, or a minimum of one (1) foot, of the sides of the pipe barrel, and to a half (1/2) pipe diameter on round pipes with granular material (or 1-1/2"-0" crushed rock material in accordance with Section 1200 gradation if crushed bedding/backfill is required in the rock sheets and Section 413).

The remaining fill material shall be of fine, readily compactable soil and be free of excess moisture, muck, frozen material, roots, sod, or other deleterious or caustic material and devoid of rocks or stones of sizes which may impinge upon and damage the pipe or otherwise interfere with proper compaction.

419 - The pipe culverts, after being bedded and backfilled as required by these specifications, shall be protected by an 18" cover of fill before heavy equipment is permitted to cross the drainage structures.

421 - Trenches and bedding rock necessary for the installation of perforated pipe shall conform to the lines, grades, dimensions and typical diagram as shown on the plans.

423 - Construction of catch basins conforming to lines, grades, dimensions and typical diagrams shown on the plans, shall be required for grade culverts.

424 - Construction of splash pads and energy dissipaters conforming to lines, grades, dimensions and typical diagram shown on the plans, shall be required for grade culverts and culverts as listed on the culvert sheet.

426 - Culvert markers consisting of six (6) foot steel fence posts painted blue shall be furnished, fabricated, and installed by the Purchaser at the inlet of all culverts (installed and existing) as marked. Marker shall be installed within six (6) inches of upslope side of culvert inlet.

427 - The Purchaser shall record culvert sizes, lengths and location actually installed on a copy of the culvert list. This culvert list shall be furnished to the Authorized Officer.

428 - The Purchaser shall remove and dispose of old culverts (removed in the construction phase) in a legal manner, off of Government property, and pay any fees required. The Purchaser shall remove the old culverts from the work site prior to road acceptance.

429 - Keep the excavation site dewatered so that the installation of culverts is completed under dry conditions. Dispose of excess water by using pumping or natural drainage ways near the site in a manner that will avoid damage to adjacent property. Provide for downstream waterflow with no more than ten (10) percent increase in natural stream turbidity due to transport of excavated material or sediment during construction. Diversion streams shall not be returned to the natural channel until all in-stream work has been completed.

430 - During culvert installations or replacement activities, all stream flow shall be diverted around the culvert work occurring in live streams, as to maintain downstream flows and

minimize turbidity. Woody material removed from stream channels during culvert work shall be placed in the stream channel downstream of the culvert.

RENOVATION AND IMPROVEMENT OF EXISTING ROADS - 500

501 - This work shall consist of reconditioning and preparing the roadbed and shoulders, minor excavation and/or embankment, cleaning and shaping drainage ditches, trimming vegetation from cut and embankment slopes, and cleaning and repairing drainage structures of existing roads in accordance with these specifications, as shown on the plans, and as marked on the ground.

501a - This work shall include the removal and disposal of slides in accordance with these specifications and as marked on the ground.

502 - The existing road surface shall be bladed and shaped to the lines, grades, dimensions, and typical cross sections shown on the plans.

502b - Drainage ditches shall be bladed and shaped in accordance with the lines, grades, dimensions, and typical cross sections shown on the plans.

503a - Material from the ditchline reestablishment excavation shall be hauled to designated disposal sites or at locations directed by the Authorized Officer.

504 - Existing road surface shall be uniformly moistened or dried to the optimum moisture content suitable for maximum density and compacted to full width with equipment conforming to requirements of Subsections 103f and 103i.

504a - Minimum compaction required shall be six (6) passes over each full-width layer, or fraction thereof, as measured along the centerline per layer of material.

506 - The inlet end of all existing drainage structures shall be cleared of vegetative debris and boulders that are of sufficient size to obstruct normal flow. Pipe inverts shall be cleared of sediment and other debris lodged in the barrel of the pipe. The outflow area of pipe structures shall be cleared of rock and vegetative obstructions which will impede the structure's designed outflow configuration. Catch basins shall conform to the lines, grade, dimensions, and typical diagram shown on the plans.

508 - Vegetation encroaching on the roadbed and the drainage ditches of existing roads shall be removed by cutting and disposed of in accordance with Subsection 2100 of these specifications.

509 - The finished grading and compacting shall be approved by the Authorized Officer. The Purchaser shall give the Authorized Officer three (3) days' notice prior to final inspection of the grading operations.

WATERING - 600

601 - This work shall consist of furnishing and applying water required for the compaction of embankments, roadbeds, backfills, base courses, surface courses, finishing and reconditioning of existing roadbeds, laying dust, or for other uses in accordance with these specifications.

602 - Water, when needed for compaction or laying dust, shall be applied at the locations, in the amounts, and during the hours as directed by the Authorized Officer. Amounts of water to be provided will be the minimum needed to properly execute the compaction requirements in conformance with these specifications.

603 - Water trucks used in this work shall be equipped with a distributing device of ample capacity and of such design as to ensure uniform application of water on the roadbed.

604 - Water required under these specifications shall be obtained at the times and at the locations indicated below:

	Willamette Meridian			Dates Available	
Common Name	Section	T	R	From	To
1400 RD Pump Chance	21	4S	7W	TBD	TBD

Use of water sources are subject to applicable State water regulations. If the required water is not available at the locations specified, water shall be obtained from a source approved by the Authorized Officer as permitted by Oregon Water Resources. A reduction shall be made in the total purchase price to reflect additional hauling distance based on rental rates from current BLM Timber Appraisal Cost Schedules. It is estimated that approximately three hundred seventy-five thousand (375,000) gallons will be required for processing rock.

605 - The Purchaser shall secure the necessary water permits and pay all required water fees for use of the water sources specified under Subsection 604 for use of water sources approved by the Authorized Officer. Purchaser shall notify the Bureau of Land Management when an agreement has been met and shall provide a copy of the documentation.

AGGREGATE BASE COURSE - 700
PIT-RUN ROCK MATERIAL

701 - This work shall consist of furnishing, hauling, and placing one or more layers of pit-run rock material on roadbeds and as backfill material approved for placing pit-run materials in accordance with these specifications and conforming to the dimensions and typical cross sections shown on the plans.

702 - Pit-run rock materials used in this work shall be obtained from the source shown on the plans or sources approved by the Authorized Officer. Development and mining of such source shall be in accordance with section 1600 of these specifications.

702a - Pitrun rock materials used in this work may be obtained from sources selected by the Purchaser at his option, providing the materials furnished comply with these specifications.

703 - Pit-run rock materials shall consist of talus rock, partly decomposed granite or basalt, or other approved materials. The materials shall be reasonably free from vegetative matter or other deleterious material. The material obtained from the sources identified under Section 1600 shall consist of the best material available from these sources as designated by the Authorized Officer.

704 - Pit-run rock material shall consist of native materials of such a size and grading that it can be taken directly from the source and placed on the road without crushing or screening.

705 - Pit-run rock material shall be placed in layers of sufficient thickness to accommodate the material as directed by Authorized Officer.

706 - Oversize material that cannot be accommodated in the layer shall be removed at the source or on the road and shall be disposed of as directed by the Authorized Officer.

707 - When so indicated by the plans, filler or binder obtained from the chosen sources shall be uniformly blended with pit-run rock material on the road.

708 - The Ditchline as shaped under sections 150, 300, and 500 of these specifications shall be approved by the Authorized Officer prior to placement of pit-run rock material. Notification for final inspection of base rock shall be three (3) days prior to the spreading of crushed cap rock.

709 - Pit-run rock material shall be placed on Ditchline blade processed and spread to required dimensions.

AGGREGATE BASE COURSE - 1000
CRUSHED ROCK MATERIAL

1001 - This work shall consist of furnishing, hauling, and placing one or more layers of crushed rock material on roadbeds and culvert bedding approved for placing crushed rock material, in accordance with these specifications and conforming to the dimensions and typical cross sections shown on the plans.

Material not conforming to these specifications will be rejected and shall be removed from the road or stockpile at the purchaser's expense.

1002a - Crushed rock materials shall be obtained from a commercial source selected by the Purchaser at his option providing that the rock materials selected comply with the specifications in this section.

1003 - Crushed rock material produced from gravel shall have two (2) manufactured fractured faces on sixty-five (65) percent, by weight, of the material retained on the No. 4 sieve. If necessary to meet the above requirements or to eliminate an excess of filler, the gravel shall be screened before crushing.

1004 - Crushed rock material shall consist of hard durable rock fragments conforming to the following gradation requirements:

TABLE 1004
AGGREGATE BASE COURSE
CRUSHED ROCK MATERIAL
Percentage by weight passing square mesh sieves
AASHTO T 11 & T 27

GRADATION

Sieve Designation	D	A
6-inch	95	100
4-inch	-	10 Max
3-inch	45-65	-
1-1/2-inch	-	-
1-inch	-	-
¾-inch	-	-
No. 4	10 Max	-
No. 10	-	-
No. 40	-	-

When requested by the Authorized Officer, the Purchaser shall follow the sampling and testing procedures as described in sections 1004a and provide results to the Authorized Officer.

1004a - The Purchaser shall be required to take one sample of each 2,000 cubic yards of crushed rock material produced, using approved AASHTO sampling procedures. The Purchaser shall submit samples to a certified lab or shall perform testing for gradation requirements using AASHTO T 11 and AASHTO T 27 testing procedures and perform testing for sand equivalency requirements using AASHTO T 176 testing procedures. Prior to testing, each sample shall be split as requested by the Authorized Officer, making one-half of the sample with proper identification available for testing by the Authorized Officer. Each sample and the results of Purchaser testing shall be made available to the Authorized Officer within twenty-four (24) hours of receiving sampling results. The Purchaser shall provide test results for the first five hundred (500) cubic yards produced prior to commencing production crushing and hauling.

1005 - Crushed rock material shall not exceed thirty-five (35) percent loss as determined by AASHTO T 96.

1006 - Crushed rock material shall show a durability value of not less than thirty-five (35) as determined by AASHTO T210.

1007 - That portion of crushed rock material passing the No. 40 sieve, including blending filler, shall have a liquid limit of not more than thirty (35) and a plasticity index of not less than four (4) and not more than twelve (12) as determined by AASHTO T 89 and AASHTO T 90.

1008 - If additional binder or filler material is necessary to meet the grading or plasticity requirements or for satisfactory bonding of the material, it shall be uniformly blended with the crushed rock material at the crushing and screening plant prior to placing on the road, unless otherwise agreed. The material for such purposes shall be obtained from sources approved by the Authorized Officer and shall be free from stones, vegetative matter, and other deleterious materials.

1009 - Shaping and compacting of roadbed shall be completed and approved prior to placing crushed rock material, in accordance to the requirements of Subsections 300, 400, and 500. Notification for final inspection of base rock shall be three (3) days prior to the spreading of crushed cap rock.

1010 - Crushed rock material conforming to the requirements of these specifications shall be placed on the approved roadbed, turnarounds, and landings in accordance with these specifications and conforming to the lines, grades, dimensions, and typical cross sections shown on the plans and marked on the ground. Compacted layers shall not exceed nine (9) inches in depth. Irregularities or depressions that develop during compaction of the top layer shall be corrected by loosening the material at these places and then adding or removing crushed rock material until the surface is smooth and uniform.

1010a - Crushed rock material used to repair or reinforce soft, muddy, frozen, yielding, or rutted roadbed shall not be construed as surfacing required by this specification unless approved by the Authorized Officer in advance.

1012 - Each layer of crushed rock material placed, processed, and shaped as specified shall be moistened or dried to a uniform moisture content suitable for maximum compaction, determined by Authorized Officer, and compacted to full width by compacting equipment conforming to the requirements of Subsections 103f and 103i . Minimum compaction shall be six (6) passes over each full-width layer, or fraction thereof.

1016 - The Purchaser shall place in stockpile 9,552 cubic yards truck measure of Gradation D crushed rock material at sites, A, shown on the plans. The Purchaser shall place in stockpile 185 cubic yards truck measure of Gradation A crushed rock material at sites, A, shown on the plans. Such material shall be used as shown on the plans and as directed by the Authorized Officer. All crushed rock material so stockpiled shall be placed on the designated roads prior to termination of the timber sale contract.

1017 - Prior to stockpiling Subsection 1004 Gradation D and A crushed rock material, the stockpile site shall be prepared by clearing and disposing of all trees, stumps, brush, and other debris in accordance with Section 200. The floor of each stockpile site shall be graded to a level and uniform cross section. A minimum of 9,737 cubic yards, stockpile measure, shall be placed amongst the following stockpile sites:

Stockpile No.	Willamette Meridian			Approx. Cu. Yds.	Road No.
	Sec.	T.	R.		
A	31	4	6	--	4-6-31.3

1018 - The equipment and methods used for stockpiling crushed rock material and for removing material from the stockpiles shall be such that minimum degradation or segregation of the material will result and that minimal amounts of foreign material will be incorporated into the crushed base material. There will be no intermingling of stockpiled materials.

1020 - Crushed rock material required under Section 1000 of these specifications shall first be placed in stockpile after crushing. The Purchaser shall notify the Authorized Officer a minimum of (3) days in advance of the date he intends to commence the crushing and stock-piling operation so that progressive test samples can be taken as the crushed rock material is produced. Sample material shall remain in separate stockpiles (2000 CY maximum) until such time the Authorized Officer receives test results which indicate compliance with Subsections 1003, 1004, 1004a, 1005, 1006, 1007, and 1008. Crushed rock material so tested shall be

approved in writing by the Authorized Officer within (6) days from receiving sampling results date. Approved material may then be removed from temporary stockpile for placement on the designated roads or combined in designated base stockpile. In no event shall the Purchaser place crushed rock materials on the road from sources other than the tested and approved stockpiles. Noncompliance with the requirements of this subsection shall constitute grounds for the rejection of crushed rock materials furnished under this contract.

AGGREGATE SURFACE COURSE – 1200
CRUSHED ROCK MATERIAL

1201 - This work shall consist of furnishing, hauling, and placing one (1) or more layers of crushed rock material on roadbeds, base courses, and culvert bedding approved for placing crushed rock material in accordance with these specifications and conforming to the dimensions and typical cross sections shown on the plans. Material not conforming to these specifications will be rejected, and shall be removed from the road or stockpile at the purchaser's expense.

1202a - Crushed rock materials used in this work shall be obtained from commercial source selected by the Purchaser at his option providing that the rock materials selected comply with the specifications in this section.

1203 - When crushed rock material is produced from gravel, not less than seventy-five (75) percent by weight of the particles retained on the No. 4 sieve will have 4 manufactured fractured faces. If necessary to meet the above requirements or to eliminate an excess of filler, the gravel shall be screened before crushing.

1204 - Crushed rock material shall consist of hard durable rock fragments conforming to the following gradation requirements:

TABLE 1204
AGGREGATE SURFACE COURSE
CRUSHED ROCK MATERIAL
Percentage by weight passing square mesh sieves
AASHTO T 11 & T 27
GRADATION

Sieve Designation	C	E
1-1/2-inch	95	95
1-inch	-	-
3/4-inch	60-90	0-5
1/2-inch	-	-
No. 4	30-55	-
No. 8	22-43	-
No. 30	11-27	-
No. 40	-	-
No. 200	3-15	-

When requested by the Authorized Officer, the Purchaser shall follow the sampling and testing procedures as described in sections 1204a and provide results to the Authorized Officer.

1204a - The Purchaser shall be required to take one sample for each 1,000 cubic yards of crushed rock material to be utilized using AASHTO sampling procedures. The Purchaser shall submit samples to a certified lab or perform testing for gradation requirements using AASHTO T 11 and AASHTO T 27 testing procedures and also perform testing for sand equivalency requirements using AASHTO T 176 testing procedures. Prior to testing, each sample shall be split as requested by Authorized Officer, making one half of the sample, with proper identification, available for testing by the Authorized Officer. Each sample and the results of Purchaser testing shall be made available to the Authorized Officer within 24 hours of receiving sampling results. The Purchaser shall provide test results for the first (500) cubic yards produced prior to commencing production crushing and hauling.

1205 - Crushed rock material retained on the No. 4 sieve shall have a percentage of loss of not more than thirty-five (35) at five hundred (500) revolutions, as determined by AASHTO T 96.

1206 - Crushed rock material shall show a durability value of not less than thirty-five (35) as determined by AASHTO T210.

1207 - That portion of crushed rock material passing the No. 40 sieve, including blending filler, shall have a liquid limit of not more than thirty-five (35) and a plasticity index of not less than four (4) and not more than twelve (12) as determined by AASHTO T 89 and AASHTO T 90.

1208 - If additional binder or filler material is necessary to meet the grading or plasticity requirements or for satisfactory bonding of the material, it shall be uniformly blended with the crushed rock material at the crushing and screening plant prior to placing on the road, unless otherwise agreed. The material for such purposes shall be obtained from sources approved by the Authorized Officer and shall be free from stones, vegetative matter, and other deleterious materials.

1209 - Shaping and compacting of roadbed, base course, or culvert trench shall be completed and approved prior to placing crushed rock material, in accordance to the requirements of Subsections 300, 400, 500, and 700. Notification for final inspection of base rock shall be three (3) days prior to the spreading of crushed cap rock.

1210 - Crushed rock material conforming to the requirements of these specifications shall be placed on the approved roadbed, landings, base course and culvert trench in accordance with these specifications and conforming to the lines, grades, dimensions, and typical cross sections shown on the plans and marked on the ground. Compacted layers shall not exceed 4 inches in depth. When more than one (1) layer is required, each shall be shaped, processed, compacted, and approved by the Authorized Officer before the succeeding layer is placed.

Irregularities or depressions that develop during compaction of the top layer shall be corrected by loosening the material at these places and then adding or removing crushed rock material until the surface is smooth and uniform.

1210a - Crushed rock material used to repair or reinforce soft, muddy, frozen, yielding, or rutted roadbed shall not be construed as surfacing required by this specification unless approved by the Authorized Officer in advance.

1212 - Each layer of crushed rock material placed, processed, and shaped as specified shall be moistened or dried to a uniform moisture content suitable for maximum compaction, as determined by Authorized Officer, and compacted to full width by compacting equipment conforming to the requirements of Subsections 103f, 103g, and 103i . Minimum compaction shall be six (6) passes over each full-width layer, or fraction thereof.

1216 - The Purchaser shall place in stockpile 4,293 cubic yards truck measure of Gradation C crushed rock material at site, A, shown on the plans. The Purchaser shall place in stockpile 140 cubic yards truck measure of Gradation E crushed rock material at site, A, shown on the plans. Such material shall be used to reinforce and repair areas of deficient support which appear during the hauling operation. Crushed rock material so stockpiled shall be placed on the designated road prior to termination of the timber sale contract.

1217 - Prior to stockpiling Subsection 1204 Gradation C and E crushed rock material, the stockpile site shall be prepared by clearing and disposing of all trees, stumps, brush, and other debris in accordance with Section 200. A minimum of 4,433 cubic yards, stockpile measure, shall be placed at the following stockpile sites:

Stockpile No.	Willamette Meridian			Approx. Cu. Yds.	Road No.
	Sec.	T.	R.		
A	31	4	6	--	4-6-31.3

1218 - The equipment and methods used for stockpiling crushed rock material and for removing material from the stockpiles shall be such that minimum degradation or segregation of the material will result and that minimal amounts of foreign material will be incorporated into the crushed base material and that there will be no intermingling of stockpiled materials.

1220 - Crushed rock material required under Section 1200 of these specifications shall first be placed in stockpile after crushing. The Purchaser shall notify the Authorized Officer a minimum of (3) days in advance of the date he intends to commence the crushing and stockpiling operations so that progressive test samples can be taken as the crushed rock material is produced. Sampled materials shall remain in separate stockpiles (1,000 CY maximum) until such time the Authorized Officer receives test results which indicate compliance with Subsections 1203, 1204, 1204a, 1205, 1206, 1207, 1208, and 1208a. Crushed rock material so tested shall be approved in writing by the Authorized Officer within 6 days from receiving sampling results date. Approved material may then be removed from temporary stockpile for placement on the designated road or combined in designated crushed rock stockpile. In no event shall the Purchaser place crushed rock materials on the road from sources other than the tested and approved stockpiles. Noncompliance with the requirements of this subsection shall constitute grounds for the rejection of all crushed rock materials furnished under this contract.

GEOTEXTILES – 1300

1301 - This work shall consist of furnishing, hauling, and installing geotextile material at the locations and in accordance with these specifications and the lines, grades, dimensions, and typical cross sections shown on the plans.

1302 - Use long-chain, synthetic polymers, composed of at least 95 percent by mass of polyolefins or polyesters, to manufacture geotextile or the threads used to sew geotextile.

1303 - Furnish to the Authorized Officer a commercial certification including the name of the manufacturer, product name, style number, chemical composition of the filaments or yarns, and other pertinent information to fully describe the geotextile.

1303b - When using a geotextile for a permanent installation limit material exposure to ultraviolet radiation to less than 10 days. Geotextile material deemed to have been overexposed to sunlight by the Authorized Officer shall be rejected.

1307 - Where subgrade reinforcement is required, clearing, grubbing, and excavation of the subgrade shall be completed prior to the placement of geotextile material. The subgrade shall

be leveled and smoothed to remove lumps and depressions which exceed (6) inches in height and depth. Small pieces of woody debris shall be removed. Light vegetation, i.e., grasses, weeds, leaves, and other small woody debris, may be left in place.

1308 - The geotextile material shall be installed directly on the prepared surface. Place the geotextile smooth and free of tension, stress, or wrinkles. Fold or cut the geotextile to conform to curves. Overlap in the direction of construction. Overlap the geotextile a minimum of (2) feet at the ends and sides of adjoining sheets, or sew the geotextile joints according to manufacturer's recommendations. Do not place longitudinal overlaps below anticipated wheel loads. Hold the geotextile in place with pins, staples, or piles of cover material.

1309 - End-dump the cover material onto the geotextile from the edge of the geotextile or from previously placed cover material. Do not operate equipment directly on the geotextile. Spread the end-dumped pile of cover material maintaining a minimum lift thickness of (4) inches. Compact the cover material with rubber-tired or non-vibratory smooth drum rollers. Avoid sudden stops, starts, or turns of the construction equipment. Fill all ruts from construction equipment with additional cover material. Do not re-grade ruts with placement equipment.

1310 - Repair or replace all geotextile that is torn, punctured, or muddy. Remove the damaged area and place a patch of the same type of geotextile overlapping 3 feet beyond the damaged area.

1311 - Geotextile material used for subgrade reinforcement or material separation shall meet the following requirements:

TABLE 1311b
Physical Requirements for Stabilization Geotextile

Property	Test Method ASTM	Units	Specifications[1]	
			Type III-A	Type III-B
Grab strength	D 4632	N	1400/900	1100/700
Sewn seam strength	D 4632	N	1260/810	990/630
Tear strength	D 4533	N	500/350	400[3]/250
Puncture strength	D 4833	N	500/350	400/250
Burst strength	D 3786	kPa	3500/1700	2700/1300
Permittivity	D 4491	s^{-1}	0.43	0.43
Apparent opening size	D 4751	mm	0.60[2]	0.60[2]
Ultraviolet stability	D 4355	%	50% after 500 hours of exposure	

(1) The first values in a column apply to geotextiles that break at < 50 percent elongation (ASTM D 4632). The second values in a column apply to geotextiles that break at ≥ 50 percent elongation (ASTM D 4632).

(2) Maximum average roll value.
(3) The minimum average tear strength for woven monofilament geotextile is 245 N.

1312 - Where geotextile material is specified as filter wrap for underdrains it shall be inert to commonly encountered chemicals, mildew and rot resistant, resistant to ultraviolet light exposure, and insect and rodent resistant.

1313 - Trenches for underdrains shall be excavated to the dimensions marked in field. Smooth the trench surfaces by removing all projections that may damage the geotextile. Minimum slope of trenches shall be one percent. The Authorized Officer shall have a minimum of 3 days notice in which to approve trenches prior to installation of the geotextile material, pipe, drain rock, or other backfill.

1314 - Geotextile material used as a filter shall be placed in a manner and at the locations shown on the plans. Place the long dimension of the geotextile parallel to the centerline of the trench. Position the geotextile, without stretching, in contact with the trench surface. Overlap the joints a minimum of 24 inches with the upstream geotextile placed over the downstream geotextile. Replace geotextile damaged during installation.

1315 - Geotextile materials used for subsurface drainage shall meet the following requirements:

TABLE 1315
Physical Requirements for Subsurface Drainage Geotextile

Property	Test Method ASTM	Units	Specifications[1]					
			Type I-A	Type I-B	Type I-C	Type I-D	Type-I-E	Type I-F
Grab strength	D 4632	N	1100/700	1100/700	1100/700	800/500	800/500	800/500
Sewn seam strength	D 4632	N	990/630	990/630	990/630	720/450	720/450	720/450
Tear strength	D 4533	N	400[3]/250	400[3]/250	400[3]/250	300/175	300/175	300/175
Puncture strength	D 4833	N	400/250	400/250	400/250	300/175	300/175	300/175
Burst strength	D 3786	kPa	2750/1350	2750/1350	2750/1350	2100/950	2100/950	2100/950
Permittivity	D 4491	s^{-1}	0.5	0.2	0.1	0.5	0.2	0.1
Apparent opening size	D 4751	mm	0.43[2]	0.25[2]	0.22[2]	0.43[2]	0.25[2]	0.22[2]

Ultraviolet stability	D 4355	%	50% after 500 hours of exposure

(1) The first values in a column apply to geotextiles that break at < 50 percent elongation (ASTM D 4632). The second values in a column apply to geotextiles that break at ≥ 50 percent elongation (ASTM D 4632).
(2) Maximum average roll value.
(3) The minimum average tear strength for woven monofilament geotextile is 245 N.

SLOPE PROTECTION - 1400

1401 - This work shall consist of furnishing, hauling, and placing stone materials for slope protection structures, splash pads, and road blockages in accordance with these specifications and conforming to the lines, grades, dimensions, and typical cross-sections shown on the plans. Material not conforming to these specifications will be rejected and shall be removed from the slope protection structure at the purchaser's expense and as directed by the Authorized Officer.

1402 - Stone material shall consist of hard angular quarry rock of such quality that it will not disintegrate on exposure to water or weathering, and shall be graded in accordance with these specifications.

Volume/ Cubic Foot	Average Dimension in inches	Approximate Weight in Pounds
12	27.5 x 27.5 x 27.5	2100
6	21.8 x 21.8 x 21.8	1050
4	19.1 x 19.1 x 19.1	700
3	17.3 x 17.3 x 17.3	525
1	12.0 x 12.0 x 12.0	175
2/3	10.5 x 12.0 x 12.0	120
1/2	9.5 x 9.5 x 9.5	88
1/3	8.3 x 8.3 x 8.3	60
1/4	7.6 x 7.6 x 7.6	44
1/6	6.6 x 6.6 x 6.6	30
1/8	6.0 x 6.0 x 6.0	22
1/100	2.6 x 2.6 x 2.6	2

1404 - The material shall be well graded from the smallest to the maximum size specified. Stones smaller than the specified ten (10) percent size shall consist of spalls and fine rock fragments so distributed as to provide a stable compact mass.

1405 - Rip rap shall conform to the following gradations:

TABLE 1405

Class	% of Rock Equal of Smaller by Count, Dx	Range of Intermediate Dimensions, inches	Range of Rock Mass, pounds
5	100	33-39	2900-4850
	85	23-28	990-1800
	50	17-20	400-650
	15	11-15	110-270

Rocks smaller than six inches in diameter are not counted.

1405a - Stone materials shall show a durability value of not less than fifty (50) as determined by AASHTO T 210.

1406a - The embankment shall be placed in successive horizontal layers of sufficient depth to contain the maximum size rock present in the material. Spalls and finer fragments of stone other than specified in Subsection 1405 shall be used to chock the larger stones solidly in position and to fill voids between the major stones as laid in the embankment. The exposed face of the embankment shall be reasonably smooth and uniform; material shall be prevented from escaping beyond the toe of the structure

1407 - Determination of the acceptability of the slope protection material gradation will be through visual inspection and physical measurements by the Authorized Officer.

1408 - Trenches for slope protection structures shall be excavated to the lines, elevations, and typical diagram shown on the plans. They shall be of sufficient size to permit the placing of structure footing of the full widths and length shown. Trenches shall be approved by the Authorized Officer prior to placement of slope protection material.

1408a - Foundation trenches and other required excavation as shown on the plans shall be approved prior to placing the slope protection material.

EROSION CONTROL - 1700

1701 - This work shall consist of measures to control soil erosion or water pollution during the construction operation through the use of berms, dikes, dams, sediment basins, fiber mats, netting, gravel, mulches, grasses, slope drains, and other erosion control devices or methods in accordance with these specifications and conforming to the lines, grades, dimensions and typical cross sections shown on the plans.

1704 - The erosion control provisions specified under this Subsection shall be

coordinated with the Soil Stabilization requirements of Section 1800 and the Geotextile requirement of Section 1300.

1708 - Newly constructed and renovated roads to be carried over the winter period, shall be blocked to vehicular traffic and waterbars installed prior to the wet season.

1708a - Road segments not completed during dry weather periods shall be winterized, by providing a well-drained roadway using waterbars, maintaining drainage, and performing additional measures necessary to minimize erosion and other damage to the roadway, as directed by the Authorized Officer. Portions of roads not having surface rock in place will be blocked or barricaded to prevent vehicular traffic. A winterization plan shall be submitted to the Authorized Officer no later than September 15th of each harvest season.

1711 - The Purchaser shall construct sediment catch basins with straw bales at the following locations: 4-6-29.0 (MP 0.747, 0.758, 0.859, 1.071), 4-6-29.1 (MP 0.147, 0.157), 4-6-29.11 (Sta. 3+00 [2], 3+24), 4-6-30.1 (Sta. 6+88), 4-6-31.0 (Sta. 9+38, 22+97, 23+79), 4-6-31.1 (MP 0.542, 0.834, 2.010, 2.161, 2.177, 2.244, 2.364, 4.059, 4.072, 4.141, 4.159), 4-6-31.2 (MP 0.407, 0.484), 4-6-31.6 (Sta. 13+95), 4-6-32.1 (MP 0.050, 0.069, 0.272, 0.286, 0.546), and 4-7-25.0 (MP 0.148, 0.157, 0.177, 0.184). Construct sediment catch basins to the dimensions of the sediment catch basin detail on Pg. 43 of Exhibit C.

1711a - Straw bales required for sediment catch basins shall be furnished by the Purchaser. Straw bales shall be certified weed free from commercial grain fields and native grass fields. Straw bales shall be from oats, wheat, rye, or other approved grain crops and shall be free from, mold, or other objectionable material. Straw bales shall be in an air-dry condition and suitable for placement. The Purchaser shall provide the weed free certification to the Authorized Officer upon request.

