

Washington DNR Timber Sales Program

**Updated information is being provided for **Lotta Strands** timber sale documents as follows:**

**Documents amended:**

<b>Brief Description</b>	<b>DATE</b>
<p><b>CONTRACT</b> –The following was added to Clause H-141:</p>	<p>5/20/2016</p>
<p>F. If the Purchaser determines that blasting is necessary for road construction of the road segments listed in Section 11-1 of the Road Plan, the Purchaser shall obtain written approval and acceptance, of a Drill and Shoot Plan, from the Snohomish County PUD and assumes responsibility for all costs and damages associated with seeking such. Purchaser must provide the State with a copy of the Plan and written acceptance from the Snohomish County PUD indicating that a satisfactory plan has been consummated between Purchaser and the Snohomish County PUD prior to onset of any blasting operations associated with these roads.</p>	
<p><b>ROAD PLAN</b> – Update to Section 11-1 with the following language:</p>	<p>5/20/2016</p>
<p>In the following locations, blasting is not permitted for road construction due to the proximity of the Snohomish County PUD pipeline, unless specifically authorized in writing by the State.</p>	

Washington DNR Timber Sales Program

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**Documents amended:**

<b>Brief Description</b>	<b>DATE</b>
Contract –The following was removed from Clause H-141 D. because corridor volume was included in the advertised volume:	5/5/16
Any timber felled outside of the RMZ core and inner zones, within the 20 foot corridor width shall be considered additional volume and shall be paid for at the rates set forth in Clause G-101.	

## TIMBER NOTICE OF SALE

**SALE NAME:** *LOTTA STRANDS*

**AGREEMENT NO:** *30-093059*

**AUCTION:** May 25, 2016 starting at 10:00 a.m.,  
Northwest Region Office, Sedro Woolley, WA

**COUNTY:** Snohomish

**SALE LOCATION:** Sale located approximately 6 miles northeast of Sultan, WA.

**PRODUCTS SOLD  
AND SALE AREA:**

All timber bounded by white timber sale boundary tags, except trees marked with blue paint on the bole and root collar and cedar snags, preexisting dead and down cedar trees and cedar logs in Unit #1.

All timber bounded by white timber sale boundary tags and adjacent young stands, except trees marked with blue paint on the bole and root collar, forest products tagged out by yellow leave tree area tags and cedar snags, preexisting dead and down cedar trees and cedar logs in Unit #2 (collectively labeled 2A, 2B and 2C).

All timber bounded by white timber sale boundary tags, adjacent young stands and the PT-ML road, except trees marked with blue paint on the bole and root collar, forest products tagged out by yellow leave tree area tags and cedar snags, preexisting dead and down cedar trees and cedar logs in Unit #3.

All timber bounded by white timber sale boundary tags, adjacent young stands and the HK-ML road, except trees marked with blue paint on the bole and root collar, forest products tagged out by yellow leave tree area tags and cedar snags, preexisting dead and down cedar trees and cedar logs in Unit #4.

All timber bounded by white timber sale boundary tags, property lines and the PT-ML road, except trees marked with blue paint on the bole and root collar, forest products tagged out by yellow leave tree area tags and cedar snags, preexisting dead and down cedar trees and cedar logs in Unit #5.

All timber bounded by white timber sale boundary tags and the HK-ML road, except trees marked with blue paint on the bole and root collar, forest products tagged out by yellow leave tree area tags and cedar snags, preexisting dead and down cedar trees and cedar logs in Unit #6

The above described products on part(s) of Sections 1, 2, 3, 10, 11 and 12 all in Township 28 North, Range 8 East, Sections 35 all in Township 29 North, Range 8 East, W.M., containing 161 acres, more or less.

**CERTIFICATION:** This sale is certified under the Sustainable Forestry Initiative® program Standard (cert no: BV-SFIS-US09000572)

**TIMBER NOTICE OF SALE**

**ESTIMATED SALE VOLUMES AND QUALITY:**

Species	Avg DBH	Ring Count	Total MBF	MBF by Grade								
				1P	2P	3P	SM	1S	2S	3S	4S	UT
Hemlock	15	8	4,215						1,645	2,049	403	118
Douglas fir	20	9	1,605						932	568	104	1
Red cedar	16		138							114	24	
Red alder	18		32						11	9	10	2
Silver fir	16		18							14	4	
Cottonwood	23		9						7		2	
Maple	11		9									9
Sale Total			6,026									

**MINIMUM BID:** \$1,064,000.00

**BID METHOD:** Sealed Bids

**PERFORMANCE**

**SECURITY:** \$100,000.00

**SALE TYPE:** Lump Sum

**EXPIRATION DATE:** March 31, 2019

**ALLOCATION:** Export Restricted

**BID DEPOSIT:** \$106,400.00 or Bid Bond. Said deposit shall constitute an opening bid at the appraised price.

**HARVEST METHOD:** Cable; cable or shovel on sustained slopes 35% or less. Falling and Yarding will not be permitted from November 1 to March 31 unless authorized in writing by the Contract Administrator (THIS PERTAINS TO GROUND-BASED EQUIPMENT ONLY) to reduce soil damage and erosion.

Additional restrictions apply, see Remarks section below.

**ROADS:** 1.70 stations of required construction. 58.49 stations of optional construction. 27.06 stations of existing road to be abandoned. 58.49 stations of road to be abandoned if built. 241.60 station of required pre-haul road maintenance.

Rock may be obtained from the following source(s) on State land at no charge to the Purchaser: HK-27 Hard Rock Pit at station 144+00 of the HK-27 Road. SP-0202 Hard Rock Pit at station 9+61 of the SP-02 Road.

An existing stockpile of 3-inch-minus ballast is available for use in both the HK-27 and SP-0202 Hard Rock Pits.

Development of existing rock source(s) will involve clearing, stripping, drilling, shooting, and processing rock to generate riprap and 3-inch-minus ballast.

An estimated total quantity of rock needed for this proposal: 224 cubic yards of riprap and 16,590 cubic yards of ballast rock.

Additional restrictions apply, see Remarks section below.

Road construction, pre-haul maintenance, road abandonment, and the hauling of rock will not be permitted from November 1 to March 31 unless authorized in writing by the Contract Administrator to reduce soil damage and siltation. The hauling of forest products will not be permitted from November 1 to March 31 unless authorized in writing by the Contract Administrator to reduce soil damage and siltation.

## TIMBER NOTICE OF SALE

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### ACREAGE DETERMINATION

**CRUISE METHOD:** Acres determined by GPS traverse. 174.7 acres gross. 6.1 acres deducted for green tree retention clumps, 4.9 acres deducted for existing roads and 2.4 acres deducted for an exclusion area. 161.3 acres net. Cruised using variable plot method. Expansion factor used is 40.00, 46.95 and 54.45. Sighting height is 4.5 feet. A total of 74 plots were taken.

Shapefiles of units are available upon request.

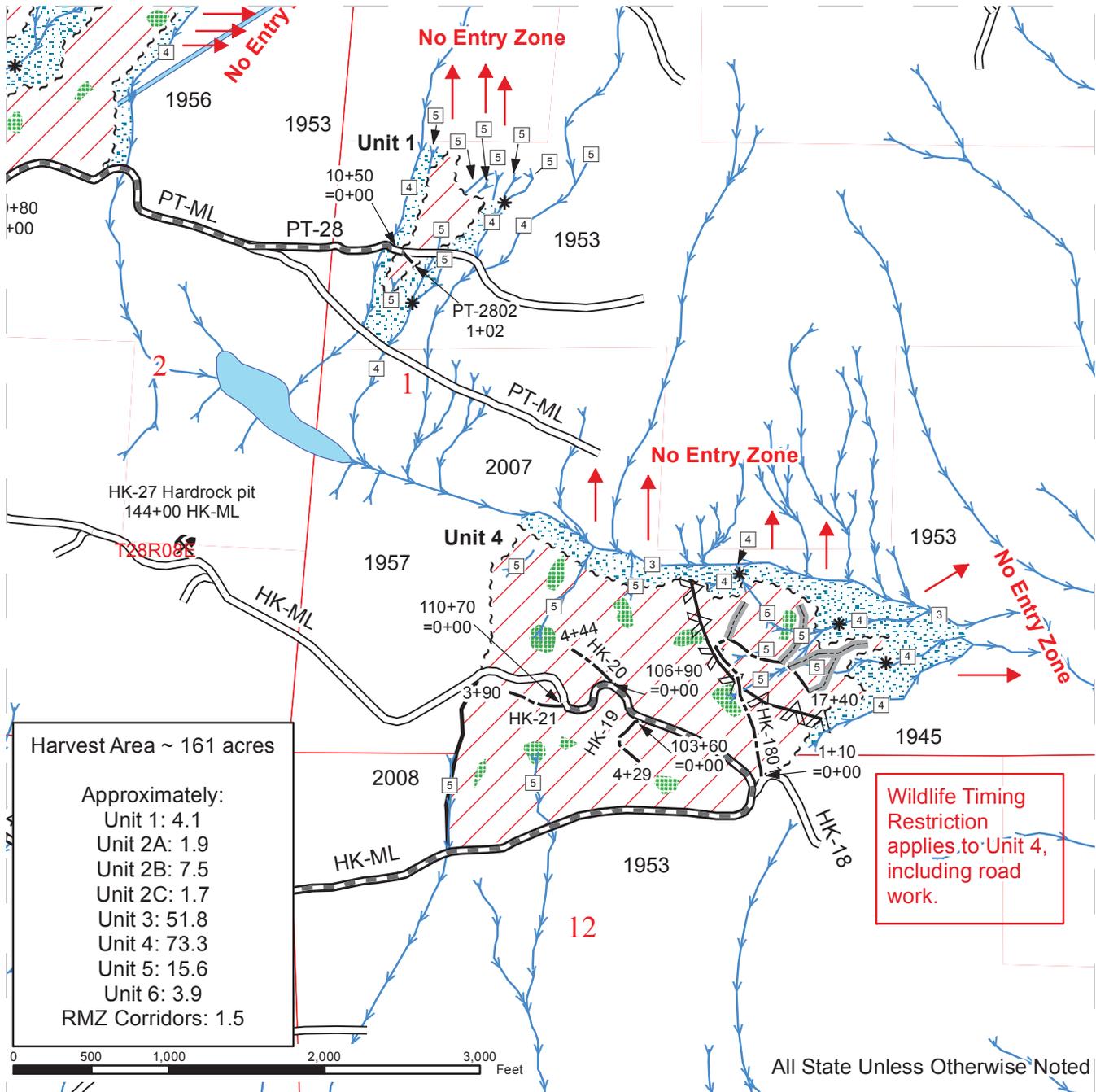
**FEES:** \$106,961.50 is due on day of sale. \$9.00 per MBF is due upon removal. These are in addition to the bid price.

- SPECIAL REMARKS:**
1. Wildlife timing restrictions are: no falling, bucking, yarding or operation of heavy equipment April 1 to August 31 from one hour before official sunrise to two hours after official sunrise and one before and after official sunset. Timing restrictions shall be applied to Unit #4.
  2. Trees marked with red paint and a yellow "T" represent the last take tree along property line boundaries.
  3. If goshawks or aggressively calling birds are detected in the vicinity of the sale, all operations associated with timber harvesting, road building, or rock pit development shall cease immediately, and the Contract Administrator shall be notified. A DNR Biologist may provide mitigating measure and operations shall re-start according to these specifications at the approval of the Contract Administrator.
  4. Profiles are available upon request.

# TIMBER SALE MAP

**SALE NAME:** LOTTA STRANDS  
**AGREEMENT#:** 93059  
**TOWNSHIP(S):** T29R08E, T28R08E  
**TRUST(S):** State Forest Transfer(1), Common School and Indemnity(3), Agricultural School(4), Charitable/Educational/Penal & Reformatory Instit.(6), Capitol Grant(7)

**REGION:** Northwest Region  
**COUNTY(S):** SNOHOMISH  
**ELEVATION RGE:** 728-2554

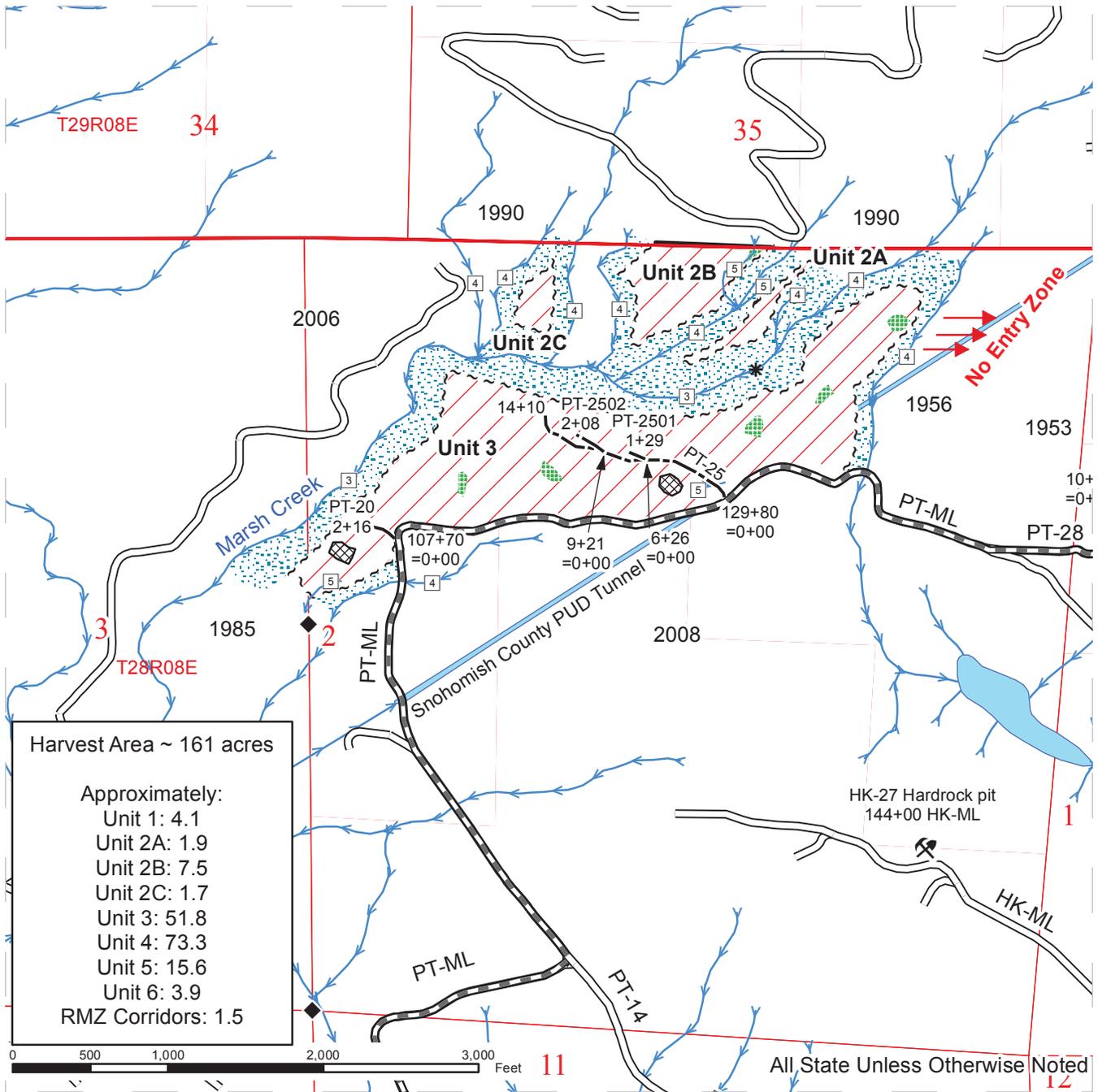


Sale Area	Wetlands	Existing Roads	Survey Corners
Sale Boundary Tags	Wetland Management Zone	Required Construction	Existing Rock Pit
Sale Boundary (No Tags)	Riparian Management Zone	Pre-Haul Maintenance	Gate
No Entry Zone	Non-Tradeable Leave Tree Area	Optional Construction	DNR Managed Lands
Equipment Restriction Zone	Leave Tree Area	Designated Skid Trail	
Streams			
Stream Type			
Stream Type Break			