SOIL STABILIZATION – 1800

1801 - This work shall consist of seeding on designated cut, fill, borrow, disposal, and special areas in accordance with these specifications and as shown on the plans. This work is not required for road acceptance under Section 18 of this contract. Grass seed will be furnished by the Government. Straw Mulch shall be furnished by the Government.

1802a - Soil stabilization work consisting of seeding and mulching shall be performed on new road construction, road renovation and improvement, landings, borrow sites, and disposal sites in accordance with these specifications and as shown on the plans. The seed shall be spread at a rate of sixty 60 pounds/acre.

1803 - Soil stabilization work as specified under Subsection 1802a shall be performed during the following seasonal periods:

From	To
August 1	October 15

The Authorized Officer may modify the above seasonal dates to conform to existing weather conditions and changes in the construction schedule.

1809 - Mulch material conforming to the requirements of Subsections 1809a and 1809b shall be furnished by the Government and shall be delivered to the work area in a dry state. Material to be used in the mulching operation may be stockpiled along the road designated for treatment provided that it is maintained in a dry state and has the approval of the Authorized Officer.

1809a - Straw mulch shall be from oats, wheat, rye, or other approved grain crops which are free from noxious weeds, mold, or other objectionable materials. Straw mulch shall be in an air-dry condition and suitable for placing with power spray equipment.

1809b - Grass straw mulch shall be from perennial grass or, if specified, an annual rye grass, from which the seed has been removed. The straw shall be free from Bentgrass, Canada Thistle, Tansy Ragwort, Skeleton weed, and other noxious weed seed. The grass straw shall be from fields which have passed the current year's field inspection of the Oregon Grass Seed Certification program, or from fields certified by the County Agent, or by seed companies purchasing the seed.

1810 - Bulk mulching material required under these specifications shall be delivered to the work area bound either by twine, string or hemp rope. Wire binding will not be permitted.

1811 - The Purchaser shall apply to the disturbed soils that are wet and/or within fifty (50) feet each side of "live stream" locations and all disposal sites a mixture of grass seed and straw mulch material at the application rate of six (6) pounds seed/acre and three thousand (3000) pounds straw mulch/acre (to be determined by Authorized Officer based on visual observation of trial applications).

1814 - The Purchaser may reduce the application rate on partially covered slopes and refrain from application on areas already well stocked with grass or on rock surfaces as determined by the Authorized Officer.

1815b - Dry Method - Blowers, mechanical seeders, seed drills, landscape seeders, cultipaker seeders, fertilizer spreaders, or other approved mechanical seeding equipment may be used when seed and fertilizer are to be applied in dry form.

1819 - The Purchaser shall notify the Authorized Officer at least three (3) days in advance of date he intends to commence the specified soil stabilization work.

1824 - Twine, rope, sacks, and other debris resulting from the soil-stabilization operation shall be picked up and disposed of to the satisfaction of the Authorized Officer.

ROADSIDE BRUSHING - 2100

2101 - This work shall consist of the removal of vegetation from the road prism - variable distance, and inside curves in accordance with these specifications and conforming to the lines, grades, dimensions, and typical cross sections shown on the Roadside Brushing Detail Sheet of this exhibit, at designated locations as shown in the plans.

2102 - Roadside brushing may be performed mechanically with self powered, self-propelled equipment, or manually with hand tools, including chain saws.

2103 - Vegetation cut manually or mechanically less than six (6) inches in diameter shall be cut to a maximum height of two (2) inches above the ground surface or above obstructions such as rocks or stumps on cut and fill slopes and all limbs below the six (6) inch area will be severed from the trunk.

2104 - Trees in excess of six (6) inches in diameter shall be limbed, so that no limbs extend into the treated area or over the roadbed to a height of fourteen (14) feet above the running surface of the roadway on cut and fill slopes, within the road prism-variable distance. Limbs shall be cut to within four (4) inches of the trunk to produce a smooth vertical face. Removal of trees larger than six (6) inches in diameter for sight distance or safety may be directed by the Authorized Officer.

2105 - Vegetation that is outside of the road prism-variable distance that protrudes into the road prism and within fourteen (14) feet in elevation above the running surface shall be cut, to within four (4) inches of the trunk to produce a smooth vertical face.

2106 - Vegetative growth capable of growing one (1) foot in height or higher shall be cut, within the road prism-variable distance or as directed by the Authorized Officer.

2107 - Inside curves shall be brushed out for a sight distance of two hundred (200) feet chord distance and/or a middle ordinate distance of twenty-five (25) feet, whichever is achieved first. Overhanging limbs and vegetation in excess of one (1) foot in height, shall be cut within these areas.

2109 - Debris resulting from this operation shall be scattered downslope from the roadway. Debris shall not be allowed to accumulate in concentrations. Debris in excess of one (1) foot in length and two (2) inches in diameter shall not be allowed to remain on cut slopes, ditches, roadways or water courses, or as directed by the Authorized Officer.

2112 - Roadside brushing shall be performed during the following seasonal periods:

*From	To
June 1	October 15

*Brushing may occur during the “wet season” given the following guidelines are followed:

1) Activity would be suspended when conditions exist that could generate

sediment inputs into streams, such as times of intense or prolonged rainfall where water in ditches is flowing, or streamflow, as measured above and below the effects of the road, becomes discolored.

2) Activity would be suspended when road surface shows signs of serious deterioration such as excessive rutting or pumping of fines from the sub-grade.

3) Activity would be suspended upon decision of Authorized Officer.

2113 - Roadside brushing shall be accomplished on the following road segments: 4-6-29.0, 4-6-29.1, 4-6-29.2, 4-6-29.11, 4-6-30.0, 4-6-30.1 (Sta. 0+00 – 11+08), 4-6-31.0 (Sta. 32+97 – 46+48), 4-6-31.1, 4-6-31.2, 4-6-31.4 (Sta. 0+00 – 8+77), 4-6-32.1, 4-6-32.4 (MP 0.000 – 1.607), 4-7-25.0 & 4-7-25.1.

2116 - Traffic warning signs shall be required at each end of the work area. Signs shall meet the requirements of the Manual on Uniform Traffic Devices.

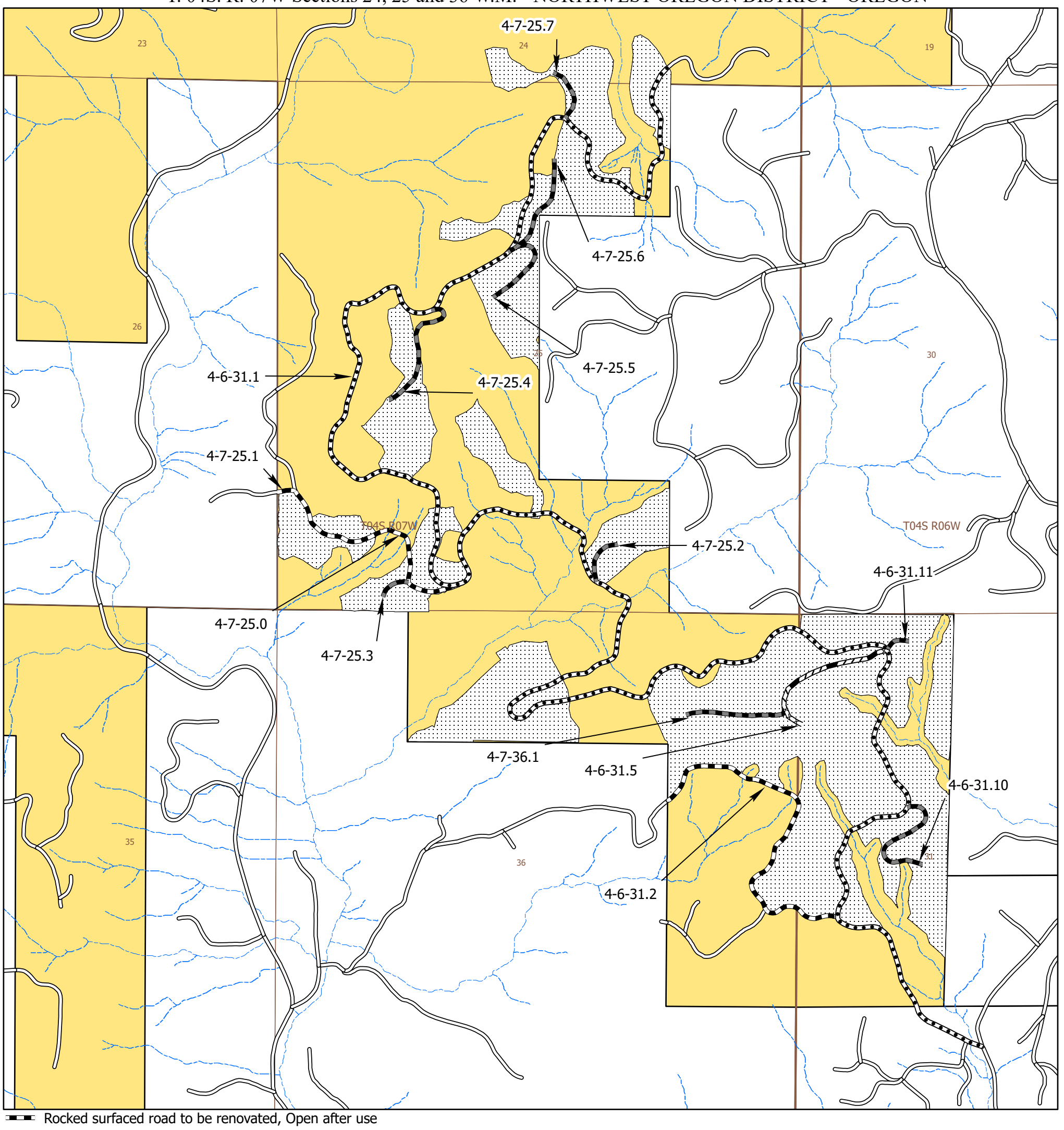
BARRICADES AND CONTROL DEVICES - 2700

2701 - This work will consist of furnishing and placement of barricades, warning signs, and other protection required to prevent injury to people and damage to property due to culvert installations, brushing, and other construction work. Purchaser shall submit a site plan showing how the specifications in this section and of Sec. 44 will be accomplished.

2702 - Maintain condition, operation, and effectiveness of traffic control devices throughout period of use. Materials used for the temporary structures and controls are property of Contractor and shall be removed from Government land when need for their service has ended.

United States Department of Interior
BUREAU OF LAND MANAGEMENT
NORTHWEST OREGON DISTRICT - OREGON
Road Plan Map

T. 04S. R. 06W. Sections 29 and 31 W.M. - NORTHWEST OREGON DISTRICT - OREGON
T. 04S. R. 07W Sections 24, 25 and 36 W.M. - NORTHWEST OREGON DISTRICT - OREGON



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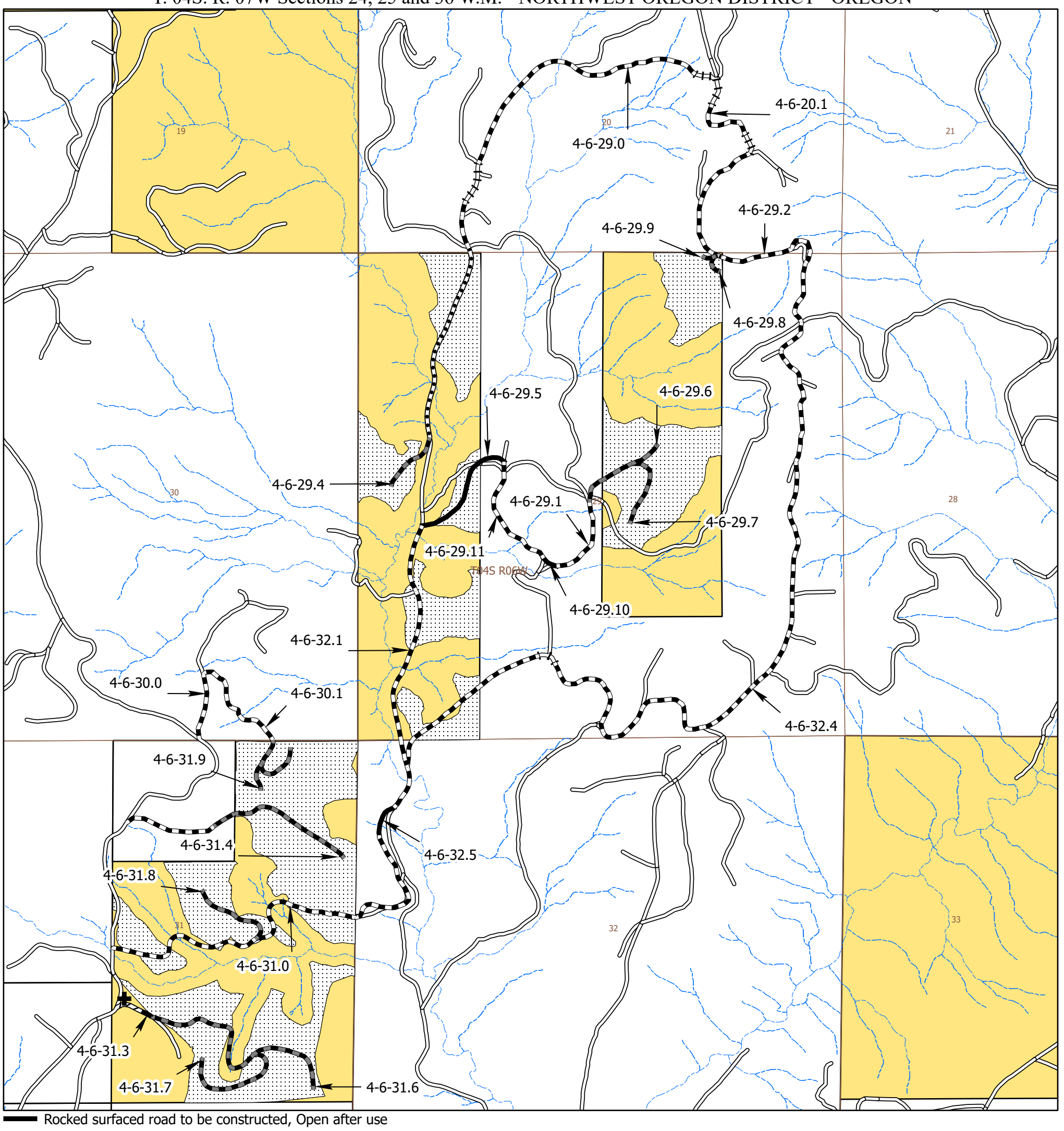

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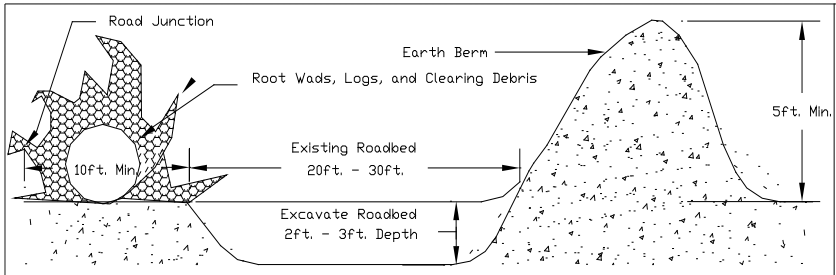
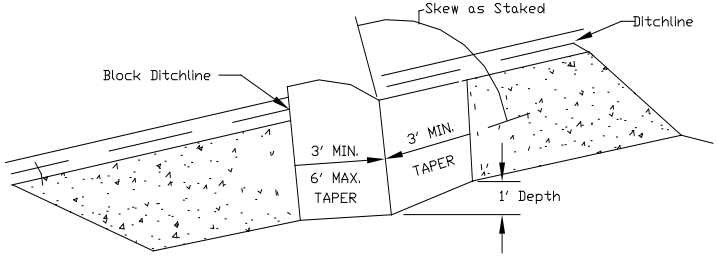
Earth Barricade, Waterdip, Drivable and Non-Drivable Waterbar Details



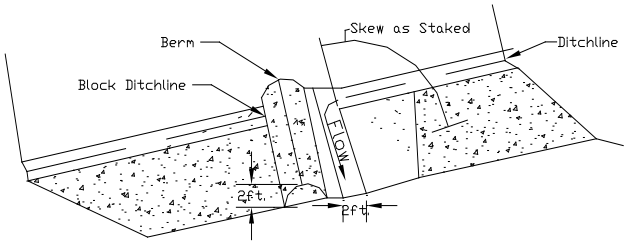
EARTH BARRICADE CONSTRUCTION



DRIVABLE WATERBAR CONSTRUCTION

NOTE:

1. DITCHLINE IS TO BE BLOCKED WITH EXCAVATED MATERIAL TO PREVENT DITCH WATER FROM BYPASSING WATERBAR.
2. EXCESS MATERIAL SHALL BE UNIFORMLY SPREAD ALONG ROADWAY. NO MATERICAL WILL BE ALLOWED BEYOND THE OUTER ROAD EDGE.

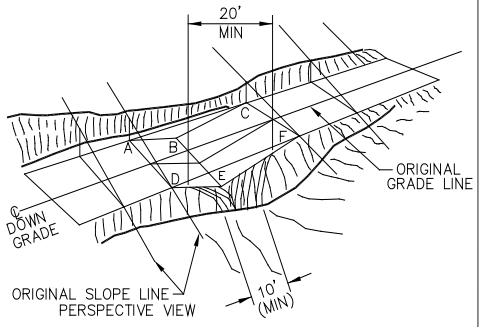


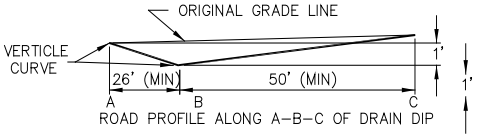
NON-DRIVABLE WATERBAR CONSTRUCTION

WATER DIP DETAIL

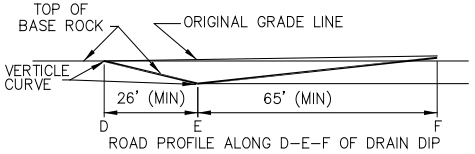
Not to Scale

NOTE: PLAN OF DIP SHOWN IS FOR OUTSLOPED ROLLING DIP, DIPS MAY BE EITHER INSLOPED OR OUTSLOPED. WHEN INSLOPED, DIPS SHALL DISCHARGE INTO A CULVERT, DROP INLET, OR OVERSIDE DRAIN, OR DRAINAGE DITCH. WHEN OUTSLOPED, THEY SHALL DISCHARGE INTO AN OVERSIDE DRAIN OR ON TO NATURAL GROUND. THE MINIMUM CROSS GRADE FROM "B" TO "E" IS 4% GREATER THAN THE ORIGINAL ROAD GRADE. SKEW LINE B–E TO FIT LOW POINT IN DRAW, IF LOCATED IN NATURAL DRAIN.

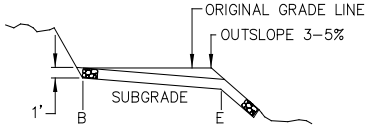




ROAD PROFILE ALONG A–B–C OF DRAIN DIP



ROAD PROFILE ALONG D–E–F OF DRAIN DIP



ROCK SPILL APRON 15' WIDE WITH MATERIAL AS SHOWN ON SCHEDULE OF ITEMS TO TOE OF FILL.

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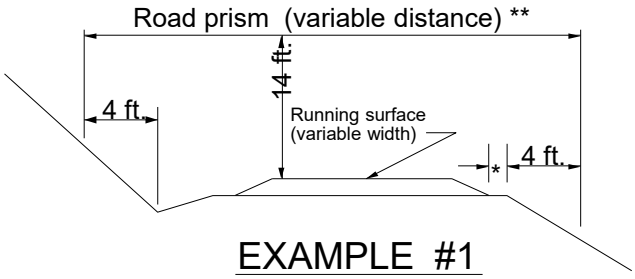
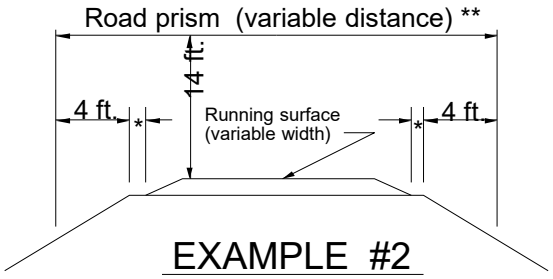
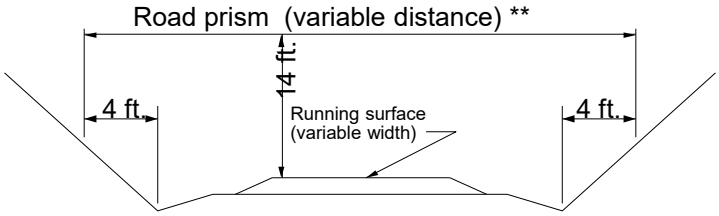
BRUSHING DETAILS



EXAMPLE #1



EXAMPLE #2

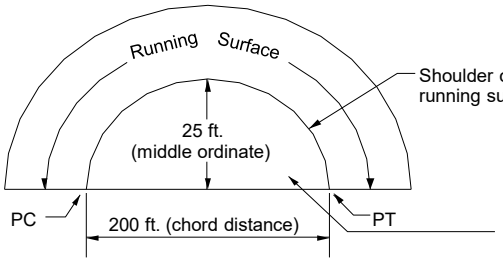


EXAMPLE #3

(NO SCALE)

* Variable distance between running surface and start of fill slope

** All areas within the variable distance shall be free of all vegatation capable of growing one (1) foot in height or higher and all overhanging limbs and branches 14 feet in elevation above the running surface



Area to be cut: shall be free of overhanging limbs and all vegatation will be cut to a maximum height of one (1) foot.

SIGHT DISTANCE DIAGRAM

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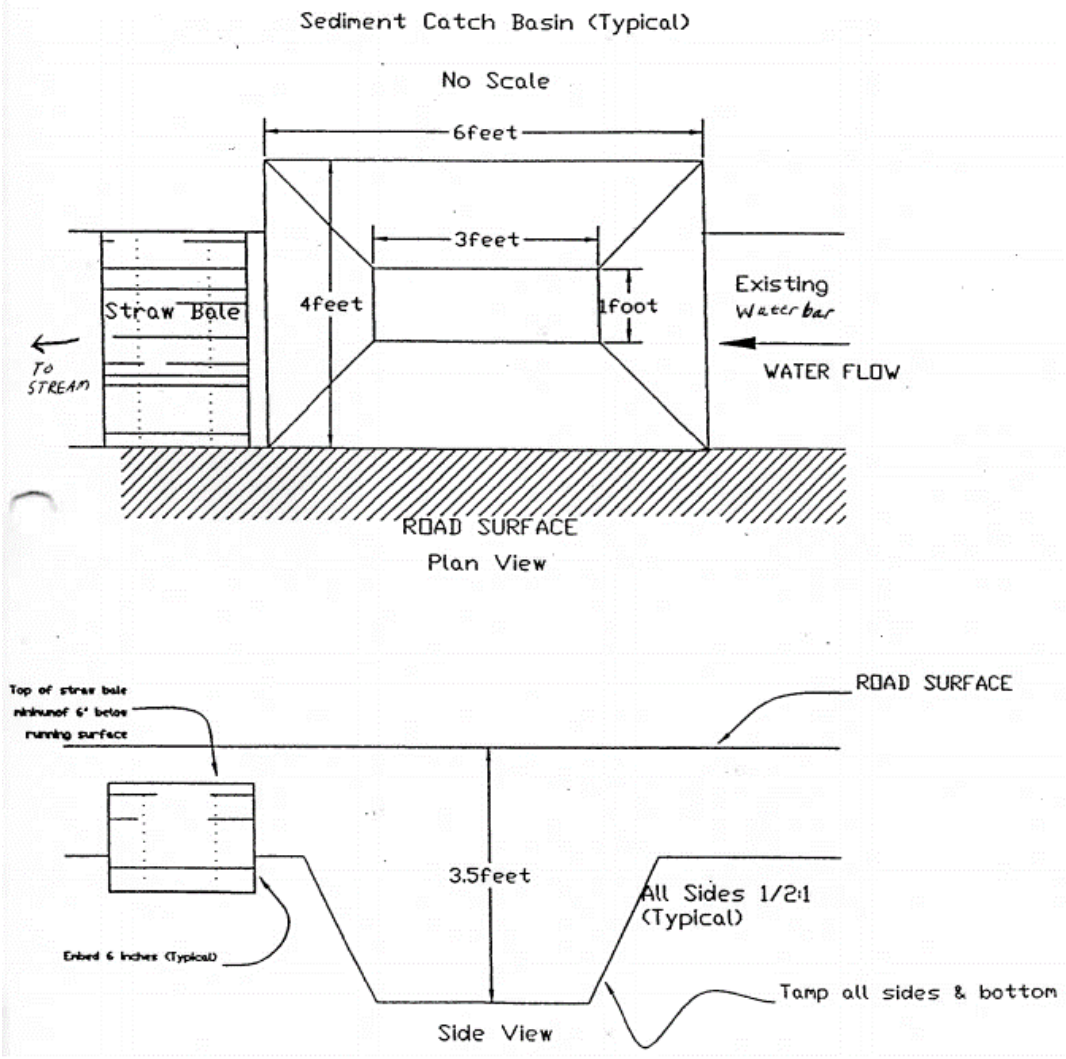
NORTHWEST OREGON DISTRICT OFFICE - OREGON

Sediment Catch Basin with Straw Bale Details



Culvert List

CULVERT LOCATIONS DESIGNED *2							DOWNSPOUT(d) or STANDPIPE(s) *4				AS BUILT			ROCK RIP RAP (GRADING) (a)		(b)	REMARKS *6
Road #	Sta./ M.P	SIZE	GAGE	LENGTH	CULVERT GRADE	INSTALL TYPE *3	SIZE	TYPE	LENGTH	TYPE OF ELBOW *5	SIZE	GAGE	LENGTH	INLET	OUTLET	Stucture inside pipe	
4-6-29.0	0.014	18"	--	30'	--	--	--	--	--	--	--	--	--	--	--	--	Install culvert as marked and directed by Authorized Officer. Construct a lead-off ditch from culvert outlet as directed. Place 10 CY of 1 1/2"-0" Crushed Bedding/Backfill Rock. Spread 10 CY of 6" Jaw Run Base Rock over pipe for surfacing, capped with 10 CY of 1 1/2"-0" Crushed Rock. Install metal inlet marker.
	0.406	18"	--	45'	--	--				--	--	--	--	--	--	--	Install culvert across road as marked and directed by Authorized Officer. Place 20 CY of 1 1/2"-0" Crushed Bedding/Backfill Rock. Spread 20 CY of 6" Jaw Run Base Rock over pipe for surfacing, capped with 15 CY of 1 1/2"-0" Crushed Rock. Install metal inlet marker.
	0.577	18"	--	10'	--	--	--	--	--	--	--	--	--	--	--	--	Excavate and remove existing culvert. Re-install existing culvert and attach additional 10' at lower elevation as marked and directed by Authorized Officer. Construct a lead-off ditch from culvert outlet as directed.
	0.753	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	Install metal inlet marker on existing CPP.
	0.848	--	--	--	--	--	--	--	--	--	--	--	--	--	50	--	Place 50 CY of Class RipRap at outlet as fill armor and energy dissipater.
	0.907	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	Clean inlet and outlet of existing CPP. Install metal inlet marker.
	1.065	18"	--	40'	--	--	--	--	--	--	--	--	--	--	--	--	Replace culvert as marked and directed by Authorized Officer. Place 20 CY of 1 1/2"-0" Crushed Bedding/Backfill Rock. Spread 20 CY of 6" Jaw Run Base Rock over pipe for surfacing, capped with 15 CY of 1 1/2"-0" Crushed Rock. Install metal inlet marker.
	1.067	24"	--	35'	--	--	--	--	--	--	--	--	--	--	--	--	Stream crossing. Install culvert as marked and directed by Authorized Officer (approx. 4.5' fill @ CL). Place 20 CY of 1 1/2"-0" Crushed Bedding/Backfill Rock. Spread 20 CY of 6" Jaw Run Base Rock over pipe for surfacing, capped with 15 CY of 1 1/2"-0" Crushed Rock. Install metal inlet marker.
4-6-29.2	0.347	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	Clean inlet and outlet of existing CPP. Install metal inlet marker.
4-6-29.4	1+70	24"	--	40'	--	--	--	--	--	--	--	--	--	--	--	--	Stream crossing. Install culvert as marked and directed by Authorized Officer (approx. 6' fill @ CL). Place 20 CY of 1 1/2"-0" Crushed Bedding/Backfill Rock. Spread 20 CY of 6" Jaw Run Base Rock over pipe for surfacing, capped with 15 CY of 1 1/2"-0" Crushed Rock. Install metal inlet marker.
4-6-29.5	8+28	24" (perforated)	14	40'	--	--	--	--	--	--	--	--	--	--	--	--	Seep. Install a French-drain as marked and with the Authorized Officer on-site. The dimensions of the French-Drain are; 40' long, 25' wide, and 4' deep at centerline. Place 120 CY of 1 1/2"-3/4" Drain Rock wrapped with 60 SY of geosynthetic non-woven fabric. Install metal inlet marker.
4-6-29.10	0+27	18"	--	40'	--	--	--	--	--	--	--	--	--	--	--	--	Install culvert as marked and directed by Authorized Officer. Place 20 CY of 1 1/2"-0" Crushed Bedding/Backfill Rock. Spread 15 CY of 1 1/2"-0" Crushed Rock capped over the surfacing rock from the 9" lift of 6" Jaw Run Base Rock.
4-6-29.11	12+00	18"	--	40'	--	--	--	--	--	--	--	--	--	--	--	--	Install culvert as marked and directed by Authorized Officer. Place 20 CY of 1 1/2"-0" Crushed Bedding/Backfill Rock. Spread 15 CY of 1 1/2"-0" Crushed Rock capped over the surfacing rock from the 9" lift of 6" Jaw Run Base Rock. Install metal inlet marker.
			--		--	--				--	--	--	--	--	--	--	
4-6-30.1	3+13	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	Clean inlet and outlet of existing CPP.
	10+51	18"	--	40'	--	--	--	--	--	--	--	--	--	--	--	--	Install culvert as marked and directed by Authorized Officer. Place 20 CY of 1 1/2"-0" Crushed Bedding/Backfill Rock. Spread 20 CY of 6" Jaw Run Base Rock over pipe for surfacing, capped with 15 CY of 1 1/2"-0" Crushed Rock. Install metal inlet marker.
4-6-31.0	0+00	18"	--	50'	--	--				--	--	--	--	--	--	--	Install culvert across East Creek Road as marked and directed by Authorized Officer. Place 20 CY of 1 1/2"-0" Crushed Bedding/Backfill Rock. Spread 20 CY of 6" Jaw Run Base Rock over pipe for surfacing, capped with 15 CY of 1 1/2"-0" Crushed Rock. Install metal inlet marker.
	7+70	18"	--	40'	--	--	--	--	--	--	--	--	--	--	--	--	Install culvert as marked and directed by Authorized Officer. Place 20 CY of 1 1/2"-0" Crushed Bedding/Backfill Rock. Spread 15 CY of 1 1/2"-0" Crushed Rock capped over the surfacing rock from the 9" lift of 6" Jaw Run Base Rock. Install metal inlet marker.
	8+25	30"	14	40'	--	--	--	--	--	--	--	--	--	10	20	--	Stream crossing. Install culvert as marked and directed by Authorized Officer (approx. 7' fill @ CL) with hugger band and neoprene gasket. Place 25 CY of 1 1/2"-0" Crushed Bedding/Backfill Rock. Spread 15 CY of 1 1/2"-0" Crushed Rock capped over the surfacing rock from the 9" lift of 6" Jaw Run Base Rock. Place 10 CY of Class 5 RipRap at inlet as fill armor. Place 20 CY of Class 5 RipRap at outlet as fill armor. Install metal inlet marker.
	8+88	30"	14	35'	--	--	--	--	--	--	--	--	--	10	10	--	Stream crossing. Install culvert as marked and directed by Authorized Officer (approx. 5.5' fill @ CL) with hugger band and neoprene gasket. Place 20 CY of 1 1/2"-0" Crushed Bedding/Backfill Rock. Spread 15 CY of 1 1/2"-0" Crushed Rock capped over the surfacing rock from the 9" lift of 6" Jaw Run Base Rock. Place 10 CY of Class 5 RipRap at inlet as fill armor. Place 10 CY of Class 5 RipRap at outlet as fill armor. Install metal inlet marker.
	12+05	18"	--	35'	--	--	18"	1	10'	--	--	--	--	--	--	--	Install culvert and downspout as marked and directed by Authorized Officer. Place 15 CY of 1 1/2"-0" Crushed Bedding/Backfill Rock. Spread 10 CY of 1 1/2"-0" Crushed Rock capped over the surfacing rock from the 9" lift of 6" Jaw Run Base Rock. Install metal inlet marker.

Gage Chart		
	Dec. Inches	
Gage	Steel	Alum.
10	.138	.135
12	.109	.105
14	.079	.075
16	.064	.060

1. Designed culvert lengths and locations are approximate.

***2**. all culverts have 2-2/3" x 1/2" unless otherwise noted.

***4.** Downspout or Standpipe Types
1) Full
2) Half
3) Flume

*** Downspouts and stand pipes (under 36" diameter) shall be CPP, Type C (single wall); unless otherwise specified.

**** Corrugated plastic pipe (CPP), Type S (double wall) shall be used for culvert sizes 24" and smaller. All larger culvets shall be aluminized steel. All aluminized steel culverts are to have hugger type bands and neoprene gaskets. Culverts 20' in length or smaller shall be one piece (no joints). No Culvert piece shall be shorter than 6 foot. Minimization of banding is required.

***5.** 1) Conventional or Fabricated
2) Turner type
3) Slip joint

***6.** Include special sections, structures, headwalls, footings & other data.

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CULVERT LOCATIONS DESIGNED *2							DOWNSPOUT(d) or STANDPIPE(s) *4				AS BUILT			ROCK RIP RAP (GRADING) (a)		(b)	REMARKS *6
Road #	Sta./ M.P	SIZE	GAGE	LENGTH	CULVERT GRADE	INSTALL TYPE *3	SIZE	TYPE	LENGTH	TYPE OF ELBOW *5	SIZE	GAGE	LENGTH	INLET	OUTLET	Stucture inside pipe	
4-6-31.0	15+62	18"	--	35'	--	--	18"	1	10'	--	--	--	--	--	--	--	Install culvert and downspout as marked and directed by Authorized Officer. Place 15 CY of 1 1/2"-0" Crushed Bedding/Backfill Rock. Spread 10 CY of 1 1/2"-0" Crushed Rock capped over the surfacing rock from the 9" lift of 6" Jaw Run Base Rock. Install metal inlet marker.
	17+80	18"	--	30'	--	--	18"	1	10'	--	--	--	--	--	--	--	Install culvert and downspout as marked and directed by Authorized Officer. Place 10 CY of 1 1/2"-0" Crushed Bedding/Backfill Rock. Spread 10 CY of 1 1/2"-0" Crushed Rock capped over the surfacing rock from the 9" lift of 6" Jaw Run Base Rock. Install metal inlet marker.
	19+10	18"	--	30'	--	--	18"	1	10'	--	--	--	--	--	--	--	Install culvert and downspout as marked and directed by Authorized Officer. Place 10 CY of 1 1/2"-0" Crushed Bedding/Backfill Rock. Spread 10 CY of 1 1/2"-0" Crushed Rock capped over the surfacing rock from the 9" lift of 6" Jaw Run Base Rock. Install metal inlet marker.
	22+50	18"	--	40'	--	--	--	--	--	--	--	--	--	--	--	--	Install culvert as marked and directed by Authorized Officer. Place 20 CY of 1 1/2"-0" Crushed Bedding/Backfill Rock. Spread 15 CY of 1 1/2"-0" Crushed Rock capped over the surfacing rock from the 9" lift of 6" Jaw Run Base Rock. Install metal inlet marker.
	23+37	36"	14	60'	--	--	--	--	--	--	--	--	--	30	50	--	Stream crossing. Install culvert as marked and directed by Authorized Officer (approx. 12' fill @ CL) with hugger band and neoprene gasket. Place 35 CY of 1 1/2"-0" Crushed Bedding/Backfill Rock. Spread 20 CY of 1 1/2"-0" Crushed Rock capped over the surfacing rock from the 9" lift of 6" Jaw Run Base Rock. Place 30 CY of Class 5 RipRap at inlet as fill armor. Place 50 CY of Class 5 RipRap at outlet as fill armor. Install metal inlet marker.
	24+23	24"	--	35'	--	--	--	--	--	--	--	--	--	--	--	--	Stream crossing. Install culvert as marked and directed by Authorized Officer (approx. 4' fill @ CL). Place 20 CY of 1 1/2"-0" Crushed Bedding/Backfill Rock. Spread 15 CY of 1 1/2"-0" Crushed Rock capped over the surfacing rock from the 9" lift of 6" Jaw Run Base Rock. Install metal inlet marker.
	28+93	18"	--	30'	--	--	--	--	--	--	--	--	--	--	--	--	Install culvert as marked and directed by Authorized Officer. Place 10 CY of 1 1/2"-0" Crushed Bedding/Backfill Rock. Spread 10 CY of 1 1/2"-0" Crushed Rock capped over the surfacing rock from the 9" lift of 6" Jaw Run Base Rock. Install metal inlet marker.
	30+16	18"	--	35'	--	--	--	--	--	--	--	--	--	--	--	--	Install culvert as marked and directed by Authorized Officer. Place 15 CY of 1 1/2"-0" Crushed Bedding/Backfill Rock. Spread 10 CY of 1 1/2"-0" Crushed Rock capped over the surfacing rock from the 9" lift of 6" Jaw Run Base Rock. Install metal inlet marker.
	38+24	18"	--	30'	--	--	18"	1	10'	--	--	--	--	--	--	--	Install culvert and downspout as marked and directed by Authorized Officer. Place 10 CY of 1 1/2"-0" Crushed Bedding/Backfill Rock. Surfacing rock will be from the 9" lift of Jaw Run Base Rock capped with a 4" lift of 1 1/2"-0" Crushed Rock. Install metal inlet marker.
	42+18	18"	--	30'	--	--	18"	1	10'	--	--	--	--	--	--	--	Install culvert and downspout as marked and directed by Authorized Officer. Place 10 CY of 1 1/2"-0" Crushed Bedding/Backfill Rock. Surfacing rock will be from the 9" lift of Jaw Run Base Rock capped with a 4" lift of 1 1/2"-0" Crushed Rock. Install metal inlet marker.
4-6-31.1	0.070	18"	--	35'	--	--	--	--	--	--	--	--	--	--	--	--	Replace culvert as marked and directed by Authorized Officer. Re-establish lead-off ditch from outlet as directed. Place 15 CY of 1 1/2"-0" Crushed Bedding/Backfill Rock. Spread 15 CY of 6" Jaw Run Base Rock over pipe for surfacing, capped with 10 CY of 1 1/2"-0" Crushed Rock. Install metal inlet marker.
	0.188	--	--	--	--	--	--	--	--	--	--	--	--	--	5	--	Place 5 CY of Class 5 RipRap at outlet as energy dissipater. Install metal inlet marker.
	0.245	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	Install metal inlet marker.
	0.477	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	Install metal inlet marker.
	0.536	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	Install metal inlet marker.
	0.583	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	Install metal inlet marker.
	0.697	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	Install metal inlet marker.
	0.776	18"	--	35'	--	--	18"	1	10'	--	--	--	--	--	--	--	Replace culvert and install downspout as marked and directed by Authorized Officer. Place 15 CY of 1 1/2"-0" Crushed Bedding/Backfill Rock. Spread 15 CY of 6" Jaw Run Base Rock over pipe for surfacing, capped with 10 CY of 1 1/2"-0" Crushed Rock. Install metal inlet marker.
	0.829	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	Install metal inlet marker.
	1.018	18"	--	40'	--	--	--	--	--	--	--	--	--	--	--	--	Replace culvert as marked and directed by Authorized Officer. Place 20 CY of 1 1/2"-0" Crushed Bedding/Backfill Rock. Spread 20 CY of 6" Jaw Run Base Rock over pipe for surfacing, capped with 15 CY of 1 1/2"-0" Crushed Rock. Install metal inlet marker.
	1.202	18"	--	30'	--	--	--	--	--	--	--	--	--	--	--	--	Replace culvert as marked and directed by Authorized Officer. Place 10 CY of 1 1/2"-0" Crushed Bedding/Backfill Rock. Spread 10 CY of 6" Jaw Run Base Rock over pipe for surfacing, capped with 10 CY of 1 1/2"-0" Crushed Rock. Install metal inlet marker. Remove existing waterbar.
	1.316	24"	--	55'	--	--	--	--	--	--	--	--	--	--	40	--	Stream crossing. Replace culvert as marked and directed by Authorized Officer (approx. 11' fill @ CL). Place 25 CY of 1 1/2"-0" Crushed Bedding/Backfill Rock. Spread 20 CY of 6" Jaw Run Base Rock over pipe for surfacing, capped with 15 CY of 1 1/2"-0" Crushed Rock. Place 40 CY of Class 5 RipRap at outlet as fill armor. Install metal inlet marker.

Gage Chart		
	Dec. Inches	
Gage	Steel	Alum.
10	.138	.135
12	.109	.105
14	.079	.075
16	.064	.060

1. Designed culvert lengths and locations are approximate.

***2**. all culverts have 2-2/3" x 1/2" unless otherwise noted.

***4.** Downspout or Standpipe Types
1) Full
2) Half
3) Flume

*** Downspouts and stand pipes (under 36" diameter) shall be CPP, Type C (single wall); unless otherwise specified.

**** Corrugated plastic pipe (CPP), Type S (double wall) shall be used for culvert sizes 24" and smaller. All larger culvets shall be aluminized steel. All aluminized steel culverts are to have hugger type bands and neoprene gaskets. Culverts 20' in length or smaller shall be one piece (no joints). No Culvert piece shall be shorter than 6 foot. Minimization of banding is required.

***5.** 1) Conventional or Fabricated
2) Turner type
3) Slip joint

***6.** Include special sections, structures, headwalls, footings & other data.

Culvert List

CULVERT LOCATIONS DESIGNED *2							DOWNSPOUT(d) or STANDPIPE(s) *4				AS BUILT			ROCK RIP RAP (GRADING) (a)		(b)	REMARKS *6
Road #	Sta./ M.P	SIZE	GAGE	LENGTH	CULVERT GRADE	INSTALL TYPE *3	SIZE	TYPE	LENGTH	TYPE OF ELBOW *5	SIZE	GAGE	LENGTH	INLET	OUTLET	Stucture inside pipe	
4-6-31.1	1.438	18"	--	35'	--	--	--	--	--	--	--	--	--	--	--	--	Replace culvert as marked and directed by Authorized Officer. Place 15 CY of 1 1/2"-0" Crushed Bedding/Backfill Rock. Spread 15 CY of 6" Jaw Run Base Rock over pipe for surfacing, capped with 10 CY of 1 1/2"-0" Crushed Rock. Install metal inlet marker.
	1.518	18"	--	30'	--	--	--	--	--	--	--	--	--	--	--	--	Replace culvert as marked and directed by Authorized Officer. Place 10 CY of 1 1/2"-0" Crushed Bedding/Backfill Rock. Spread 10 CY of 6" Jaw Run Base Rock over pipe for surfacing, capped with 10 CY of 1 1/2"-0" Crushed Rock. Install metal inlet marker. Remove existing waterbar.
	1.804	18"	--	35'	--	--	--	--	--	--	--	--	--	--	--	--	Replace culvert as marked and directed by Authorized Officer. Place 15 CY of 1 1/2"-0" Crushed Bedding/Backfill Rock. Spread 15 CY of 6" Jaw Run Base Rock over pipe for surfacing, capped with 10 CY of 1 1/2"-0" Crushed Rock. Install metal inlet marker.
	1.902	24"	--	35'	--	--	--	--	--	--	--	--	--	--	--	--	Stream crossing. Replace culvert as marked and directed by Authorized Officer. Place 20 CY of 1 1/2"-0" Crushed Bedding/Backfill Rock. Spread 20 CY of 6" Jaw Run Base Rock over pipe for surfacing, capped with 15 CY of 1 1/2"-0" Crushed Rock. Install metal inlet marker.
	2.064	18"	--	30'	--	--	--	--	--	--	--	--	--	--	--	--	Install culvert as marked and directed by Authorized Officer. Place 10 CY of 1 1/2"-0" Crushed Bedding/Backfill Rock. Spread 10 CY of 6" Jaw Run Base Rock over pipe for surfacing, capped with 10 CY of 1 1/2"-0" Crushed Rock. Install metal inlet marker.
	2.120	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	Install metal inlet marker.
	2.171	48"	14	70'	--	--	--	--	--	--	--	--	--	30	70	--	Stream crossing. Replace culvert as marked and directed by Authorized Officer (approx. 16'' fill @ CL) with hugger band and neoprene gasket. Will be lower than existing CMP. Place 50 CY of 1 1/2"-0" Crushed Bedding/Backfill Rock. Spread 35 CY of 6" Jaw Run Base Rock over pipe for surfacing, capped with 25 CY of 1 1/2"-0" Crushed Rock. Place 30 CY of Class 5 RipRap at inlet as fill armor. Place 70 CY of Class 5 RipRap at outlet as fill armor and energy dissipater. Install metal inlet marker.
	2.238	30"	14	65'	--	--	--	--	--	--	--	--	--	10	50	--	Stream crossing. Replace culvert as marked and directed by Authorized Officer (approx. 12'' fill @ CL) with hugger band and neoprene gasket. Will be lower than existing CMP. Place 35 CY of 1 1/2"-0" Crushed Bedding/Backfill Rock. Spread 30 CY of 6" Jaw Run Base Rock over pipe for surfacing, capped with 20 CY of 1 1/2"-0" Crushed Rock. Place 10 CY of Class 5 RipRap at inlet as fill armor. Place 50 CY of Class 5 RipRap at outlet as fill armor and energy dissipater. Install metal inlet marker.
	2.287	18"	--	30'	--	--	--	--	--	--	--	--	--	--	--	--	Replace culvert as marked and directed by Authorized Officer. Place 10 CY of 1 1/2"-0" Crushed Bedding/Backfill Rock. Spread 10 CY of 6" Jaw Run Base Rock over pipe for surfacing, capped with 10 CY of 1 1/2"-0" Crushed Rock. Install metal inlet marker.
	2.361	30"	14	45'	--	--	--	--	--	--	--	--	--	10	30	--	Stream crossing. Replace culvert as marked and directed by Authorized Officer (approx. 9'' fill @ CL) with hugger band and neoprene gasket. Will be lower than existing CMP. Place 20 CY of 1 1/2"-0" Crushed Bedding/Backfill Rock. Spread 20 CY of 6" Jaw Run Base Rock over pipe for surfacing, capped with 15 CY of 1 1/2"-0" Crushed Rock. Place 10 CY of Class 5 RipRap at inlet as fill armor. Place 30 CY of Class 5 RipRap at outlet as fill armor and energy dissipater. Install metal inlet marker.
	2.407	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	Clean inlet and outlet of existing CMP. Install metal inlet marker.
	2.557	18"	--	30'	--	--	--	--	--	--	--	--	--	--	--	--	Replace culvert as marked and directed by Authorized Officer. Place 10 CY of 1 1/2"-0" Crushed Bedding/Backfill Rock. Spread 10 CY of 6" Jaw Run Base Rock over pipe for surfacing, capped with 10 CY of 1 1/2"-0" Crushed Rock. Install metal inlet marker.
	2.638	18"	--	30'	--	--	--	--	--	--	--	--	--	--	--	--	Replace culvert as marked and directed by Authorized Officer. Place 10 CY of 1 1/2"-0" Crushed Bedding/Backfill Rock. Spread 10 CY of 6" Jaw Run Base Rock over pipe for surfacing, capped with 10 CY of 1 1/2"-0" Crushed Rock. Install metal inlet marker.
	2.718	18"	--	35'	--	--	--	--	--	--	--	--	--	--	--	--	Replace culvert as marked and directed by Authorized Officer. Place 15 CY of 1 1/2"-0" Crushed Bedding/Backfill Rock. Spread 15 CY of 6" Jaw Run Base Rock over pipe for surfacing, capped with 10 CY of 1 1/2"-0" Crushed Rock. Install metal inlet marker.
	2.799	18"	--	30'	--	--	--	--	--	--	--	--	--	--	--	--	Replace culvert as marked and directed by Authorized Officer. Place 10 CY of 1 1/2"-0" Crushed Bedding/Backfill Rock. Spread 10 CY of 6" Jaw Run Base Rock over pipe for surfacing, capped with 10 CY of 1 1/2"-0" Crushed Rock. Install metal inlet marker.
	2.864	18"	--	40'	--	--	--	--	--	--	--	--	--	--	--	--	Replace culvert as marked and directed by Authorized Officer. Place 20 CY of 1 1/2"-0" Crushed Bedding/Backfill Rock. Spread 20 CY of 6" Jaw Run Base Rock over pipe for surfacing, capped with 15 CY of 1 1/2"-0" Crushed Rock. Install metal inlet marker.
	2.930	18"	--	35'	--	--	18"	1	10'	--	--	--	--	--	--	--	Replace culvert and install downspout as marked and directed by Authorized Officer. Place 15 CY of 1 1/2"-0" Crushed Bedding/Backfill Rock. Spread 15 CY of 6" Jaw Run Base Rock over pipe for surfacing, capped with 10 CY of 1 1/2"-0" Crushed Rock. Install metal inlet marker.
	3.000	18"	--	30'	--	--	18"	1	10'	--	--	--	--	--	--	--	Replace culvert and install downspout as marked and directed by Authorized Officer. Place 10 CY of 1 1/2"-0" Crushed Bedding/Backfill Rock. Spread 10 CY of 6" Jaw Run Base Rock over pipe for surfacing, capped with 10 CY of 1 1/2"-0" Crushed Rock. Install metal inlet marker.
	3.063	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	Install metal inlet marker.
	3.107	18"	--	30'	--	--	--	--	--	--	--	--	--	--	--	--	Replace culvert as marked and directed by Authorized Officer. Place 10 CY of 1 1/2"-0" Crushed Bedding/Backfill Rock. Spread 10 CY of 6" Jaw Run Base Rock over pipe for surfacing, capped with 10 CY of 1 1/2"-0" Crushed Rock. Install metal inlet marker.

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4-6-31.1	3.165	18"	--	30'	--	--	--	--	--	--	--	--	--	--	--	--	Replace culvert as marked and directed by Authorized Officer. Place 10 CY of 1 1/2"-0" Crushed Bedding/Backfill Rock. Spread 10 CY of 6" Jaw Run Base Rock over pipe for surfacing, capped with 10 CY of 1 1/2"-0" Crushed Rock. Install metal inlet marker.
	3.229	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	Install metal inlet marker.
	3.480	18"	--	30'	--	--	18"	1	10'	--	--	--	--	--	--	--	Replace culvert and install downspout as marked and directed by Authorized Officer. Place 10 CY of 1 1/2"-0" Crushed Bedding/Backfill Rock. Spread 10 CY of 6" Jaw Run Base Rock over pipe for surfacing, capped with 10 CY of 1 1/2"-0" Crushed Rock. Install metal inlet marker.
	3.565	18"	--	40'	--	--	18"	1	10'	--	--	--	--	--	--	--	Replace culvert and install downspout as marked and directed by Authorized Officer. Place 20 CY of 1 1/2"-0" Crushed Bedding/Backfill Rock. Spread 20 CY of 6" Jaw Run Base Rock over pipe for surfacing, capped with 15 CY of 1 1/2"-0" Crushed Rock. Install metal inlet marker.
	3.664	18"	--	35'	--	--	--	--	--	--	--	--	--	--	--	--	Replace culvert as marked and directed by Authorized Officer. Place 15 CY of 1 1/2"-0" Crushed Bedding/Backfill Rock. Spread 15 CY of 6" Jaw Run Base Rock over pipe for surfacing, capped with 10 CY of 1 1/2"-0" Crushed Rock. Install metal inlet marker.
	3.735	18"	--	35'	--	--	--	--	--	--	--	--	--	--	--	--	Replace culvert as marked and directed by Authorized Officer. Place 15 CY of 1 1/2"-0" Crushed Bedding/Backfill Rock. Spread 15 CY of 6" Jaw Run Base Rock over pipe for surfacing, capped with 10 CY of 1 1/2"-0" Crushed Rock. Install metal inlet marker.
	3.813	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	Install metal inlet marker.
	3.885	18"	--	35'	--	--	--	--	--	--	--	--	--	--	--	--	Replace culvert as marked and directed by Authorized Officer. Place 15 CY of 1 1/2"-0" Crushed Bedding/Backfill Rock. Spread 15 CY of 6" Jaw Run Base Rock over pipe for surfacing, capped with 10 CY of 1 1/2"-0" Crushed Rock. Install metal inlet marker.
	4.039	18"	--	35'	--	--	--	--	--	--	--	--	--	--	--	--	Replace culvert as marked and directed by Authorized Officer and construct a lead-off ditch. Place 15 CY of 1 1/2"-0" Crushed Bedding/Backfill Rock. Spread 15 CY of 6" Jaw Run Base Rock over pipe for surfacing, capped with 10 CY of 1 1/2"-0" Crushed Rock. Install metal inlet marker.
	4.067	30"	14	65'	--	--	--	--	--	--	--	--	--	10	60	--	Stream crossing. Replace culvert as marked and directed by Authorized Officer (approx. 14'' fill @ CL) with hugger band and neoprene gasket. Will be lower than existing CMP. Place 30 CY of 1 1/2"-0" Crushed Bedding/Backfill Rock. Spread 25 CY of 6" Jaw Run Base Rock over pipe for surfacing, capped with 20 CY of 1 1/2"-0" Crushed Rock. Place 10 CY of Class 5 RipRap at inlet as fill armor. Place 60 CY of Class 5 RipRap at outlet as fill armor and energy dissipater. Install metal inlet marker.
	4.151	30"	14	65'	--	--	--	--	--	--	--	--	--	20	40	--	Stream crossing. Replace culvert as marked and directed by Authorized Officer (approx. 13'' fill @ CL) with hugger band and neoprene gasket. Will be lower than existing CMP. Place 30 CY of 1 1/2"-0" Crushed Bedding/Backfill Rock. Spread 25 CY of 6" Jaw Run Base Rock over pipe for surfacing, capped with 20 CY of 1 1/2"-0" Crushed Rock. Place 20 CY of Class 5 RipRap at inlet as fill armor. Place 40 CY of Class 5 RipRap at outlet as fill armor. Install metal inlet marker.
	4.206	18"	--	35'	--	--	--	--	--	--	--	--	--	--	--	--	Replace culvert as marked and directed by Authorized Officer. Place 15 CY of 1 1/2"-0" Crushed Bedding/Backfill Rock. Spread 15 CY of 6" Jaw Run Base Rock over pipe for surfacing, capped with 10 CY of 1 1/2"-0" Crushed Rock. Install metal inlet marker.
4-6-31.2	0.150	18"	--	30'	--	--	--	--	--	--	--	--	--	--	--	--	Replace culvert as marked and directed by Authorized Officer. Place 10 CY of 1 1/2"-0" Crushed Bedding/Backfill Rock. Spread 10 CY of 6" Jaw Run Base Rock over pipe for surfacing, capped with 10 CY of 1 1/2"-0" Crushed Rock. Install metal inlet marker.
	0.262	18"	--	35'	--	--	--	--	--	--	--	--	--	--	--	--	Replace culvert as marked and directed by Authorized Officer. Place 15 CY of 1 1/2"-0" Crushed Bedding/Backfill Rock. Spread 15 CY of 6" Jaw Run Base Rock over pipe for surfacing, capped with 10 CY of 1 1/2"-0" Crushed Rock. Install metal inlet marker.
	0.401	24"	--	45'	--	--	--	--	--	--	--	--	--	--	10	--	Stream crossing. Replace culvert as marked and directed by Authorized Officer (approx. 5.5'' fill @ CL). Place 20 CY of 1 1/2"-0" Crushed Bedding/Backfill Rock. Spread 20 CY of 6" Jaw Run Base Rock over pipe for surfacing, capped with 15 CY of 1 1/2"-0" Crushed Rock. Place 10 CY of Class 5 RipRap at outlet as fill armor. Install metal inlet marker.
	0.446	18"	--	50'	--	--	--	--	--	--	--	--	--	--	--	--	Replace culvert as marked and directed by Authorized Officer (approx. 8.5' fill @ CL). Place 20 CY of 1 1/2"-0" Crushed Bedding/Backfill Rock. Spread 20 CY of 6" Jaw Run Base Rock over pipe for surfacing, capped with 15 CY of 1 1/2"-0" Crushed Rock. Install metal inlet marker.
4-6-31.4	1+87	--	--	--	--	--	--	--	--	--	--	--	--	--	5	--	Stream crossing. Place 5 CY of Class 5 RipRap at outlet as energy dissipater. Install metal inlet marker.
4-6-31.5	0+10	18"	--	50'	--	--	--	--	--	--	--	--	--	--	--	--	Install culvert as marked and directed by Authorized Officer (culvert may have to slighlty bend to achieve desired alignment). Place 20 CY of 1 1/2"-0" Crushed Bedding/Backfill Rock. Spread 20 CY of 6" Jaw Run Base Rock over pipe for surfacing, capped with 15 CY of 1 1/2"-0" Crushed Rock.
	5+72	18"	--	35'	--	--	--	--	--	--	--	--	--	--	--	--	Install culvert as marked and directed by Authorized Officer. Place 15 CY of 1 1/2"-0" Crushed Bedding/Backfill Rock. Spread 15 CY of 6" Jaw Run Base Rock over pipe for surfacing, capped with 10 CY of 1 1/2"-0" Crushed Rock. Install metal inlet marker.

Gage Chart		
	Dec. Inches	
Gage	Steel	Alum.
10	.138	.135
12	.109	.105
14	.079	.075
16	.064	.060

1. Designed culvert lengths and locations are approximate.

***2**. all culverts have 2-2/3" x 1/2" unless otherwise noted.

***4.** Downspout or Standpipe Types
1) Full
2) Half
3) Flume

*** Downspouts and stand pipes (under 36" diameter) shall be CPP, Type C (single wall); unless otherwise specified.

**** Corrugated plastic pipe (CPP), Type S (double wall) shall be used for culvert sizes 24" and smaller. All larger culvets shall be aluminized steel. All aluminized steel culverts are to have hugger type bands and neoprene gaskets. Culverts 20' in length or smaller shall be one piece (no joints). No Culvert piece shall be shorter than 6 foot. Minimization of banding is required.