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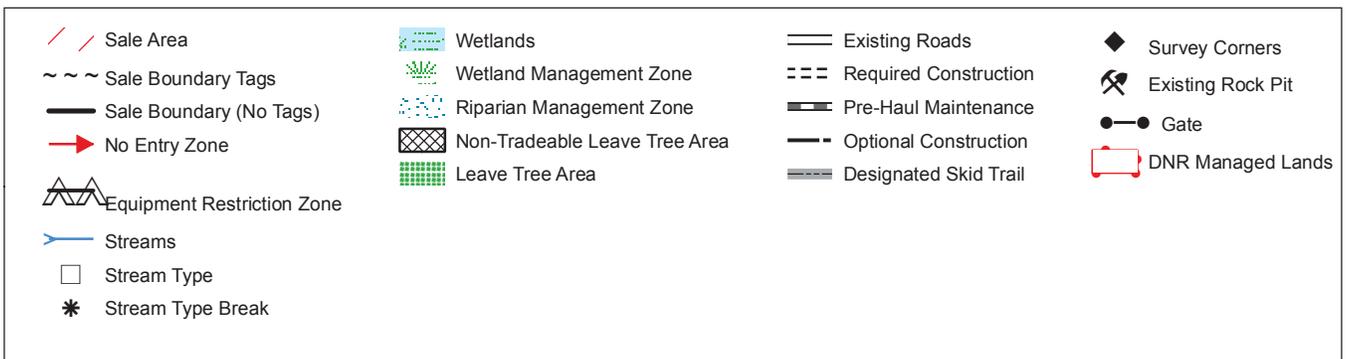
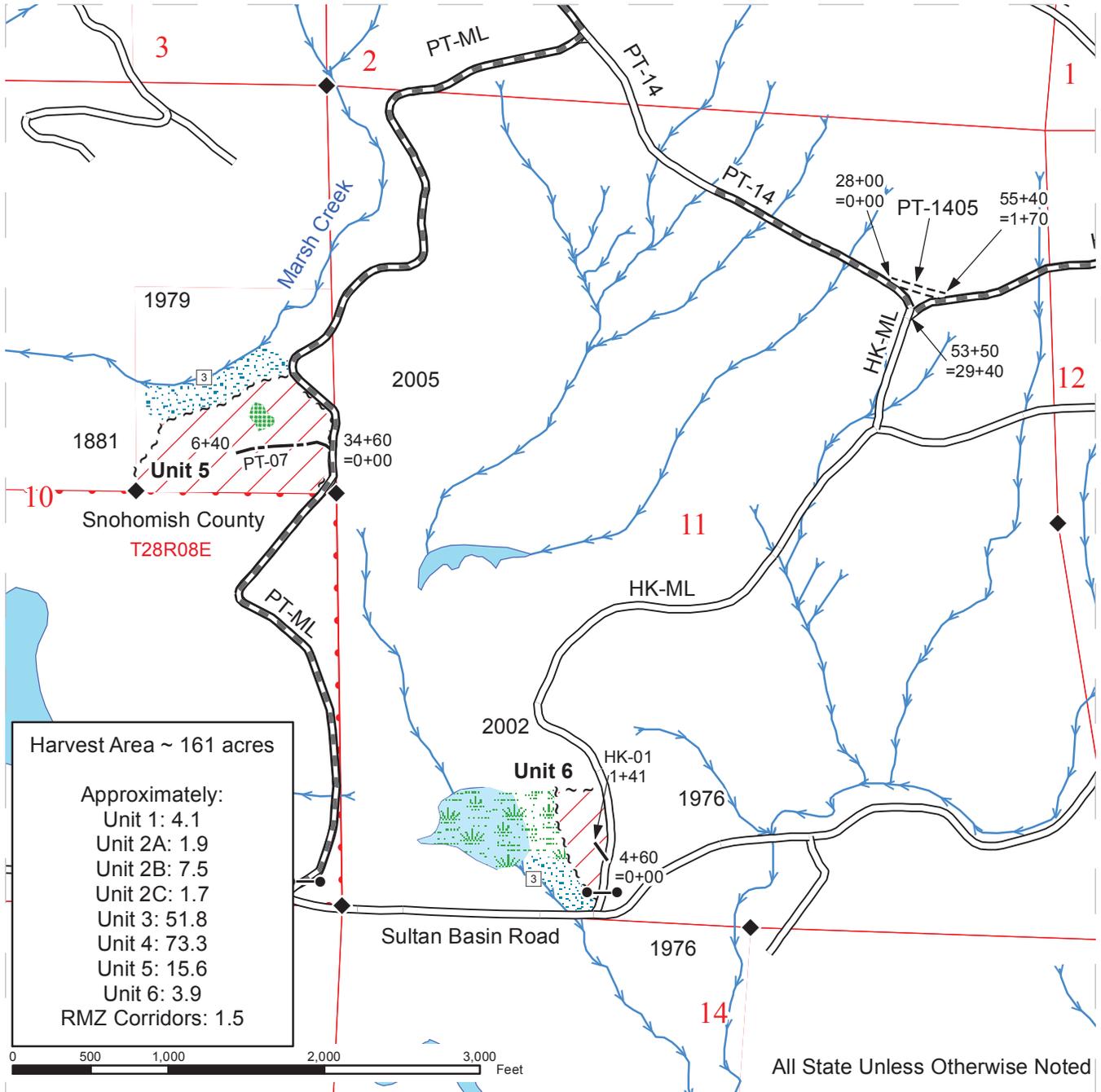
Harvest Area ~ 161 acres  
  
 Approximately:  
 Unit 1: 4.1  
 Unit 2A: 1.9  
 Unit 2B: 7.5  
 Unit 2C: 1.7  
 Unit 3: 51.8  
 Unit 4: 73.3  
 Unit 5: 15.6  
 Unit 6: 3.9  
 RMZ Corridors: 1.5

Sale Area	Wetlands	Existing Roads	Survey Corners
Sale Boundary Tags	Wetland Management Zone	Required Construction	Existing Rock Pit
Sale Boundary (No Tags)	Riparian Management Zone	Pre-Haul Maintenance	Gate
No Entry Zone	Non-Tradeable Leave Tree Area	Optional Construction	DNR Managed Lands
Equipment Restriction Zone	Leave Tree Area	Designated Skid Trail	
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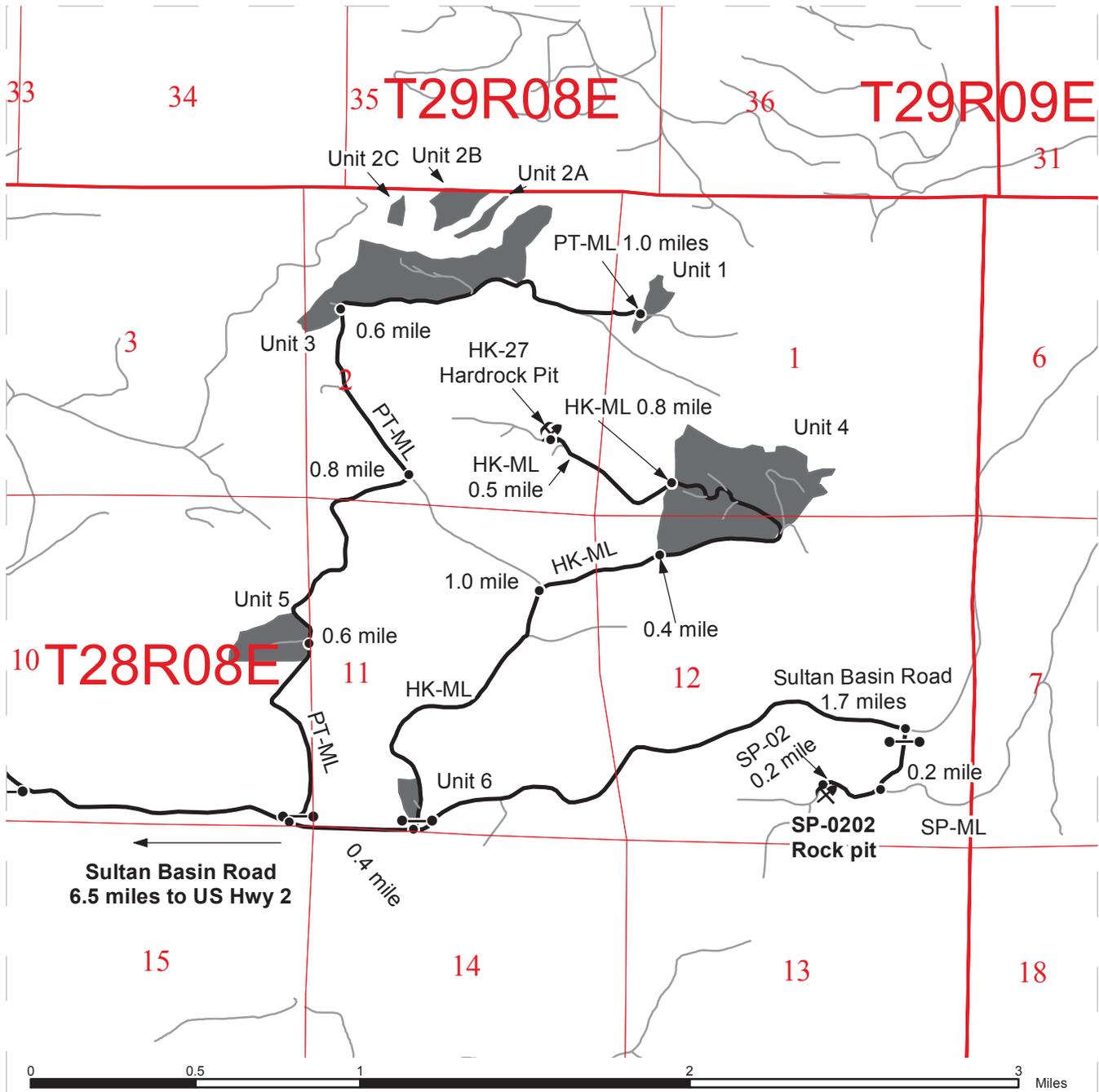
**REGION:** Northwest Region  
**COUNTY(S):** SNOHOMISH  
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# DRIVING MAP

SALE NAME: LOTTA STRANDS  
 AGREEMENT#: 93059  
 TOWNSHIP(S): T29R08E, T28R08E  
 TRUST(S): State Forest Transfer(1), Common School and Indemnity(3), Agricultural School(4), Charitable/Educational/Penal & Reformatory Instit.(6), Capitol Grant(7)

REGION: Northwest Region  
 COUNTY(S): SNOHOMISH  
 ELEVATION RGE: 728-2554



- Timber Sale Unit
- Other Route
- Haul Route
- Rock Pit
- Distance Indicator
- Gate

**Driving Directions:**

To access Units 1, 2, 3, and 5:  
 From US Hwy 2 follow Sultan Basin Rd 6.5 miles to the Portal Mainline (PT-ML), F1 key needed for gate. Turn left onto the PT-ML, and continue 0.6 mile, Unit 5 will be on the left. Continue on the PT-ML 1.4 miles to reach the western end of Unit 3. Continue on the PT-ML 0.6 miles to reach an orphaned road grade in Unit 3, walk this grade across Marsh Creek to access Units 2A, 2B, and 2C. From the old grade continue on the PT-ML 0.4 miles to reach Unit 1.

To access Units 4, 6, and the HK-27 rock pit:  
 On Sultan Basin Rd continue past the PT-ML gate 0.4 mile to the Hawk Ridge Mainline (HK-ML), F1 key needed for gate. Turn left onto the HK-ML, Unit 6 is on the left. From the HK-ML gate follow the HK-ML 1.4 miles to reach the southwestern corner of Unit 4. Continue 1.3 miles to reach the HK-27 rock pit.

To access the SP-0202 rock pit:  
 On Sultan Basin Rd continue past the HK-ML gate 1.7 miles to the Studebaker Pass Mainline (SP-ML), F1 key needed for gate. Turn right onto the SP-ML and continue 0.2 mile to the SP-02 road. Turn right onto the SP-02 and continue 0.2 mile to the SP-0202 rock pit.



**STATE OF WASHINGTON  
DEPARTMENT OF NATURAL RESOURCES**

**BILL OF SALE AND CONTRACT FOR  
FOREST PRODUCTS**

**Export Restricted Lump Sum AGREEMENT NO. 30-093059**

**SALE NAME: LOTTA STRANDS**

**THE STATE OF WASHINGTON DEPARTMENT OF NATURAL  
RESOURCES, HEREINAFTER ACTING SOLELY, IN ITS PROPRIETARY  
CAPACITY, STATE, AND PURCHASER, AGREE AS FOLLOWS:**

Section G: General Terms

G-001 Definitions

The following definitions apply throughout this contract;

Bill of Sale and Contract for Forest Products: Contract between the Purchaser and the State, which sets forth the procedures and obligations of the Purchaser in exchange for the right to remove forest products from the sale area. The Bill of Sale and Contract for Forest Products may include a Road Plan for any road construction or reconstruction, where applicable.

Contract Administrator: Region Manager's designee responsible for assuring that the contractual obligations of the Purchaser are met.

Forest Product: Any material derived from the forest for commercial use.

Purchaser: The company or individual that has entered a Bill of Sale and Contract for Forest Products with the State for the right to harvest and remove forest products from the timber sale area.

Road Construction: Includes building new and maintaining existing forest roads and associated work that may be optional or required as described in the Road Plan.

State: The Washington State Department of Natural Resources, landowner and seller of Forest Products from the timber sale area. The State is represented by the Region Manager as designated on the contract signature page. Contractual obligations to the State are enforced by the Region Manager or the designated Contract Administrator.

Subcontractor: Individual or company employed by the Purchaser to perform a portion or all of the services required by The Bill of Sale and Contract for Forest Products. The Purchaser is responsible for independently negotiating, procuring and paying for all subcontracted services rendered.

G-011 Right to Remove Forest Products and Contract Area

Purchaser was the successful bidder on May 25, 2016 and the sale was confirmed on \_\_\_\_\_. The State, as owner, agrees to sell to Purchaser, and Purchaser agrees to purchase as much of the following forest products as can be cut and removed during the term of this contract: All timber bounded by white timber sale boundary tags, except trees marked with blue paint on the bole and root collar and cedar snags, preexisting dead and down cedar trees and cedar logs in Unit #1.

All timber bounded by white timber sale boundary tags and adjacent young stands, except trees marked with blue paint on the bole and root collar, forest products tagged out by yellow leave tree area tags and cedar snags, preexisting dead and down cedar trees and cedar logs in Unit #2 (collectively labeled 2A, 2B and 2C).

All timber bounded by white timber sale boundary tags, adjacent young stands and the PT-ML road, except trees marked with blue paint on the bole and root collar, forest products tagged out by yellow leave tree area tags and cedar snags, preexisting dead and down cedar trees and cedar logs in Unit #3.

All timber bounded by white timber sale boundary tags, adjacent young stands and the HK-ML road, except trees marked with blue paint on the bole and root collar, forest products tagged out by yellow leave tree area tags and cedar snags, preexisting dead and down cedar trees and cedar logs in Unit #4.

All timber bounded by white timber sale boundary tags, property lines and the PT-ML road, except trees marked with blue paint on the bole and root collar, forest products tagged out by yellow leave tree area tags and cedar snags, preexisting dead and down cedar trees and cedar logs in Unit #5.

All timber bounded by white timber sale boundary tags and the HK-ML road, except trees marked with blue paint on the bole and root collar, forest products tagged out by yellow leave tree area tags and cedar snags, preexisting dead and down cedar trees and cedar logs in Unit #6

The above described products, located on approximately 161 acres on part(s) of Sections 1, 2, 3, 10, 11, and 12 all in Township 28 North, Range 8 East, Section 35 in Township 29 North, Range 8 East W.M. in Snohomish County(s) as designated on the sale area and as shown on the attached timber sale map.

All forest products described above from the bole of the tree that meet or exceed 2 inches diameter inside bark on the small end are eligible for removal. Above ground components of a tree that remain as by-products after the manufacture of logs, including but not limited to tree tops, branches, limbs, needles, leaves, stumps, are not eligible for removal under the terms of this contract.

Forest products purchased under a contract that is designated as export restricted shall not be exported until processed. Forest products purchased under a contract that is designated as exportable may be exported prior to processing.

G-020 Inspection By Purchaser

Purchaser hereby warrants to the State that they have had an opportunity to fully inspect the sale area and the forest products being sold. Purchaser further warrants to the State that they enter this contract based solely upon their own judgment of the value of the forest products, formed after their own examination and inspection of both the timber sale area and the forest products being sold. Purchaser also warrants to the State that they enter this contract without any reliance upon the volume estimates, acreage estimates, appraisals, pre-bid documentation, or any other representations by the State Department of Natural Resources.

G-025 Schedules

The following attached schedules are hereby incorporated by reference:

Schedule	Title
A	NW Ground-Based Equip Specifications (Rev11/05/14)
R	Additional Road Abandonment

G-031 Contract Term

Purchaser shall complete all work required by this contract prior to March 31, 2019.

G-040 Contract Term Adjustment - No Payment

Purchaser may request an adjustment in the contract term. A claim must be submitted in writing and received by the State within 30 days after the start of interruption or delay. The claim must also indicate the actual or anticipated length of interruption or delay. The State may grant an adjustment without charge only if the cause for contract term adjustment is beyond Purchaser's control. The cause must be one of the following and the adjustment may be granted only if operations or planned operations under this contract are actually interrupted or delayed:

- a. Road and bridge failures which deny access.
- b. Access road closures imposed by road owner.

- c. Excessive suspensions as provided in clause G-220.
- d. Regulatory actions not arising from Purchaser's failure to comply with this contract which will prevent timber harvest for a period less than 6 months.

G-051 Contract Term Extension - Payment

Extensions of this contract term may be granted only if, in the judgment of the State, Purchaser is acting in good faith and is endeavoring to remove the forest products conveyed. The term of this contract may be extended for a reasonable time by the State if all of the following conditions are satisfied:

- a. A written request for extension of the contract term must be received prior to the expiration date of the contract.
- b. Completion of all required roads and compliance with all contract and regulatory requirements.
- c. For the first extension, not to exceed 1 year, payment of at least 25 percent of the total contract price.

For the second extension, not to exceed 1 year, payment of at least 90 percent of the total contract price.

The payments shall not include the initial deposit which shall be held according to the provisions of RCW 79.15.100.

- d. Payment of an amount based on 12 percent interest per annum on the unpaid portion of the total contract price.

All payments, except the initial deposit, will be deducted from the total contract price to determine the unpaid portion of the contract.

- e. Payment of \$665.00 per acre per annum for the acres on which an operating release has not been issued in the sale area.
- f. In no event will the extension charge be less than \$200.00.
- g. Extension payments are non-refundable.

G-053 Surveys - Sensitive, Threatened, Endangered Species

Whenever the State determines that a survey for sensitive, threatened, or endangered species is prudent, or when Purchaser determines a survey is prudent and the State agrees, Purchaser shall perform such surveys at Purchaser's expense and to the standards required by the State. The survey information shall be supplied to the State.

## G-060 Exclusion of Warranties

The PARTIES AGREE that the IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE and ALL OTHER WARRANTIES EXPRESSED OR IMPLIED ARE EXCLUDED from this transaction and shall not apply to the goods sold. For example, THE FOLLOWING SPECIFIC MATTERS ARE NOT WARRANTED, and are EXCLUDED from this transaction:

- a. The MERCHANTABILITY of the forest products. The use of the term "merchantable" in any document is not intended to vary the foregoing.
- b. The CONDITION of the forest products. The forest products will be conveyed "AS IS."
- c. The ACREAGE contained within any sale area. Any acreage descriptions appearing in the timber notice of sale, timber sale contract, or other documents are estimates only, provided solely for administrative and identification purposes.
- d. The VOLUME, QUALITY, OR GRADE of the forest products. The State neither warrants nor limits the amount of timber to be harvested. The descriptions of the forest products to be conveyed are estimates only, made solely for administrative and identification purposes.
- e. The CORRECTNESS OF ANY SOIL OR SURFACE CONDITIONS, PRE-SALE CONSTRUCTION APPRAISALS, INVESTIGATIONS, AND ALL OTHER PRE-BID DOCUMENTS PREPARED BY OR FOR THE STATE. These documents have been prepared for the State's appraisal purposes only.
- f. THAT THE SALE AREA IS FREE FROM THREATENED OR ENDANGERED SPECIES or their habitat. The State is not responsible for any interference with forestry operations that result from the presence of any threatened or endangered species, or the presence of their habitat, within the sale area.
- g. THAT THE FORESTRY OPERATIONS to be performed under this contract WILL BE FREE FROM REGULATORY ACTIONS by governmental agencies. The State is not responsible for actions to enforce regulatory laws, such as the Washington Forest Practices Act (chapter 76.09 RCW), taken by the Department of Natural Resources or any other agency that may affect the operability of this timber sale.
- h. Items contained in any other documents prepared for or by the State.