***5.** 1) Conventional or Fabricated
2) Turner type
3) Slip joint

***6.** Include special sections, structures, headwalls, footings & other data.

Culvert List

CULVERT LOCATIONS DESIGNED *2							DOWNSPOUT(d) or STANDPIPE(s) *4				AS BUILT			ROCK RIP RAP (GRADING) (a)		(b)	REMARKS *6
Road #	Sta./ M.P	SIZE	GAGE	LENGTH	CULVERT GRADE	INSTALL TYPE *3	SIZE	TYPE	LENGTH	TYPE OF ELBOW *5	SIZE	GAGE	LENGTH	INLET	OUTLET	Stucture inside pipe	
4-6-31.5	8+00	18"	--	35'	--	--	--	--	--	--	--	--	--	--	--	--	Install culvert as marked and directed by Authorized Officer. Place 15 CY of 1 1/2"-0" Crushed Bedding/Backfill Rock. Spread 15 CY of 6" Jaw Run Base Rock over pipe for surfacing, capped with 10 CY of 1 1/2"-0" Crushed Rock. Install metal inlet marker.
4-6-31.6	0+80	18"	--	50'	--	--	--	--	--	--	--	--	--	--	--	--	Install culvert across the old subgrade of the road to the right as marked and directed by Authorized Officer. Place 20 CY of 1 1/2"-0" Crushed Bedding/Backfill Rock. Spread 20 CY of 6" Jaw Run Base Rock over pipe for surfacing, capped with 15 CY of 1 1/2"-0" Crushed Rock. Install metal inlet marker.
	5+70	18"	--	30'	--	--	18"	1	10'	--	--	--	--	--	--	--	Install culvert and install downspout as marked and directed by Authorized Officer. Place 10 CY of 1 1/2"-0" Crushed Bedding/Backfill Rock. Spread 10 CY of 6" Jaw Run Base Rock over pipe for surfacing, capped with 10 CY of 1 1/2"-0" Crushed Rock. Install metal inlet marker.
	13+80	24"	--	45'	--	--	--	--	--	--	--	--	--	--	10	--	Stream crossing. Install culvert as marked and directed by Authorized Officer (approx. 7' fill @ CL). Place 20 CY of 1 1/2"-0" Crushed Bedding/Backfill Rock. Spread 20 CY of 6" Jaw Run Base Rock over pipe for surfacing, capped with 15 CY of 1 1/2"-0" Crushed Rock. Place 10 CY of Class 5 RipRap at outlet as fill armor and energy dissipater. Install metal inlet marker.
4-6-31.10	9+02	18"	--	35'	--	--	--	--	--	--	--	--	--	--	--	--	Install culvert as marked and directed by Authorized Officer. Place 15 CY of 1 1/2"-0" Crushed Bedding/Backfill Rock. Spread 15 CY of 6" Jaw Run Base Rock over pipe for surfacing, capped with 10 CY of 1 1/2"-0" Crushed Rock. Install metal inlet marker.
4-6-32.1	0.060	--	--	--	--	--	--	--	--	--	--	--	--	20	--	--	Stream crossing. Remove existing log blocking flow at inlet. Place 20 CY of Class 5 RipRap(10 CY to the left and 10 CY to the right) at the inlet to armor bank and direct flow of stream into culvert.
	0.174	18"	--	30'	--	--	--	--	--	--	--	--	--	--	--	--	Replace culvert as marked and directed by Authorized Officer. Place 10 CY of 1 1/2"-0" Crushed Bedding/Backfill Rock. Spread 10 CY of 1 1/2"-0" Crushed Rock capped over the surfacing rock from the 9" lift of 6" Jaw Run Base Rock. Install metal inlet marker.
	0.278	--	--	--	--	--	--	--	--	--	--	--	--	--	20	--	Cut and remove 5' of shotgunned outlet. Place 20 CY of Class 5 RipRap at outlet as energy dissipater. Spread additional 40 CY of 1 1/2"-0" Crushed Cap Rock.
	0.471	18"	--	35'	--	--	--	--	--	--	--	--	--	--	--	--	Install culvert as marked and directed by Authorized Officer. Place 15 CY of 1 1/2"-0" Crushed Bedding/Backfill Rock. Spread 10 CY of 1 1/2"-0" Crushed Rock capped over the surfacing rock from the 9" lift of 6" Jaw Run Base Rock. Install metal inlet marker.
	0.553	--	--	--	--	--	--	--	--	--	--	--	--	--	30	--	Existing CPP in fair conditoin, but has very little cover over pipe. Spread 30 CY of 1 1/2"-0" Crushed Rock capped over the surfacing rock from the 9" lift of 6" Jaw Run Base Rock. Place 30 CY of Class 5 RipRap at outlet energy dissipater and fill armor to shore up road shoulder and fill in existing erosion. Install metal inlet marker.
4-6-32.4	1.052	18"	--	30'	--	--	--	--	--	--	--	--	--	--	--	--	Replace culvert as marked and directed by Authorized Officer. Place 10 CY of 1 1/2"-0" Crushed Bedding/Backfill Rock. Spread 10 CY of 6" Jaw Run Base Rock over pipe for surfacing, capped with 10 CY of 1 1/2"-0" Crushed Rock. Install metal inlet marker.
	1.227	18"	--	50'	--	--	--	--	--	--	--	--	--	--	--	--	Replace culvert and shift inlet to the right to help horizontal alignment as marked and directed by Authorized Officer. Place 20 CY of 1 1/2"-0" Crushed Bedding/Backfill Rock. Spread 20 CY of 6" Jaw Run Base Rock over pipe for surfacing, capped with 15 CY of 1 1/2"-0" Crushed Rock. Install metal inlet marker.
	1.491	18"	--	30'	--	--	--	--	--	--	--	--	--	--	--	--	Install culvert as marked and directed by Authorized Officer. Place 10 CY of 1 1/2"-0" Crushed Bedding/Backfill Rock. Spread 10 CY of 6" Jaw Run Base Rock over pipe for surfacing, capped with 10 CY of 1 1/2"-0" Crushed Rock. Install metal inlet marker.
	1.825	18"	--	70'	--	--	--	--	--	--	--	--	--	--	--	--	Install culvert in ditchline as marked and directed by Authorized Officer. Place 30 CY of 1 1/2"-0" Crushed Bedding/Backfill Rock.
4-6-32.5	1+56-2+09	30" (perforated)	14	35'	--	--	--	--	--	--	--	--	--	--	--	--	Seep. Install a French-drain as marked and with the Authorized Officer on-site. The dimensions of the French-Drain are; 60' long, 35' wide, and 3.5' deep at centerline. Excavate 1' down on existing ground across entire length. Place 240 SY of woven geo-synthetic fabric in excavated area parallel with running surface of the road. Place 50 CY of 6" Jaw Run Base Rock on top of woven fabric to create a firm base. Wrap 185 CY of 6"-4" Drain Rock with 450 SY of non-woven geo-synthetic fabric, also running parallel with running surface (approx. 53' long, 35' wide, and 3.5' deep @ CL). Additionally, incase the culvert with 20 CY of 1 1/2"-3/4" Drain Rock to buffer around the 6"-4" Drain Rock. Use suitable on-site material to backfill over entire French-drain to achieve 9" cover over culvert. Surfacing will be from the 9" lift of 6" Jaw Run Base Rock. Install metal inlet marker.

Gage Chart		
	Dec. Inches	
Gage	Steel	Alum.
10	.138	.135
12	.109	.105
14	.079	.075
16	.064	.060

1. Designed culvert lengths and locations are approximate.

***2**. all culverts have 2-2/3" x 1/2" unless otherwise noted.

***4.** Downspout or Standpipe Types
1) Full
2) Half
3) Flume

*** Downspouts and stand pipes (under 36" diameter) shall be CPP, Type C (single wall); unless otherwise specified.

**** Corrugated plastic pipe (CPP), Type S (double wall) shall be used for culvert sizes 24" and smaller. All larger culvets shall be aluminized steel. All aluminized steel culverts are to have hugger type bands and neoprene gaskets. Culverts 20' in length or smaller shall be one piece (no joints). No Culvert piece shall be shorter than 6 foot. Minimization of banding is required.

***5.** 1) Conventional or Fabricated
2) Turner type
3) Slip joint

***6.** Include special sections, structures, headwalls, footings & other data.

Culvert List

CULVERT LOCATIONS							DOWNSPOUT(d) or STANDPIPE(s) *4				AS BUILT			ROCK RIP RAP (GRADING)			REMARKS *6
DESIGNED *2														(a)		(b)	
Road #	Sta./ M.P	SIZE	GAGE	LENGTH	CULVERT GRADE	INSTALL TYPE *3	SIZE	TYPE	LENGTH	TYPE OF ELBOW *5	SIZE	GAGE	LENGTH	INLET	OUTLET	Stucture inside pipe	
4-7-25.0	0.068	18"	--	35'	--	--	--	--	--	--	--	--	--	--	--	--	Replace culvert as marked and directed by Authorized Officer. Place 15 CY of 1 1/2"-0" Crushed Bedding/Backfill Rock. Spread 15 CY of 6" Jaw Run Base Rock over pipe for surfacing, capped with 10 CY of 1 1/2"-0" Crushed Rock. Install metal inlet marker.
	0.154	24"	--	65'	--	--	--	--	--	--	--	--	--	5	20	--	Stream crossing. Replace culvert as marked and directed by Authorized Officer (approx. 13' fill @ CL). Place 25 CY of 1 1/2"-0" Crushed Bedding/Backfill Rock. Spread 20 CY of 6" Jaw Run Base Rock over pipe for surfacing, capped with 15 CY of 1 1/2"-0" Crushed Rock. Place 5 CY of Class 5 RipRap at inlet as fill amror. Place 20 CY of Class 5 RipRap at outlet as fill armor and energy dissipater. Install metal inlet marker.
	0.181	36"	14	75'	--	--	--	--	--	--	--	--	--	5	30	--	Stream crossing. Replace culvert as marked and directed by Authorized Officer (approx. 16'' fill @ CL) with hugger band and neoprene gasket. Place 40 CY of 1 1/2"-0" Crushed Bedding/Backfill Rock. Spread 30 CY of 6" Jaw Run Base Rock over pipe for surfacing, capped with 20 CY of 1 1/2"-0" Crushed Rock. Place 5 CY of Class 5 RipRap at inlet as fill armor. Place 30 CY of Class 5 RipRap at outlet as fill armor and energy dissipater. Install metal inlet marker.
	0.236	18"	--	35'	--	--	--	--	--	--	--	--	--	--	--	--	Replace culvert as marked and directed by Authorized Officer. Place 15 CY of 1 1/2"-0" Crushed Bedding/Backfill Rock. Spread 15 CY of 6" Jaw Run Base Rock over pipe for surfacing, capped with 10 CY of 1 1/2"-0" Crushed Rock. Install metal inlet marker.
	0.309	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	Install metal inlet marker. Remove existing waterbar.

Gage Chart		
	Dec. Inches	
Gage	Steel	Alum.
10	.138	.135
12	.109	.105
14	.079	.075
16	.064	.060

1. Designed culvert lengths and locations are approximate.

***2**. all culverts have 2-2/3" x 1/2" unless otherwise noted.

***4.** Downspout or Standpipe Types
1) Full
2) Half
3) Flume

*** Downspouts and stand pipes (under 36" diameter) shall be CPP, Type C (single wall); unless otherwise specified.

**** Corrugated plastic pipe (CPP), Type S (double wall) shall be used for culvert sizes 24" and smaller. All larger culvets shall be aluminized steel. All aluminized steel culverts are to have hugger type bands and neoprene gaskets. Culverts 20' in length or smaller shall be one piece (no joints). No Culvert piece shall be shorter than 6 foot. Minimization of banding is required.

***5.** 1) Conventional or Fabricated
2) Turner type
3) Slip joint

***6.** Include special sections, structures, headwalls, footings & other data.

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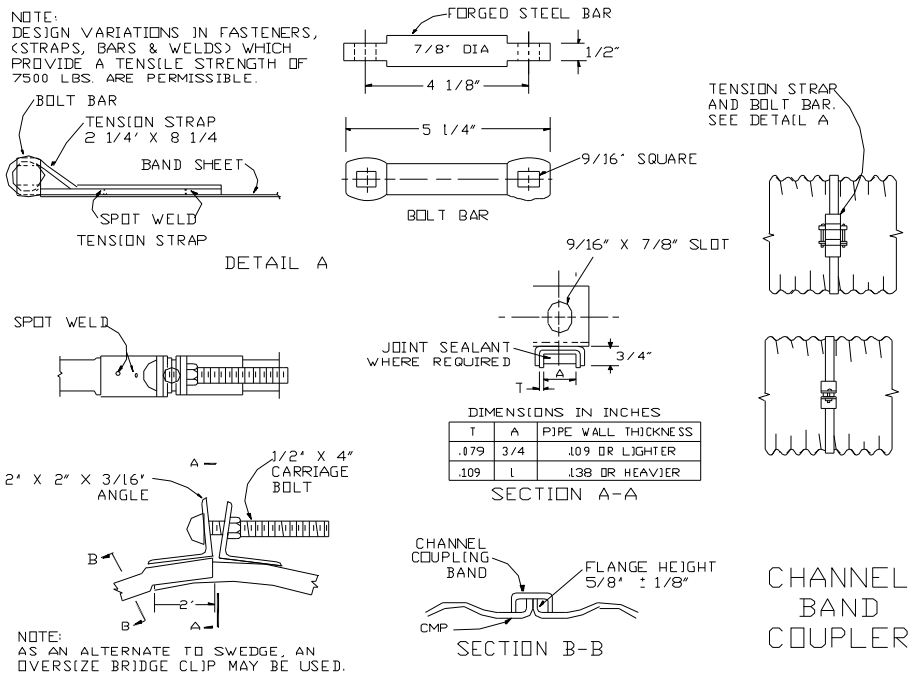
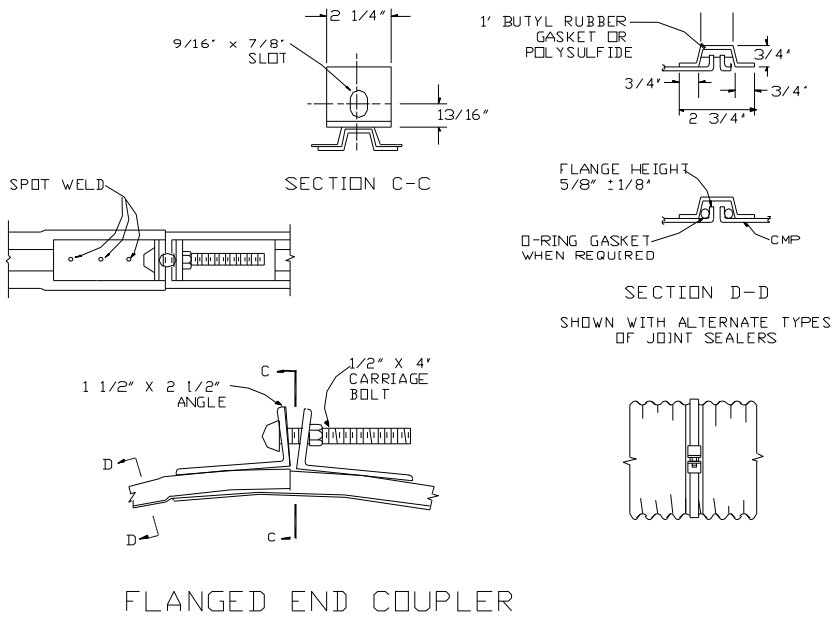
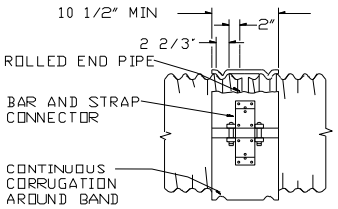
CULVERT BAND DETAILS







STANDARD CONSTRUCTION IS 1 PIECE 12" THRU 48" AND 2 PIECE 54" AND ABOVE

THE HUGGER COUPLER BAND OR AN APPROVED EQUIVALENT COUPLER BAND SHALL BE MADE OF THE SAME MATERIAL AND FINISH AS THE PIPES JOINED. THE COUPLER BANDS SHALL HAVE A MINIMUM WIDTH OF 10 1/2 INCHES AND MAY BE TWO NUMERICAL THICKNESSES LIGHTER THAN THE GAGE OR THICKNESS DESIGNATED FOR THE CONDUIT JOINED. THE BAND SHALL BE DESIGNED TO BE DRAWN TOGETHER WITH TWO 1/2 INCH BOLTS THROUGH USE OF A BAR AND STRAP SUITABLY WELDED TO THE BAND. THE BAND SHALL ENGAGE AND MESH WITH THE SECOND ANNULER CORRUGATION INWARD FROM THE END OF EACH OF THE CONDUIT SECTIONS JOINED.

GASKETS AND "HUGGER" TYPE BANDS, OR AN APPROVED EQUIVALENT COUPLER, SHALL BE INSTALLED INSTALLED ON ALL 48" AND LARGER METAL PIPES.

"HUGGER" COUPLER BANDS

STANDARD COUPLER BANDS								
CORRUGATED								
CULVERT SIZE (INCHES	STD. ANNULAR		HELICAL		3" X 1"		6" X 1"	
	WIDTH	NO. OF BOLTS	WIDTH	NO. OF BOLTS	WIDTH	NO. OF BOLTS	WIDTH	NO. OF BOLTS
UNDER 18	7	2	7	2				
18 TO 54	12	3	12	3	14	3	18	3
OVER 54	24	5	24	5	24	5	24	4

DATA IN THIS BLOCK DOES NOT APPLY TO PERFORATED PIPE UNDERDRAIN. FOR BANDS WITH "PUNCH-OUT" TYPE CONNECTIONS, 2 BOLTS ARE PERMISSIBLE FOR EACH LAP. BANDS SHALL LAP 1/2 WIDTH ONTO EACH SECTION OF PIPE AND MUST FULLY ENCIRCLE THE JOINT FORMING A NEARLY WATERTIGHT CONNECTION.

Ⓐ BANDS WITH ANGLES
Ⓑ BANDS WITH TENSION TYPE CONNECTIONS

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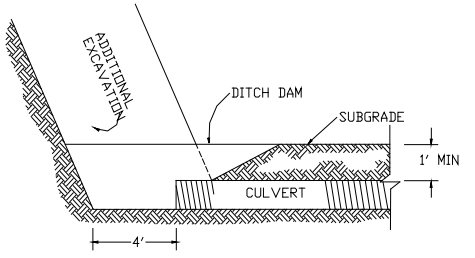
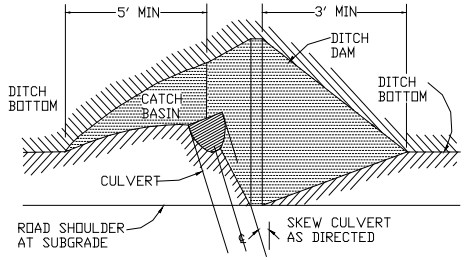
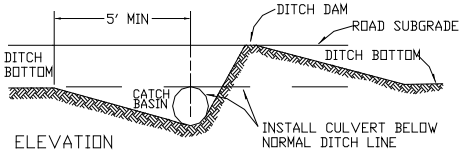
CULVERT INSTALLATION DETAILS



CROSS SECTION AT CATCH BASIN



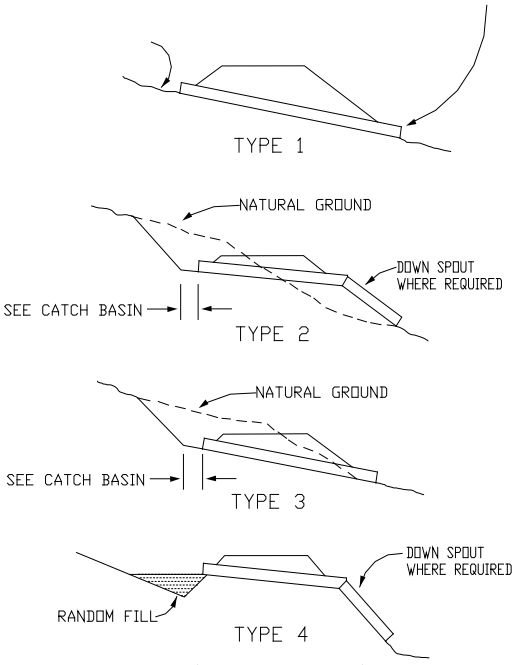
PLAN VIEW



ELEVATION

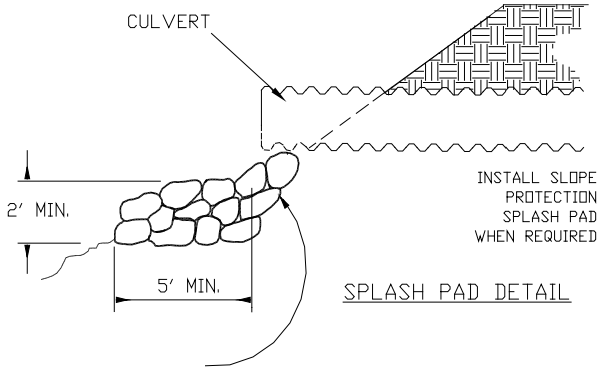
CATCH BASIN

not to scale



CULVERT INSTALLATION TYPES

not to scale

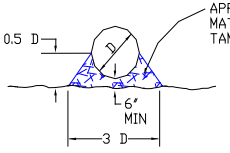


SPLASH PAD DETAIL

NOTE:

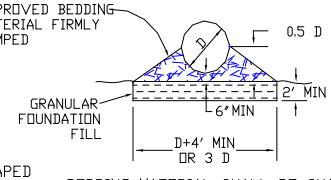
1. PLACE ROCKS UNDER THE OUTLET
2. SPLASH PAD WIDTH SHALL MEET OR EXCEED CULVERT DIAMETER

not to scale



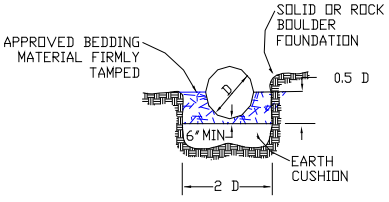
BEDDING MATERIAL SHALL BE SHAPED TO FIT THE BOTTOM OF THE CULVERT.

BEDDING OF CULVERTS ON STABLE NATURAL GROUND FOUNDATION OR COMPACTED EMBANKMENT



BEDDING MATERIAL SHALL BE SHAPED TO FIT THE BOTTOM OF THE CULVERT.

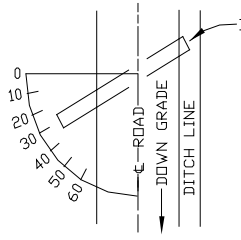
BEDDING OF CULVERTS ON SOFT SPONGY OR UNSTABLE SOIL FOUNDATION



BEDDING MATERIAL SHALL BE SHAPED TO FIT THE BOTTOM OF THE CULVERT. EARTH CUSHIONING OF SILTY CLAY LOAM OR SAND MAY BE USED IF MATERIAL CAN BE PLACED IN THE DRY CONDITION. IF THE EXCAVATION IS WET, USE GRANULAR FOUNDATION FILL MATERIAL. MAINTAIN 8" MIN. DEPTH BETWEEN HIGH POINTS OF ROCKS AND/OR BOULDERS AND THE BOTTOM OF THE CULVERT.

BEDDING OF CULVERT IN SOLID ROCK OR BOULDER FOUNDATION

BEDDING OF CULVERTS



SKEW DIAGRAM

THE GRADE OF CROSSDRAINS SHALL BE AT LEAST 2% GREATER THAN THE GRADE OF THE DITCH.

ALWAYS THINK SAFETY

not to scale

ROCK VOLUMES TOTALS

ROAD SEGMENT:		4-6-20.1		STATION:	0+00 - 12+81		
Application	Rock Size and Type	Location	Compacted Depth	Volume per Station/Item (CY)	Approx. Total (CY)	Curve Widening (CY)	Summary Totals
Road Rock	1-1/2"-0"	Cap Spot Rock	--	--	--	--	20
Road Rock	6" Jaw Run	Base Spot Rock	--	--	--	--	40
Stabilization Wall	RipRap: Class 5	Sta. 0+35	--	--	--	--	20

ROAD SEGMENT:		4-6-29.0		MILEAGE:	0.000 - 1.181		
Application	Rock Size and Type	Location	Compacted Depth	Volume per Station/Item (CY)	Approx. Total (CY)	Curve Widening (CY)	Summary Totals
Road Rock	1-1/2"-0"	Cap Rock: 0.490 - 0.577	4"	20	92	55	147
Road Rock	1-1/2"-0"	Cap Spot Rock	---	---	---	---	65
Road Rock	6" Jaw Run	Base Rock: 0.490 - 0.577, 1.135, 1.181	9"	50	351	33	384
Road Rock	6" Jaw Run	Base Spot Rock	---	---	---	---	90
Culverts	1-1/2"-0"	Bedding/Backfill	--	--	--	--	70
Fill Armor/Energy Dissipater.	RipRap: Class 5	MP 0.848	---	---	---	---	50

ROAD SEGMENT:		4-6-29.1		MILEAGE:	0.000 - 0.170		
Application	Rock Size and Type	Location	Compacted Depth	Volume per Station/Item (CY)	Approx. Total (CY)	Curve Widening (CY)	Summary Totals
Road Rock	1-1/2"-0"	Cap Spot Rock	--	--	--	--	10
Road Rock	6" Jaw Run	Base Spot Rock	--	--	--	--	20

ROAD SEGMENT:		4-6-29.2		MILEAGE:	0.000 - 0.630		
Application	Rock Size and Type	Location	Compacted Depth	Volume per Station/Item	Approx. Total (CY)	Curve Widening	Summary Totals
Road Rock	1-1/2"-0"	Cap Spot Rock	---	---	---	---	30
Road Rock	6" Jaw Run	Base Spot Rock	---	---	---	---	50

ROAD SEGMENT:		4-6-29.4		STATION:	0+00 - 7+70		
Application	Rock Size and Type	Location	Compacted Depth	Volume per Station/Item (CY)	Approx. Total (CY)	Curve Widening (CY)	Summary Totals
Road Rock	1-1/2"-0"	Cap Spot Rock	--	--	--	--	25
Road Rock	6" Jaw Run	Base Spot Rock	--	--	--	--	40
Culverts	1-1/2"-0"	Bedding/Backfill	--	--	--	--	20

ROAD SEGMENT:		4-6-29.5		STATION:	0+00 - 13+30		
Application	Rock Size and Type	Location	Compacted Depth	Volume per Station/Item (CY)	Approx. Total (CY)	Curve Widening (CY)	Summary Totals
Road Rock	1-1/2"-0"	Cap Spot Rock	---	---	---	---	20
Road Rock	6" Jaw Run	Base Rock: 0+00 - 13+30	9"	50	665	57	722
Road Rock	6" Jaw Run	Base Spot Rock	---	---	---	---	40
French Drain	1-1/2"-3/4" Drain Rock	Sta. 8+28	--	--	---	---	120

ROCK VOLUMES TOTALS

ROAD SEGMENT:		4-6-29.6		STATION:		0+00 - 10+65	
Application	Rock Size and Type	Location/Number	Compacted Depth	Volume per Station/Item (CY)	Approx. Total (CY)	Curve Widening (CY)	Summary Totals
Road Rock	1-1/2"-0"	Cap Spot Rock	--	--	--	--	10
Road Rock	6" Jaw Run	Base Spot Rock	--	--	--	--	20

ROAD SEGMENT:		4-6-29.8		STATION:		0+00 - 2+20	
Application	Rock Size and Type	Location	Compacted Depth	Volume per Station/Item (CY)	Approx. Total (CY)	Curve Widening (CY)	Summary Totals
Road Rock	1-1/2"-0"	Cap Spot Rock	--	--	--	--	10
Road Rock	6" Jaw Run	Base Spot Rock	---	---	---	---	20

ROAD SEGMENT:		4-6-29.10		STATION:		0+00 - 1+66	
Application	Rock Size and Type	Location/Number	Compacted Depth	Volume per Station/Item (CY)	Approx. Total (CY)	Curve Widening (CY)	Summary Totals
Road Rock	1-1/2"-0"	Cap Spot Rock	---	---	---	---	25
Road Rock	6" Jaw Run	Base Rock: 0+00 - 1+66	9"	50	83	8	91
Road Rock	6" Jaw Run	Base Spot Rock	---	---	---	---	20
Culvert	1-1/2"-0"	Bedding/Backfill Rock	--	--	---	---	20

ROAD SEGMENT:		4-6-29.11		STATION:		0+00 - 12+80	
Application	Rock Size and Type	Location/Number	Compacted Depth	Volume per Station/Item (CY)	Approx. Total (CY)	Curve Widening (CY)	Summary Totals
Road Rock	1-1/2"-0"	Cap Spot Rock	---	---	---	---	45
Road Rock	6" Jaw Run	Base Rock: 0+00 - 12+80	9"	50	640	80	720
Road Rock	6" Jaw Run	Base Spot Rock	---	---	---	---	20
Culvert	1-1/2"-0"	Bedding/Backfill Rock	--	--	---	---	20

ROAD SEGMENT:		4-6-30.0		MILEAGE:		0.000 - 0.122	
Application	Rock Size and Type	Location/Number	Compacted Depth	Volume per Station/Item (CY)	Approx. Total (CY)	Curve Widening (CY)	Summary Totals
Road Rock	1-1/2"-0"	Cap Spot Rock	---	---	---	---	20

ROAD SEGMENT:		4-6-30.1		STATION:		0+00 - 18+68	
Application	Rock Size and Type	Location/Number	Compacted Depth	Volume per Station/Item (CY)	Approx. Total (CY)	Curve Widening (CY)	Summary Totals
Road Rock	1-1/2"-0"	Cap Spot Rock	---	---	---	---	25
Road Rock	6" Jaw Run	Base Spot Rock	---	---	---	---	40
Culvert	1-1/2"-0"	Bedding/Backfill Rock	--	--	---	---	20

ROAD SEGMENT:		4-6-31.0		STATION:		0+00 - 46+48	
Application	Rock Size and Type	Location	Compacted Depth	Volume per Station/Item (CY)	Approx. Total (CY)	Curve Widening (CY)	Summary Totals
Road Rock	1-1/2"-0"	Cap Rock: 36+70 - 46+48	4"	20	196	15	211
Road Rock	1-1/2"-0"	Cap Spot Rock	---	---	---	---	180
Road Rock	6" Jaw Run	Base Rock: 0+00 - 46+48	9"	50	2,324	340	2,664
Road Rock	6" Jaw Run	Base Spot Rock	---	---	---	---	40
Culverts	1-1/2"-0"	Bedding/Backfill	--	--	--	--	255
Ditchline Armor	PitRun	Sta. 24+23 - 24+93	--	--	--	--	10
Outlet Fill Armor	RipRap: Class 5	Sta. 8+25, 8+88, 23+37	--	--	--	--	80
Inlet Fill Armor	RipRap: Class 5	Sta. 8+25, 8+88, 23+37	--	--	--	--	50
Road Block	RipRap: Class 5	Sta. 33+32	---	---	---	---	30

ROCK VOLUMES TOTALS

ROAD SEGMENT:		4-6-31.1		MILEAGE:		0.000 - 4.327	
Application	Rock Size and Type	Location	Compacted Depth	Volume per Station/Item (CY)	Approx. Total (CY)	Curve Widening (CY)	Summary Totals
Road Rock	1-1/2"-0"	Cap Spot Rock	---	---	---	---	715
Road Rock	6" Jaw Run	Base Spot Rock	---	---	---	---	1,200
Culverts	1-1/2"-0"	Bedding/Backfill	--	--	--	--	545
Outlet Energy Dissipater	RipRap: Class 5	MP. 0.188	--	--	--	--	5
Outlet Fill Armor/Energy Dissipater	RipRap: Class 5	MP. 2.171, 2.238, 2.361, 4.067	--	--	--	--	210
Outlet Fill Armor	RipRap: Class 5	MP. 1.316, 4.151	---	---	---	---	80
Inlet Fill Armor	RipRap: Class 5	MP. 2.171, 2.238, 2.361, 4.067, 4.151	---	---	---	---	80

ROAD SEGMENT:		4-6-31.2		MILEAGE:		0.000 - 0.660	
Application	Rock Size and Type	Location/Number	Compacted Depth	Volume per Station/Item (CY)	Approx. Total (CY)	Curve Widening (CY)	Summary Totals
Road Rock	1-1/2"-0"	Cap Spot Rock	---	---	---	---	60
Road Rock	6" Jaw Run	Base Spot Rock	---	---	---	---	85
Culvert	1-1/2"-0"	Bedding/Backfill Rock	---	---	---	---	65
Outlet Fill Armor	RipRap: Class 5	MP. 0.401	---	---	---	---	10

ROAD SEGMENT:		4-6-31.3		STATION:		0+00 - 4+86	
Application	Rock Size and Type	Location	Compacted Depth	Volume per Station/Item (CY)	Approx. Total (CY)	Curve Widening (CY)	Summary Totals
Road Rock	1-1/2"-0"	Cap Spot Rock	--	--	--	--	10
Road Rock	6" Jaw Run	Base Spot Rock	--	--	--	--	20

ROAD SEGMENT:		4-6-31.4		STATION:		0+00 - 24+32	
Application	Rock Size and Type	Location	Compacted Depth	Volume per Station/Item (CY)	Approx. Total (CY)	Curve Widening (CY)	Summary Totals
Road Rock	1-1/2"-0"	Cap Spot Rock	--	--	--	--	20
Outlet Energy Dissipater	RipRap: Class 5	Sta. 1+87	--	--	--	--	5