## G-062 Habitat Conservation Plan

The State has entered into a Habitat Conservation Plan (HCP) with the U.S. Fish and Wildlife Service and the National Marine Fisheries Service (the Services) to address

state trust land management issues relating to compliance with the Federal Endangered Species Act. The activities to be carried out under this contract are located within the State's HCP area and are subject to the terms and conditions of the HCP, and the Services' Incidental Take Permit Nos. 812521 and 1168 (collectively referred to as ITP), or as amended hereafter by the Services. The ITP authorizes the incidental take of certain federally listed threatened and endangered species, as specified in the ITP conditions. All HCP materials, including the ITP, are available for review at the State's Regional Offices and the administrative headquarters in Olympia, Washington.

By signing this contract, Purchaser agrees to comply with the terms and conditions of the ITP, and the HCP, which shall become terms of this contract. The State agrees to authorize the lawful activities of the Purchaser carried out pursuant to this contract, PROVIDED the Purchaser remains in compliance with the terms and conditions of both the HCP and ITP. The requirements set forth in this contract are intended to comply with the terms and conditions of the HCP and ITP. Accordingly, non-compliance with the terms and conditions of the HCP and ITP will render the authorization provided in this paragraph void, be deemed a breach of the contract and may subject Purchaser to liability for violation of the Endangered Species Act.

Any modifications to the contract shall be proposed in writing by Purchaser, shall continue to meet the terms and conditions of the HCP and ITP, and shall require the prior written approval of the Region Manager before taking effect.

#### G-063 Incidental Take Permit Notification Requirements

- a. Purchaser shall immediately notify the Contract Administrator of new locations of permit species covered by the Incidental Take Permits (ITP) that are discovered within the area covered by the State's Habitat Conservation Plan (HCP), including, but not limited to: locations of occupied murrelet habitat; spotted owl nest sites; wolves; grizzly bears; nests, communal roosts, or feeding concentrations of bald eagles; peregrine falcon nests; Columbian white-tailed deer; Aleutian Canada geese; Oregon silverspot butterflies; and additional stream reaches found to contain bull trout. Purchaser is required to notify the Contract Administrator upon discovery of any fish species found in streams or bodies of water classified as non-fish bearing. In all circumstances, notification must occur within a 24 hour time period.
- b. Upon locating any live, dead, injured, or sick specimens of any permit species covered by the ITP, Purchaser shall immediately notify the Contract Administrator. Purchaser shall notify the Contract Administrator if there is any doubt as to the identification of a discovered permit species. Purchaser may be required to take certain actions to help the Contract Administrator safeguard the well-being of any live, injured or sick specimens of any permit species discovered, until the proper disposition of such specimens can be determined by the Contract Administrator. Any such requirements will be explained to Purchaser by the Contract Administrator during the Pre-Work Conference. In all circumstances, notification must occur within a 24 hour time period.

- c. Purchaser shall refer to a specific ITP number, PRT-812521 or ITP 1168 (copies which are located in the region office) in all correspondence and reports concerning permit activities.
- d. Provisions and requirements of the ITP shall be clearly presented and explained to Purchaser by Contract Administrator during the Pre-Work Conference as per contract clause G-330. All applicable provisions of the ITP and this schedule must be presented and clearly explained by Purchaser to all authorized officers, employees, contractors, or agents of Purchaser conducting authorized activities in the timber sale area. Any questions Purchaser may have about the ITP should be directed to the Contract Administrator.

G-064 Permits

Purchaser is responsible for obtaining any permits not already obtained by the State that relate to Purchaser's operation. Forest Practice Application / Hydraulic Project Approval permits obtained by the State shall be transferred to Purchaser. Purchaser is responsible for all permits, amendments and renewals.

G-065 Regulatory Disclaimer

The State disclaims any responsibility for, or liability relating to, regulatory actions by any government agency, including actions pursuant to the Forest Practices Act, Ch. 76.09 RCW that may affect the operability of the timber sale.

G-066 Governmental Regulatory Actions

a. Risk

Purchaser shall be responsible for any increased operational costs arising from any applicable foreign or domestic governmental regulation or order that does not cause contract performance to become commercially impracticable or that does not substantially frustrate the purpose of the contract. If impracticability or frustration results from Purchaser's failure to comply with this contract, Purchaser shall remain responsible for payment of the total contract price notwithstanding the impracticability or frustration.

b. Sale Area

When portions of the sale area become subject to a foreign or domestic governmental regulation or order that will likely prevent timber harvest for a period that will exceed the expiration date of this contract, and Purchaser has complied with this contract, the following shall apply:

- i. RCW 79.15.140 shall govern all adjustments to the contract area.

c. Adjustment of Price

The State shall adjust the total contract price by subtracting from the total contract price an amount determined in the following manner: The State shall cause the timber sale area subject to governmental regulation or order to be measured. The State shall calculate the percentage of the total sale area subject to the governmental regulation or order. The State shall reduce the total contract price by that calculated percentage. However, variations in species, value, costs, or other items pertaining to the affected sale area will be analyzed and included in the adjustment if deemed appropriate by the State. The State will further reduce the total contract price by the reasonable cost of unamortized roads Purchaser constructed but was unable to fully use for removing timber. A reduction in total contract price terminates all of the Purchaser's rights to purchase and remove the timber and all other interest in the affected sale area.

G-070 Limitation on Damage

In the event of a breach of any provision of this contract by the State, the exclusive remedy available to Purchaser will be limited to a return of the initial deposit, unapplied payments, and credit for unamortized improvements made by Purchaser. The State shall not be liable for any damages, whether direct, incidental or consequential.

G-080 Scope of State Advice

No advice by any agent, employee, or representative of the State regarding the method or manner of performing shall constitute a representation or warranty that said method, manner or result thereof will conform to the contract or be suitable for Purchaser's purposes under the contract. Purchaser's reliance on any State advice regarding the method or manner of performance shall not relieve Purchaser of any risk or obligation under the contract. Purchaser retains the final responsibility for its operations under this contract and State shall not be liable for any injuries resulting from Purchaser's reliance on any State advice regarding the method or manner of performance.

G-091 Sale Area Adjustment

The Parties may agree to adjustments in the sale area boundary. The cumulative changes to the sale area during the term of the contract shall not exceed more than four percent of the original sale area. If the sale area is increased, the added forest products become a part of this contract. The State shall determine the volume added and shall calculate the increase to the total contract price using the rates set forth in clause G-101, G-102, or G-103. If the sale area is reduced, the State shall determine the volume to be reduced. The State shall calculate the reduction to the total contract price using the rates set forth in clause G-101, G-102, or G-103.

G-101 Forest Products Not Designated

Any forest products not designated for removal, which must be removed in the course of operations authorized by the State, shall be approved and designated by the Contract Administrator. Added forest products become a part of this contract and the Scribner log scale volume, as defined by the Northwest Log Rules Advisory Group, shall be

determined by the Contract Administrator. Added forest products shall be paid for at the following contract payment rates per Mbf Scribner log scale.

Contract Item	Appraised Price	Overbid Factor	Price	Fees	Contract Payment Rate
Cottonwood	\$72.97	0	\$0.00	\$9.00	\$9.00
Douglas fir	\$204.06	0	\$0.00	\$9.00	\$9.00
Hemlock	\$154.56	0	\$0.00	\$9.00	\$9.00
Maple	\$87.30	0	\$0.00	\$9.00	\$9.00
Red alder	\$233.90	0	\$0.00	\$9.00	\$9.00
Red cedar	\$531.79	0	\$0.00	\$9.00	\$9.00
Silver fir	\$149.15	0	\$0.00	\$9.00	\$9.00
Other	\$198.94	0	\$0.00	\$9.00	\$9.00

**G-106 Adding Naturally Damaged Forest Products**

Any forest products not designated for removal that are seriously damaged by disease, insects or wind, or that may contribute seriously to the spread of insect or disease damage may be added to this sale by the State's Contract Administrator. Additions must be in unlogged areas of the sale and added volume shall not exceed an amount equal to 10 percent of the original advertised volume. Added forest products become a part of this contract and shall be paid for at the rate set forth in clause G-101, G-102 or G-103.

**G-111 Title and Risk of Loss**

Title to the forest products under this contract passes to the Purchaser after they are removed from the sale area, if adequate advance payment or payment security has been provided to the State under this contract. Purchaser bears all risk of loss of, or damage to, and has an insurable interest in, the forest products described in this contract from the time the sale is confirmed under RCW 79.15.120. Breach of this contract shall have no effect on this provision.

**G-116 Sustainable Forestry Initiative® (SFI) Certification**

Forest products purchased under this contract are certified as being in conformance with the Sustainable Forestry Initiative program Standard under certificate number: BV-SFIS-US09000572.

Purchaser shall have at least one person regularly on-site during active operations that have completed training according to the requirements outlined within the SFI® program Standard. Purchaser shall designate in writing the name(s) of the individual(s) who will be on-site and provide proof of their successful completion of an approved training program prior to active operations.

**G-120 Responsibility for Work**

All work, equipment, and materials necessary to perform this contract shall be the responsibility of Purchaser. Any damage to improvements, except as provided in clause G-121 or unless the State issues an operating release pursuant to clause G-280, shall be repaired promptly to the satisfaction of the State and at Purchaser's expense.

**G-121 Exceptions**

Exceptions to Purchaser's responsibility in clause G-120 shall be limited exclusively to the following. These exceptions shall not apply where road damage occurs due to Purchaser's failure to take reasonable precautions or to exercise sound forest engineering and construction practices.

Road is defined as the road bed, including but not limited to its component parts, such as subgrade, ditches, culverts, bridges, and cattle guards.

For the purposes of this clause, damage will be identified by the State and is defined as:

1. Failure of (a) required improvements or roads designated in clause C-050, or (b) required or optional construction completed to the point that authorization to haul has been issued;
2. Caused by a single event from forces beyond the control of Purchaser, its employees, agents, or invitees, including independent contractors; and
3. Includes, but is not limited to natural disasters such as earthquakes, volcanic eruptions, landslides, and floods.

The repair work identified by the State shall be promptly completed by Purchaser at an agreed price. The State may elect to accomplish repairs by means of State-provided resources. The State will bear the cost to repair damages caused by a third party. In all other cases, the Purchaser shall bear responsibility for the costs as described below.

For each event, Purchaser shall be solely responsible for the initial \$5,000 in repairs. For repairs in excess of \$5,000, the parties shall share equally the portion of costs between \$5,000 and \$15,000. The State shall be solely responsible for the portion of the cost of repairs that exceed \$15,000.

Nothing contained in clauses G-120 and G-121 shall be construed as relieving Purchaser of responsibility for, or damage resulting from, Purchaser's operations or negligence, nor shall Purchaser be relieved from full responsibility for making good any defective work or materials. Authorization to haul does not warrant that Purchaser built roads are free from material defect and the State may require additional work, at Purchasers expense regardless of cost, to remedy deficiencies at any time.

**G-140 Indemnity**

To the fullest extent permitted by law, Purchaser shall indemnify, defend and hold harmless State, agencies of State and all officials, agents and employees of State, from and against all claims arising out of or resulting from the performance of the contract. "Claim" as used in this contract means any financial loss, claim, suit, action, damage, or expense, including but not limited to attorneys' fees, attributable for bodily injury, sickness, disease or death, or injury to or destruction of tangible property including loss of use resulting therefrom. Purchasers' obligations to indemnify, defend, and hold

harmless includes any claim by Purchasers' agents, employees, representatives, or any subcontractor or its employees. Purchaser expressly agrees to indemnify, defend, and hold harmless State for any claim arising out of or incident to Purchasers' or any subcontractors' performance or failure to perform the contract. Purchasers' obligation to indemnify, defend, and hold harmless State shall not be eliminated or reduced by any actual or alleged concurrent negligence of State or its agents, agencies, employees and officials. Purchaser waives its immunity under Title 51 RCW to the extent it is required to indemnify, defend and hold harmless State and its agencies, officials, agents or employees.

G-150 Insurance

Purchaser shall, at its cost and expense, buy and maintain insurance of the types and amounts listed below. Failure to buy and maintain the required insurance may result in a breach and/or termination of the contract at State's option. State may suspend Purchaser operations until required insurance has been secured.

All insurance and surety bonds should be issued by companies admitted to do business within the State of Washington and have a rating of A-, Class VII or better in the most recently published edition of Best's Reports. If an insurer is not admitted, all insurance policies and procedures for issuing the insurance policies must comply with Chapter 48.15 RCW and 284-15 WAC.

The State of Washington, Department of Natural Resources region office of sale origin shall be provided written notice before cancellation or non-renewal of any insurance referred to therein, in accord with the following specifications:

1. Insurers subject to Chapter 48.18 RCW (admitted and regulated by the Insurance Commissioner): The insurer shall give the State 45 days advance notice of cancellation or non-renewal. If cancellation is due to non-payment of premium, the State shall be given 10 days advance notice of cancellation.
2. Insurers subject to Chapter 48.15 RCW (surplus lines): The State shall be given 20 days advance notice of cancellation. If cancellation is due to non-payment of premium, the State shall be given 10 days advance notice of cancellation.

Before starting work, Purchaser shall furnish State of Washington, Department of Natural Resources with a certificate(s) of insurance, executed by a duly authorized representative of each insurer, showing compliance with the insurance requirements specified in the contract. Insurance coverage shall be obtained by the Purchaser prior to operations commencing and continually maintained in full force until all contract obligations have been satisfied or an operating release has been signed by the State.

Purchaser shall include all subcontractors as insured under all required insurance policies, or shall furnish separate certificates of insurance and endorsements for each subcontractor. Subcontractor(s) must comply fully with all insurance requirements

stated herein. Failure of subcontractor(s) to comply with insurance requirements does not limit Purchaser's liability or responsibility.

The State of Washington, Department of Natural Resources, its elected and appointed officials, agents and employees shall be named as an additional insured on all general liability, excess, umbrella, and property insurance policies.

All insurance provided in compliance with this contract shall be primary as to any other insurance or self-insurance programs afforded to or maintained by State. Purchaser waives all rights against State for recovery of damages to the extent these damages are covered by general liability or umbrella insurance maintained pursuant to this contract.

By requiring insurance herein, State does not represent that coverage and limits will be adequate to protect Purchaser and such coverage and limits shall not limit Purchaser's liability under the indemnities and reimbursements granted to State in this contract.

The limits of insurance, which may be increased as deemed necessary by State of Washington, Department of Natural Resources, shall not be less than as follows:

Commercial General Liability (CGL) Insurance. Purchaser shall maintain general liability (CGL) insurance, and, if necessary, commercial umbrella insurance with a limit of not less than \$1,000,000.00 per each occurrence. If such CGL insurance contains aggregate limits, the General Aggregate limit shall be at least twice the "each occurrence" limit. CGL insurance shall have products-completed operations aggregate limit of at least two times the "each occurrence" limit. CGL coverage shall include a Logging and Lumbering Endorsement (i.e. Logger's Broad-Form) to cover the events that include, but are not limited to, fire suppression expenses, accidental timber trespasses, and wildfire property damage with limits of not less than \$2,000,000.00 each occurrence.

CGL insurance shall be written on Insurance Services Office (ISO) occurrence form CG 00 01 (or a substitute form providing equivalent coverage). All insurance shall cover liability arising out of premises, operations, independent contractors, products completed operations, personal injury and advertising injury, and liability assumed under an insured contract (including the tort liability of another party assumed in a business contract), and contain separation of insured (cross liability) condition.

Employer's Liability "Stop Gap" Insurance. Purchaser shall buy employers liability insurance, and, if necessary, commercial umbrella liability insurance with limits not less than \$1,000,000.00 each accident for bodily injury by accident or \$1,000,000.00 each employee for bodily injury by disease.

Workers' Compensation Coverage. Purchaser shall comply with all State of Washington workers' compensation statutes and regulations. Workers' compensation coverage shall be provided for all employees of Purchaser and employees of any subcontractor or sub-subcontractor. Coverage shall include bodily injury (including

death) by accident or disease, which exists out of or in connection with the performance of this contract. Except as prohibited by law, Purchaser waives all rights of subrogation against State for recovery of damages to the extent they are covered by workers' compensation, employer's liability, commercial general liability, or commercial umbrella liability insurance.

If Purchaser, subcontractor or sub-subcontractor fails to comply with all State of Washington workers' compensation statutes and regulations and State incurs fines or is required by law to provide benefits to or obtain coverage for such employees, Purchaser shall indemnify State. Indemnity shall include all fines, payment of benefits to Purchaser or subcontractor employees, or their heirs or legal representatives, and the cost of effecting coverage on behalf of such employees.

Business Auto Policy (BAP). Purchaser shall maintain business auto liability and, if necessary, commercial umbrella liability insurance with a limit not less than \$1,000,000.00 per accident. Such insurance shall cover liability arising out of "Any Auto". Business auto coverage shall be written on ISO form CA 00 01, or substitute liability form providing equivalent coverage. If necessary the policy shall be endorsed to provide contractual liability coverage and cover a "covered pollution cost or expense" as provided in the 1990 or later editions of CA 00 01. Purchaser waives all rights against State for the recovery of damages to the extent they are covered by business auto liability or commercial umbrella liability insurance.

#### G-160 Agents

The State's rights and duties will be exercised by the Region Manager at Sedro Woolley, Washington. The Region Manager will notify Purchaser in writing who is responsible for administering the contract. The Region Manager has sole authority to waive, modify, or amend the terms of this contract in the manner prescribed in clause G-180. No agent, employee, or representative of the State has any authority to bind the State to any affirmation, representation, or warranty concerning the forest products conveyed beyond the terms of this contract.

Purchaser is required to have a person on site during all operations who is authorized to receive instructions and notices from the State. Purchaser shall inform the State in writing who is authorized to receive instructions and notices from the State, and any limits to this person's authority.

#### G-170 Assignment and Delegation

No rights or interest in this contract shall be assigned by Purchaser without prior written permission of the State. Any attempted assignment shall be void and ineffective for all purposes unless made in conformity with this paragraph. Purchaser may perform any duty through a delegate, but Purchaser is not thereby relieved of any duty to perform or any liability. Any assignee or delegate shall be bound by the terms of the contract in the same manner as Purchaser.

G-180 Modifications

Waivers, modifications, or amendments of the terms of this contract must be in writing signed by Purchaser and the State.

G-190 Contract Complete

This contract is the final expression of the Parties' agreement. There are no understandings, agreements, or representations, expressed or implied, which are not specified in this contract.