ROAD SEGMENT:		4-6-31.5		STATION:		0+00 - 15+45	
Application	Rock Size and Type	Location	Compacted Depth	Volume per Station/Item	Approx. Total (CY)	Curve Widening	Summary Totals
Road Rock	1-1/2"-0"	Cap Spot Rock	---	---	---	---	45
Road Rock	6" Jaw Run	Base Spot Rock	---	---	---	---	70
Culvert	1-1/2"-0"	Bedding/Backfill Rock	---	---	---	---	50

ROAD SEGMENT:		4-6-31.6		STATION:		0+00 - 24+44	
Application	Rock Size and Type	Location	Compacted Depth	Volume per Station/Item (CY)	Approx. Total (CY)	Curve Widening (CY)	Summary Totals
Road Rock	1-1/2"-0"	Cap Spot Rock	---	---	---	---	40
Road Rock	6" Jaw Run	Base Spot Rock	---	---	---	---	50
Culvert	1-1/2"-0"	Bedding/Backfill Rock	---	---	---	---	50
Outlet Fill Armor/Energy Dissipater	RipRap: Class 5	Sta. 13+80	---	---	---	---	10

ROCK VOLUMES TOTALS

ROAD SEGMENT:		4-6-31.8		STATION:	0+00 - 9+60		
Application	Rock Size and Type	Location	Compacted Depth	Volume per Station/Item (CY)	Approx. Total (CY)	Curve Widening (CY)	Summary Totals
Road Rock	1-1/2"-0"	Cap Spot Rock	--	--	--	--	10
Road Rock	6" Jaw Run	Base Spot Rock	--	--	--	--	20

ROAD SEGMENT:		4-6-31.10		STATION:	0+00 - 13+50		
Application	Rock Size and Type	Location/Number	Compacted Depth	Volume per Station/Item (CY)	Approx. Total (CY)	Curve Widening (CY)	Summary Totals
Road Rock	1-1/2"-0"	Cap Spot Rock	---	---	---	---	20
Road Rock	6" Jaw Run	Base Spot Rock	---	---	---	---	35
Culvert	1-1/2"-0"	Bedding/Backfill Rock	---	---	---	---	15

ROAD SEGMENT:		4-6-31.11		STATION:	0+00 - 3+19		
Application	Rock Size and Type	Location/Number	Compacted Depth	Volume per Station/Item (CY)	Approx. Total (CY)	Curve Widening (CY)	Summary Totals
Road Rock	1-1/2"-0"	Cap Spot Rock	--	--	--	--	10
Road Rock	6" Jaw Run	Base Spot Rock	--	--	--	--	20

ROAD SEGMENT:		4-6-32.1		MILEAGE:	0.000 - 0.559		
Application	Rock Size and Type	Location/Number	Compacted Depth	Volume per Station/Item (CY)	Approx. Total (CY)	Curve Widening (CY)	Summary Totals
Road Rock	1-1/2"-0"	Cap Spot Rock	---	---	---	---	100
Road Rock	6" Jaw Run	Base Rock: 0.000 - 0.559	9"	50	1,476	140	1,616
Road Rock	6" Jaw Run	Base Spot Rock	---	---	---	---	20
Culverts	1-1/2"-0"	Bedding/Backfill	--	--	--	--	25
Outlet Energy Dissipater	RipRap: Class 5	MP. 0.278	--	--	--	--	20
Inlet Fill Armor	RipRap: Class 5	MP. 0.060	--	--	--	--	20
Outlet Fill Armor/Energy Dissipater	RipRap: Class 5	MP. 0.553	---	---	---	---	30

ROAD SEGMENT:		4-6-32.4		MILEAGE:	0.000 - 1.825		
Application	Rock Size and Type	Location/Number	Compacted Depth	Volume per Station/Item (CY)	Approx. Total (CY)	Curve Widening (CY)	Summary Totals
Road Rock	1-1/2"-0"	Cap Spot Rock	---	---	---	---	65
Road Rock	6" Jaw Run	Base Rock: 1.438 - 1.478, 1.583 - 1.825	9"	50	744	94	838
Road Rock	6" Jaw Run	Base Spot Rock	---	---	---	---	100
Culverts	1-1/2"-0"	Bedding/Backfill	--	--	--	--	70

ROCK VOLUMES TOTALS

ROAD SEGMENT:		4-6-32.5		STATION:	0+00 - 3+79		
Application	Rock Size and Type	Location	Compacted Depth	Volume per Station/Item (CY)	Approx. Total (CY)	Curve Widening (CY)	Summary Totals
Road Rock	1-1/2"-0"	Cap Spot Rock	---	---	---	---	10
Road Rock	6" Jaw Run	Base Rock: 0+00 - 3+79	9"	50	190	17	207
Road Rock	6" Jaw Run	Base Spot Rock	---	---	---	---	70
French Drain	6"-4" Drain Rock	Sta. 1+56 - 2+09	---	---	---	---	185
French Drain	1-1/2"-3/4" Drain Rock	Sta. 1+56 - 2+09	---	---	---	---	20

ROAD SEGMENT:		4-7-25.0		MILEAGE:	0.000 - 0.394		
Application	Rock Size and Type	Location	Compacted Depth	Volume per Station/Item (CY)	Approx. Total (CY)	Curve Widening (CY)	Summary Totals
Road Rock	1-1/2"-0"	Cap Spot Rock	---	---	---	---	105
Road Rock	6" Jaw Run	Base Spot Rock	---	---	---	---	80
Culvert	1-1/2"-0"	Bedding/Backfill Rock	---	---	---	---	95
Inlet Fill Armor	RipRap: Class 5	MP. 0.154, 0.181	---	---	---	---	10
Outlet Fill Armor/Energy Dissipater	RipRap: Class 5	MP. 0.154, 0.181	---	---	---	---	50

ROAD SEGMENT:		4-7-25.1		MILEAGE:	0.000 - 0.032		
Application	Rock Size and Type	Location	Compacted Depth	Volume per Station/Item (CY)	Approx. Total (CY)	Curve Widening (CY)	Summary Totals
Road Rock	1-1/2"-0"	Cap Spot Rock	---	---	---	---	30

ROAD SEGMENT:		4-7-25.2		STATION:	0+00 - 5+42		
Application	Rock Size and Type	Location	Compacted Depth	Volume per Station/Item (CY)	Approx. Total (CY)	Curve Widening (CY)	Summary Totals
Road Rock	1-1/2"-0"	Cap Spot Rock	--	--	--	--	10
Road Rock	6" Jaw Run	Base Spot Rock	--	--	--	--	20

ROAD SEGMENT:		4-7-25.3		STATION:	0+00 - 2+70		
Application	Rock Size and Type	Location	Compacted Depth	Volume per Station/Item (CY)	Approx. Total (CY)	Curve Widening (CY)	Summary Totals
Road Rock	1-1/2"-0"	Cap Spot Rock	--	--	--	--	10
Road Rock	6" Jaw Run	Base Spot Rock	--	--	--	--	20

ROAD SEGMENT:		4-7-25.4		STATION:	0+00 - 10+10		
Application	Rock Size and Type	Location	Compacted Depth	Volume per Station/Item (CY)	Approx. Total (CY)	Curve Widening (CY)	Summary Totals
Road Rock	1-1/2"-0"	Cap Spot Rock	--	--	--	--	10
Road Rock	6" Jaw Run	Base Spot Rock	--	--	--	--	20

ROCK VOLUMES TOTALS

ROAD SEGMENT:		**4-7-25.5**		**STATION:**	**0+00 - 6+80**		
Application	Rock Size and Type	Location	Compacted Depth	Volume per Station/Item (CY)	Approx. Total (CY)	Curve Widening (CY)	Summary Totals
Road Rock	1-1/2"-0"	Cap Spot Rock	--	--	--	--	10
Road Rock	6" Jaw Run	Base Spot Rock	--	--	--	--	20
ROAD SEGMENT:		**4-7-25.7**		**STATION:**	**0+00 - 4+46**		
Application	Rock Size and Type	Location	Compacted Depth	Volume per Station/Item (CY)	Approx. Total (CY)	Curve Widening (CY)	Summary Totals
Road Rock	1-1/2"-0"	Cap Spot Rock	--	--	--	--	10
Road Rock	6" Jaw Run	Base Spot Rock	--	--	--	--	20

ROAD MAINTENANCE SPECIFICATIONS

General road maintenance specifications are designated by numeric symbols according to the type of work performed as follows:

SECTION	DESCRIPTION
3000	General
3100	Operational Maintenance
3200	Seasonal Maintenance
3300	Final Maintenance
3400	Other Maintenance
3500	Decommissioning

GENERAL - 3000

3001 The Purchaser shall be required to maintain all roads as shown on the Exhibit E maps of this contract in accordance with Sections 3000, 3100, 3200, 3300, 3400, and 3500 of this exhibit.

3001a The Purchaser shall be required to provide maintenance on roads in accordance with Subsections 3405, 3405a, 3405b, 3406b.

3002 The Purchaser shall maintain the cross section of existing dirt or graveled roads to the existing geometric standards. Any roads required to be constructed, improved, or renovated under terms of this contract shall be maintained to the geometric standards required in Exhibit C of this contract.

3003 The minimum required maintenance on any Purchaser maintained roads shall include the provisions specified in Subsections 3101, 3104, and 3105.

3004 The Purchaser shall be responsible for providing timely maintenance and cleanup on any roads with logging units substantially completed prior to moving operations to other roads. The maximum length of non-maintained or non-cleanup of the road prism shall not exceed the sum of one (1) mile at any time. Release of maintenance requirements may be granted, upon written request, when the conditions specified in Sections 3300 and 3400 are met satisfactorily.

OPERATIONAL MAINTENANCE - 3100

3101 The Purchaser shall blade and shape the road surface and shoulders with a motor grader, when directed by the Authorized Officer. Banks shall not be undercut. Back blading with tractors or similar equipment will be allowed only around landings and other areas when approved by the Authorized Officer.

3102 The Purchaser shall furnish and place 865 cu.yds. of aggregate conforming to the requirements in Sections 1200 of Exhibit C of this contract on the roadway at locations and in the amounts designated by the Authorized Officer.

630 cu.yds. - To be placed on BLM controlled roads as directed by Authorized Officer (maintenance rock: Sections 42.v.).

235 cu yds – To be placed on non-BLM controlled roads as directed by the Authorized Officer (maintenance rock: Section 42.ee.)

This aggregate shall be used to repair surface failures and areas of depleted surface depth excluding damages covered by Section 12 of this contract. The aggregate shall be furnished, hauled, placed, spread, and compacted by use of dump trucks, water trucks, and motor grader or similar equipment.

3104 The purchaser shall perform other road cleanup including removal of debris, fallen timber, bank slough, and slides which can practicably be accomplished by a motor grader, rubber tired front end bucket loader, rubber tired backhoe or comparable equipment, and by the use of hand tools.

3104a Removal of bank slough and slide material includes placement of material at the nearest designated, suitable disposal site where material cannot erode into streams, lakes, or reservoirs or cause undue damage to road fill slopes which have been planted or mulched to control soil erosion as directed by the Authorized Officer.

3104b The Purchaser shall be responsible for removal of all slides or slough, up to fifteen station yards in quantity, at any one site. This work includes unlimited multiple sites on all roads required to be maintained by the purchaser.

Prior to removal of any slough or slide material exceeding fifteen station yards at any one site, the Purchaser and the Authorized Officer or their Authorized Representatives shall agree in writing, in the field, to the quantity of material, method of disposal, and the disposal site. Work may commence immediately after agreement.

Upon completion of agreed upon work, a reduction in timber sale purchase price will be made to offset the cost of the work, based on current BLM Road Cost Guide. Adjustments in purchase price for completed work shall be made as necessary and no less than once per year when actual work is ongoing.

3105 The Purchaser shall be responsible for maintaining normal flow in drainage structures. This includes cleaning out drainage ditches, catch basins, clearing pipe inverts of sediment and other debris lodged in the barrel of the pipe, and maintaining water dips and waterbars using equipment specified in Subsection 3104 and other culvert cleaning and flushing equipment.

3108 The Purchaser shall avoid fouling gravel or bituminous surfaces through covering with earth and debris from side ditches, slides or other sources. The Purchaser shall also avoid blading surfacing material off the running surface of the roadway. (Skidding of logs on the roadway in or outside designated logging units is not authorized without prior written approval by the Authorized Officer. Repair required caused by such skidding activity is not considered maintenance and shall be repaired at the Purchaser's expense.)

SEASONAL MAINTENANCE - 3200

3201 The Purchaser shall perform preventative maintenance at the end of Purchaser's hauling each season and during non-hauling periods which occur between other

operations on the contract area. This includes requirements specified in Section 3100.

3202 The purchaser shall perform and complete maintenance specified in Sections 3000, 3100, and 3200 on all roads maintained by him, during times when there is a low potential to deliver sediment to streams, as determined by Authorized Officer, and as specified in Subsection 3203, after initial commencement of construction or logging operations. Thereafter, all roads shall have continuous preventive maintenance and road cleanup. This includes all roads used and not used during the preceding operating seasons.

3203 The Purchaser shall complete road cleanup and maintenance, as specified in Section 3100, at the completion of logging operations on any roads located in an area separate from the area where logging activities will resume.

3204 The Purchaser shall be responsible for performing post storm inspections and maintenance during the winter season to minimize erosion and potential road or watershed damage.

FINAL MAINTENANCE - 3300

3301 The Purchaser shall complete final maintenance and/or damage repairs on all roads used under terms of their contract within thirty (30) calendar days following the completion of hauling and in accordance with Sec. 16(b) of this contract. This work shall include any maintenance and/or damage repairs specified in Sections 3000, 3100, and 3200 necessary to meet the conditions specified in Subsection 3002 and shall be executed in accordance with Subsection 3302 of this section.

The Authorized Officer may grant acceptance of Purchaser's maintenance responsibility in part where certain individual roads or road segments are no longer of any use to the Purchaser's remaining removal operations, providing that all contract requirements as specified under Sec. 16(b), Special Provisions (Sections 3000, 3100, 3200 and 3300 of the maintenance specifications) have been completed and a relinquishment of cutting and removal rights on cutting units tributary to these roads is signed by the Purchaser. Request for partial acceptance must be submitted in writing by the Purchaser.

3302 The Purchaser shall perform final road maintenance only when weather or soil moisture conditions are suitable for normal maintenance equipment operations as determined by the Authorized Officer.

If final maintenance is delayed after the date required in Subsection 3301 of this contract by adverse soil moisture or unsuitable equipment operating conditions, the Purchaser will be notified by the Authorized Officer when soil moisture and equipment operating conditions are suitable. The Purchaser shall then be required to complete final maintenance within 30 days.

OTHER MAINTENANCE - 3400

3401 The Purchaser shall repair any damage to road surfaces that was specified under Subsection 3108. This repair includes restoring the roadway to the designed standard and replacement of surfacing with approved surface material. This repair is not limited to use of equipment specified in Subsection 3104.

3402 The Purchaser shall be permitted to remove ice and snow from roads authorized for use under this contract only when prior written approval has been secured from the Authorized Officer. The Purchaser shall submit a written request for permission to remove ice and snow in advance of the date operations are to begin.

Upon receiving written authorization for ice or snow removal, the Purchaser will perform the work according to the conditions and equipment requirements set forth in the authorization.

DECOMMISSIONING – 3500

3501 Decommissioning on the following roads shall consist of removing cross drains and draw culverts. Work includes subsoiling, spread government supplied grass seed, installing non-drivable waterbars, scattering slash, removing culverts, and blocking roads from access by vehicles. This work is *not* required for road acceptance under Section 18 of this contract.

Road No or Site	From Sta/MP	To Sta/MP	Length
4-6-29.4	0+00	7+70	770’
4-6-31.10	0+00	13+50	1,350’
4-6-31.11	0+00	3+19	319’
4-7-25.2	0+00	5+42	542’
4-7-25.3	0+00	2+70	270’
4-7-25.4	0+00	10+10	1,010’
4-7-25.5	0+00	6+80	680’
4-7-25.6	0+00	7+70	770’
4-7-25.7	0+00	4+46	446’
4-7-36.1	0+00	10+05	1,005’

3501c Decommissioning on the following roads shall consist of removing cross drains and draw culverts. Work includes installing non-drivable waterbars, spread

government supplied grass seed, and blocking roads from access by vehicles. This work is *not* required for road acceptance under Section 18 of this contract.

Road No or Site	From Sta/MP	To Sta/MP	Length
4-6-29.6	0+00	10+65	1,065’
4-6-29.7	0+00	5+95	595’
4-6-29.8	0+00	2+20	220’
4-6-29.9	0+00	1+55	155’
4-6-30.1	11+08	18+68	760’
4-6-31.3	0+00	4+86	486’
4-6-31.4	8+77	24+32	1,555’
4-6-31.5	0+00	15+45	1,545’
4-6-31.6	0+00	24+44	2,444’
4-6-31.7	0+00	13+93	1,393’
4-6-31.8	0+00	9+60	960’
4-6-31.9	0+00	3+50	350’

3501d Stabilization of the following roads shall consist of installing drivable waterbars/waterdips (as directed). This work is *not* required for road acceptance under Section 18 of this contract.

Road No or Site	From Sta/MP	To Sta/MP	Length
4-6-29.0	0.000	0.382	0.382 Miles
4-6-31.1	0.000	4.327	4.327 Miles

3504 Decommissioning and Stabilization work shall be completed after all harvesting activities requiring that road segment have ceased, unless otherwise authorized in writing by the Authorized Officer. All decommissioning and stabilization work shall be performed during times when there is a low potential to deliver sediment to streams, as determined by the Authorized Officer (except in-stream work, which is in North Yamhill River Watershed:

From	To
July 15	September 30

3505 Where draw crossing fill material is to be excavated and removed, the finished bottom of draw profile shall be reestablished to its original channel grade, and resulting adjacent banks shall be constructed to a 2:1 backslope ratio.

3507 Culverts and Inlet Markers removed during decommissioning shall become the property of the BLM. All culverts and bands removed from the roadbed shall be recovered in such a manner as to preserve the pipe from rips and holes. The Purchaser shall be responsible for delivering culvert materials to the BLM Cedar Creek Storage Facility (SW¼ sec. 5, T. 3 S., R. 6 W., WM.) and for payment of any fees required. This task shall be done prior to termination of this contract.

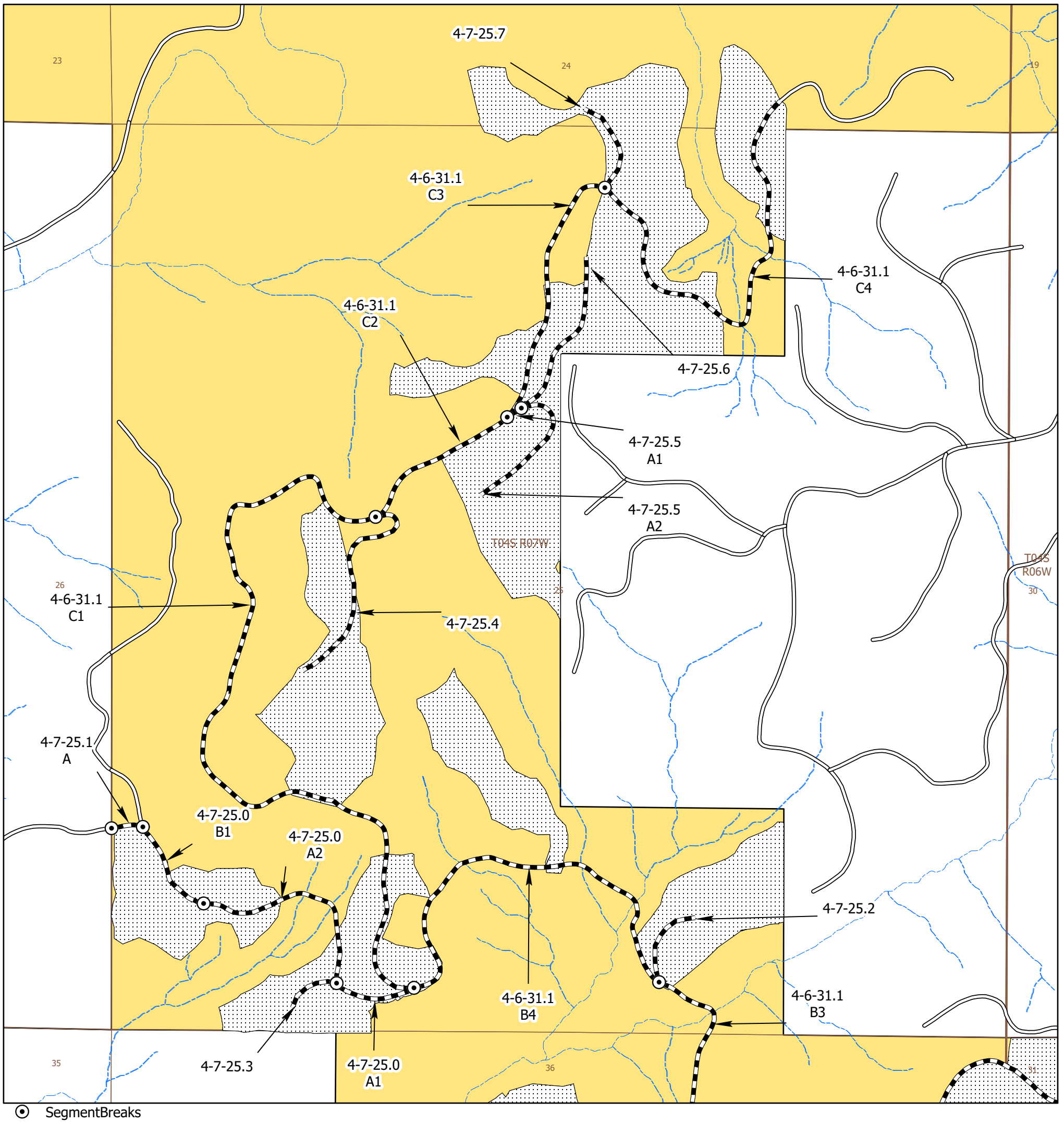
3509 Decommissioned roads shall have access blocked with barricades as shown on Exhibit C page 51. Stumps and woody debris used in the construction of barricades shall be material piled and stored during the clearing and grubbing process of road construction.

3511 Subsoiling shall be accomplished by using excavator attachments, log loader tongs, or other acceptable equipment capable of de-compacting the soil to a depth of 18 inches. The full width of the roadbed shall be loosened by the subsoiling operation, with no portion of the bed having been left at the original compacted density. Ripper entries into the roadbed shall be spaced where total subgrade subsoiling is accomplished.

3513 Waterbars (drivable and non-drivable)/Waterdips shall be installed across full width of roadway at locations marked in the field by Authorized Officer and constructed to the dimensions of the waterbar detail on Page 51 of Exhibit C.

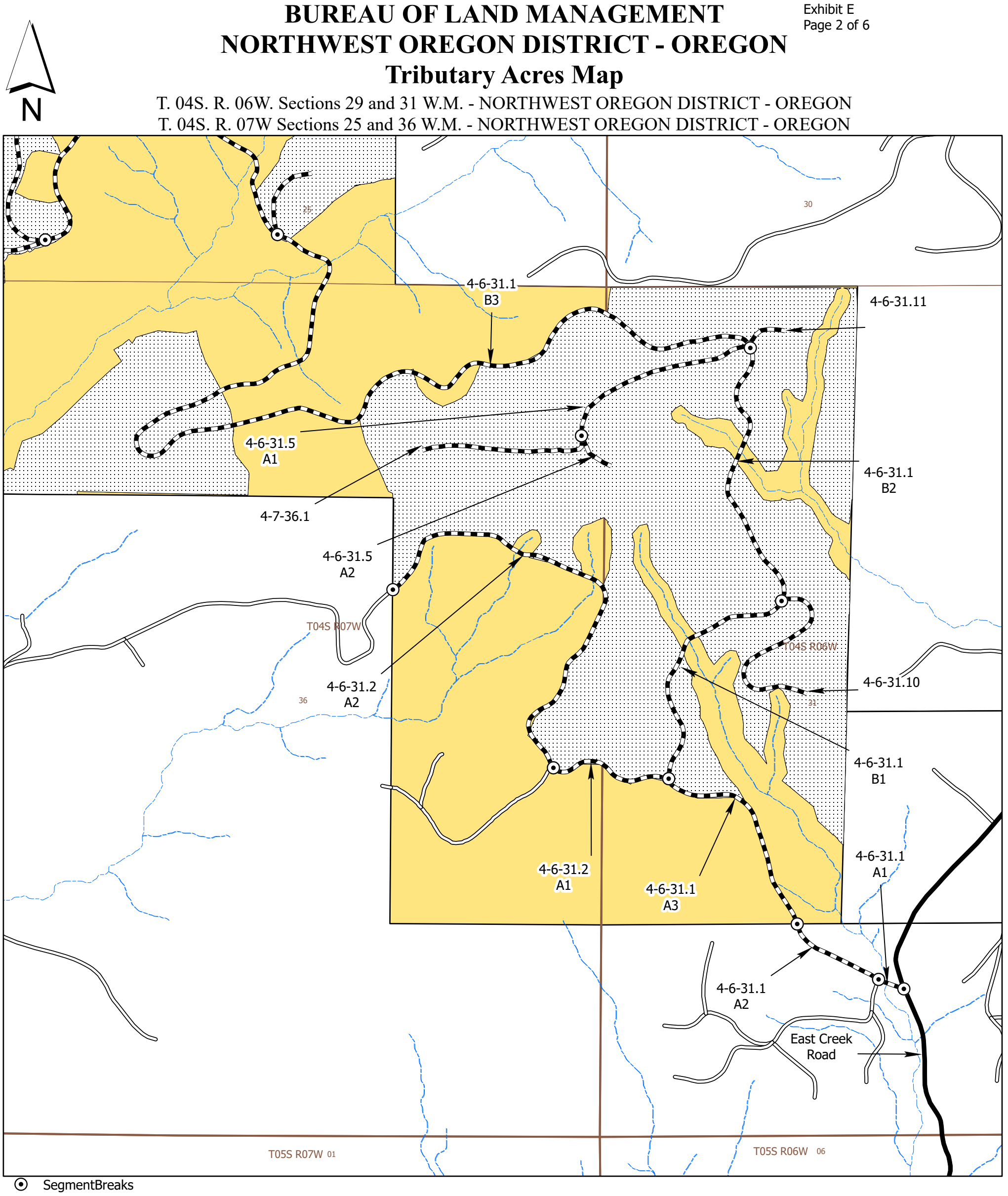
United States Department of Interior
BUREAU OF LAND MANAGEMENT
NORTHWEST OREGON DISTRICT - OREGON
Tributary Acres Map

T. 04S. R. 06W. Sections 29 and 31 W.M. - NORTHWEST OREGON DISTRICT - OREGON
T. 04S. R. 07W Sections 25 and 36 W.M. - NORTHWEST OREGON DISTRICT - OREGON



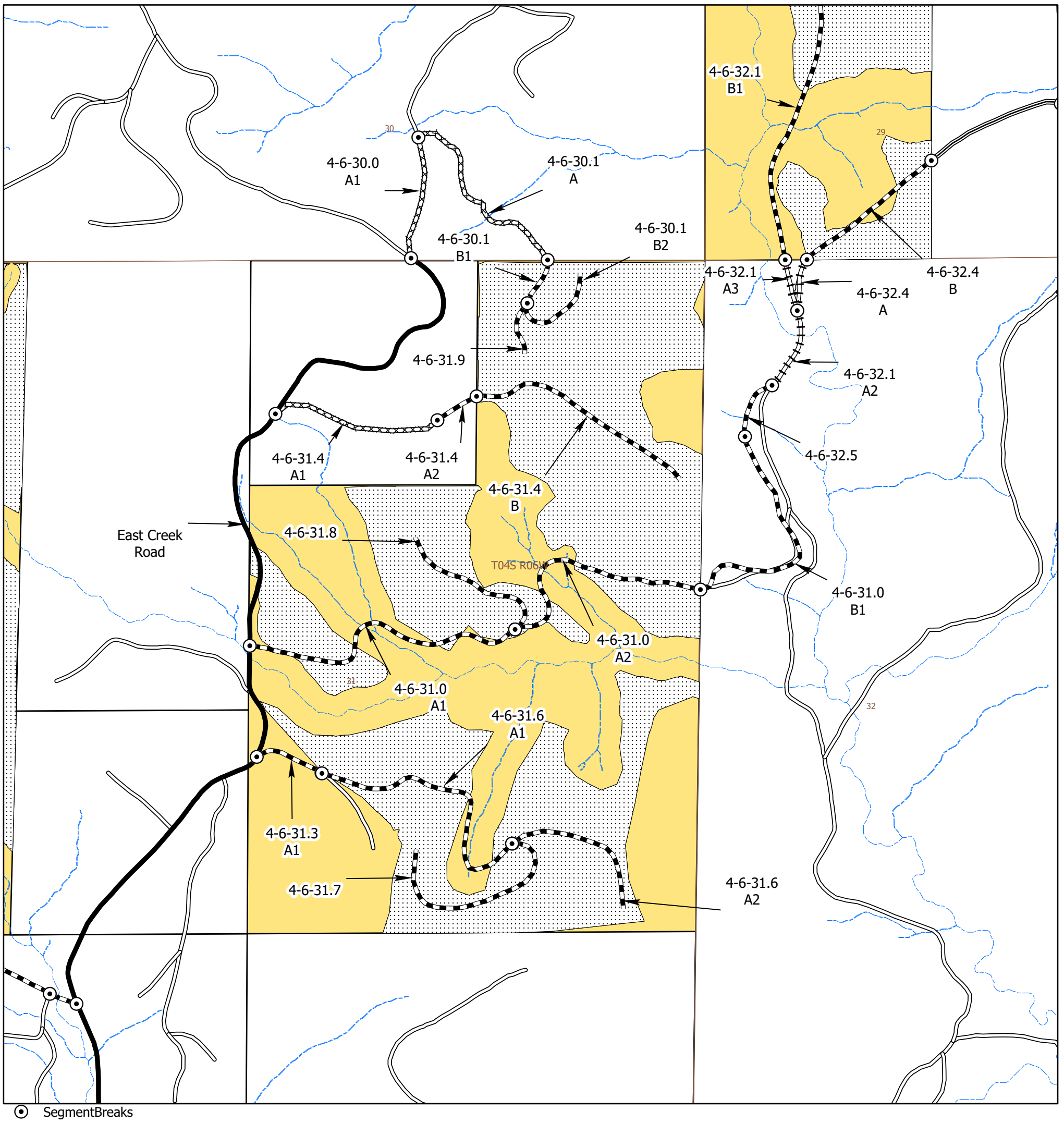
United States Department of Interior
BUREAU OF LAND MANAGEMENT
NORTHWEST OREGON DISTRICT - OREGON
Tributary Acres Map

T. 04S. R. 06W. Sections 29 and 31 W.M. - NORTHWEST OREGON DISTRICT - OREGON
T. 04S. R. 07W Sections 25 and 36 W.M. - NORTHWEST OREGON DISTRICT - OREGON



United States Department of Interior
BUREAU OF LAND MANAGEMENT
NORTHWEST OREGON DISTRICT - OREGON
Tributary Acres Map

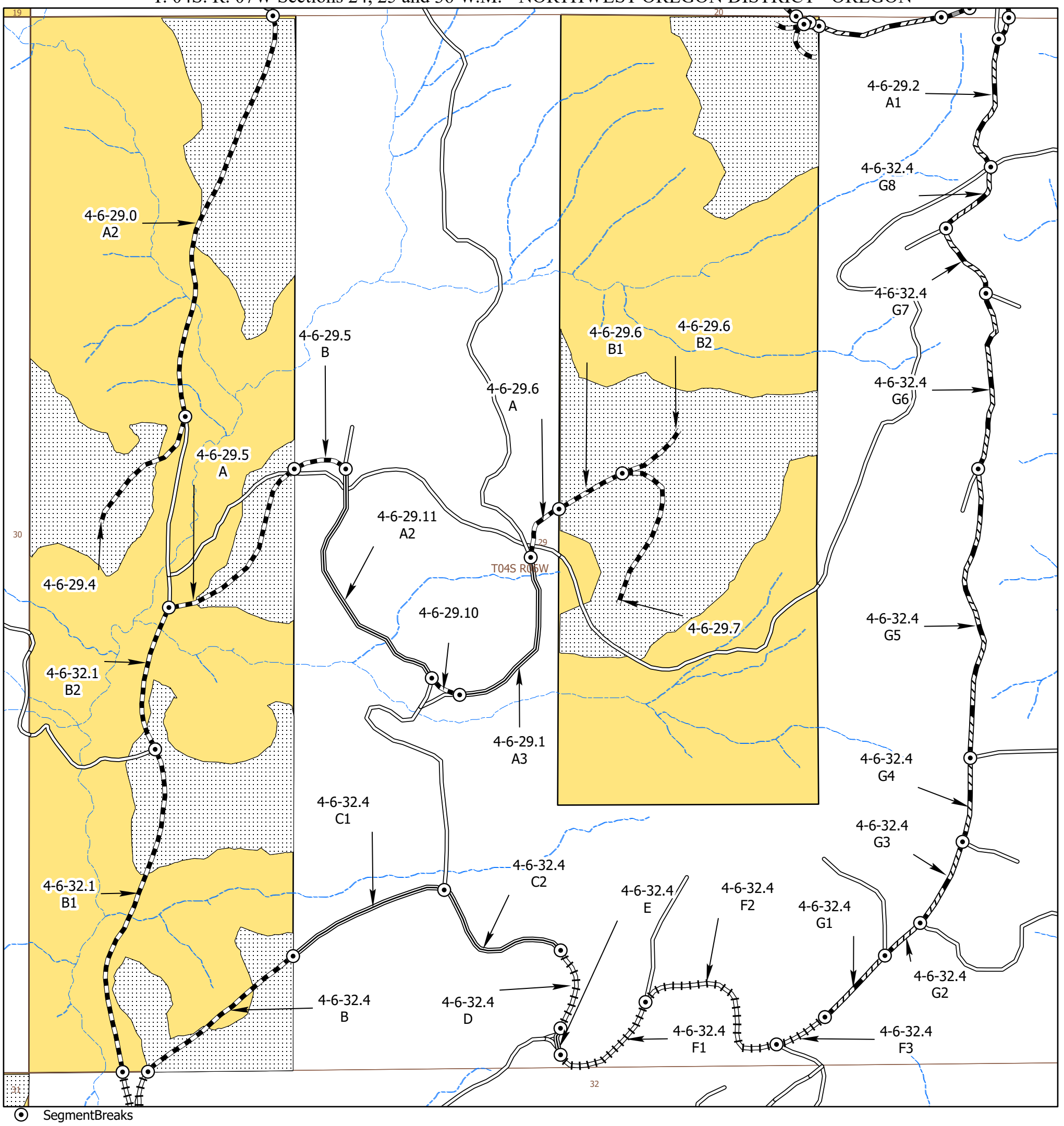
T. 04S. R. 06W. Sections 29 and 31 W.M. - NORTHWEST OREGON DISTRICT - OREGON
T. 04S. R. 07W Sections 25 and 36 W.M. - NORTHWEST OREGON DISTRICT - OREGON



No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual or aggregate use with other data. Original data were complied from various sources and may be updated without notification. Prepared By: Austin Bettis

United States Department of Interior
BUREAU OF LAND MANAGEMENT
NORTHWEST OREGON DISTRICT - OREGON
Road Plan Map

T. 04S. R. 06W. Sections 29 and 31 W.M. - NORTHWEST OREGON DISTRICT - OREGON
T. 04S. R. 07W Sections 24, 25 and 36 W.M. - NORTHWEST OREGON DISTRICT - OREGON

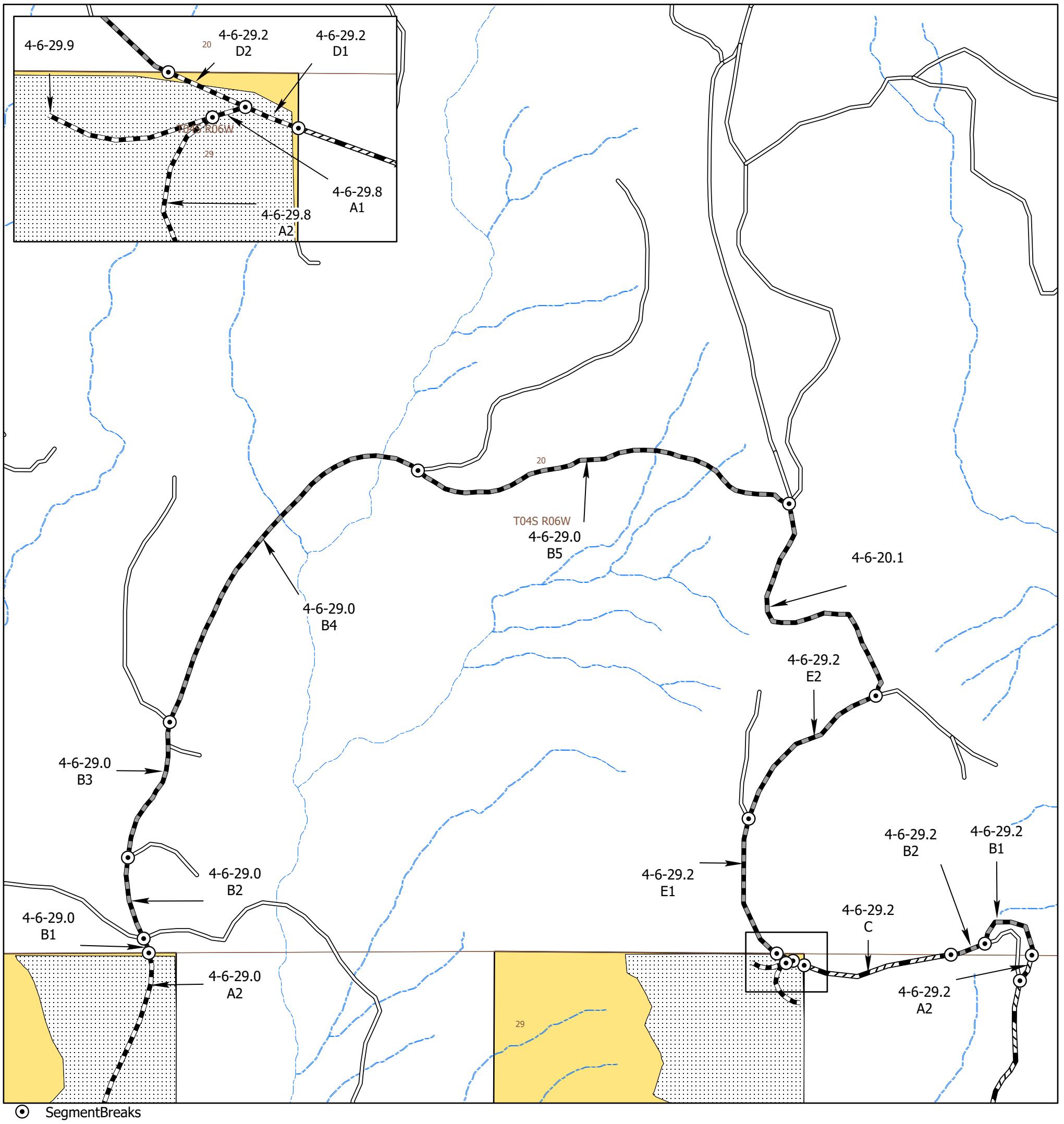


- SegmentBreaks
- BLM controlled road - Purchaser Maintenance - Designated Haul Route
- Boston Timber Opportunities controlled road - Purchaser Maintenance - Designated Haul Route
- Golden Pond Timberlands controlled road - Purchaser Maintenance - Designated Haul Route
- Tristar Northwest Oregon Timberlands controlled road - Purchaser Maintenance - Designated Haul Route
- Weyerhaeuser Timber Holdings controlled road - Purchaser Maintenance - Designated Haul Route
- Existing Roads
- Streams
- Timber Town Project Area
- Bureau of Land Management
- Private

0 0.13 0.25 0.5 Miles

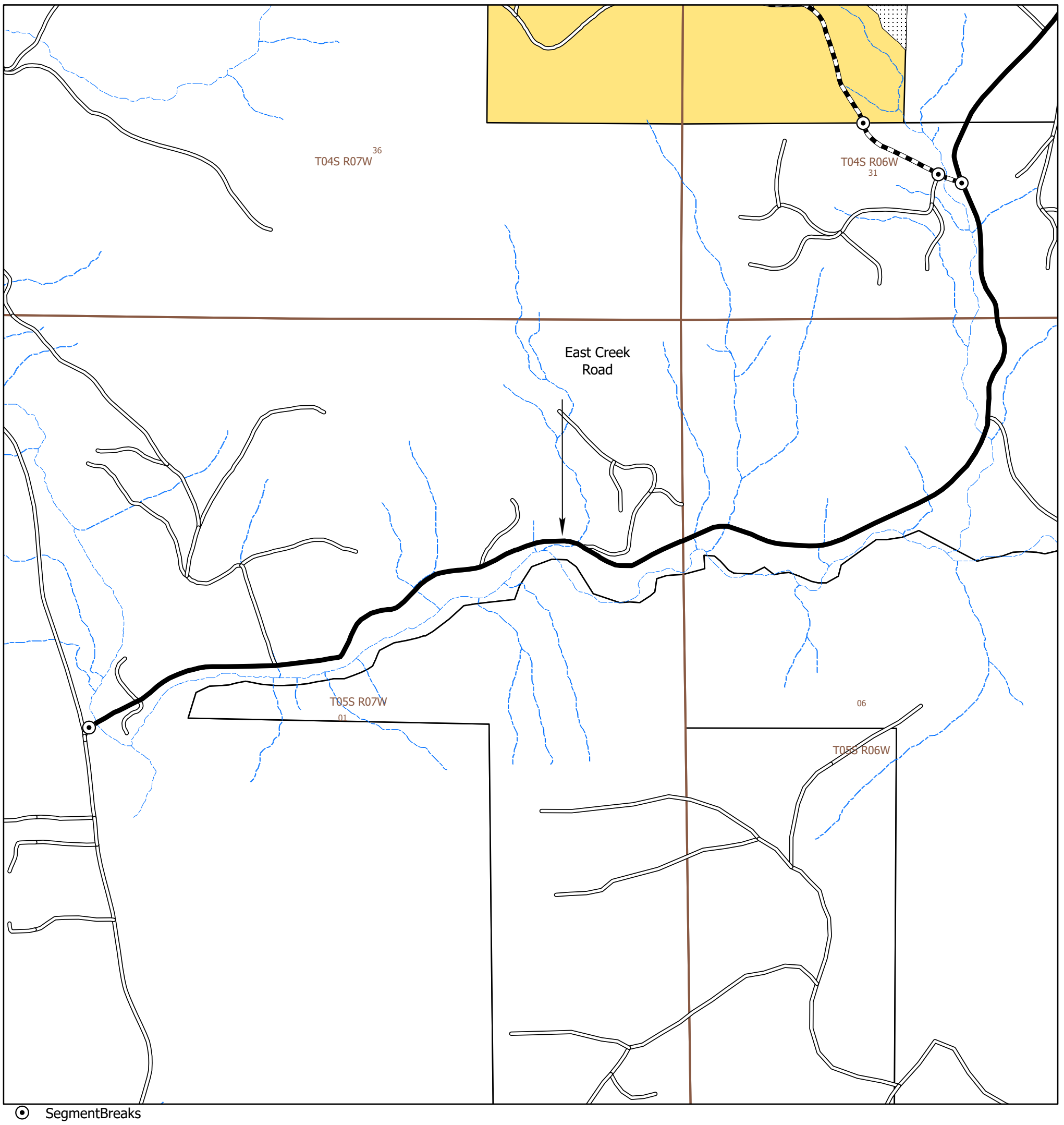
United States Department of Interior
BUREAU OF LAND MANAGEMENT
NORTHWEST OREGON DISTRICT - OREGON
Tributary Acres Map

T. 04S. R. 06W. Sections 29 and 31 W.M. - NORTHWEST OREGON DISTRICT - OREGON
T. 04S. R. 07W Sections 25 and 36 W.M. - NORTHWEST OREGON DISTRICT - OREGON



United States Department of Interior
BUREAU OF LAND MANAGEMENT
NORTHWEST OREGON DISTRICT - OREGON
Tributary Acres Map

T. 04S. R. 06W. Sections 29 and 31 W.M. - NORTHWEST OREGON DISTRICT - OREGON
T. 04S. R. 07W Sections 25 and 36 W.M. - NORTHWEST OREGON DISTRICT - OREGON



COARSE WOODY DEBRIS (CWD) CREATION

The Purchaser shall select and treat a total of three thousand and eighty-one (3,081) reserve trees in the CWD Creation Units shown on Exhibit F maps (pages 7-15) to create Coarse Woody Debris (CWD) by saw-topping, high-girdling, basal-girdling, cavity creation, or felling. Treated trees will be marked with flagging as specified by the Authorized Officer.

The Purchaser must provide a proposed schedule of work to the Authorized Officer at least one week prior to commencing the CWD creation activities.

CWD Creation per CWD Unit

CWD Unit Number	CWD Unit Acres	Total Trees	Saw-Top	High Girdle	Basal Girdle	Cavity	Fell	Tree Size
1A	4.40	44	4	4	36	0	0	10-20
1B	0.59	12	3	0	9	0	0	10-20
1C	1.58	4	2	2	0	0	0	10-20
2A	1.23	13	5	4	0	4	0	20-30
2B	2.65	27	12	10	0	5	0	20-30
2C	0.78	5	1	2	0	2	0	20-30
2D	2.52	30	10	9	0	11	0	20-30
2E	2.80	15	2	2	2	9	0	20-30
2F	8.92	92	11	10	71	0	0	10-20
2G	1.10	20	13	3	4	0	0	10-20
2H	0.62	10	3	3	4	0	0	10-20
2I	0.59	10	3	3	4	0	0	10-20
2J	0.53	8	0	0	8	0	0	10-20
2K	0.38	9	0	0	9	0	0	10-20
2L	2.54	25	3	2	20	0	0	10-20
2M	3.62	10	3	3	4	0	0	10-20
2N	0.83	2	1	1	0	0	0	10-20
2O	2.00	12	3	8	1	0	0	14-24
2P	2.55	71	4	6	20	0	41	10-20; 14-20 Fell
2Q	1.55	20	1	3	10	0	6	10-20; 24-30 Fell
2R	5.10	57	5	10	42	0	0	14-24
2S	0.96	13	7	6	0	0	0	14-24
2T	0.82	11	6	5	0	0	0	14-24
2U	0.71	11	5	6	0	0	0	14-24
2V	2.89	16	6	8	2	0	0	14-24
2W	1.10	10	10	0	0	0	0	14-24
3A	8.23	97	34	23	40	0	0	14-24
3B	4.01	42	10	9	23	0	0	14-24
4A	1.72	17	6	8	3	0	0	14-24
4B	3.35	31	0	0	31	0	0	10-20
4C	0.64	8	0	3	5	0	0	10-20
4D	0.60	10	5	5	0	0	0	10-20
4E	0.24	5	0	0	5	0	0	10-20

4F	2.05	6	3	3	0	0	0	10-20
5A	1.15	15	7	7	1	0	0	14-24
5B	3.82	38	4	1	33	0	0	10-20
5C	0.57	8	1	1	6	0	0	10-20
5D	3.18	9	5	4	0	0	0	10-20
5E	13.14	35	0	5	30	0	0	10-20
5F	1.78	18	9	9	0	0	0	10-20
5G	2.42	22	11	11	0	0	0	10-20
6A	1.05	10	4	2	4	0	0	14-24
6B	4.59	59	31	16	12	0	0	14-24
6C	1.06	5	5	0	0	0	0	14-24
6D	2.18	5	0	0	5	0	0	14-24
7A	5.46	66	9	4	53	0	0	10-20
7B	0.99	14	1	1	12	0	0	10-20
7C	2.65	9	3	1	5	0	0	10-20
7D	5.04	21	4	4	13	0	0	10-20
8A	13.38	164	15	10	139	0	0	10-20
8B	0.71	10	2	0	8	0	0	10-20
8C	1.12	16	0	0	16	0	0	10-20
8D	1.06	10	0	0	10	0	0	10-20
8E	1.85	4	3	1	0	0	0	10-20
8F	0.81	2	2	0	0	0	0	10-20
8G	5.36	14	3	0	11	0	0	10-20
9A	24.62	212	50	50	112	0	0	14-24
9B	1.14	12	4	0	8	0	0	14-24
9C	0.42	5	1	0	4	0	0	14-24
9D	1.91	20	6	4	10	0	0	14-24
9E	2.13	21	4	2	15	0	0	14-24
9F	3.56	80	15	15	50	0	0	14-24
9G	28.16	321	67	74	180	0	0	14-24
9H	0.53	5	0	0	5	0	0	14-24
9I	0.85	10	0	0	10	0	0	14-24
9J	0.63	10	0	0	10	0	0	14-24
9K	0.94	12	0	0	12	0	0	14-24
9L	0.42	14	0	0	14	0	0	14-24
9M	0.90	14	0	0	14	0	0	14-24
9N	12.61	114	14	0	100	0	0	14-24
9O	2.41	10	10	0	0	0	0	14-24
9P	8.72	55	20	20	15	0	0	14-24
9Q	17.10	140	35	35	70	0	0	14-24
9R	10.62	105	0	0	105	0	0	14-24
9S	0.50	7	0	0	7	0	0	10-20
9T	0.97	10	0	0	10	0	0	10-20
9U	11.75	103	15	18	70			10-20
10A	27.29	27	14	13	0	0	0	14-24
10B	3.50	10	1	2	7	0	0	14-24
10C	6.99	63	15	15	33	0		14-24

10D	10.73	58	4	0	23	0	31	14-24; 20-26 Fell
11A	1.90	3	3	0	0	0	0	14-24
11B	3.20	20	10	0	10	0	0	14-24
11C	0.49	20	6	3	11	0	0	14-24
11D	3.97	21	0	0	0	0	21	20-26
12A	7.52	7	7	0	0	0	0	14-24
12B	2.23	2	2	0	0	0	0	14-24
12C	2.66	6	6	0	0	0	0	14-24
12D	1.95	6	6	0	0	0	0	14-24
13A	5.87	6	6	0	0	0	0	14-24
13B	0.83	1	1	0	0	0	0	14-24
13C	38.77	39	20	19	0	0	0	14-24
13D	1.15	6	6	0	0	0	0	14-24
13E	1.26	2	2	0	0	0	0	14-24
13F	0.60	4	4	0	0	0	0	14-24
13G	6.31	82	0	0	46	0	36	14-24; 20-26 Fell
14A	8.32	8	4	4	0	0	0	14-24
15A	11.62	11	6	5	0	0	0	14-24
16A	6.22	4	3	1	0	0	0	14-24
17A	9.98	11	6	5	0	0	0	14-24
18A	17.03	15	7	8	0	0	0	14-24
19A	30.05	31	16	15	0	0	0	14-24
20A	12.58	11	5	6	0	0	0	14-24
Total	**501.50**	**3081**	**701**	**552**	**1662**	**31**	**135**	

[1] See Coarse Woody Debris Creation maps (Exhibit F pages 7-15)

1. **Tree Selection** – The Purchaser shall select three thousand and eighty-one (3,081) reserve trees to create CWD by saw-topping, high-girdling basal-girdling, cavity creation, or felling according to the following guidelines. Numbers of trees and tree sizes to be selected, specific to each CWD unit, are displayed in the table above. Placement of trees to be selected by treatment type within the individual treatment units is displayed on the Coarse Woody Debris Creation maps (Exhibit F pages 7-15). The locations of the selected trees (individually or in small groups; distance from roads or property line) varies by treatment method; see treatment methods below for additional treatment-specific information concerning tree selection. There are three units where BLM has pre-selected the majority of the trees to be treated. Pre-selected trees will be shown on Exhibit F maps and a GPS layer will be provided to aid in locating these trees.

    - Only healthy Douglas-fir trees shall be selected for treatment.
    - No trees marked with any existing metal tags shall be selected for treatment.
    - No trees with limbs > 4” in diameter.

- No trees with nests or any nest-like structures of any birds or mammals, or trees with defects such as cavities, platforms, mistletoe infection, or dead, forked/multiple and/or broken tops shall be selected.
- Selected trees shall be evenly distributed throughout the CWD units. When selecting trees, select approximately fifty (50) percent of the trees larger than the median tree size for the given range, and approximately fifty (50) percent of the trees smaller than the median tree size for the given range unless stand conditions dictate otherwise. If only trees smaller than the appropriate size are available, select trees of the largest size class present. Do not select the largest, most dominant tree within any given area.

a. **Saw-topping and High-girdling:** Select healthy appearing Douglas-fir trees with live crown ratios greater than thirty (30) percent and with **average or larger** crown spread. If only trees with smaller live crown ratios than appropriate are available, select trees with the largest crown ratio present. Treatment types and selected trees shall be scattered uniformly throughout the units. Trees selected for saw-topping shall be selected singly or in small groups of three (3) to five (5) trees. Trees selected for high-girdling shall be selected in groups of three (3) to five (5) trees. Trees selected for saw-topping or high-girdling shall not be located within falling distance of a drivable road (open after use) or property line boundary where BLM land abuts non-federal ownership.

b. **Basal-girdling:** Select healthy Douglas-fir trees with live crown ratios **less** than thirty (30) percent and **smaller** than average crown spread. If only trees with larger live crown ratios than appropriate are available, select appropriately sized trees with the smallest crown ratio present. Selected trees shall be located within the portion of the CWD units designated for basal-girdling and selected in groups of three (3) to five (5) trees. Trees selected for basal-girdling shall not be located within falling distance of a drivable road (open after use) or a property line boundary where BLM land abuts non-federal.

c. **Tree felling**: Select Douglas-fir trees with live crown ratios less than thirty (30) percent and smaller than average crown spread. If only trees with larger live crown ratios than appropriate are available, select appropriately sized trees with the smallest crown ratio present. Selected trees shall be located within the portion of the CWD unit designated for felling and shall be scattered uniformly throughout the unit. Trees selected for felling shall be and selected singly (not in groups). The portion of the tree in contact with the stream channel would be at least six (6) inches in diameter. Trees selected for felling shall be those trees which provide minimal amounts or no shade to streams (e.g., north side of stream channel and/or being an area where topography or tree location minimizes the shade afforded to stream by selected tree, such as being located several tree spacings from the stream channel). No work required in live streams shall be conducted between October 1 of one calendar year and July 14 of the following calendar year in the Yamhill River watershed, both days inclusive, unless BLM receives a waiver from the Oregon Department of Fish and Wildlife, and is approved by the Authorized Officer.

d. **Cavity creation**: Select healthy appearing Douglas-fir trees with live crown ratios greater than thirty (30) percent and with **average or larger** crown spread. If only trees with smaller live crown ratios than appropriate are available, select trees with the largest crown ratio present. Treatment types and selected trees shall be scattered uniformly throughout the units. Trees selected for cavity creation shall not be located within falling distance of a drivable road (open after use) or property line boundary where BLM land abuts non-federal ownership.

2. **CWD Treatments**

a. **Saw-Topping** – severing the treetop within the live crown

1. The Purchaser shall climb and top selected trees at a height of at least sixty (60) feet above the ground at a point where approximately twenty to fifty (20-50) percent of the live crown remains; saw-topping heights shall be varied equally within this placement within the live crown. Topping shall be done with power tools (e.g., chainsaws).
2. To the extent practicable, the Purchaser shall retain all green limbs and the largest dead limbs on the treated trees during the climbing and topping operations.
3. Tree tops shall be completely severed from the tree and fall completely to the ground inside unit boundaries.
4. To the extent practicable, the Purchaser shall directionally fall tops in order to not damage existing snags, under-story conifers, any tree containing a suspected nest of a bird or mammal, or any tree with defects such as hollow cavities, multiple tops, or decay, and avoid contact with unburned burn piles and drivable roads.
5. The Contractor shall tie two pieces of flagging of a color approved by the Authorized Officer on a branch, or around the bole, directly below the saw top. Flagging shall extend a minimum of three feet downward and must be visible from the ground.

b. **High-Girdling** – girdling within the live crown

1. The Purchaser shall climb and girdle selected trees within the live crown at a point where approximately twenty to fifty (20-50) percent of the live crown remains below the point of girdling and at a height of at least sixty (60) feet above the ground; girdling heights shall be varied equally within this placement within the live crown. Girdling may be done with a hand tool or power tool and will consist of removing all bark and cambium in a ten to twelve (10-12) inch band completely around the main stem of the tree.
2. Tool cuts must not penetrate more than one-half (0.5) inches into the wood of high-girdled trees.
3. Live limbs below the point of high-girdling shall not be removed. To the extent practicable, the Purchaser shall retain the largest dead limbs on the trees during the climbing and high-girdling operations.

4. The Contractor shall tie two pieces of flagging of a color approved by the Authorized Officer on a branch, or around the bole, directly below the girdle site. Flagging shall extend a minimum of three feet downward and must be visible from the ground.

c. **Basal-Girdling**

1. When logging machinery, such as harvesters, are used to basal-girdle trees, tree shall have the bark and cambium layer removed from a 12-inch wide or greater band completely encircling the bole of the tree at or below breast height. No flagging is required.

2. When chainsaws are used to basal-girdle trees, girdling will be accomplished by making two (2) parallel cuts around the tree. Each cut must connect with itself completely around the tree and penetrate through the cambium layer into the wood at least ½ inch, but not more than 1 inch. The distance between the top cut and the bottom cut shall not exceed twelve (12) inches. Trees shall be girdled between 3 and 4 feet above ground level measured on the uphill side of the tree. The Contractor shall tie one piece of flagging of a color approved by the Authorized Officer around the bole of each treated tree near DBH level.

d. **Cavity Creation** – excavating a concave depression or hollow in a tree to accommodate the invasion of heart-rot fungus.

1. The Purchaser shall climb and create a cavity in selected trees within the live crown at a point where approximately twenty to fifty (20-50) percent of the live crown remains below the cavity point and at a height of <u>at least</u> sixty (60) feet above the ground. Cavity creation may be done with a hand tool or power tool and will consist of an oblong hole cut into the tree bole. The cut shall <u>*not*</u> extend more than 1/3 the diameter of the tree. Cavities shall be directed toward an open area or gap in the tree crown canopy. Each treatment shall have flagging tied at the upper-most treatment location so it's visible from the ground.

3. <u>Documentation</u>

1. The Purchaser shall provide the location for all saw-topped, high-girdled, basal-girdled or felled trees by collecting GPS points on a GPS unit with NAD83 datum, zone 10. If acceptable GPS satellite coverage cannot be obtained at a site, the point shall be hand drawn onto a map and submitted to the Authorized Officer.

2. The Purchaser shall tally all CWD trees by 2-inch diameter class, tree species, snag type, and unit identifier on a daily basis. The Authorized Officer may request the tally at any time during CWD operations. At the completion of operations, the Purchaser shall submit a completed tally to the Authorized Officer.

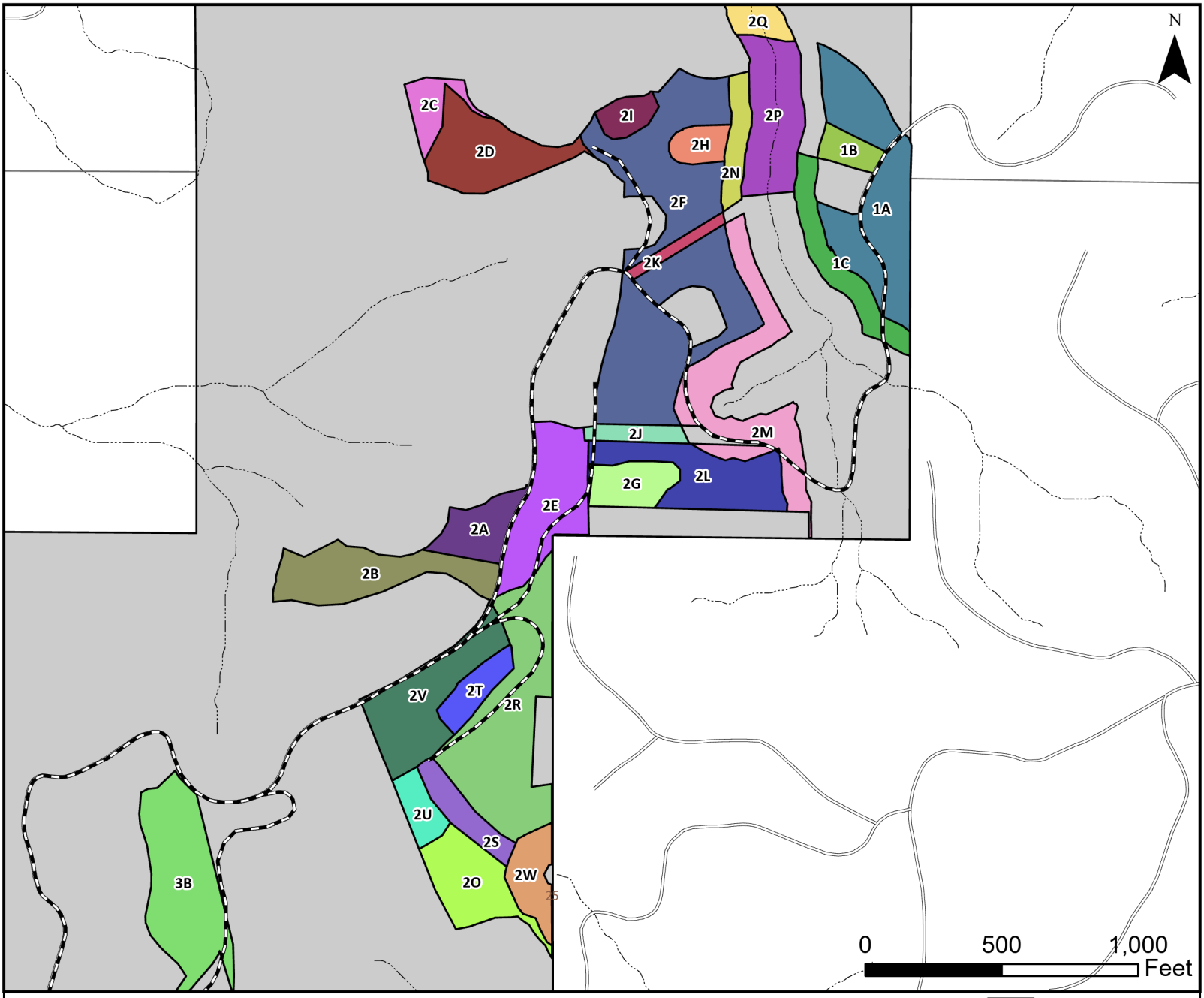
3. All information recorded on the tally sheet shall be legible, clear and reproducible on a black and white copy machine. All documents shall be reviewed by the Purchaser to ensure completeness, legibility, accuracy, and consistency in style before submitting them to the Authorized Officer.