G-200 Notice

Notices required to be given under the following clauses shall be in writing and shall be delivered to Purchaser's authorized agent or sent by certified mail to Purchaser's post office address:

G-210 Violation of Contract

G-220 State Suspends Operations

All other notices required to be given under this contract shall be in writing and delivered to the authorized agent or mailed to the Party's post office address. Purchaser agrees to notify the State of any change of address.

G-210 Violation of Contract

- a. If Purchaser violates any provision of this contract, the Contract Administrator, by written notice, may suspend those operations in violation. If the violation is capable of being remedied, Purchaser has 30 days after receipt of a suspension notice to remedy the violation. If the violation cannot be remedied (such as a violation of WAC 240-15-015) or Purchaser fails to remedy the violation within 30 days after receipt of a suspension notice, the State may terminate the rights of Purchaser under this contract and collect damages.
- b. If the contract expires pursuant to clause G-030 or G-031 without Purchaser having performed all its duties under this contract, Purchaser's right to operate is terminated and Purchaser shall not have the right to remedy the breach. This provision shall not relieve Purchaser of any payment obligations.
- c. The State has the right to remedy the breach in the absence of any indicated attempt by Purchaser or if Purchaser is unable, as determined by the State, to remedy the breach. Any expense incurred by the State shall be charged to Purchaser and shall be paid within 30 days of receipt of billing.
- d. If Purchaser's violation is a result of a failure to make a payment when due, in addition to a. and b. above, interest shall accrue on the unpaid balance at 12 percent per annum, beginning the date payment was due.

**G-220 State Suspends Operation**

The Contract Administrator may suspend any operation of Purchaser under this contract when the State is suffering, or there is a reasonable expectation the State will suffer environmental, monetary, or other damage if the operation is allowed to continue.

Purchaser shall be in breach of this contract if the operation continues after the suspension notice or if the operation resumes without prior approval and notice from the Contract Administrator.

Purchaser may request a modification of a suspension within 30 days of the start of suspension through the dispute resolution process in clause G-240. If this process results in a finding that the suspension exceeded the time reasonably necessary to stop or prevent damage to the State, Purchaser is entitled to request a contract term adjustment under clause G-040.

If it reasonably appears that the damage that the State is suffering, or can reasonably be expected to suffer if the operation is allowed to continue, will prevent harvest for a period that will exceed 6 months, and Purchaser has complied with this contract, the provisions of clause G-066 shall govern just as if the harvest was prevented by an applicable foreign or domestic governmental regulation or order.

**G-230 Unauthorized Activity**

Any cutting, removal, or damage of forest products by Purchaser, its employees, agents, or invitees, including independent contractors, in a manner inconsistent with the terms of this contract or State law, is unauthorized. Such activity may subject Purchaser to liability for triple the value of said forest products under RCW 79.02.320 or RCW 79.02.300 and may result in prosecution under RCW 79.02.330 or other applicable statutes.

**G-240 Dispute Resolution**

The following procedures apply in the event of a dispute regarding interpretation or administration of this contract and the parties agree that these procedures must be followed before a lawsuit can be initiated.

- a. In the event of a dispute, Purchaser must make a written request to the Region Manager for resolution prior to seeking other relief.
- b. The Region Manager will issue a written decision on Purchaser's request within ten business days.
- c. Within ten business days of receipt of the Region Manager's decision, Purchaser may make a written request for resolution to the Deputy Supervisor - Uplands of the Department of Natural Resources.

- d. Unless otherwise agreed, a conference will be held by the Deputy Supervisor - Uplands within 30 calendar days of the receipt of Purchaser's request for review of the Region Manager's written decision. Purchaser and the Region Manager will have an opportunity to present their positions. The Deputy Supervisor - Uplands will issue a decision within a reasonable time of being presented with both Parties' positions.

G-250 Compliance with All Laws

Purchaser shall comply with all applicable statutes, regulations and laws, including, but not limited to; chapter 27.53 RCW, chapter 68.50 RCW, WAC 240-15 and WAC 296-54. Failure to comply may result in forfeiture of this contract.

G-260 Venue

This contract shall be governed by the laws of the State of Washington. In the event of a lawsuit involving this contract, venue shall be proper only in Thurston County Superior Court.

G-270 Equipment Left on State Land

All equipment owned or in the possession of Purchaser, its employees, agents, or invitees, including independent contractors, shall be removed from the sale area and other State land by the termination date of this contract. Equipment remaining unclaimed on State land 60 days after the expiration of the contract period is subject to disposition as provided by law. Purchaser shall pay to the State all costs of moving, storing, and disposing of such equipment. The State shall not be responsible for any damages to or loss of the equipment or damage caused by the moving, storing or disposal of the equipment.

G-280 Operating Release

An operating release is a written document, signed by the State and Purchaser, indicating that Purchaser has been relieved of certain rights or responsibilities with regard to the entire or a portion of the timber sales contract. Purchaser and State may agree to an operating release for this sale, or portion of this sale, prior to the contract expiration, when all contract requirements pertaining to the release area have been satisfactorily completed. Upon issuance of a release, Purchaser's right to cut and remove forest products on the released area will terminate.

G-310 Road Use Authorization

Purchaser is authorized to use the following State roads and roads for which the State has acquired easements and road use permits; PT-ML, PT-07, PT-14, PT-1405, PT-20, PT-25, PT-2501, PT-2502, PT-28, PT-2802, HK-ML, HK-01, HK-18, HK-1801, HK-19, HK-20, HK-21, SP-ML, SP-02. The State may authorize in writing the use of other roads subject to fees, restrictions, and prior rights.

G-330 Pre-work Conference

Purchaser shall arrange with the Contract Administrator to review this contract and to examine the sale area before beginning any operations. A plan of operations shall be developed and agreed upon by the Contract Administrator and Purchaser before

beginning any operations. To the extent that the plan of operations is inconsistent with the contract, the terms of the contract shall prevail. State's acceptance and approval of Purchaser's plan of operations shall not be construed as any statement or warranty that the plan of operations is adequate for Purchaser's purposes or complies with applicable laws.

G-340 Preservation of Markers

Any legal land subdivision survey corners and witness objects are to be preserved. If such are destroyed or disturbed, the Purchaser shall, at the Purchaser's own expense, re-establish them through a licensed land surveyor in accordance with U.S. General Land Office standards. Corners and/or witness objects that must be disturbed or destroyed in the process of road construction or logging shall be adequately referenced and/or replaced in accordance with RCW 58.24.040(8). Such references must be approved by the Contract Administrator prior to removal of said corners and/or witness objects.

G-360 Road Use Reservation

The State shall have the right to use, without charge, all existing roads and any road constructed or reconstructed on State lands by Purchaser under this contract. The State may extend such rights to others. If the State grants such rights to others, the State shall require performance or payment, as directed by the State, for their proportionate share of maintenance based on their use.

G-370 Blocking Roads

Purchaser shall not block the PT-ML Road, unless authority is granted in writing by the Contract Administrator.

G-380 Road Easement and Road Use Permit Requirements

Purchaser agrees to comply with the terms and conditions of the attached:

Easements with:

Snohomish County; #55-087592; dated May 5, 2011.

G-430 Open Fires

Purchaser shall not set, or allow to be set by Purchaser's employees, agents, invitees and independent contractors, any open fire at any time of the year without first obtaining permission, in writing, from the Contract Administrator.

G-450 Encumbrances

This contract and Purchaser's activities are subject to the following:

Easement, including the terms and provisions thereof,

For: Tunnel

In Favor of: PUD #1 of Snohomish County

Disclosed by Application No.: 50-052563

Granted: 11/17/1981

Expires: Indefinite

Easement, including the terms and provisions thereof,  
For: Road  
In Favor of: PUD #1 of Snohomish County  
Disclosed by Application No.: 50-093059  
Granted: 4/26/1985  
Expires: Indefinite

Easement, including the terms and provisions thereof,  
For: County Road  
In Favor of: Snohomish County  
Disclosed by Application No.: 50-CR3292  
Granted: 8/6/1947  
Expires: Indefinite

#### Special Notations

- Properties provides access only to the Blue Mountain Communication Site.

#### Section P: Payments and Securities

##### P-011 Initial Deposit

Purchaser paid DATA MISSING initial deposit, which will be maintained pursuant to RCW 79.15.100(3). If the operating authority on this contract expires without Purchaser's payment of the full amount specified in Clause P-020, the initial deposit will be immediately forfeited to the State, and will be offset against Purchaser's remaining balance due. Any excess initial deposit funds not needed to ensure full payment of the contract price, or not needed to complete any remaining obligations of the Purchaser existing after contract expiration, will be refunded to the Purchaser.

##### P-020 Payment for Forest Products

Purchaser agrees to pay the total, lump sum contract price of \$161,195.50. The total contract price consists of a \$0.00 contract bid price plus \$161,195.50 in fees. Fees collected shall be retained by the state unless the contract is adjusted via the G-066 clause. Purchaser shall be liable for the entire purchase price, and will not be entitled to any refunds or offsets unless expressly stated in this contract.

THE PURCHASE PRICE SHALL NOT BE AFFECTED BY ANY FACTORS, INCLUDING: the amount of forest products actually present within the contract area, the actual acreage covered by the contract area, the amount or volume of forest products actually cut or removed by purchaser, whether it becomes physically impossible or uneconomic to remove the forest products, and whether the subject forest products have been lost or damaged by fire or any other cause. The only situations Purchaser may not be liable for the full purchase price are governed by clause G-066, concerning governmental regulatory actions taken during the term of the contract.

**P-045 Guarantee of Payment**

Purchaser will pay for forest products prior to cutting or will guarantee payment by posting an approved payment security. The amount of cash or payment security shall be determined by the State and shall equal or exceed the value of the cutting proposed by Purchaser.

**P-050 Billing Procedure**

The State will compute and forward to Purchaser statements of charges provided for in the contract. Purchaser shall deliver payment to the State on or before the date shown on the billing statement.

**P-080 Payment Account Refund**

Advance payments made under P-045 or P-045.2 remaining on account above the value for the charges shall be returned to Purchaser within 30 days following the final report of charges. Refunds not made within the 30 day period will accrue interest at the interest rate, as established by WAC 332-100-030, computed on a daily basis until paid.

**P-090 Performance Security**

Purchaser agrees to furnish, within 30 days of the confirmation date, security acceptable to the State in the amount of \$100,000.00. The Security provided shall guarantee performance of all provisions of this contract and payment of any damages caused by operations under this contract or resulting from Purchaser's noncompliance with any rule or law. Acceptable performance security may be in the form of a performance bond, irrevocable letter of credit, cash, savings or certificate of deposit account assignments, and must name the State as the obligee or beneficiary. A letter of credit must comply with Title 62A RCW, Article 5. Performance security must remain in full force over the duration of the contract length. Surety bonds issued shall conform to the issuance and rating requirements in clause G-150. The State shall retain the performance security pursuant to RCW 79.15.100. Purchaser shall not operate unless the performance security has been accepted by the State. If at any time the State decides that the security document or amount has become unsatisfactory, Purchaser agrees to suspend operations and, within 30 days of notification, to replace the security with one acceptable to the State or to supplement the amount of the existing security.

**P-100 Performance Security Reduction**

The State may reduce the performance security after an operating release has been issued if the State determines that adequate security exists for any remaining obligations of Purchaser.

**Section H: Harvesting Operations****H-001 Operations Outside the Sale Boundaries**

No operations shall occur outside the sale boundaries, as described within the contract, unless approved in writing by the State.

**H-010 Cutting and Yarding Schedule**

Falling and Yarding will not be permitted from November 1 to March 31 BY GROUND-BASED EQUIPMENT unless authorized in writing by the Contract Administrator.

**H-013 Reserve Tree Damage Definition**

Reserve trees are trees required and designated for retention within the sale boundary. Purchaser shall protect reserve trees from being cut, damaged, or removed during operations.

Reserve tree damage exists when one or more of the following criteria occur as a result of Purchaser's operation, as determined by the Contract Administrator:

- a. A reserve tree has one or more scars on its trunk exposing the cambium layer, which in total exceeds 200 square inches.
- b. A reserve tree top is broken or the live crown ratio is reduced below 30 percent.
- c. A reserve tree has more than 1/3 of the circumference of its root system injured such that the cambium layer is exposed.

If the Contract Administrator determines that a reserve tree has been cut or damaged, the Purchaser shall provide a replacement reserve tree of like condition, size, and species within the sale area, as approved by the Contract Administrator. Purchaser may be required to pay liquidated damages for Excessive Reserve Tree Damage as detailed in clause D-041.

Removal of designated reserve trees from the sale area is unauthorized, and may invoke the use of the G-230 'Trespass and Unauthorized Activity' clause. Purchaser is required to leave all cut or damaged reserve trees on site.

**H-016 Skid Trail Requirements**

A skid trail is defined as an area that is used for more than three passes by any equipment.

Purchaser shall comply with the following during the yarding operation:

- a. A skid trail will not exceed 12 feet in width, including rub trees.
- b. Skid trails shall not cover more than 15 percent of the total acreage on one unit.
- c. Location of the skid trails must be marked by Purchaser and approved by the Contract Administrator.

- d. Except for rub trees, skid trails shall be felled and yarded prior to the felling of adjacent timber.
- e. Rub trees shall be left standing until all timber tributary to the skid trail has been removed.
- f. Excessive soil damage is not permitted. Excessive soil damage is described in clause H-017.
- g. Purchaser will not have more than two skid trails open to active skidding at any one time. All other skid trails used for skidding timber will be closed.
- h. Once a skid trail is closed, Purchaser will not reopen a skid trail unless approved in writing by the Contract Administrator.
- i. Skid trails will be water barred at the time of completion of yarding, if required by the Contract Administrator.

Purchaser shall not deviate from the requirements set forth in this clause without prior written approval from the Contract Administrator.

H-017 Preventing Excessive Soil Disturbance

Operations may be suspended when soil rutting exceeds 4 inches as measured from the natural ground line. To reduce soil damage, the Contract Administrator may require water bars to be constructed, grass seed to be placed on exposed soils, or other mitigation measures. Suspended operations shall not resume unless approval to do so has been given, in writing, by the Contract Administrator.

H-035 Fall Trees Into Sale Area

Trees shall be felled into the sale area unless otherwise approved by the Contract Administrator.

H-040 Purchaser Harvest Plan

Purchaser shall, as part of the plan of operations, prepare an acceptable harvest plan for the sale area. The plan shall address the falling, yarding and hauling of forest products, which are part(s) of this contract. The harvest plan shall be approved by the Contract Administrator prior to beginning the harvest operation. Purchaser shall not deviate from the harvest plan without prior written approval by the Contract Administrator.

H-051 Branding and Painting

Purchaser shall provide a State of Washington registered log brand, acceptable to the State, unless the State agrees to furnish the brand. All purchased timber shall be branded in a manner that meets the requirements of WAC 240-15-030(2)(a)(i). All timber purchased under a contract designated as export restricted shall also be painted in a manner that meets the requirements of WAC 240-15-030(2)(a)(ii).

For pulp loads purchased under a contract designated as export restricted, Purchaser shall brand at least 3 logs with legible brands at one end. Also, 10 logs shall be painted at one end with durable red paint.

H-080 Snags Not to be Felled

Snags not required to be felled for safety reasons may be left standing. Snags felled for safety reasons shall not be removed and must remain where felled.

H-120 Harvesting Equipment

Forest products sold under this contract shall be felled by chainsaw and yarded by cable; felled by chainsaw or feller-buncher and yarded by cable or shovel on sustained slopes 35% or less, unless authority to use other equipment is granted in writing by the State.

H-125 Log Suspension Requirements

Lead-end suspension is required for all yarding activities. When yarding across Marsh Creek for Units 2A, 2B and 2C, full suspension is required through the inner and core zones of the RMZ (100 feet on either side of the stream).

H-126 Tailholds on State Land

If Purchaser tailholds on State land, methods to minimize damage to live trees outside the sale area shall be employed and must be approved in writing by the Contract Administrator.

H-130 Hauling Schedule

The hauling of forest products will not be permitted on any road from November 1 to March 31 unless authorized in writing by the Contract Administrator .

H-140 Special Harvest Requirements

Purchaser shall accomplish the following during the harvest operations:

- A. An on-site pre-work meeting shall be scheduled with the Contract Administrator, which shall include the operator and fallers, prior to commencement of any activities on site.
- B. A copy of the timber sale map and contract shall be present on site during active operations.
- C. Ground-based yarding shall not exceed 600 feet from any landing or road unless authorized in writing by the Contract Administrator.
- D. Ground-based equipment crossings over type 5 streams outside of the Equipment Restriction Zone, shall be located by the purchaser and approved by the Contract Administrator before use. The equipment shall cross as close to perpendicular as possible, and may require log cribbing, culvert installation, or other approved methods to protect stream channels, as directed by the Contract Administrator.

- E. Trees shall be felled away from stream channels and any standing water or wet swales when feasible.
- F. Maintain a 30-foot equipment limitation zone on either side of all type 5 streams.
- G. Leave trees marked with a single blue painted ring or clumps tagged with a single yellow "Leave Tree Area" tag may be traded for unmarked trees of similar size and wildlife characteristics upon prior approval by the Contract Administrator.
- H. The gates on the PT-ML and HK-ML must be closed and locked at the end of every day.
- I. Flaggers and signage are required, and provided at the Purchaser's expense, when active harvesting operations are within a tree length and a half of Sultan Basin Road.
- J. Special requirements for the Equipment Restriction Zone in Unit #4
  - 1. Ground based machinery shall only operate on landings, roads, and designated skid trails marked with yellow "Skid Trail" flagging.
  - 2. If additional skid trails are required, they shall be marked by the Purchaser and approved by the Contract Administrator before use.
  - 3. No equipment shall cross any stream except on roads or at designated skid trail crossings.
  - 4. Ground based equipment shall be required to operate on a mat of slash unless otherwise approved by the Contract Administrator.
  - 5. Upon completion of harvesting, water bars shall be installed on skid trails as directed by the Contract Administrator.

Permission to do otherwise must be granted in writing by the Contract Administrator.

#### H-141 Additional Harvest Requirements

Purchaser shall accomplish the following during the harvest operations:

- A. Wildlife timing restrictions are: no falling, bucking, yarding or operation of heavy equipment April 1 to August 31 from one hour before official sunrise to two hours after official sunrise and one before and after official sunset. Timing restrictions shall be applied to Unit #4.
- B. No operations, or tail holding shall be permitted in the No Entry Zone, directly to the north of Unit #1 and north of Unit #4 (See Timber Sale Map for specific locations).

- C. All trees marked with double blue rings shall not be traded. Two leave tree clumps, tagged with two yellow “Leave Tree Area” tags, in Unit #3 are not tradeable (See Timber Sale Map for specific locations).
- D. Cable corridor requirements for harvesting Units #2A, #2B, and #2C
1. Corridors shall be located by the Purchaser and approved by the Contract Administrator prior to operations.
  2. A maximum of five total corridors is allowed for harvesting Units 2A, 2B, and 2C.
  3. Corridors shall be no wider than 20 feet.
  4. Corridors shall be no closer than 30 feet apart at the point where they cross Marsh Creek.
  5. No corridor shall intersect any stream junction along Marsh Creek.
  6. No cable yarding or suspension of cables shall be allowed within the inner gorge areas between Units #2A and #3.
  7. The core and inner zones of the Riparian Management Zone (RMZ) are defined as the first 105 feet measured outward from the ordinary high water mark on both sides of the stream. Any timber felled within the RMZ core and inner zones shall not be considered harvestable downed wood and must remain on site.
  8. Full suspension is required while yarding through the RMZ core and inner zones (105 feet on either side of the stream channel).
  9. A minimum of two landings on the HK-25, HK-2501, or HK-2502 shall be used to harvest Units 2A, 2B, and 2C.
- E. If goshawks or aggressively calling birds are detected in the vicinity of the sale, all operations associated with timber harvesting, road building, or rock pit development shall cease immediately, and the Contract Administrator shall be notified. A DNR Biologist may provide mitigating measure and operations shall re-start according to these specifications at the approval of the Contract Administrator.
- F. If the Purchaser determines that blasting is necessary for road construction of the road segments listed in Section 11-1 of the Road Plan, the Purchaser shall obtain written approval and acceptance, of a Drill and Shoot Plan, from the Snohomish County PUD and assumes responsibility for all costs and damages associated with seeking such. Purchaser must provide the State with a copy of the Plan and written acceptance from the Snohomish County PUD indicating that a satisfactory plan has been consummated between Purchaser and the Snohomish County PUD prior to onset of any blasting operations associated with these roads.

Permission to do otherwise must be granted in writing by the State.

**H-190 Completion of Settings**

Operations begun on any setting of the sale area shall be completed before any operation begins on subsequent settings unless authorized in writing by the Contract Administrator.

**H-220 Protection of Residual or Adjacent Trees**

Unless otherwise specified by this contract, the Contract Administrator shall identify damaged adjacent or leave trees that shall be paid for according to clause G-230.

**H-230 Tops and Limbs Outside the Sale Boundary**

Tops and limbs outside the sale boundary as a result of Purchaser's operation shall be removed concurrently with the yarding operation unless otherwise directed by the Contract Administrator.

**H-240 Lop and Scatter**

The tops of all felled trees shall be lopped and slash scattered away from leave trees .

**Section C: Construction and Maintenance****C-040 Road Plan**

Road construction and associated work provisions of the Road Plan for this sale, dated 11/20/2015 are hereby made a part of this contract.

**C-050 Purchaser Road Maintenance and Repair**

Purchaser shall perform work at their own expense on PT-ML, PT-07, PT-20, PT-25, PT-2501, PT-2502, PT-28, PT-2802, HK-01, HK-18, HK-1801, HK-19, HK-20, HK-21 roads. All work shall be completed to the specifications detailed in the Road Plan.

**C-060 Designated Road Maintainer**

If required by the State, Purchaser shall perform maintenance and replacement work as directed by the Contract Administrator on the PT-14, PT-1405, HK-ML, SP-ML and SP-02 roads. Purchaser shall furnish a statement in a form satisfactory to the State showing the costs incurred while performing this work. Costs shall be based on the rates set forth in the State current Equipment Rate Schedule on file at the region and Olympia offices. The State shall reimburse Purchaser for said costs within 30 days of receipt and approval of the statement.

**C-080 Landing Locations Approved Prior to Construction**

Landings shall be marked by Purchaser and approved by the Contract Administrator prior to construction.

**Section S: Site Preparation and Protection****S-001 Emergency Response Plan**

An Emergency Response Plan (ERP) shall be provided to the Contract Administrator containing but not limited to, valid contact numbers and procedures for medical emergencies, fire, hazardous spills, forest practice violations and any unauthorized or unlawful activity on or in the vicinity of the sale area. The Contract Administrator and

the State shall be promptly notified whenever an incident occurs requiring an emergency response.

The ERP must be presented for inspection at the prework meeting and kept readily available to all personnel, including subcontractors, on site during active operations.

S-010 Fire Hazardous Conditions

Purchaser acknowledges that operations under this Contract may increase the risk of fire. Purchaser shall conduct all operations under this agreement following the requirements of WAC 332-24-005 and WAC 332-24-405 and further agrees to use the highest degree of care to prevent uncontrolled fires from starting.

In the event of an uncontrolled fire, Purchaser agrees to provide equipment and personnel working at the site to safely and effectively engage in first response fire suppression activity.

Purchaser's failure to effectively engage in fire-safe operations is considered a breach and may result in suspension of operations.

S-020 Extreme Hazard Abatement

Purchaser shall provide a written Extreme Hazard Abatement plan that meets the requirements of WAC 332-24 prior to the beginning of logging operations. The plan must be acceptable to the Contract Administrator. The plan will identify how Purchaser will accomplish abatement. Purchaser shall also provide, and keep current, a written timetable for completion of all specified work in the plan. The Contract Administrator's acceptance and approval of Purchaser's hazard abatement plan shall not be construed as any statement or warranty that the hazard abatement plan is adequate for Purchaser's purposes or complies with applicable laws.

S-030 Landing Debris Clean Up

Landing debris shall be disposed of in a manner approved in writing by the Contract Administrator.

S-035 Logging Debris Clean Up

Slash and debris created from harvest activities shall be treated in a manner approved in writing by the Contract Administrator.

S-050 Cessation of Operations for Low Humidity

During the "closed season", when the humidity is 30 percent or lower on the sale area, all operations must cease unless authority to continue is granted by the State in writing.

S-060 Pump Truck or Pump Trailer

Purchaser shall provide a fully functional pump truck or pump trailer equipped to meet the specifications of WAC 332-24-005 and WAC 332-24-405 during the "closed season" or as extended by the State and shall provide trained personnel to operate this equipment on the sale area during all operating periods.

## S-100 Stream Cleanout

Slash or debris which enters any stream as a result of operations under this contract and which is identified by the Contract Administrator shall be removed and deposited in a stable position. Removal of slash or debris shall be accomplished in a manner that avoids damage to the natural stream bed and bank vegetation.

## S-130 Hazardous Materials

## a. Hazardous Materials and Waste - Regulatory Compliance

Purchaser is responsible for understanding and complying with all applicable local, state, and federal hazardous material/waste laws and regulations for operations conducted under this contract. Such regulations pertain to, but may not be limited to, hazardous material storage, handling and transport, personnel protection, release notification and emergency response, cleanup and waste disposal. Purchaser shall be responsible for restoring the site in the event of a spill.

## b. Hazardous Materials Spill Prevention

All operations shall be conducted in a manner that avoids the release of hazardous materials, including petroleum products, into the environment (water, air or land).

## c. Hazardous Materials Spill Containment, Control and Cleanup

If safe to do so, Purchaser shall take immediate action to contain and control all hazardous material spills. Purchaser shall ensure that enough quick response spill kits capable of absorbing 4 to 6 gallons of oil, coolant, solvent or contaminated water are available on site to quickly address potential spills from any piece of equipment at all times throughout active operations. If large quantities of bulk fuel/other hazardous materials are stored on site, Purchaser must be able to effectively control a container leak and contain & recover a hazmat spill equal to the largest single on site storage container volume. (HAZWOPER reg. 29CFR 1910.120 (j) (1) (vii)).

## d. Hazardous Material Release Reporting

Releases of oil or hazardous materials to the environment must be reported according to the State Department of Ecology (ECY). It is the responsibility of the Purchaser to have all emergency contact information readily available and a means of remote communication for purposes of quick notification. In the event of a spill, the Purchaser is responsible for notifying the following:

Appropriate Department of Ecology regional office (contact information below).  
DNR Contract Administrator

ECY - Northwest Region:  
1-425-649-7000  
(Island, King, Kitsap, San Juan, Skagit, Snohomish, and Whatcom counties)

ECY - Southwest Region:  
1-360-407-6300  
(Clallam, Clark, Cowlitz, Grays Harbor, Jefferson, Mason, Lewis, Pacific, Pierce, Skamania, Thurston, and Wahkiakum counties)

ECY - Central Region:  
1-509-575-2490  
(Benton, Chelan, Douglas, Kittitas, Klickitat, Okanogan, and Yakima counties)

ECY - Eastern Region:  
1-509-329-3400  
(Adams, Asotin, Columbia, Ferry, Franklin, Garfield, Grant, Lincoln, Pend Oreille, Spokane, Stevens, Walla Walla, and Whitman counties)

#### S-131 Refuse Disposal

As required by RCW 70.93, All Purchaser generated refuse shall be removed from state lands for proper disposal prior to termination of this contract. No refuse shall be burned, buried or abandoned on state forest lands. All refuse shall be transported in a manner such that it is in compliance with RCW 70.93 and all loads or loose materials shall be covered/secured such that these waste materials are properly contained during transport.

#### Section D: Damages

##### D-013 Liquidated Damages or Failure to Perform

The following clauses provide for payments by Purchaser to the State for breaches of the terms of this contract other than failure to perform. These payments are agreed to as liquidated damages and not as penalties. They are reasonable estimates of anticipated harm to the State, which will be caused by Purchaser's breach. These liquidated damages provisions are agreed to by the State and Purchaser with the understanding of the difficulty of proving loss and the inconvenience or infeasibility of obtaining an adequate remedy. These liquidated damages provisions provide greater certainty for the Purchaser by allowing the Purchaser to better assess its responsibilities under the contract.

Clause P-020 governs Purchaser's liability in the event Purchaser fails to perform any of the contract requirements other than the below liquidated damage clauses without written approval by the State. Purchaser's failure to pay for all or part of the forest products sold in this contract prior to expiration of the contract term results in substantial injury to the State. Therefore, Purchaser agrees to pay the State the full lump sum contract price in P-020 in the event of failure to perform.

D-041 Reserve Tree Excessive Damage

When Purchaser’s operations exceed the damage limits set forth in clause H-013, Reserve Tree Damage Definition, and when the Contract Administrator determines that a suitable replacement for a damaged reserve tree is not possible, the damaged trees result in substantial injury to the State. The value of the damaged reserve trees at the time of the breach is not readily ascertainable. Therefore, the Purchaser agrees to pay the State as liquidated damages at the rate of \$1,000.00 per tree for all damaged reserve trees that are not replaced in the sale area.

IN WITNESS WHEREOF, the Parties hereto have entered into this contract.

STATE OF WASHINGTON  
DEPARTMENT OF NATURAL RESOURCES

\_\_\_\_\_  
Purchaser

\_\_\_\_\_  
Jean Fike  
Northwest Region Manager

Date: \_\_\_\_\_  
Address: \_\_\_\_\_

Date: \_\_\_\_\_

CORPORATE ACKNOWLEDGEMENT

STATE OF \_\_\_\_\_ )

COUNTY OF \_\_\_\_\_ )

On this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_, before me personally appeared \_\_\_\_\_

\_\_\_\_\_ to me known to be the \_\_\_\_\_ of the corporation

that executed the within and foregoing instrument and acknowledged said instrument to be the free and voluntary act and deed of the corporation, for the uses and purposes therein mentioned, and on oath stated that (he/she was) (they were) authorized to execute said instrument.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my official seal the day and year first above written.

\_\_\_\_\_  
Notary Public in and for the State of

\_\_\_\_\_  
My appointment expires \_\_\_\_\_

**Schedule A**  
**NW Ground-Based Equip Specifications (Rev11/05/14)**

The following types of equipment are considered ground-based equipment: feller-buncher, processor, forwarder, skidder and shovel.

SHOVEL is defined as a low ground pressure track-mounted machine with hydraulic boom and grapple capable of picking up one end of the largest log 25 feet from the center of the machine.

LOG PROCESSOR/DE-LIMBER is defined as a mobile machine with a hydraulic boom capable of simultaneously bucking, delimiting and/or debarking and chipping whole trees while sitting stationary at the landing.

FELLER-BUNCHER/HARVESTER is defined as a track mounted machine with hydraulic boom and cutter head capable of felling, bucking, limbing, and decking logs in one operation.

FORWARDER is defined as a track or rubber tire machine used for transporting logs to a landing by use of a bunk with self loading boom in which logs are carried free of the ground.

RUBBER-TIRED SKIDDER is defined as a skidder mounted on rubber tires used to drag logs to a landing. Logs are generally pulled in groups of six or less, with one end on the ground.

TRACKED SKIDDER is defined as any tracked tractor or skidder, fixed or articulated, used to drag logs to landings. Logs are generally pulled in groups of six or less, with one end on the ground.

Harvester shall not deviate from the requirements set forth in this Schedule without prior written approval from the Contract Administrator.

**FOR ALL YARDING:**

Equipment will remain at least 30 feet from all water courses or areas of wet/soft soils, except as necessary to cross at approved locations. Water course crossing structures must be approved by a HPA or by the Contract Administrator.

Logging debris created by the operation will be removed from water courses concurrently with yarding.

**WHEN SHOVEL YARDING IS AUTHORIZED:**

S1. When yarding and loading operations are occurring simultaneously, an additional shovel will be required for loading to avoid extra trips to the landing.

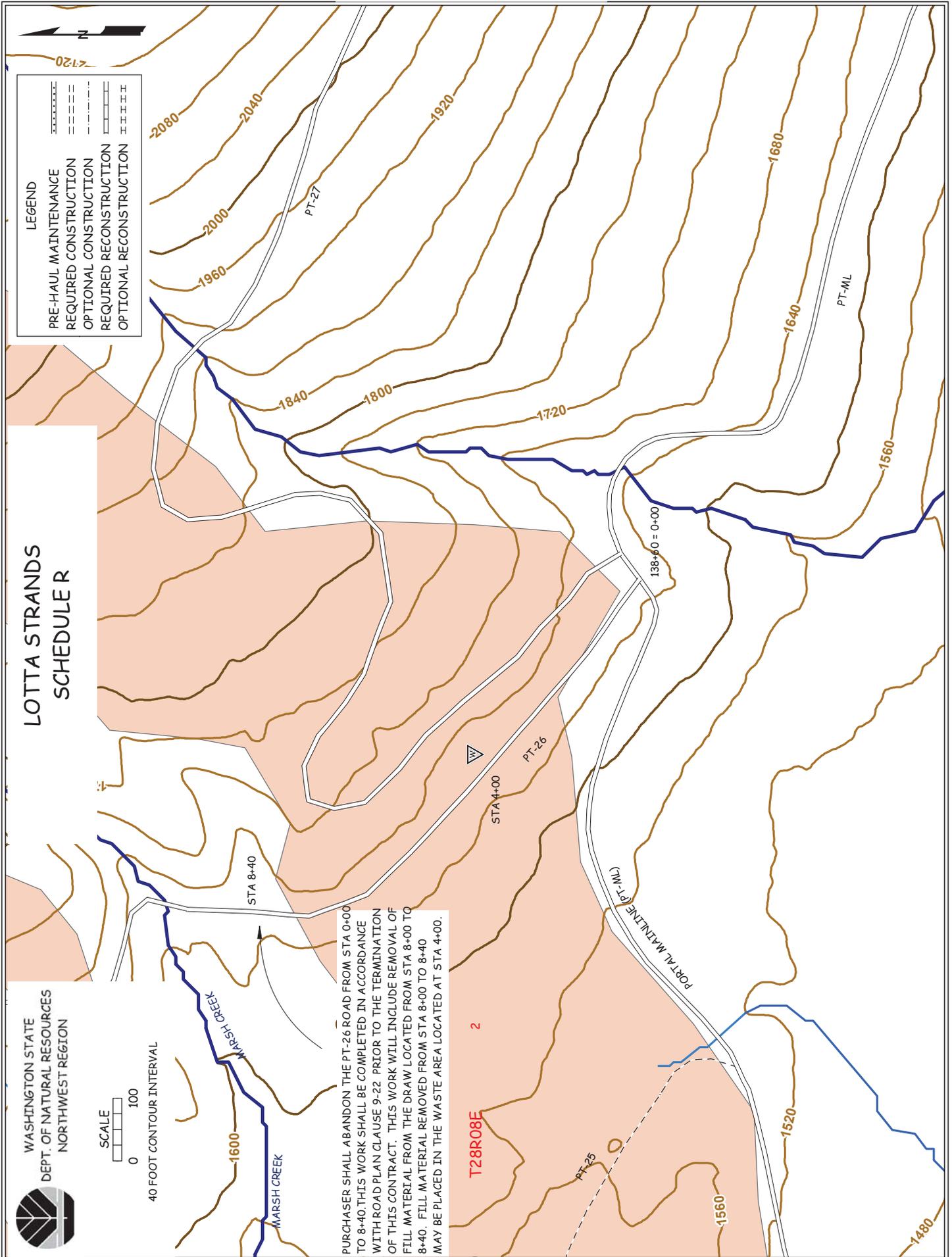
S2. Shovel yarding will not be allowed to create ruts or soil puddling. Shovel routes should be dispersed to prevent creation of definable trails.

S3. Within shovel logged areas, to facilitate proper reforestation, logging debris will be dispersed as necessary to create clear, plantable spots at approximately a 11 foot x 11 foot spacing. Planting spots will be created concurrently with yarding.

LOG PROCESSORS will be allowed within the sale area only under one of the following conditions:

1. No tops or limbs will be allowed to accumulate on any landings, and all tops and limbs will be re-distributed into the unit, to the satisfaction of the Contract Administrator, and will provide for plantable spots every 11 feet by 11 feet.
2. Harvester must provide a written slash treatment plan, acceptable to the Contract Administrator, to address the additional slash accumulation. The Slash Treatment Plan will be a part of the Plan of Operations.