N

10/4/2023

United States Department of the Interior
BUREAU OF LAND MANAGEMENT
COARSE WOODY DEBRIS (CWD) CREATION MAP

T. 4S. R. 7W, Sections 24 & 25 W. M.



Pre-selected Snags | Project Roads | Other Roads | Streams | Contract Area

CWD Unit	Acres	Total Trees	Saw Top	High Girdle	Basal Girdle	Cavity	Fell	DBH Range
1A	4.4	44	4	4	36	0	0	10-20
1B	0.6	12	3	0	9	0	0	10-20
1C	1.6	4	2	2	0	0	0	10-20
2A	1.2	13	5	4	0	4	0	20-30
2B	2.6	27	12	10	0	5	0	20-30
2C	0.8	5	1	2	0	2	0	20-30
2D	2.5	30	10	9	0	11	0	20-30
2E	2.8	15	2	2	2	9	0	20-30
2F	8.9	92	11	10	71	0	0	10-20
2G	1.1	20	13	3	4	0	0	10-20
2H	0.6	10	3	3	4	0	0	10-20
2I	0.6	10	3	3	4	0	0	10-20
2J	0.5	8	0	0	8	0	0	10-20
2K	0.4	9	0	0	9	0	0	10-20

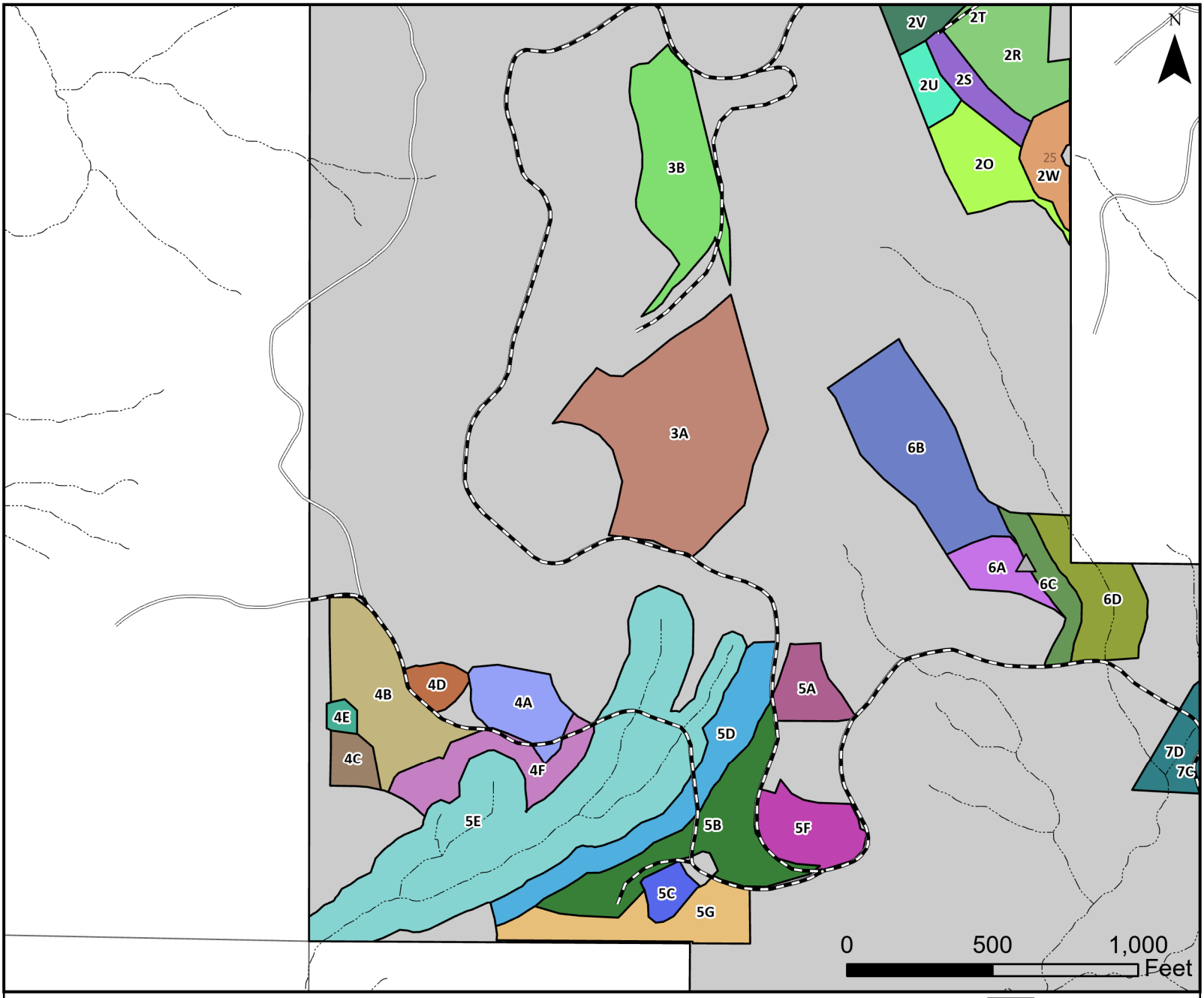
CWD Unit	Acres	Total Trees	Saw Top	High Girdle	Basal Girdle	Cavity	Fell	DBH Range
2L	2.5	25	3	2	20	0	0	10-20
2M	3.6	10	3	3	4	0	0	10-20
2N	0.8	2	1	1	0	0	0	10-20
2O	2	12	3	8	1	0	0	14-24
2P	2.5	71	4	6	20	0	41	10-20; 14-20 Fell
2Q	1.6	20	1	3	10	0	6	10-20; 24-30 Fell
2R	5.1	57	5	10	42	0	0	14-24
2S	1	13	7	6	0	0	0	14-24
2T	0.8	11	6	5	0	0	0	14-24
2U	0.7	11	5	6	0	0	0	14-24
2V	2.9	16	6	8	2	0	0	14-24
2W	1.1	10	10	0	0	0	0	14-24
3B	4	42	10	9	23	0	0	14-24

United States Department of the Interior
BUREAU OF LAND MANAGEMENT

COARSE WOODY DEBRIS (CWD) CREATION MAP

T. 4S. R. 7W, Section 25 W. M.

10/4/2023



Pre-selected Snags | Project Roads | Other Roads | Streams | Contract Area

CWD Unit	Acres	Total Trees	Saw Top	High Girdle	Basal Girdle	Cavity	Fell	DBH Range
2O	2	12	3	8	1	0	0	14-24
2R	5.1	57	5	10	42	0	0	14-24
2S	1	13	7	6	0	0	0	14-24
2T	0.8	11	6	5	0	0	0	14-24
2U	0.7	11	5	6	0	0	0	14-24
2V	2.9	16	6	8	2	0	0	14-24
2W	1.1	10	10	0	0	0	0	14-24
3A	8.2	97	34	23	40	0	0	14-24
3B	4	42	10	9	23	0	0	14-24
4A	1.7	17	6	8	3	0	0	14-24
4B	3.4	31	0	0	31	0	0	10-20
4C	0.6	8	0	3	5	0	0	10-20
4D	0.6	10	5	5	0	0	0	10-20
4E	0.2	5	0	0	5	0	0	10-20

CWD Unit	Acres	Total Trees	Saw Top	High Girdle	Basal Girdle	Cavity	Fell	DBH Range
4F	2	6	3	3	0	0	0	10-20
5A	1.1	15	7	7	1	0	0	14-24
5B	3.8	38	4	1	33	0	0	10-20
5C	0.6	8	1	1	6	0	0	10-20
5D	3.2	9	5	4	0	0	0	10-20
5E	13.1	35	0	5	30	0	0	10-20
5F	1.8	18	9	9	0	0	0	10-20
5G	2.4	22	11	11	0	0	0	10-20
6A	1.1	10	4	2	4	0	0	14-24
6B	4.6	59	31	16	12	0	0	14-24
6C	1.1	5	5	0	0	0	0	14-24
6D	2.2	5	0	0	5	0	0	14-24
7C	2.6	9	3	1	5	0	0	10-20
7D	5	21	4	4	13	0	0	10-20

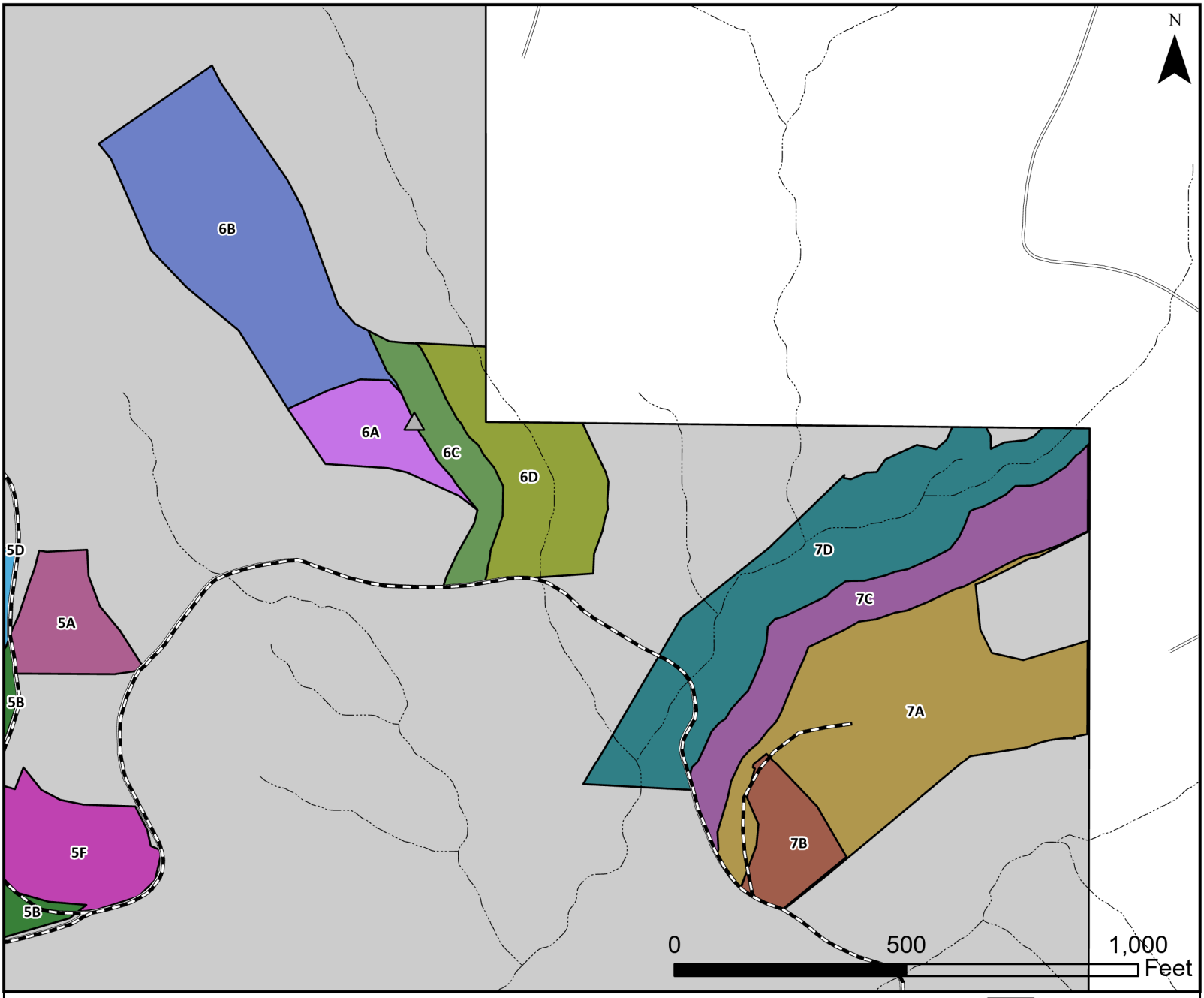
Prepared By: dtyler

United States Department of the Interior
BUREAU OF LAND MANAGEMENT

COARSE WOODY DEBRIS (CWD) CREATION MAP

10/4/2023

T. 4S. R. 7W, Section 25 W. M.



Pre-selected Snags | Project Roads | Other Roads | Streams | Contract Area

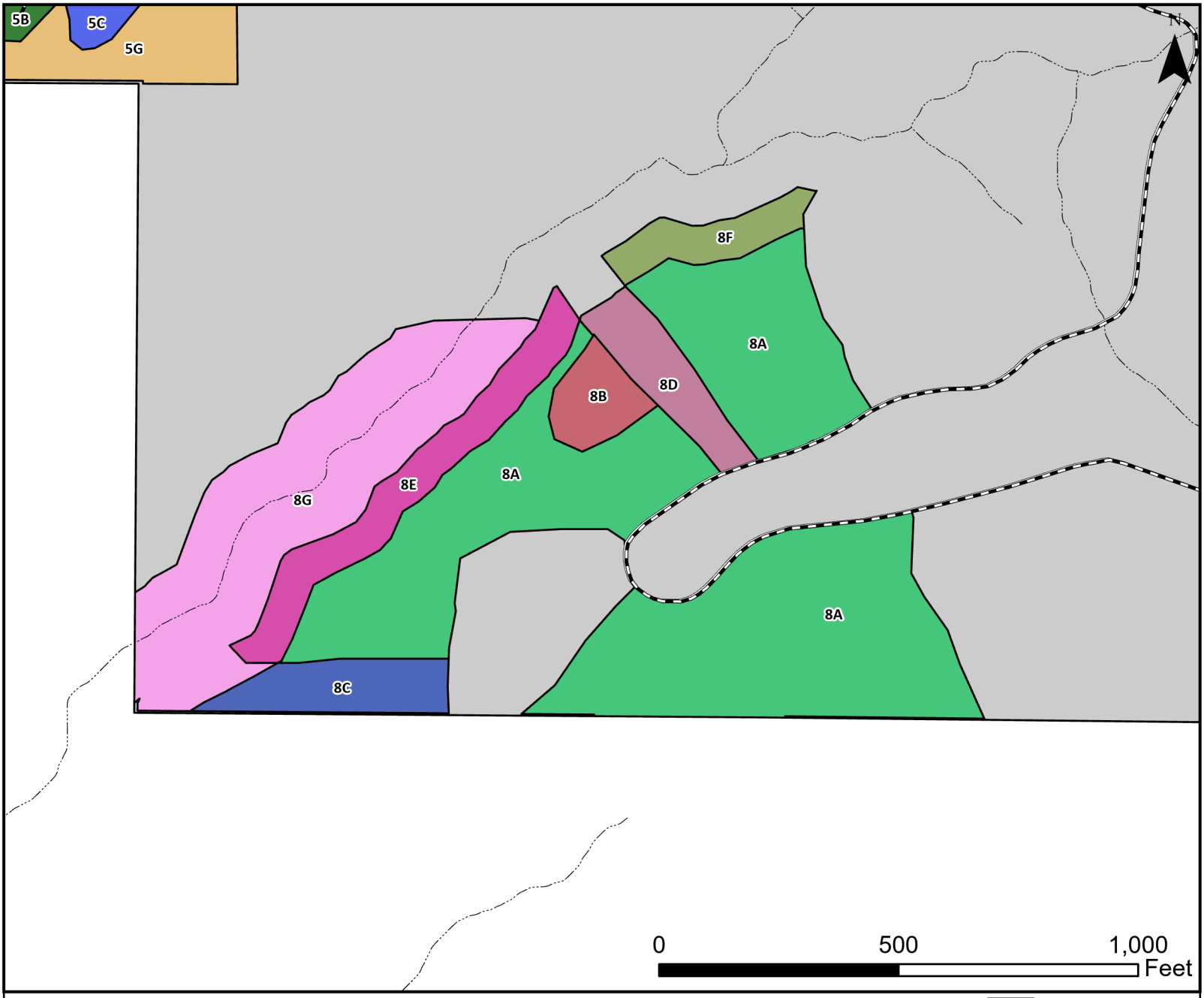
CWD Unit	Acres	Total Trees	Saw Top	High Girdle	Basal Girdle	Cavity	Fell	DBH Range
5A	1.1	15	7	7	1	0	0	14-24
5B	3.8	38	4	1	33	0	0	10-20
5D	3.2	9	5	4	0	0	0	10-20
5F	1.8	18	9	9	0	0	0	10-20
6A	1.1	10	4	2	4	0	0	14-24
6B	4.6	59	31	16	12	0	0	14-24
6C	1.1	5	5	0	0	0	0	14-24
6D	2.2	5	0	0	5	0	0	14-24
7A	5.5	66	9	4	53	0	0	10-20
7B	1	14	1	1	12	0	0	10-20
7C	2.6	9	3	1	5	0	0	10-20
7D	5	21	4	4	13	0	0	10-20

Prepared By: dtyler

United States Department of the Interior
BUREAU OF LAND MANAGEMENT
COARSE WOODY DEBRIS (CWD) CREATION MAP

10/4/2023

T. 4S. R. 7W, Section 36 W. M.



Pre-selected Snags | Project Roads | Other Roads | Streams | Contract Area

CWD Unit	Acres	Total Trees	Saw Top	High Girdle	Basal Girdle	Cavity	Fell	DBH Range
5B	3.8	38	4	1	33	0	0	10-20
5C	0.6	8	1	1	6	0	0	10-20
5G	2.4	22	11	11	0	0	0	10-20
8A	13.4	164	15	10	139	0	0	10-20
8B	0.7	10	2	0	8	0	0	10-20
8C	1.1	16	0	0	16	0	0	10-20
8D	1.1	10	0	0	10	0	0	10-20
8E	1.9	4	3	1	0	0	0	10-20
8F	0.8	2	2	0	0	0	0	10-20
8G	5.4	14	3	0	11	0	0	10-20

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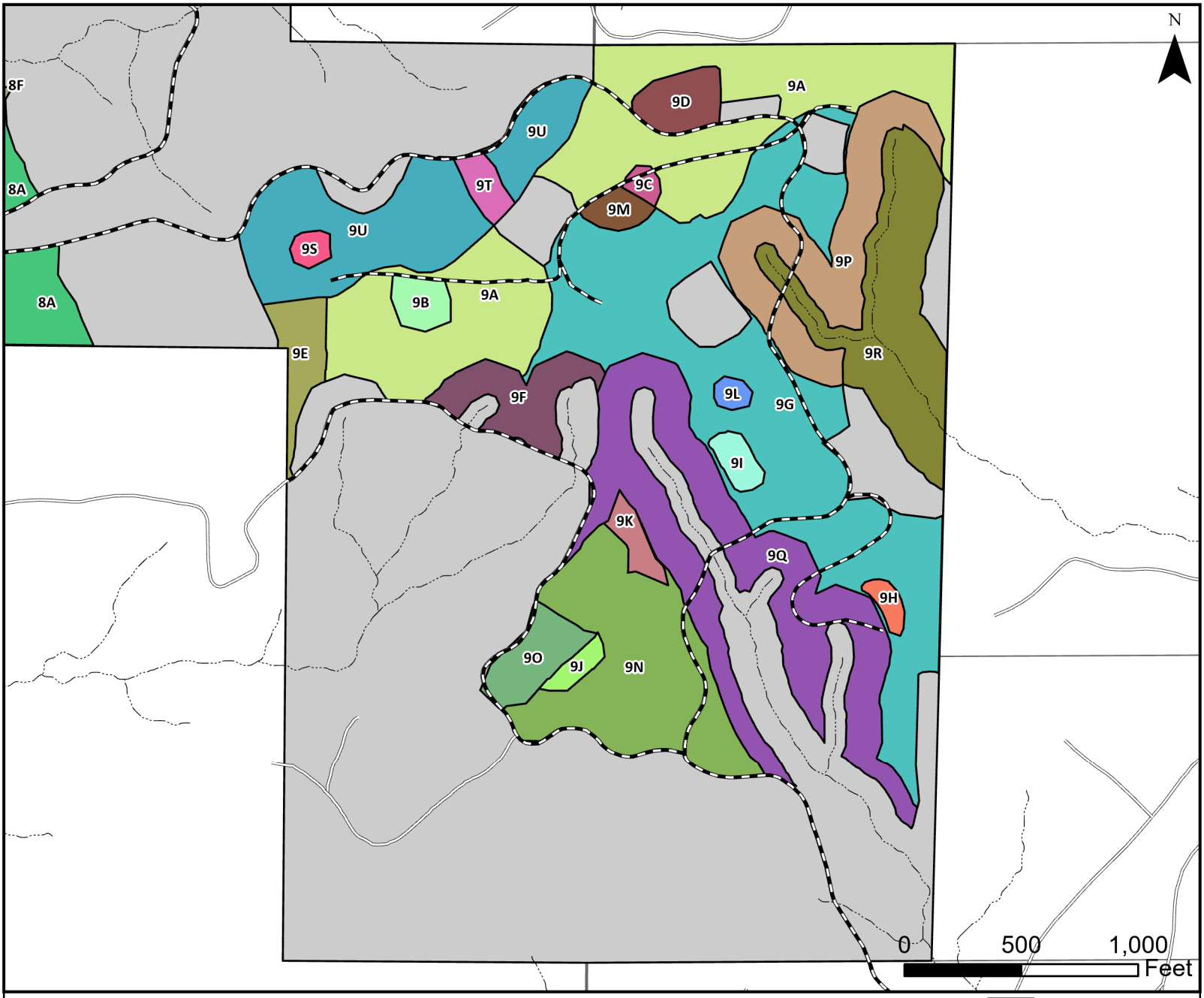
COARSE WOODY DEBRIS (CWD) CREATION MAP

10/4/2023

T. 4S. R. 7W, Section 36 W. M.; T. 4S. R. 6W, Section 31 W. M.



Pre-selected Snags | Project Roads | Other Roads | Streams | Contract Area

CWD Unit	Acres	Total Trees	Saw Top	High Girdle	Basal Girdle	Cavity	Fell	DBH Range
8A	13.4	164	15	10	139	0	0	10-20
8F	0.8	2	2	0	0	0	0	10-20
9A	24.6	212	50	50	112	0	0	14-24
9B	1.1	12	4	0	8	0	0	14-24
9C	0.4	5	1	0	4	0	0	14-24
9D	1.9	20	6	4	10	0	0	14-24
9E	2.1	21	4	2	15	0	0	14-24
9F	3.6	80	15	15	50	0	0	14-24
9G	28.2	321	67	74	180	0	0	14-24
9H	0.5	5	0	0	5	0	0	14-24
9I	0.8	10	0	0	10	0	0	14-24
9J	0.6	10	0	0	10	0	0	14-24

CWD Unit	Acres	Total Trees	Saw Top	High Girdle	Basal Girdle	Cavity	Fell	DBH Range
9K	0.9	12	0	0	12	0	0	14-24
9L	0.4	14	0	0	14	0	0	14-24
9M	0.9	14	0	0	14	0	0	14-24
9N	12.6	114	14	0	100	0	0	14-24
9O	2.4	10	10	0	0	0	0	14-24
9P	8.7	55	20	20	15	0	0	14-24
9Q	17.1	140	35	35	70	0	0	14-24
9R	10.6	105	0	0	105	0	0	14-24
9S	0.5	7	0	0	7	0	0	10-20
9T	1	10	0	0	10	0	0	10-20
9U	11.8	103	15	18	70			10-20

N

10/4/2023

United States Department of the Interior
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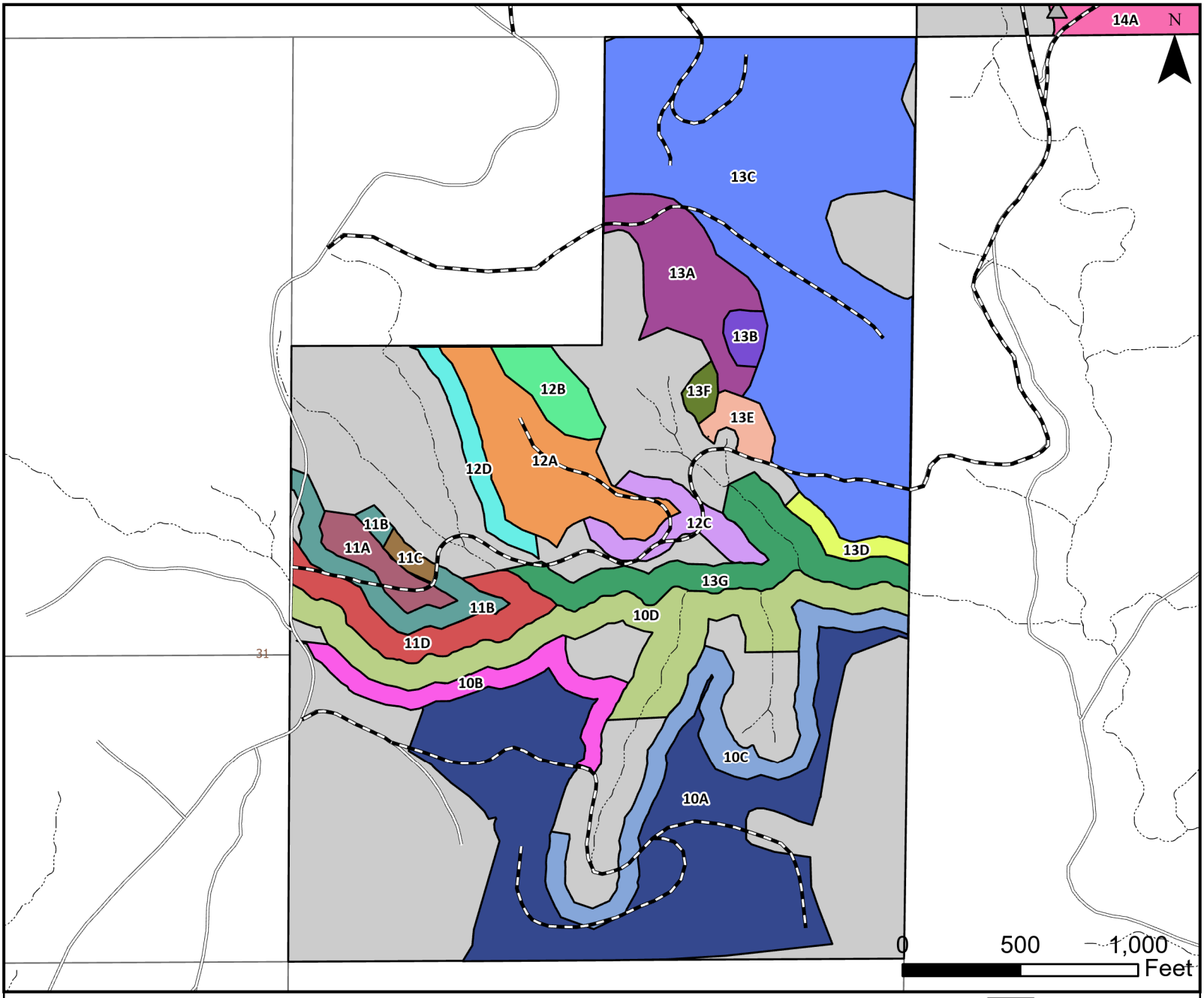
COARSE WOODY DEBRIS (CWD) CREATION MAP

T. 4S. R. 6W, Section 31 W. M.



Pre-selected Snags | Project Roads | Other Roads | Streams | Contract Area

CWD Unit	Acres	Total Trees	Saw Top	High Girdle	Basal Girdle	Cavity	Fell	DBH Range
10A	27.3	27	14	13	0	0	0	14-24
10B	3.5	10	1	2	7	0	0	14-24
10C	7	63	15	15	33	0		14-24
10D	10.7	58	4	0	23	0	31	14-24; 20-26 Fell
11A	1.9	3	3	0	0	0	0	14-24
11B	3.2	20	10	0	10	0		14-24
11C	0.5	20	6	3	11	0		14-24
11D	4	21	0	0	0	0	21	20-26
12A	7.5	7	7	0	0	0	0	14-24
12B	2.2	2	2	0	0	0	0	14-24

CWD Unit	Acres	Total Trees	Saw Top	High Girdle	Basal Girdle	Cavity	Fell	DBH Range
12C	2.7	6	6	0	0	0		14-24
12D	1.9	6	6	0	0	0		14-24
13A	5.9	6	6	0	0	0	0	14-24
13B	0.8	1	1	0	0	0	0	14-24
13C	38.8	39	20	19	0	0	0	14-24
13D	1.1	6	6	0	0	0		14-24
13E	1.3	2	2	0	0	0		14-24
13F	0.6	4	4	0	0	0		14-24
13G	6.3	82	0	0	46	0	36	14-24; 20-26 Fell
14A	8.3	8	4	4	0	0	0	14-24