**Schedule R**  
**Additional Road Abandonment**





## WASHINGTON STATE DEPARTMENT OF NATURAL RESOURCES

### FOREST EXCISE TAX ROAD SUMMARY SHEET

**Region:**

**Timber Sale Name:**

**Application Number:**

#### EXCISE TAX APPLICABLE ACTIVITIES

**Construction:** linear feet  
*Road to be constructed (optional and required) but not abandoned*

**Reconstruction:** linear feet  
*Road to be reconstructed (optional and required) but not abandoned*

**Abandonment:** linear feet  
*Abandonment of existing roads not reconstructed under the contract*

**Decommission:** linear feet  
*Road to be made undriveable but not officially abandoned.*

**Pre-Haul Maintenance:** linear feet  
*Existing road to receive maintenance work (specifically required by the contract) prior to haul*

#### EXCISE TAX EXEMPT ACTIVITIES

**Temporary Optional Construction:** linear feet  
*Optional roads to be constructed and then abandoned*

**Temporary Optional Reconstruction:** linear feet  
*Optional roads to be reconstructed and then abandoned*

**New Abandonment:** linear feet  
*Abandonment of roads constructed or reconstructed under the contract*

All parties must make their own assessment of the taxable or non-taxable status of any work performed under the timber sale contract. The Department of Revenue bears responsibility for determining forest road excise taxes. The Department of Natural Resources developed this form to help estimate the impact of forest excise taxes. However, the information provided may not precisely calculate the actual amount of taxes due. The Department of Revenue is available for consultation by calling 1.800.548.8829.

(Revised 6/13)

## Cruise Narrative

<b>Sale Name:</b> Lotta Strands	<b>Region:</b> Northwest
<b>App. Number:</b> 30-093059	<b>District:</b> Cascade
<b>Lead cruiser:</b> P. Kirner	<b>Completion date:</b> 12/9/15
<b>Other cruisers on sale:</b>	

### Unit acreage specifications:

Unit #	Cruised acres	Cruised acres agree with sale acres? Yes/No	If acres do not agree explain why.
1	4.1	Yes	
2A	1.9	Yes	
2B	7.5	Yes	
2C	1.7	Yes	
3	51.8	Yes	
4	73.3	Yes	
5	15.6	Yes	
6	3.9	Yes	
RMZ Corridor	1.5	Yes	

**161.3**

### Unit cruise specifications:

Unit #	Sample type (VP, FP, ITS,100%)	Expansion factor (BAF, full/half)	Sighting height (4.5 ft, 16 ft.)	Grid size (Plot spacing or % of area)	Plot ratio (cruise:count)	Total number of plots
1	V.P.	Full 54.45 40.00	4.5	200 x 200	All Cruised	3
2 A,B,C	V.P.	Full 54.45	4.5	250 x 250	All Cruised	4
3	V.P.	Full 54.45 40.00	4.5	300 x 300	1 to 1	24
4	V.P.	Full 54.45 40.00	4.5	325 x 325	1 to 1	31
5	V.P.	Full 46.95	4.5	300 x 300	1 to 1	8

6	V.P.	Full 54.45	4.5	175 x 175	1 to 1	3
RMZ Corridors	V.P.	Full 54.45	4.5		Cruised	1

### Sale/Cruise Description:

<b>Minor species cruise intensity:</b>	The minor species are Red Cedar, Red Alder and B. Maple in this sale. A 40 BAF prism was used for these species to gather a better sample on them.					
<b>Minimum cruise spec:</b>	8 inches DBH having 5 inches at 16 feet. On occasion a smaller pulp log was cruised minimum 2 inch top 16 feet long.					
<b>Avg ring count by sp:</b>	<b>DF =</b>	9.0	<b>WH =</b>	8.0	<b>SS =</b>	
<b>Leave/take tree description:</b>	Scattered blue painted leave trees and leave tree clumps throughout the units.					
<b>Other conditions</b>	Harvesting units 2 A, B and C will require downhill yarding through the RMZ of Marsh Creek. Log will be landed in unit 3. Only 5 corridors are permitted.					

### Field observations:

<p>These stands are located up the Sultan Basin Road accessed by the Portal Mainline and the Hawk Ridge Mainline. Both mainlines have gates on them, F1 key. Units 1 and 2 have a south aspect, units 3 and 4 have a north and south aspect, and units 5 and 6 are flat. The elevation of the sale is 740 feet for units 5 and 6, to 2,000 feet at unit 1.</p> <p>Western Hemlock makes up 70 percent of the volume in the sale. The average Hemlock is 15.4 inches DBH and 75 feet tall. D. Fir makes up another 27 percent of the sale. Its average size is 19.6 inches DBH and 85 feet tall. There are trace amounts of Red Alder, Red Cedar, B. Cottonwood, S. Fir and B. Maple.</p> <p>Defects noted in the sale are double tops throughout the units, some butt rot in the Cedar and in units 2 and the north half of unit 3 missile toe is pervasive. The harvesting of this sale should be relatively easy, the harvest of unit 2 will be the most difficult through the RMZ.</p>
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**GRANTS:** 01, 03, 04, 06 and 07

**PREPARED BY:** P. Kirner

**TITLE:** Forest Check Cruiser 1

TC PSPCSTGR		Species, Sort Grade - Board Foot Volumes (Project)																			
Northwest		Project: <b>LOTSTND</b>										Page <b>1</b>									
T28N R08E S01 Ty0001 THRU T28N R08E S12 Ty0004		Acres <b>161.30</b>										Date <b>1/19/2016</b>									
												Time <b>9:31:15AM</b>									
S Spp	So T	Gr rt ad	% Net BdFt	Bd. Ft. per Acre			Total Net MBF	Percent of Net Board Foot Volume								Average Log				Logs Per /Acre	
				Def%	Gross	Net		Log Scale Dia.				Log Length				Ln Ft	Dia In	Bd Ft	CF/ Lf		
								4-5	6-11	12-16	17+	12-20	21-30	31-35	36-99						
WH	D	2S	39	16.2	12,171	10,197	1,645			87	13				100	40	14	239	1.70	42.6	
WH	D	3S	48	4.7	13,322	12,702	2,049		100					0	100	40	8	98	0.68	129.3	
WH	D	4S	10	2.0	2,546	2,496	403	90	10			15	30	11	45	27	5	29	0.32	86.8	
WH	D	UT	3	4.2	766	734	118	91	9			27	40	13	20	13	5	13	0.27	57.1	
<b>WH Totals</b>			70	9.3	28,806	26,129	4,215	11	50	34	5	2	4	1	92	32	8	83	0.74	315.8	
DF	D	2S	58	2.3	5,913	5,779	932			94	6				100	40	14	291	1.91	19.8	
DF	D	3S	35	10.9	3,953	3,521	568		100			0	0		100	40	9	100	0.80	35.1	
DF	D	4S	7	5.8	687	647	104	66	34			28	32	10	30	24	6	27	0.33	24.3	
DF	D	UT															7		0.00	2.1	
<b>DF Totals</b>			27	5.7	10,552	9,947	1,605	4	38	54	4	2	2	1	95	34	9	122	1.02	81.4	
CW	D	2S	85	19.4	58	46	7			100					100	40	15	290	2.05	.2	
CW	D	4S	15	16.7	10	8	1		100						100	36	7	50	0.75	.2	
<b>CW Totals</b>			0	19.0	67	54	9		15	85					100	38	11	170	1.43	.3	
RA	D	2S	35	57.5	167	71	11			100				100		30	16	130	2.26	.5	
RA	D	3S	27		54	54	9		100			41	59			25	11	104	1.04	.5	
RA	D	4S	30	35.4	95	61	10	9	91				9	91		37	7	47	0.67	1.3	
RA	D	UT	8		15	15	2	100				100				19	5	20	0.24	.7	
<b>RA Totals</b>			1	39.1	331	201	32	10	55	35		18	54	28		30	9	65	0.94	3.1	
RC	D	3S	82	9.2	776	704	114			52	33	15			4	96	37	10	138	1.34	5.1
RC	D	4S	18		152	152	24	100					7	49	31	13	26	5	28	0.32	5.5
<b>RC Totals</b>			2	7.7	927	856	138	18	42	27	12	1	9	9	81	31	7	81	0.90	10.6	
SF	D	3S	78		86	86	14		100						100	40	10	150	0.97	.6	
SF	D	4S	22		23	23	4	100						100		35	5	40	0.34	.6	
<b>SF Totals</b>			0		109	109	18	21	79					21	79	38	8	95	0.68	1.1	
BM	D	UT	100		62	62	10	52	48			48	52			26	6	34	0.41	1.8	
<b>BM Totals</b>			0		62	62	10	52	48			48	52			26	6	34	0.41	1.8	
<b>Totals</b>				8.6	40,854	37,359	6,026	10	46	39	5	2	4	1	92	32	8	90	0.80	414.1	

TC PSTATS		PROJECT STATISTICS							PAGE	1	
Northwest		PROJECT			LOTSTND		DATE		1/19/2016		
TWP	RGE	SC	TRACT	TYPE		ACRES	PLOTS	TREES	CuFt	BdFt	
28N	08E	01	LOTTA STRAND	0001	THR	161.30	74	395	S	W	
28N	08E	12	LOTTA STRAND	0004							
			PLOTS	TREES	TREES PER PLOT	ESTIMATED TOTAL TREES	PERCENT SAMPLE TREES				
TOTAL			74	395	5.3						
CRUISE			45	209	4.6	31,552	.7				
DBH COUNT											
REFOREST											
COUNT			28	161	5.8						
BLANKS			1								
100 %											
STAND SUMMARY											
		SAMPLE TREES	TREES /ACRE	AVG DBH	BOLE LEN	REL DEN	BASAL AREA	GROSS BF/AC	NET BF/AC	GROSS CF/AC	NET CF/AC
WHEMLOCK		150	149.6	15.4	75	49.1	192.7	28,806	26,129	7,367	7,365
DOUG FIR		39	35.7	19.6	85	16.8	74.4	10,552	9,947	2,836	2,833
WR CEDAR		12	6.2	16.4	61	2.2	9.1	927	856	298	298
R ALDER		4	1.6	17.8	65	0.6	2.7	331	201	86	86
COTWOOD		1	.2	23.0	78	0.1	.5	67	54	17	17
BL MAPLE		2	1.8	10.9	43	0.4	1.2	62	62	19	19
PS FIR		1	.6	16.0	77	0.2	.8	109	109	29	29
<b>TOTAL</b>		209	195.6	16.2	76	69.8	281.2	40,854	37,359	10,654	10,648
CONFIDENCE LIMITS OF THE SAMPLE											
68.1 TIMES OUT OF 100 THE VOLUME WILL BE WITHIN THE SAMPLE ERROR											
CL	68.1	COEFF		SAMPLE TREES - BF			# OF TREES REQ.		INF. POP.		
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10		
WHEMLOCK		68.1	5.6	223	236	249					
DOUG FIR		67.8	10.9	376	422	468					
WR CEDAR		66.9	20.1	188	235	282					
R ALDER		61.5	35.1	96	148	199					
COTWOOD											
BL MAPLE		20.2	18.9	28	35	42					
PS FIR											
<b>TOTAL</b>		75.8	5.2	253	267	281	229	117	57		
CL	68.1	COEFF		TREES/ACRE			# OF PLOTS REQ.		INF. POP.		
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10		
WHEMLOCK		78.4	9.1	136	150	163					
DOUG FIR		165.1	19.2	29	36	42					
WR CEDAR		324.5	37.7	4	6	9					
R ALDER		406.3	47.2	1	2	2					
COTWOOD		860.2	99.9	0	0	0					
BL MAPLE		614.1	71.3	1	2	3					
PS FIR		860.2	99.9	0	1	1					
<b>TOTAL</b>		48.1	5.6	185	196	207	93	47	23		
CL	68.1	COEFF		BASAL AREA/ACRE			# OF PLOTS REQ.		INF. POP.		
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10		
WHEMLOCK		78.8	9.2	175	193	210					
DOUG FIR		156.5	18.2	61	74	88					
WR CEDAR		310.9	36.1	6	9	12					
R ALDER		380.8	44.2	1	3	4					
COTWOOD		860.2	99.9	0	0	1					
BL MAPLE		604.1	70.2	0	1	2					
PS FIR		860.2	99.9	0	1	2					
<b>TOTAL</b>		41.5	4.8	268	281	295	69	35	17		

**PROJECT STATISTICS**  
**PROJECT LOTSTND**

TWP	RGE	SC	TRACT	TYPE		ACRES	PLOTS	TREES	CuFt	BdFt
28N	08E	01	LOTTA STRAND	0001	THR	161.30	74	395	S	W
28N	08E	12	LOTTA STRAND	0004						

CL	68.1	COEFF		NET BF/ACRE			# OF PLOTS REQ.		INF. POP.
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10
WHEMLOCK		80.5	9.3	23,687	26,129	28,571			
DOUG FIR		153.5	17.8	8,174	9,947	11,721			
WR CEDAR		303.5	35.2	554	856	1,157			
R ALDER		396.1	46.0	109	201	294			
COTWOOD		860.2	99.9	0	54	109			
BL MAPLE		604.6	70.2	18	62	106			
PS FIR		860.2	99.9	0	109	217			
<b>TOTAL</b>		<b>43.7</b>	<b>5.1</b>	<b>35,462</b>	<b>37,359</b>	<b>39,255</b>	<b>76</b>	<b>39</b>	<b>19</b>

CL	68.1	COEFF		V BAR/ACRE			# OF PLOTS REQ.		INF. POP.
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10
WHEMLOCK				123	136	148			
DOUG FIR				110	134	158			
WR CEDAR		275.8	32.0	61	94	127			
R ALDER		349.3	40.6	41	75	110			
COTWOOD		860.2	99.9	0	118	236			
BL MAPLE		604.6	70.2	16	53	90			
PS FIR		860.2	99.9	0	136	272			
<b>TOTAL</b>		<b>41.9</b>	<b>4.9</b>	<b>126</b>	<b>133</b>	<b>140</b>	<b>70</b>	<b>36</b>	<b>18</b>

T28N R08E S01 T0001 Twp Rge Sec Tract Type Acres Plots Sample Trees CuFt 28N 08E 01 LOTTA STRAND 0001 4.10 3 24 S	T28N R08E S01 T0001 BdFt W
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Spp	S T	So rt	Gr ad	% Net BdFt	Bd. Ft. per Acre			Total Net MBF	Percent Net Board Foot Volume								Average Log			Logs Per /Acre	
									Log Scale Dia.				Log Length				Ln Ft	Dia In	Bd Ft		CF/ Lf
									4-5	6-11	12-16	17+	12-20	21-30	31-35	36-99					
WH	DM	2S		7		2,311	2,311	9	100				100				40	16	400	2.27	5.8
WH	DM	3S		69	4.7	21,800	20,776	85	100				100				40	7	82	0.60	252.9
WH	DM	4S		17	3.8	5,119	4,922	20	100				26	20	54		24	5	25	0.29	199.9
WH	DM	UT		7		2,034	2,034	8	25	75			25		75		10	5	18	0.48	112.4
<b>WH</b>	<b>Totals</b>			54	3.9	31,264	30,043	123	18	74	8		6	3	9	82	28	6	53	0.53	571.0
DF	DM	2S		80	1.0	18,010	17,824	73		55	45				100		40	16	415	2.52	43.0
DF	DM	3S		17	2.0	3,657	3,583	15	100				5	7	89		37	10	127	0.89	28.2
DF	DM	4S		3		652	652	3	100				68	32			16	7	24	0.42	27.1
<b>DF</b>	<b>Totals</b>			40	1.2	22,319	22,059	90	19	44	36		3	2	95		33	12	225	1.70	98.2
CW	DM	2S		85	19.4	2,265	1,824	7	100				100				40	15	290	2.05	6.3
CW	DM	4S		15	16.7	377	315	1	100				100				36	7	50	0.75	6.3
<b>CW</b>	<b>Totals</b>			4	19.0	2,642	2,139	9	15	85					100		38	11	170	1.43	12.6
RA	DM	3S		80		869	869	4	100				100				20	11	80	0.94	10.9
RA	DM	4S		20	33.3	326	217	1	100				100				27	5	20	0.41	10.9
<b>RA</b>	<b>Totals</b>			2	9.1	1,195	1,086	4	20	80			80	20			24	8	50	0.64	21.7
<b>Type Totals</b>					3.6	57,421	55,328	227	10	50	25	15	6	3	5	86	29	7	79	0.74	703.5

T28N R08E S02 T0003 Twp Rge Sec Tract Type Acres Plots Sample Trees CuFt 28N 08E 02 LOTTA STRAND 0003 51.80 24 74 S	T28N R08E S02 T0003 BdFt W
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Spp	S	So	Gr	% Net BdFt	Bd. Ft. per Acre Def% Gross Net			Total Net MBF	Percent Net Board Foot Volume								Average Log			Logs Per /Acre	
									Log Scale Dia.				Log Length				Ln Ft	Dia In	Bd Ft		CF/ Lf
									4-5	6-11	12-16	17+	12-20	21-30	31-35	36-99					
WH	DM	2S		41	20.0	22,578	18,069	936		84	16				100	40	14	234	1.72	77.2	
WH	DM	3S		47	5.4	21,911	20,721	1,073		100					100	40	8	98	0.67	210.7	
WH	DM	4S		9	.4	3,923	3,905	202	88	12		14	29	10	47	27	5	29	0.31	135.1	
WH	DM	UT		3		912	912	47	94	6		47	53			10	5	9	0.18	96.5	
<b>WH</b>	<b>Totals</b>			94	11.6	49,324	43,608	2,259	10	49	35	6	2	4	1	93	31	8	84	0.76	519.5
DF	DM	2S		79	6.0	1,646	1,547	80		67	33				100	40	14	282	2.04	5.5	
DF	DM	3S		16	5.6	337	319	17		100					100	40	9	105	0.71	3.0	
DF	DM	4S		5		83	83	4		100		41	59			21	7	35	0.51	2.4	
DF	DM	UT														7			0.00	1.9	
<b>DF</b>	<b>Totals</b>			4	5.7	2,067	1,949	101		21	53	26	2	3	96	30	10	153	1.43	12.8	
RC	DM	3S		66		617	617	32		100					100	36	8	91	0.75	6.8	
RC	DM	4S		34		306	306	16	100				10	69	21	24	5	25	0.29	12.5	
<b>RC</b>	<b>Totals</b>			2		923	923	48	33	67			3	23	74	28	6	48	0.50	19.3	
<b>Type Totals</b>					11.2	52,314	46,479	2,408	10	48	35	7	2	4	1	93	31	8	84	0.77	551.5

T28N R08E S02 T002A Twp Rge Sec Tract Type Acres Plots Sample Trees CuFt 28N 08E 02 LOTTA STRAND 002A 1.90 1 7 S	T28N R08E S02 T002A BdFt W
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S Spp	So T	Gr rt ad	% Net BdFt	Bd. Ft. per Acre			Total Net MBF	Percent Net Board Foot Volume								Average Log				Logs Per /Acre
								Log Scale Dia.				Log Length				Ln	Dia	Bd	CF/	
								4-5	6-11	12-16	17+	12-20	21-30	31-35	36-99	Ft	In	Ft	Lf	
WH	DM	2S	13	51.3	12,911	6,290	12		98	2				100	40	14	144	1.83	43.5	
WH	DM	3S	70	3.5	33,038	31,885	61		100					100	40	9	127	0.88	251.4	
WH	DM	4S	17		7,361	7,361	14	100				39	61		34	5	35	0.33	207.8	
WH	DM	UT														7		0.00	30.8	
<b>WH</b>	<b>Totals</b>		100	14.6	53,310	45,535	87	16	70	14	0		6	94	35	8	85	0.76	533.6	
<b>Type</b>	<b>Totals</b>			14.6	53,310	45,535	87	16	70	14	0		6	94	35	8	85	0.76	533.6	

T28N R08E S02 T002B Twp Rge Sec Tract Type Acres Plots Sample Trees CuFt 28N 08E 02 LOTTA STRAND 002B 7.50 2 13 S	T28N R08E S02 T002B BdFt W
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Spp	S T	So rt	Gr ad	% Net BdFt	Bd. Ft. per Acre			Total Net MBF	Percent Net Board Foot Volume								Average Log			Logs Per /Acre	
									Log Scale Dia.				Log Length				Ln	Dia	Bd		CF/ Lf
									4-5	6-11	12-16	17+	12-20	21-30	31-35	36-99	Ft	In	Ft		Lf
WH		DM	2S	51	31.0	20,356	14,047	105		63	37			100	40	15	248	2.07	56.6		
WH		DM	3S	38	8.8	11,302	10,306	77		100			3	97	39	8	88	0.71	117.0		
WH		DM	4S	9	19.9	3,345	2,680	20	67	33		13	25	62	28	5	27	0.44	98.5		
WH		DM	UT	2		326	326	2	68	32		100			10	6	12	0.27	27.4		
<b>WH</b>	<b>Totals</b>			66	22.6	35,329	27,358	205	7	41	32	19	2	3	94	33	8	91	0.94	299.6	
DF		DM	2S	73		6,863	6,863	51		100				100	40	15	379	2.16	18.1		
DF		DM	3S	23	26.2	2,975	2,195	16		100				100	40	10	121	0.95	18.1		
DF		DM	4S	4		283	283	2		100		100			22	6	30	0.37	9.4		
<b>DF</b>	<b>Totals</b>			23	7.7	10,122	9,342	70		27	73			3	97	36	12	205	1.41	45.6	
RC		DM	3S	89	20.6	5,398	4,285	32		62	38		15	85	35	14	203	2.30	21.1		
RC		DM	4S	11		499	499	4	100				100		34	5	40	0.47	12.5		
<b>RC</b>	<b>Totals</b>			12	18.9	5,898	4,784	36	10	55	34		24	76	35	10	142	1.64	33.6		
<b>Type Totals</b>					19.2	51,348	41,484	311	6	33	44	17	2	3	3	93	33	9	110	1.06	378.8

T28N R08E S02 T002C Twp Rge Sec Tract Type Acres Plots Sample Trees CuFt 28N 08E 02 LOTTA STRAND 002C 1.70 1 5 S	T28N R08E S02 T002C BdFt W
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S Spp	So T	Gr rt ad	%	Bd. Ft. per Acre				Total Net MBF	Percent Net Board Foot Volume								Average Log				Logs Per /Acre
									Log Scale Dia.				Log Length				Ln	Dia	Bd	CF/	
									4-5	6-11	12-16	17+	12-20	21-30	31-35	36-99	Ft	In	Ft	Lf	
WH	DM	2S	47	20,225	20,225	34	100				100				40	13	256	1.51	79.1		
WH	DM	3S	44	.0	18,765	18,765	32	100				100				40	9	116	0.78	162.5	
WH	DM	4S	9		3,747	3,747	6	89	11			11		47	42	32	5	36	0.34	104.0	
WH	DM	UT														6		0.00	58.5		
<b>WH</b>	<b>Totals</b>		100		42,737	42,737	73	8	45	47		1		4	95	32	8	106	0.84	404.0	
<b>Type</b>	<b>Totals</b>				42,737	42,737	73	8	45	47		1		4	95	32	8	106	0.84	404.0	

<b>T28N R08E S02 TCORR</b>										<b>T28N R08E S02 TCORR</b>			
<b>Twp</b>	<b>Rge</b>	<b>Sec</b>	<b>Tract</b>	<b>Type</b>	<b>Acres</b>	<b>Plots</b>	<b>Sample Trees</b>	<b>CuFt</b>	<b>BdFt</b>				
<b>28N</b>	<b>08E</b>	<b>02</b>	<b>LOTTA STRAND</b>	<b>CORR</b>	<b>1.50</b>	<b>1</b>	<b>5</b>	<b>S</b>	<b>W</b>				

S Sp	So T	Gr rt ad	%	Bd. Ft. per Acre			Total Net MBF	Percent Net Board Foot Volume								Average Log			Logs Per /Acre					
								Net BdFt	Def%	Gross	Net	Log Scale Dia.				Log Length				Ln Ft	Dia In	Bd Ft	CF/ Lf	
												4-5	6-11	12-16	17+	12-20	21-30	31-35						36-99
DF	DM	2S	67		13,727	13,727	21	100				100				40	15	379	2.16	36.2				
DF	DM	3S	26	11.7	5,951	5,257	8	100				100				40	10	145	0.95	36.2				
DF	DM	4S	7		1,259	1,259	2	100				100				23	7	35	0.44	36.2				
<b>DF</b>	<b>Totals</b>		56	3.3	20,937	20,243	30	32	68					6	94	34	11	186	1.31	108.6				
RC	DM	3S	91	20.6	10,365	8,225	12	61	39					100				40	12	195	2.16	42.2		
RC	DM	4S	9		749	749	1	100				100				30	5	30	0.40	25.0				
<b>RC</b>	<b>Totals</b>		25	19.3	11,114	8,974	13	8	56	36					8	92	36	10	134	1.62	67.2			
WH	DM	3S	80		5,324	5,324	8	100				100				40	9	120	0.83	44.4				
WH	DM	4S	20		1,331	1,331	2	100				100				30	5	30	0.29	44.4				
<b>WH</b>	<b>Totals</b>		19		6,655	6,655	10	20	80					20	80	35	7	75	0.60	88.7				
<b>Type Totals</b>					7.3	38,706	35,873	54	6	47	38	9					9	91	35	9	136	1.15	264.5	

T28N R08E S10 T0005 Twp Rge Sec Tract Type Acres Plots Sample Trees CuFt 28N 08E 10 LOTTA STRAND 0005 15.60 8 19 S	T28N R08E S10 T0005 BdFt W
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S Spp	So T	Gr rt ad	% Net BdFt	Bd. Ft. per Acre			Total Net MBF	Percent Net Board Foot Volume								Average Log			Logs Per /Acre	
								Log Scale Dia.				Log Length				Ln	Dia	Bd		CF/ Lf
								4-5	6-11	12-16	17+	12-20	21-30	31-35	36-99	Ft	In	Ft		Lf
DF	DM	2S	33	4.6	7,123	6,796	106	100				100				40	13	256	1.66	26.5
DF	DM	3S	53	7.7	11,687	10,789	168	100				100				40	9	107	0.79	100.6
DF	DM	4S	14	6.7	2,984	2,783	43	94	6			11	16	23	49	30	5	30	0.30	93.3
<b>DF</b>	<b>Totals</b>		68	6.5	21,794	20,368	318	13	54	33		2	2	3	93	36	8	92	0.74	220.4
WH	DM	2S	12		1,148	1,148	18	100				100				40	13	240	1.66	4.8
WH	DM	3S	51	7.0	5,200	4,835	75	100				100				40	8	92	0.72	52.6
WH	DM	4S	19	4.5	1,908	1,823	28	100						58	42	33	5	32	0.30	57.2
WH	DM	UT	18		1,662	1,662	26	100						54	46	23	5	24	0.26	68.1
<b>WH</b>	<b>Totals</b>		32	4.5	9,918	9,467	148	37	51	12		21		79	32	6	52	0.49	182.8	
<b>Type Totals</b>				5.9	31,712	29,835	465	20	53	27		1	8	2	89	34	7	74	0.63	403.2

T28N R08E S11 T0006 Twp Rge Sec Tract Type Acres Plots Sample Trees CuFt 28N 08E 11 LOTTA STRAND 0006 3.90 3 6 S	T28N R08E S11 T0006 BdFt W
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S Spp	So T	Gr rt ad	% Net BdFt	Bd. Ft. per Acre			Total Net MBF	Percent Net Board Foot Volume								Average Log				Logs Per /Acre		
								Log Scale Dia.				Log Length				Ln	Dia	Bd	CF/			
								4-5	6-11	12-16	17+	12-20	21-30	31-35	36-99	Ft	In	Ft	Lf			
WH	DM	2S	72	2.5	24,114	23,520	92	100				100				40	14	299	1.92	78.7		
WH	DM	3S	25	1.5	8,262	8,136	32	100				100				40	8	103	0.75	78.7		
WH	DM	4S	3		767	767	3	100				100				8	7	10	0.33	78.7		
<b>WH Totals</b>			100	2.2	33,143	32,423	126	27	73	2				98				29	10	137	1.25	236.2
<b>Type Totals</b>				2.2	33,143	32,423	126	27	73	2				98				29	10	137	1.25	236.2

Species, Sort Grade - Board Foot Volumes (Type)											Page 1										
T TSPCSTGR Northwest			Project: LOTSTND							Date 1/19/2016 Time 9:31:14AM											
T28N R08E S12 T0004										T28N R08E S12 T0004											
Twp	Rge	Sec	Tract	Type	Acres	Plots	Sample Trees	CuFt	BdFt												
28N	08E	12	LOTTA STRAND	0004	73.30	31	56	S	W												
S Sp	So T	Gr rt ad	% Net BdFt	Bd. Ft. per Acre			Total Net MBF	Percent Net Board Foot Volume							Average Log			Logs Per /Acre			
				Def%	Gross	Net		Log Scale Dia.				Log Length			Ln	Dia	Bd		CF/ Lf		
								4-5	6-11	12-16	17+	12-20	21-30	31-35	36-99	Ft	In	Ft			
WH	DM	2S	36	4.9	6,285	5,975	438			92	8				100	40	13	239	1.53	25.0	
WH	DM	3S	52	2.9	8,509	8,260	605		100						100	40	8	100	0.69	82.9	
WH	DM	4S	9		1,449	1,449	106	96	4			18	26	8	48	28	5	30	0.31	49.1	
WH	DM	UT	3	13.1	541	470	34	96	4			16	24	44	15	17	5	15	0.35	31.7	
<b>WH</b>	<b>Totals</b>		52	3.8	16,784	16,154	1,184	11	52	34	3	2	3	2	93	33	8	86	0.71	188.7	
DF	DM	2S	60	1.7	8,342	8,198	601			100					100	40	14	282	1.87	29.1	
DF	DM	3S	34	12.1	5,342	4,694	344		100						100	40	8	95	0.79	49.6	
DF	DM	4S	6	6.1	726	682	50	56	44			41	39		20	21	6	24	0.35	28.8	
DF	DM	UT																	0.00	3.2	
<b>DF</b>	<b>Totals</b>		44	5.8	14,410	13,574	995	3	37	60		2	2		96	34	9	123	1.06	110.7	
RA	DM	2S	40	57.5	368	156	11			100					100	30	16	130	2.26	1.2	
RA	DM	3S	19		71	71	5		100						100	30	11	130	1.12	.5	
RA	DM	4S	32	35.6	190	123	9		100						100	40	8	54	0.71	2.3	
RA	DM	UT	9		32	32	2	100				100				19	5	20	0.24	1.6	
<b>RA</b>	<b>Totals</b>		1	42.2	661	382	28	8	51	41		8	60		32	31	9	68	0.99	5.6	
RC	DM	3S	90		507	507	37		51	49					100	38	10	150	1.34	3.4	
RC	DM	4S	10		51	51	4	100							100	32	5	34	0.33	1.5	
<b>RC</b>	<b>Totals</b>		2		558	558	41	9	47	44					9	91	37	8	114	1.06	4.9
BM	DM	UT	100		137	137	10	52	48			48	52			26	6	34	0.41	4.0	
<b>BM</b>	<b>Totals</b>		0		137	137	10	52	48			48	52			26	6	34	0.41	4.0	
SF	DM	3S	78		189	189	14		100						100	40	10	150	0.97	1.3	
SF	DM	4S	22		50	50	4	100							100	35	5	40	0.34	1.3	
<b>SF</b>	<b>Totals</b>		1		239	239	18	21	79						21	79	38	8	95	0.68	2.5
<b>Type Totals</b>				5.3	32,789	31,044	2,275	8	45	45	2	2	3	1	93	33	8	98	0.84	316.4	

TC TSTATS				STATISTICS				PAGE	1	
Northwest				PROJECT		LOTSTND		DATE	1/19/2016	
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt	
28N	08E	01	LOTTA STRAND	0001	4.10	3	24	S	W	
				TREES	ESTIMATED	PERCENT				
				PER PLOT	TOTAL	SAMPLE				
				PLOTS	TREES	TREES	TREES			
TOTAL				3	24	8.0				
CRUISE				3	24	8.0	1,392	1.7		
DBH COUNT										
REFOREST										
COUNT										
BLANKS										
100 %										
STAND SUMMARY										
	SAMPLE	TREES	AVG	BOLE	REL	BASAL	GROSS	NET	GROSS	NET
	TREES	/ACRE	DBH	LEN	DEN	AREA	BF/AC	BF/AC	CF/AC	CF/AC
WHEMLOCK	15	289.6	13.1	64	75.1	272.3	31,264	30,043	8,592	8,587
DOUG FIR	7	32.7	26.7	101	24.6	127.1	22,319	22,059	5,436	5,435
COTWOOD	1	6.3	23.0	78	3.8	18.2	2,642	2,139	687	686
R ALDER	1	10.9	15.0	50	3.4	13.3	1,195	1,086	322	325
<b>TOTAL</b>	<b>24</b>	<b>339.5</b>	<b>15.3</b>	<b>68</b>	<b>110.3</b>	<b>430.8</b>	<b>57,421</b>	<b>55,328</b>	<b>15,036</b>	<b>15,032</b>
CONFIDENCE LIMITS OF THE SAMPLE										
68.1 TIMES OUT OF 100 THE VOLUME WILL BE WITHIN THE SAMPLE ERROR										
CL:	68.1 %	COEFF	SAMPLE TREES - BF				# OF TREES REQ.		INF. POP.	
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10	
WHEMLOCK	81.1	21.7		101	129	157				
DOUG FIR	53.1	21.6		607	774	941				
COTWOOD										
R ALDER										
<b>TOTAL</b>	<b>115.0</b>	<b>24.0</b>		<b>247</b>	<b>325</b>	<b>402</b>	<b>551</b>	<b>281</b>	<b>138</b>	
CL:	68.1 %	COEFF	TREES/ACRE				# OF PLOTS REQ.		INF. POP.	
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10	
WHEMLOCK	35.0	24.2		219	290	360				
DOUG FIR	86.6	59.9		13	33	52				
COTWOOD	173.2	119.8			6	14				
R ALDER	173.2	119.8			11	24				
<b>TOTAL</b>	<b>29.5</b>	<b>20.4</b>		<b>270</b>	<b>339</b>	<b>409</b>	<b>50</b>	<b>26</b>	<b>13</b>	
CL:	68.1 %	COEFF	BASAL AREA/ACRE				# OF PLOTS REQ.		INF. POP.	
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10	
WHEMLOCK	20.0	13.8		235	272	310				
DOUG FIR	89.2	61.7		49	127	205				
COTWOOD	173.2	119.8			18	40				
R ALDER	173.2	119.8			13	29				
<b>TOTAL</b>	<b>23.8</b>	<b>16.5</b>		<b>360</b>	<b>431</b>	<b>502</b>	<b>33</b>	<b>17</b>	<b>8</b>	
CL:	68.1 %	COEFF	NET BF/ACRE				# OF PLOTS REQ.		INF. POP.	
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10	
WHEMLOCK	39.1	27.0		21,926	30,043	38,161				
DOUG FIR	90.9	62.9		8,186	22,059	35,933				
COTWOOD	173.2	119.8			2,139	4,702				
R ALDER	173.2	119.8			1,086	2,388				
<b>TOTAL</b>	<b>41.4</b>	<b>28.6</b>		<b>39,486</b>	<b>55,328</b>	<b>71,170</b>	<b>98</b>	<b>50</b>	<b>25</b>	
CL:	68.1 %	COEFF	V-BAR/ACRE				# OF PLOTS REQ.		INF. POP.	
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10	
WHEMLOCK	39.1	27.0		81	110	140				
DOUG FIR	90.9	62.9		64	174	283				
COTWOOD	173.2	119.8			118	259				

TC TSTATS				<b>STATISTICS</b>				PAGE	2	
<b>Northwest</b>				PROJECT		LOTSTND		DATE	1/19/2016	
<b>TWP</b>	<b>RGE</b>	<b>SECT</b>	<b>TRACT</b>	<b>TYPE</b>	<b>ACRES</b>	<b>PLOTS</b>	<b>TREES</b>	<b>CuFt</b>	<b>BdFt</b>	
<b>28N</b>	<b>08E</b>	<b>01</b>	<b>LOTTA STRAND</b>	<b>0001</b>	4.10	3	24	S	W	
CL:	68.1 %	COEFF		V-BAR/ACRE			# OF PLOTS REQ.		INF. POP.	
SD:	1.0	VAR.	S.E. %	LOW	AVG	HIGH	5	7	10	
R ALDER		173.2	119.8		81	179				
<b>TOTAL</b>		39.9	27.6	92	128	165	91	47	23	