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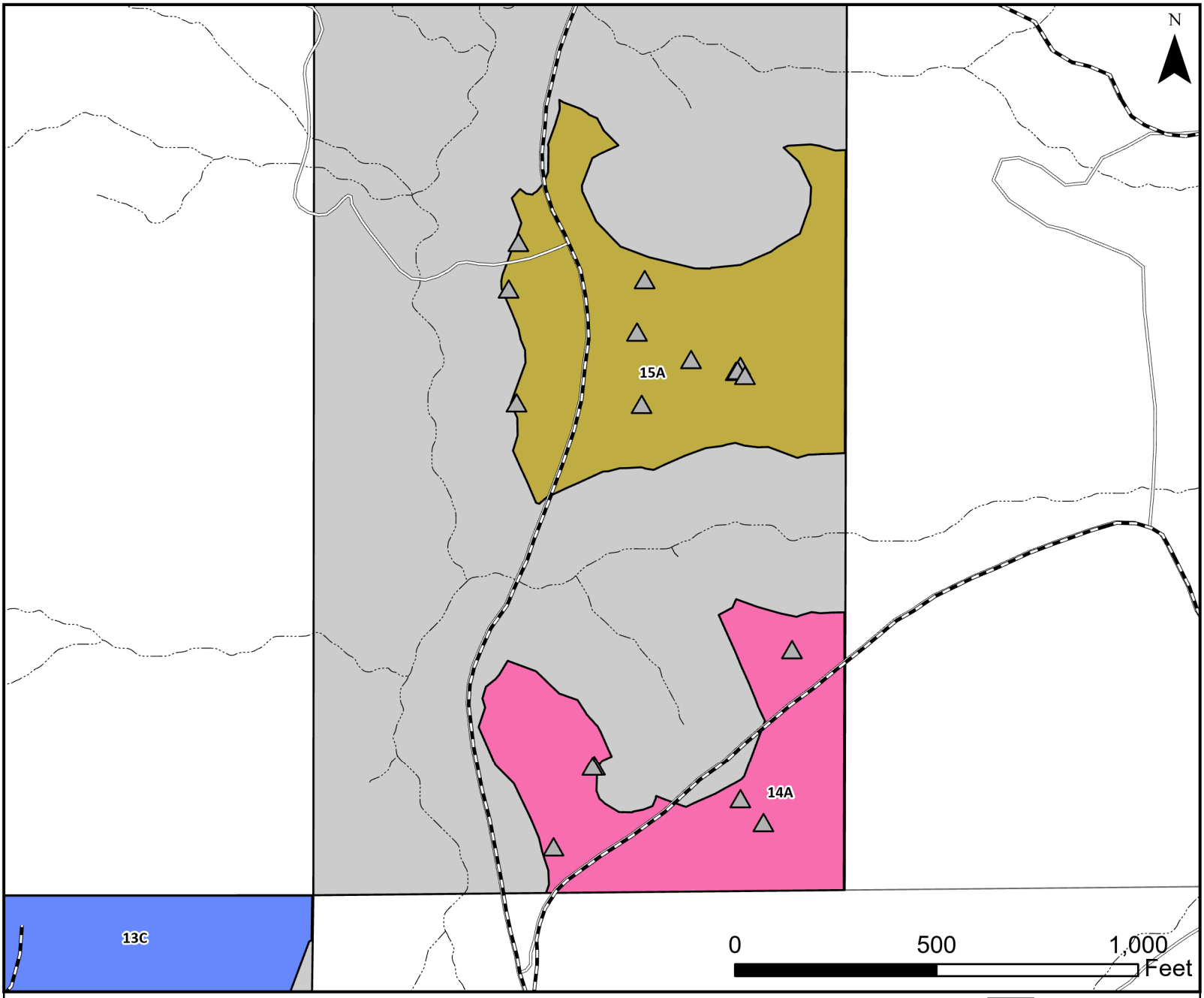
COARSE WOODY DEBRIS (CWD) CREATION MAP

10/4/2023

T. 4S. R. 6W, Section 29 W. M.



Pre-selected Snags | Project Roads | Other Roads | Streams | Contract Area

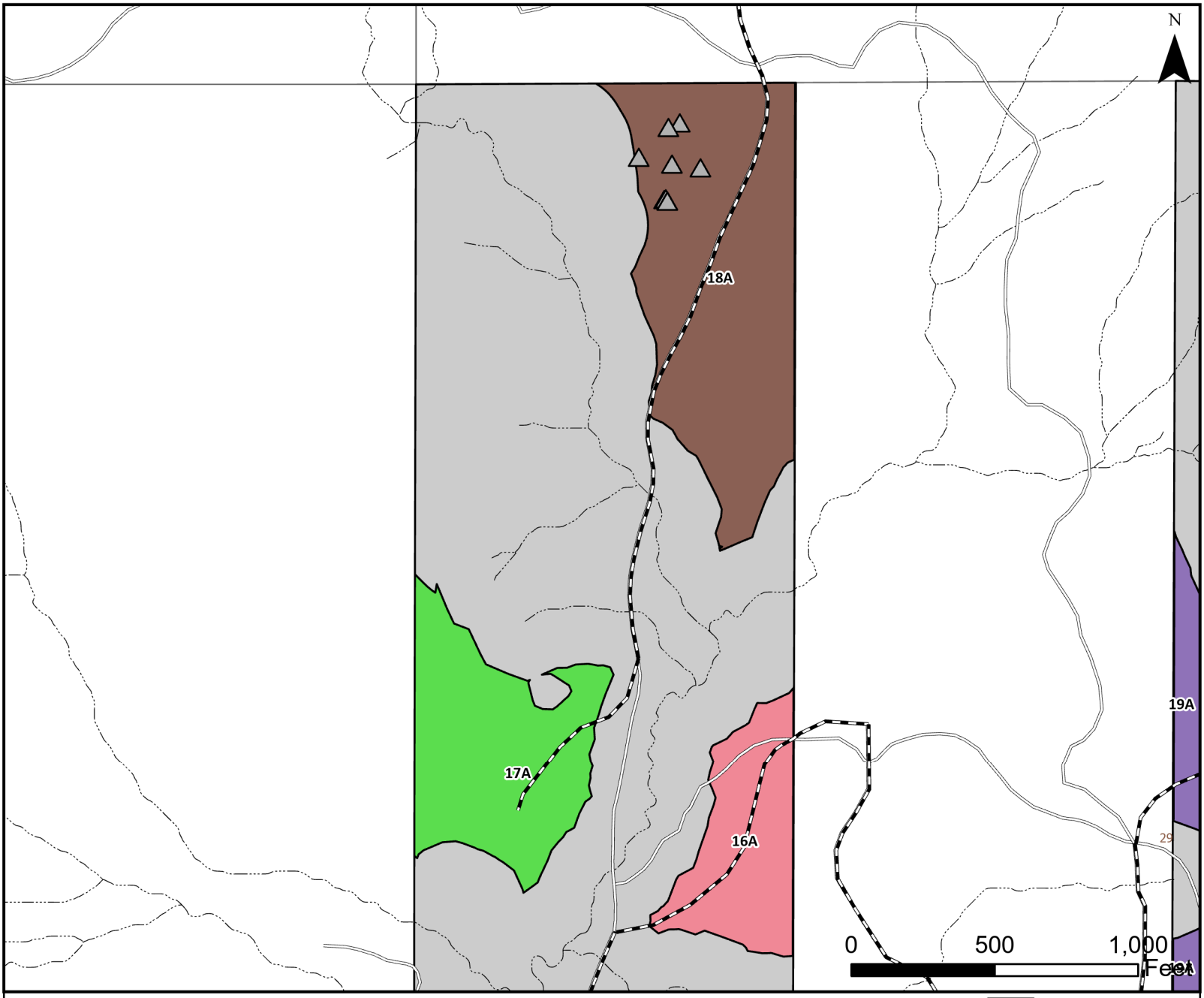
CWD Unit	Acres	Total Trees	Saw Top	High Girdle	Basal Girdle	Cavity	Fell	DBH Range
13C	38.8	39	20	19	0	0	0	14-24
14A	8.3	8	4	4	0	0	0	14-24
15A	11.6	11	6	5	0	0	0	14-24

United States Department of the Interior
BUREAU OF LAND MANAGEMENT

COARSE WOODY DEBRIS (CWD) CREATION MAP

10/4/2023

T. 4S. R. 6W, Section 29 W. M.



Pre-selected Snags | Project Roads | Other Roads | Streams | Contract Area

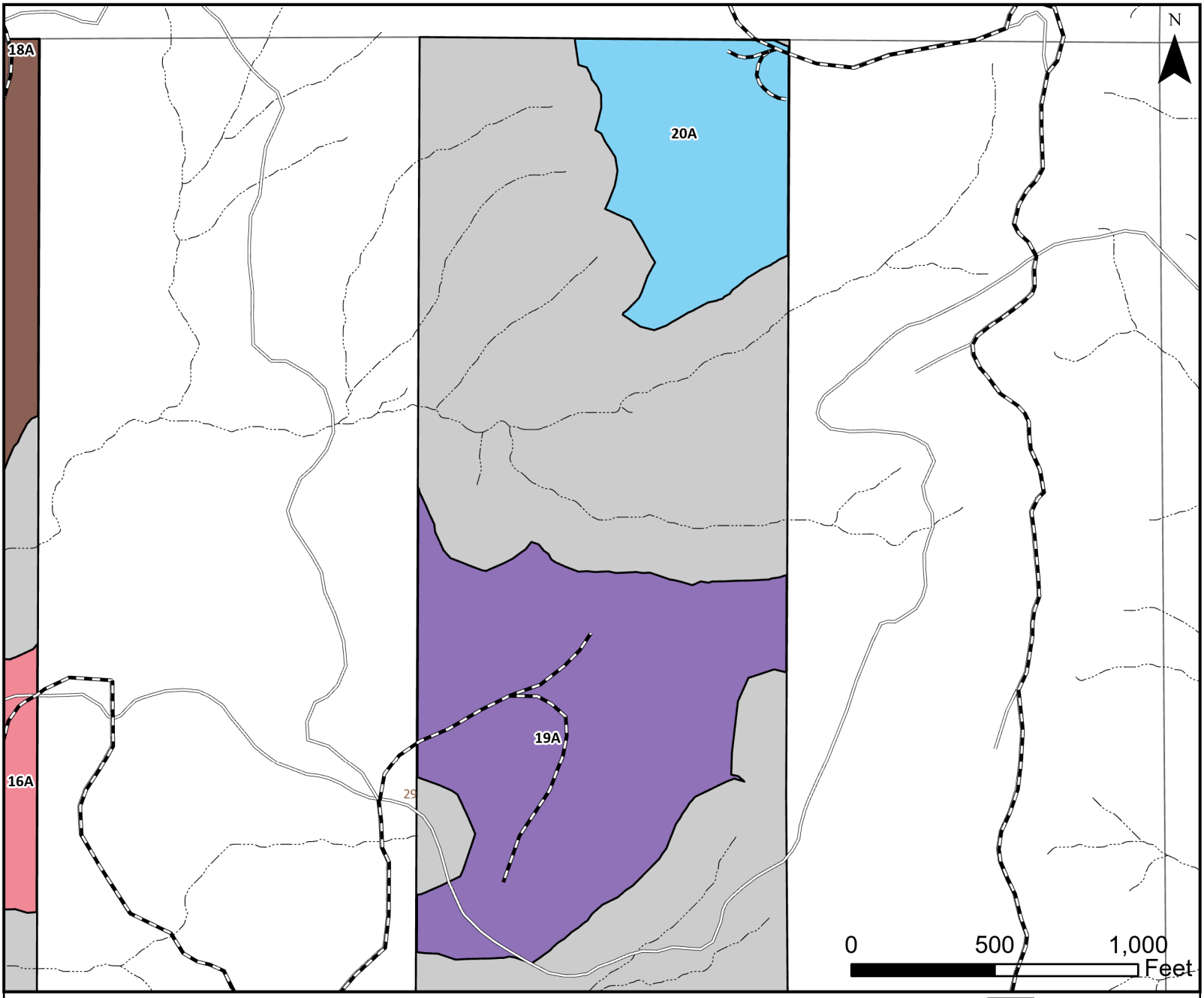
CWD Unit	Acres	Total Trees	Saw Top	High Girdle	Basal Girdle	Cavity	Fell	DBH Range
16A	6.2	4	3	1	0	0	0	14-24
17A	10	11	6	5	0	0	0	14-24
18A	17	15	7	8	0	0	0	14-24
19A	30.1	31	16	15	0	0	0	14-24

N

United States Department of the Interior
BUREAU OF LAND MANAGEMENT
COARSE WOODY DEBRIS (CWD) CREATION MAP

10/4/2023

T. 4S. R. 6W, Section 29 W. M.



Pre-selected Snags | Project Roads | Other Roads | Streams | Contract Area

CWD Unit	Acres	Total Trees	Saw Top	High Girdle	Basal Girdle	Cavity	Fell	DBH Range
16A	6.2	4	3	1	0	0	0	14-24
18A	17	15	7	8	0	0	0	14-24
19A	30.1	31	16	15	0	0	0	14-24
20A	12.6	11	5	6	0	0	0	14-24

Legal Description of Contract Area

Land Status	County	Township	Range	Section	Subdivision	Meridian
O&C	Yamhill	4S	6W	29	W½NE¼, W½NW¼, W½SW¼, NW¼SE¼,	Willamette
O&C	Yamhill	4S	6W	31	NE¼NE¼, S½NE¼, Lot 1, Lot 2, N½SE¼,	Willamette
O&C	Yamhill	4S	7W	24	SE¼SW¼, SW¼SE¼,	Willamette
O&C	Yamhill	4S	7W	25	NW¼NE¼, NE¼NW¼, S½NW¼, SW¼, SW¼SE¼,	Willamette
O&C	Yamhill	4S	7W	36	N½NE¼, SE¼NE¼, NE¼NW¼, NE¼SE¼,	Willamette

Species Totals

Species	Net	Gross Merch	Gross	# of Merch Logs	# of Cull Logs	# of Trees
Douglas Fir	9,853.0	10,104.0	10,165.0	165,736	268	36,565
Red Alder	61.0	109.0	109.0	1,018	1,759	804
Bigleaf Maple	4.0	20.0	23.0	148	812	480
Totals	**9,918.0**	**10,233.0**	**10,297.0**	**166,902**	**2,839**	**37,849**

Cutting Area Acres

Regeneration Harvest Acres	Partial Cut Acres	Right of Way Acres	Total Acres	Net Volume per Acre
48.0	388.0	17.0	453.0	21.9

Logging Costs

Stump to Truck	$1,476,433.37
Transportation	$860,436.00
Road Construction	$1,188,111.17
Maintenance/Rockwear	$109,470.68
Road Use	$23,851.46
Other Allowances	$247,766.15
Total:	**$3,906,068.83**
Total Logging Cost per MBF:	**$393.84**

Utilization Centers

Location	Distance	% of Net Volume
Garibaldi	52.0 miles	1%
Lyons	65.0 miles	99%

Profit & Risk

Profit	11%
Risk	0%
Total Profit & Risk	**11%**

Tract Features

Quadratic Mean DBH	15.1 in
Average GM Log	60 bf
Average Volume per Acre	21.9 mbf
Recovery	96%
Net MBF volume:	
Green	9,918.0 mbf
Salvage	0 mbf
Export	0 mbf
Ground Base Logging:	
Percent of Sale Volume	80%
Average Yarding Slope	20%
Average Yarding Distance	575 ft
Cable Logging:	
Percent of Sale Volume	20%
Average Yarding Slope	50%
Average Yarding Distance	700 ft
Aerial Logging:	
Percent of Sale Volume	0%
Average Yarding Slope	0%
Average Yarding Distance	0 ft

Cruise

Cruise Completed	August 2023
Cruised By	Bryant/Salmon

Cruise Method

20 BAF variable plot in thinning 40 BAF variable plot in Regen

Stumpage Computation

Species	# of Trees	Net Volume	Pond Value	(-) Profit & Risk	(-) Logging Costs	(+) Marginal Log Value	Stumpage Adjustment	Appraised Price/MBF		Appraised Value ($)
Douglas Fir	36,565	9,853.0	$666.10	$73.27	$393.84	$0.00	($1.25)	$197.70		$1,947,938.10
Red Alder	804	61.0	$259.67	$28.56	$393.84	$0.00	$0.00	$26.00	*	$1,586.00
Bigleaf Maple	480	4.0	$228.75	$25.16	$393.84	$0.00	$0.00	$22.90	*	$91.60
Totals	**37,849**	**9,918.0**								**$1,949,615.70**

* Minimum Stumpage values were used to compute the Appraised Price/MBF (10% of Pond Value)

Percent of Volume By Log Grade

Species	No. 1 & 2 Peeler	No. 3 Peeler	Special Mill	No. 2 Sawmill	No. 3 Sawmill	No. 4 Sawmill	Camp Run
Douglas Fir				44.0%	51.0%	5.0%	

Species	No. 1 Sawmill	No. 2 Sawmill	No. 3 Sawmill	No. 4 Sawmill	No. 5 Sawmill		Camp Run
Red Alder							100.0%

Species	No. 1 Sawmill	No. 2 Sawmill	No. 3 Sawmill	No. 4 Sawmill	No. 5 Sawmill		Camp Run
Bigleaf Maple							100.0%

Unit: 1

Net Volume/Acre: 18.9 MBF

Species	Net	Gross Merch	Gross	# of Trees
Douglas Fir	131.0	134.0	135.0	520
Red Alder	1.0	2.0	2.0	17
Totals:	**132.0**	**136.0**	**137.0**	**537**

Regeneration Harvest	0.0
Partial Cut	7.0
Right of Way	0.0
Total Acres:	**7.0**

Unit: 2

Net Volume/Acre: 14.8 MBF

Species	Net	Gross Merch	Gross	# of Trees
Douglas Fir	615.0	632.0	638.0	2,450
Red Alder	6.0	11.0	11.0	82
Totals:	**621.0**	**643.0**	**649.0**	**2,532**

Regeneration Harvest	0.0
Partial Cut	42.0
Right of Way	0.0
Total Acres:	**42.0**

Unit: 3

Net Volume/Acre: 34.2 MBF

Species	Net	Gross Merch	Gross	# of Trees
Douglas Fir	479.0	490.0	490.0	1,573
Totals:	**479.0**	**490.0**	**490.0**	**1,573**

Regeneration Harvest	0.0
Partial Cut	14.0
Right of Way	0.0
Total Acres:	**14.0**

Unit: 4

Net Volume/Acre: 16.8 MBF

Species	Net	Gross Merch	Gross	# of Trees
Douglas Fir	149.0	153.0	155.0	594
Red Alder	2.0	3.0	3.0	20
Totals:	**151.0**	**156.0**	**158.0**	**614**

Regeneration Harvest	0.0
Partial Cut	9.0
Right of Way	0.0
Total Acres:	**9.0**

Unit: 5

Net Volume/Acre: 17.3 MBF

Species	Net	Gross Merch	Gross	# of Trees
Douglas Fir	205.0	211.0	213.0	817
Red Alder	2.0	4.0	4.0	27
Totals:	**207.0**	**215.0**	**217.0**	**844**

Regeneration Harvest	0.0
Partial Cut	12.0
Right of Way	0.0
Total Acres:	**12.0**

Unit: 6

Species	Net	Gross Merch	Gross	# of Trees
Douglas Fir	383.0	392.0	392.0	1,258
Totals:	**383.0**	**392.0**	**392.0**	**1,258**

Net Volume/Acre: 47.9 MBF

Regeneration Harvest	0.0
Partial Cut	8.0
Right of Way	0.0
Total Acres:	**8.0**

Unit: 7

Species	Net	Gross Merch	Gross	# of Trees
Douglas Fir	168.0	172.0	174.0	668
Red Alder	2.0	3.0	3.0	22
Totals:	**170.0**	**175.0**	**177.0**	**690**

Net Volume/Acre: 17.0 MBF

Regeneration Harvest	0.0
Partial Cut	10.0
Right of Way	0.0
Total Acres:	**10.0**

Unit: 8

Species	Net	Gross Merch	Gross	# of Trees
Douglas Fir	354.0	364.0	367.0	1,411
Red Alder	4.0	6.0	6.0	47
Totals:	**358.0**	**370.0**	**373.0**	**1,458**

Net Volume/Acre: 16.3 MBF

Regeneration Harvest	0.0
Partial Cut	22.0
Right of Way	0.0
Total Acres:	**22.0**

Unit: 9

Species	Net	Gross Merch	Gross	# of Trees
Douglas Fir	1,995.0	2,047.0	2,069.0	7,943
Red Alder	20.0	35.0	35.0	269
Totals:	**2,015.0**	**2,082.0**	**2,104.0**	**8,212**

Net Volume/Acre: 16.1 MBF

Regeneration Harvest	0.0
Partial Cut	125.0
Right of Way	0.0
Total Acres:	**125.0**

Unit: 10

Species	Net	Gross Merch	Gross	# of Trees
Douglas Fir	578.0	594.0	599.0	2,302
Red Alder	6.0	11.0	11.0	77
Totals:	**584.0**	**605.0**	**610.0**	**2,379**

Net Volume/Acre: 17.2 MBF

Regeneration Harvest	0.0
Partial Cut	34.0
Right of Way	0.0
Total Acres:	**34.0**

Unit: 11

Species	Net	Gross Merch	Gross	# of Trees
Douglas Fir	93.0	96.0	97.0	371
Red Alder	1.0	2.0	2.0	12
Totals:	**94.0**	**98.0**	**99.0**	**383**

Net Volume/Acre: 15.7 MBF

Regeneration Harvest	0.0
Partial Cut	6.0
Right of Way	0.0
Total Acres:	**6.0**

Unit: 12

Species	Net	Gross Merch	Gross	# of Trees
Douglas Fir	224.0	230.0	232.0	891
Red Alder	2.0	4.0	4.0	30
Totals:	**226.0**	**234.0**	**236.0**	**921**

Net Volume/Acre: 16.1 MBF

Regeneration Harvest	0.0
Partial Cut	14.0
Right of Way	0.0
Total Acres:	**14.0**

Unit: 13

Species	Net	Gross Merch	Gross	# of Trees
Douglas Fir	802.0	823.0	831.0	3,193
Red Alder	8.0	15.0	15.0	107
Totals:	**810.0**	**838.0**	**846.0**	**3,300**

Net Volume/Acre: 18.0 MBF

Regeneration Harvest	0.0
Partial Cut	45.0
Right of Way	0.0
Total Acres:	**45.0**

Unit: 14

Species	Net	Gross Merch	Gross	# of Trees
Douglas Fir	335.0	343.0	343.0	1,101
Totals:	**335.0**	**343.0**	**343.0**	**1,101**

Net Volume/Acre: 41.9 MBF

Regeneration Harvest	8.0
Partial Cut	0.0
Right of Way	0.0
Total Acres:	**8.0**

Unit: 15

Species	Net	Gross Merch	Gross	# of Trees
Douglas Fir	479.0	490.0	490.0	1,573
Totals:	**479.0**	**490.0**	**490.0**	**1,573**

Net Volume/Acre: 47.9 MBF

Regeneration Harvest	10.0
Partial Cut	0.0
Right of Way	0.0
Total Acres:	**10.0**

Unit: 16

Species	Net	Gross Merch	Gross	# of Trees
Douglas Fir	239.0	245.0	245.0	786
Totals:	**239.0**	**245.0**	**245.0**	**786**

Net Volume/Acre: 47.8 MBF

Regeneration Harvest	5.0
Partial Cut	0.0
Right of Way	0.0
Total Acres:	**5.0**

Unit: 17

Species	Net	Gross Merch	Gross	# of Trees
Douglas Fir	431.0	441.0	441.0	1,416
Totals:	**431.0**	**441.0**	**441.0**	**1,416**

Net Volume/Acre: 43.1 MBF

Regeneration Harvest	10.0
Partial Cut	0.0
Right of Way	0.0
Total Acres:	**10.0**

Unit: 18

Species	Net	Gross Merch	Gross	# of Trees
Douglas Fir	718.0	735.0	735.0	2,359
Totals:	**718.0**	**735.0**	**735.0**	**2,359**

Net Volume/Acre: 47.9 MBF

Regeneration Harvest	15.0
Partial Cut	0.0
Right of Way	0.0
Total Acres:	**15.0**

Unit: 19

Species	Net	Gross Merch	Gross	# of Trees
Douglas Fir	504.0	517.0	522.0	2,005
Red Alder	5.0	9.0	9.0	67
Bigleaf Maple	2.0	10.0	12.0	240
Totals:	**511.0**	**536.0**	**543.0**	**2,312**

Net Volume/Acre: 18.3 MBF

Regeneration Harvest	0.0
Partial Cut	28.0
Right of Way	0.0
Total Acres:	**28.0**

Unit: 20

Species	Net	Gross Merch	Gross	# of Trees
Douglas Fir	205.0	211.0	213.0	817
Red Alder	2.0	4.0	4.0	27
Bigleaf Maple	2.0	10.0	11.0	240
Totals:	**209.0**	**225.0**	**228.0**	**1,084**

Net Volume/Acre: 17.4 MBF

Regeneration Harvest	0.0
Partial Cut	12.0
Right of Way	0.0
Total Acres:	**12.0**

Unit: RW

Net Volume/Acre: 45.1 MBF

Species	Net	Gross Merch	Gross	# of Trees
Douglas Fir	766.0	784.0	784.0	2,517
Totals:	**766.0**	**784.0**	**784.0**	**2,517**

Regeneration Harvest	0.0
Partial Cut	0.0
Right of Way	17.0
Total Acres:	**17.0**

Comments:
49 acres of reserve clumps were removed from cruise acres and 1 acre of Right-of-way was removed that is on private land.

Total Stump To Truck	Net Volume	$/MBF
$1,476,433.37	9,918.0	$148.86

Stump to Truck: Falling, Bucking, Yarding, & Loading

Yarding System	Unit of Measure	# of Units of Measure	$/Unit of Measure	Total Cost	Remarks
Cable: Medium Yarder	GM MBF	1,583.0	$203.79	$322,599.57	Cable units
Cable: Medium Yarder	GM MBF	490.0	$152.84	$74,891.60	Unit 3
Track Skidder	GM MBF	4,731.0	$144.50	$683,629.50	Ground units
Track Skidder	GM MBF	3,430.0	$112.89	$387,212.70	Units 6,14,15,16,17,18 and RW
Subtotal				**$1,468,333.37**	

Additional Costs

Item	Unit of Measure	# of Units of Measure	$/Unit of Measure	Total Cost	Remarks
Intermediate Support	Each	27.0	$300.00	$8,100.00	
Subtotal				**$8,100.00**	

Additional Moves

Equipment	Unit of Measure	# of Units of Measure	$/Unit of Measure	Total Cost	Remarks
Subtotal				**$0.00**	

Total	Net Volume	$/MBF
$860,436.00	9,918.0	$86.75

Utilization Center	One Way Mileage	Description	Unit of Measure	# of Units	$/Unit of Measure	Total Cost	% of Sale Volume
Garibaldi	52.0	Alder/Maple	GM MBF	130.0	$90.00	$11,700.00	1%
Lyons	65.0	All Conifer	GM MBF	10,104.0	$84.00	$848,736.00	99%

Engineering Allowances

Total	Net Volume	$/MBF
$1,321,433.31	9,918.0	$133.24

Cost Item	Total Cost
Road Construction:	$1,188,111.17
Road Maintenance/Rockwear:	$109,470.68
Road Use Fees:	$23,851.46

Total	Net Volume	$/MBF
$247,766.15	9,918.0	$24.98

Environmental Protection

Cost item	Total Cost
Machine Washing	$400.00
CWD Costs	$178,141.15
Subtotal	**$178,541.15**

Slash Disposal & Site Prep

Cost item	Total Cost
Fuel reduction cost	$69,225.00
Subtotal	**$69,225.00**

Comments:
SLASH DISPOSAL APPRAISAL WORKSHEET
Acres: 139 Appraisal Date: 9/12/2023

FUELS ALLOWANCE SUMMARY
UNIT # Treatment Type Quantity Measure Allowance C1? Total

Sec 25 Landing pile and cover 5 acres $125.00 N $562.50
Hand pile and cover 0 acres $- N
Machine Pile and Cover 11 acres $400.00 N $4,400.00
Landing Pile Burn 5 acres $125.00 N $562.50
Handpile Burn 0 acres $- N
Machine Pile Burn 11 acres $125.00 N $1,375.00
Slashing - L1 0 acres $- N
$6,900.00
Sec 36 Landing pile and cover 4 acres $125.00 N $500.00
Hand pile and cover 0 acres $- N $-
Machine Pile and Cover 16 acres $400.00 N $6,400.00
Landing Pile Burn 4 acres $125.00 N $500.00
Handpile Burn 0 acres N $-
Machine Pile Burn 16 acres $125.00 N $2,000.00
Slashing - L1 0 acres N $-
$9,400.00
Sec. 29 Landing pile and cover 4 acres $125.00 N $500.00
Hand pile and cover 0 acres $- N $-
Machine Pile and Cover 17 acres $400.00 N $6,800.00

Landing Pile Burn 4 acres $125.00 N $500.00
Handpile Burn 0 acres N $-
Machine Pile Burn 17 acres $125.00 N $2,125.00
Slashing - L1 0 acres N $-
$9,925.00
Sec. 31 Landing pile and cover 4 acres $125.00 N $500.00
Hand pile and cover 0 acres $- N $-
Machine Pile and Cover 10 acres $400.00 N $4,000.00
Landing Pile Burn 4 acres $125.00 N $500.00
Handpile Burn 0 acres N $-
Machine Pile Burn 10 acres $125.00 N $1,250.00
Slashing - L1 0 acres N $-
$6,250.00
All Units Landing pile and cover 0 acres $- N $-
Hand pile and cover 21 acres $750.00 N $15,750.00
Machine Pile and Cover 26 acres $400.00 N $10,400.00
Landing Pile Burn 0 acres $- N $-
Handpile Burn 21 acres $100.00 N $2,100.00
Machine Pile Burn 26 acres $125.00 N $3,250.00
Slashing - L1 21 acres $250.00 N $5,250.00
$36,750.00
Total $69,225.00
CWD Appraisal
60% BG/40% Tillamook Field Office - Timber Town Timber Sale Appraisal
Treatment Type Quantity Price Total
Saw-Top (10-20) 146 $90.00 $13,140.00
Saw-Top (14-24) 525 $100.00 $52,500.00
Saw-Top (20-30) 30 $110.00 $3,300.00
High Girdle (10-20) 121 $80.00 $9,680.00
High Girdle (14-24) 404 $88.00 $35,552.00
High Girdle (20-30) 27 $100.00 $2,700.00
Cavity Creation (20-30) 31 $94.50 $2,929.50
Basal Girdle (10-20) 663 $20.00 $13,260.00
Basal Girdle (14-24) 997 $24.00 $23,928.00
Basal Girdle (20-30) 2 $30.00 $60.00
Felling (14-20) 41 $27.00 $1,107.00
Felling (20-26) 88 $40.00 $3,520.00
Felling (24-30) 6 $45.00 $270.00
3081 $161,946.50
10% Admin $16,194.65
$178,141.15

100%bo $215,123.25
climbing BO $159,139.52