TC TSTATS		STATISTICS						PAGE	1	
Northwest		PROJECT		LOTSTND		DATE		1/19/2016		
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt	
28N	08E	02	LOTTA STRAND	0003	51.80	24	148	S	W	
		PLOTS	TREES	TREES PER PLOT	ESTIMATED TOTAL TREES	PERCENT SAMPLE TREES				
TOTAL		24	148	6.2						
CRUISE		12	74	6.2	13,073	.6				
DBH COUNT										
REFOREST										
COUNT		11	68	6.2						
BLANKS		1								
100 %										
STAND SUMMARY										
	SAMPLE TREES	TREES /ACRE	AVG DBH	BOLE LEN	REL DEN	BASAL AREA	GROSS BF/AC	NET BF/AC	GROSS CF/AC	NET CF/AC
WHEMLOCK	67	235.7	15.5	79	78.4	308.6	49,324	43,608	12,235	12,229
DOUG FIR	3	4.3	24.2	98	2.8	13.6	2,067	1,949	557	558
WR CEDAR	4	12.5	12.1	52	2.9	10.0	923	923	268	268
<b>TOTAL</b>	<b>74</b>	<b>252.4</b>	<b>15.5</b>	<b>78</b>	<b>84.3</b>	<b>332.2</b>	<b>52,314</b>	<b>46,479</b>	<b>13,060</b>	<b>13,056</b>
CONFIDENCE LIMITS OF THE SAMPLE										
68.1 TIMES OUT OF 100 THE VOLUME WILL BE WITHIN THE SAMPLE ERROR										
CL:	68.1 %	COEFF	SAMPLE TREES - BF			# OF TREES REQ.		INF. POP.		
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10	
WHEMLOCK	65.7	8.0		240	261	282				
DOUG FIR	45.2	31.3		344	500	656				
WR CEDAR	64.8	37.0		63	100	137				
<b>TOTAL</b>	<b>68.2</b>	<b>7.9</b>		<b>241</b>	<b>262</b>	<b>283</b>	<b>186</b>	<b>95</b>	<b>46</b>	
CL:	68.1 %	COEFF	TREES/ACRE			# OF PLOTS REQ.		INF. POP.		
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10	
WHEMLOCK	46.6	9.7		213	236	259				
DOUG FIR	247.4	51.6		2	4	6				
WR CEDAR	253.5	52.8		6	12	19				
<b>TOTAL</b>	<b>45.2</b>	<b>9.4</b>		<b>229</b>	<b>252</b>	<b>276</b>	<b>85</b>	<b>43</b>	<b>21</b>	
CL:	68.1 %	COEFF	BASAL AREA/ACRE			# OF PLOTS REQ.		INF. POP.		
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10	
WHEMLOCK	37.8	7.9		284	309	333				
DOUG FIR	243.2	50.7		7	14	21				
WR CEDAR	212.6	44.3		6	10	14				
<b>TOTAL</b>	<b>35.4</b>	<b>7.4</b>		<b>308</b>	<b>332</b>	<b>357</b>	<b>52</b>	<b>27</b>	<b>13</b>	
CL:	68.1 %	COEFF	NET BF/ACRE			# OF PLOTS REQ.		INF. POP.		
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10	
WHEMLOCK	41.2	8.6		39,867	43,608	47,348				
DOUG FIR	238.0	49.6		982	1,949	2,915				
WR CEDAR	205.2	42.8		528	923	1,317				
<b>TOTAL</b>	<b>38.5</b>	<b>8.0</b>		<b>42,752</b>	<b>46,479</b>	<b>50,206</b>	<b>62</b>	<b>32</b>	<b>15</b>	
CL:	68.1 %	COEFF	V-BAR/ACRE			# OF PLOTS REQ.		INF. POP.		
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10	
WHEMLOCK				129	141	153				
DOUG FIR	147.9	30.8		72	143	214				
WR CEDAR	167.9	35.0		53	92	132				
<b>TOTAL</b>	<b>193.8</b>	<b>40.4</b>		<b>129</b>	<b>140</b>	<b>151</b>	<b>1,565</b>	<b>799</b>	<b>391</b>	

TC TSTATS		<b>STATISTICS</b>				PAGE 1				
<b>Northwest</b>		<b>PROJECT LOTSTND</b>		DATE 1/19/2016						
<b>TWP</b>	<b>RGE</b>	<b>SECT</b>	<b>TRACT</b>	<b>TYPE</b>	<b>ACRES</b>	<b>PLOTS</b>	<b>TREES</b>	<b>CuFt</b>	<b>BdFt</b>	
<b>28N</b>	<b>08E</b>	<b>02</b>	<b>LOTTA STRAND</b>	<b>002A</b>	1.90	1	7	S	W	
				TREES	ESTIMATED	PERCENT				
		PLOTS	TREES	PER PLOT	TOTAL	SAMPLE				
					TREES	TREES				
TOTAL	1	7	7.0							
CRUISE	1	7	7.0	478	1.5					
DBH COUNT										
REFOREST										
COUNT										
BLANKS										
100 %										
<b>STAND SUMMARY</b>										
	SAMPLE	TREES	AVG	BOLE	REL	BASAL	GROSS	NET	GROSS	NET
	TREES	/ACRE	DBH	LEN	DEN	AREA	BF/AC	BF/AC	CF/AC	CF/AC
WHEMLOCK	7	251.4	16.7	79	93.3	381.2	53,311	45,535	14,358	14,355
<b>TOTAL</b>	<b>7</b>	<b>251.4</b>	<b>16.7</b>	<b>79</b>	<b>93.3</b>	<b>381.2</b>	<b>53,311</b>	<b>45,535</b>	<b>14,358</b>	<b>14,355</b>
CONFIDENCE LIMITS OF THE SAMPLE										
68.1 TIMES OUT OF 100 THE VOLUME WILL BE WITHIN THE SAMPLE ERROR										
CL: 68.1 %	COEFF	<b>SAMPLE TREES - BF</b>				# OF TREES REQ.		INF. POP.		
SD: 1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10		
WHEMLOCK	35.7	14.5	150	176	201					
<b>TOTAL</b>	<b>35.7</b>	<b>14.5</b>	<b>150</b>	<b>176</b>	<b>201</b>	<b>59</b>	<b>30</b>	<b>15</b>		

TC TSTATS		STATISTICS				PAGE 1				
Northwest		PROJECT		LOTSTND		DATE 1/19/2016				
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt	
28N	08E	02	LOTTA STRAND	002B	7.50	2	13	S	W	
		PLOTS	TREES	TREES PER PLOT	ESTIMATED TOTAL TREES	PERCENT SAMPLE TREES				
TOTAL	2	13	6.5			1.0				
CRUISE	2	13	6.5		1,345					
DBH COUNT										
REFOREST										
COUNT										
BLANKS										
100 %										
STAND SUMMARY										
	SAMPLE TREES	TREES /ACRE	AVG DBH	BOLE LEN	REL DEN	BASAL AREA	GROSS BF/AC	NET BF/AC	GROSS CF/AC	NET CF/AC
WHEMLOCK	9	144.4	17.6	74	58.3	245.0	35,329	27,358	9,244	9,235
DOUG FIR	2	18.1	23.5	106	11.2	54.5	10,122	9,342	2,330	2,329
WR CEDAR	2	16.8	24.4	77	11.0	54.5	5,898	4,784	1,910	1,908
<b>TOTAL</b>	<i>13</i>	<i>179.3</i>	<i>19.0</i>	<i>77</i>	<i>81.1</i>	<i>353.9</i>	<i>51,348</i>	<i>41,484</i>	<i>13,484</i>	<i>13,473</i>
CONFIDENCE LIMITS OF THE SAMPLE										
68.1 TIMES OUT OF 100 THE VOLUME WILL BE WITHIN THE SAMPLE ERROR										
CL: 68.1 %	COEFF	SAMPLE TREES - BF				# OF TREES REQ.		INF. POP.		
SD: 1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10		
WHEMLOCK	86.3	30.5	205	294	384					
DOUG FIR	6.9	6.4	482	515	548					
WR CEDAR	63.9	59.9	146	365	584					
<b>TOTAL</b>	<i>68.8</i>	<i>19.8</i>	<i>272</i>	<i>339</i>	<i>407</i>	<i>205</i>	<i>104</i>	<i>51</i>		
CL: 68.1 %	COEFF	TREES/ACRE				# OF PLOTS REQ.		INF. POP.		
SD: 1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10		
WHEMLOCK	98.0	91.7	12	144	277					
DOUG FIR	141.4	132.4		18	42					
WR CEDAR	141.4	132.4		17	39					
<b>TOTAL</b>	<i>51.4</i>	<i>48.1</i>	<i>93</i>	<i>179</i>	<i>266</i>	<i>185</i>	<i>95</i>	<i>46</i>		
CL: 68.1 %	COEFF	BASAL AREA/ACRE				# OF PLOTS REQ.		INF. POP.		
SD: 1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10		
WHEMLOCK	110.0	103.0		245	497					
DOUG FIR	141.4	132.4		54	127					
WR CEDAR	141.4	132.4		54	127					
<b>TOTAL</b>	<i>32.6</i>	<i>30.6</i>	<i>246</i>	<i>354</i>	<i>462</i>	<i>75</i>	<i>38</i>	<i>19</i>		
CL: 68.1 %	COEFF	NET BF/ACRE				# OF PLOTS REQ.		INF. POP.		
SD: 1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10		
WHEMLOCK	107.0	100.2		27,358	54,773					
DOUG FIR	141.4	132.4		9,342	21,713					
WR CEDAR	141.4	132.4		4,784	11,120					
<b>TOTAL</b>	<i>22.4</i>	<i>21.0</i>	<i>32,775</i>	<i>41,484</i>	<i>50,193</i>	<i>35</i>	<i>18</i>	<i>9</i>		
CL: 68.1 %	COEFF	V-BAR/ACRE				# OF PLOTS REQ.		INF. POP.		
SD: 1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10		
WHEMLOCK	107.0	100.2		112	224					
DOUG FIR	141.4	132.4		172	399					
WR CEDAR	141.4	132.4		88	204					
<b>TOTAL</b>	<i>22.4</i>	<i>21.0</i>	<i>93</i>	<i>117</i>	<i>142</i>	<i>35</i>	<i>18</i>	<i>9</i>		

TC TSTATS		<b>STATISTICS</b>					PAGE	1		
<b>Northwest</b>		<b>PROJECT</b>		<b>LOTSTND</b>		DATE	1/19/2016			
<b>TWP</b>	<b>RGE</b>	<b>SECT</b>	<b>TRACT</b>	<b>TYPE</b>	<b>ACRES</b>	<b>PLOTS</b>	<b>TREES</b>	<b>CuFt</b>	<b>BdFt</b>	
<b>28N</b>	<b>08E</b>	<b>02</b>	<b>LOTTA STRAND</b>	<b>002C</b>	1.70	1	5	S	W	
				TREES	ESTIMATED			PERCENT		
		PLOTS	TREES	PER PLOT	TOTAL			SAMPLE		
					TREES			TREES		
TOTAL		1	5	5.0						
CRUISE		1	5	5.0	276			1.8		
DBH COUNT										
REFOREST										
COUNT										
BLANKS										
100 %										
<b>STAND SUMMARY</b>										
	SAMPLE	TREES	AVG	BOLE	REL	BASAL	GROSS	NET	GROSS	NET
	TREES	/ACRE	DBH	LEN	DEN	AREA	BF/AC	BF/AC	CF/AC	CF/AC
WHEMLOCK	5	162.5	17.5	85	65.0	272.3	42,737	42,737	10,954	10,954
<b>TOTAL</b>	<b>5</b>	<b>162.5</b>	<b>17.5</b>	<b>85</b>	<b>65.0</b>	<b>272.3</b>	<b>42,737</b>	<b>42,737</b>	<b>10,954</b>	<b>10,954</b>
CONFIDENCE LIMITS OF THE SAMPLE										
68.1 TIMES OUT OF 100 THE VOLUME WILL BE WITHIN THE SAMPLE ERROR										
CL: 68.1 %	COEFF	<b>SAMPLE TREES - BF</b>				# OF TREES REQ.		INF. POP.		
SD: 1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10		
WHEMLOCK	44.1	21.9	226	290	354					
<b>TOTAL</b>	<b>44.1</b>	<b>21.9</b>	<b>226</b>	<b>290</b>	<b>354</b>	<b>96</b>	<b>49</b>	<b>24</b>		

TC TSTATS		STATISTICS						PAGE	1	
Northwest		PROJECT		LOTSTND		DATE		1/19/2016		
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt	
28N	08E	02	LOTTA STRAND	CORR	1.50	1	5	S	W	
		PLOTS	TREES	TREES PER PLOT	ESTIMATED TOTAL TREES	PERCENT SAMPLE TREES				
TOTAL		1	5	5.0						
CRUISE		1	5	5.0	171	2.9				
DBH COUNT										
REFOREST COUNT										
BLANKS										
100 %										
STAND SUMMARY										
	SAMPLE TREES	TREES /ACRE	AVG DBH	BOLE LEN	REL DEN	BASAL AREA	GROSS BF/AC	NET BF/AC	GROSS CF/AC	NET CF/AC
DOUG FIR	2	36.2	23.5	106	22.5	108.9	20,937	20,243	4,869	4,867
WR CEDAR	2	33.6	24.4	77	22.1	108.9	11,114	8,974	3,966	3,955
WHEMLOCK	1	44.4	15.0	74	14.1	54.5	6,655	6,655	1,866	1,866
<b>TOTAL</b>	<b>5</b>	<b>114.2</b>	<b>20.9</b>	<b>85</b>	<b>59.5</b>	<b>272.3</b>	<b>38,706</b>	<b>35,873</b>	<b>10,700</b>	<b>10,688</b>
CONFIDENCE LIMITS OF THE SAMPLE										
68.1 TIMES OUT OF 100 THE VOLUME WILL BE WITHIN THE SAMPLE ERROR										
CL: 68.1 %	COEFF	SAMPLE TREES - BF				# OF TREES REQ.		INF. POP.		
SD: 1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10		
DOUG FIR	5.1	4.7	534	560	586					
WR CEDAR	62.4	58.4	141	340	539					
WHEMLOCK										
<b>TOTAL</b>	<b>52.3</b>	<b>26.0</b>	<b>289</b>	<b>390</b>	<b>491</b>	<b>135</b>	<b>69</b>	<b>34</b>		

TC TSTATS		<b>STATISTICS</b>						PAGE 1		
<b>Northwest</b>		<b>PROJECT</b>		<b>LOTSTND</b>		DATE	1/19/2016			
<b>TWP</b>	<b>RGE</b>	<b>SECT</b>	<b>TRACT</b>	<b>TYPE</b>	<b>ACRES</b>	<b>PLOTS</b>	<b>TREES</b>	<b>CuFt</b>	<b>BdFt</b>	
<b>28N</b>	<b>08E</b>	<b>10</b>	<b>LOTTA STRAND</b>	<b>0005</b>	15.60	8	43	S	W	
		PLOTS	TREES	TREES PER PLOT	ESTIMATED TOTAL TREES	PERCENT SAMPLE TREES				
TOTAL		8	43	5.4						
CRUISE		4	19	4.8	3,453	.6				
DBH COUNT REFOREST COUNT		4	24	6.0						
BLANKS 100 %										
<b>STAND SUMMARY</b>										
	SAMPLE TREES	TREES /ACRE	AVG DBH	BOLE LEN	REL DEN	BASAL AREA	GROSS BF/AC	NET BF/AC	GROSS CF/AC	NET CF/AC
DOUG FIR	10	100.6	17.0	82	38.4	158.5	21,794	20,368	5,808	5,807
WHEMLOCK	9	120.8	11.9	59	27.2	93.9	9,918	9,467	2,820	2,821
<b>TOTAL</b>	<b>19</b>	<b>221.3</b>	<b>14.5</b>	<b>70</b>	<b>66.4</b>	<b>252.4</b>	<b>31,712</b>	<b>29,835</b>	<b>8,628</b>	<b>8,628</b>
CONFIDENCE LIMITS OF THE SAMPLE										
68.1 TIMES OUT OF 100 THE VOLUME WILL BE WITHIN THE SAMPLE ERROR										
CL: 68.1 %	COEFF	<b>SAMPLE TREES - BF</b>				# OF TREES REQ.		INF. POP.		
SD: 1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10		
DOUG FIR	58.7	19.5	194	241	288					
WHEMLOCK	77.5	27.3	81	111	141					
<b>TOTAL</b>	<b>74.2</b>	<b>17.5</b>	<b>148</b>	<b>179</b>	<b>211</b>	<b>232</b>	<b>119</b>	<b>58</b>		
CL: 68.1 %	COEFF	<b>TREES/ACRE</b>				# OF PLOTS REQ.		INF. POP.		
SD: 1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10		
DOUG FIR	74.2	28.0	72	101	129					
WHEMLOCK	105.4	39.7	73	121	169					
<b>TOTAL</b>	<b>38.4</b>	<b>14.5</b>	<b>189</b>	<b>221</b>	<b>253</b>	<b>67</b>	<b>34</b>	<b>17</b>		
CL: 68.1 %	COEFF	<b>BASAL AREA/ACRE</b>				# OF PLOTS REQ.		INF. POP.		
SD: 1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10		
DOUG FIR	74.2	28.0	114	158	203					
WHEMLOCK	103.5	39.0	57	94	131					
<b>TOTAL</b>	<b>26.2</b>	<b>9.9</b>	<b>227</b>	<b>252</b>	<b>277</b>	<b>31</b>	<b>16</b>	<b>8</b>		
CL: 68.1 %	COEFF	<b>NET BF/ACRE</b>				# OF PLOTS REQ.		INF. POP.		
SD: 1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10		
DOUG FIR	75.0	28.3	14,611	20,368	26,124					
WHEMLOCK	99.5	37.5	5,916	9,467	13,019					
<b>TOTAL</b>	<b>32.5</b>	<b>12.2</b>	<b>26,183</b>	<b>29,835</b>	<b>33,487</b>	<b>48</b>	<b>24</b>	<b>12</b>		
CL: 68.1 %	COEFF	<b>V-BAR/ACRE</b>				# OF PLOTS REQ.		INF. POP.		
SD: 1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10		
DOUG FIR			92	129	165					
WHEMLOCK	16.0	6.0	63	101	139					
<b>TOTAL</b>	<b>235.9</b>	<b>89.0</b>	<b>104</b>	<b>118</b>	<b>133</b>	<b>2,532</b>	<b>1,292</b>	<b>633</b>		

TC TSTATS		STATISTICS					PAGE	1		
Northwest		PROJECT		LOTSTND		DATE	1/19/2016			
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt	
28N	08E	11	LOTTA STRAND	0006	3.90	3	12	S	W	
		PLOTS	TREES	TREES PER PLOT	ESTIMATED TOTAL TREES	PERCENT SAMPLE TREES				
TOTAL		3	12	4.0						
CRUISE		2	6	3.0	307	2.0				
DBH COUNT										
REFOREST										
COUNT		1	6	6.0						
BLANKS										
100 %										
STAND SUMMARY										
	SAMPLE TREES	TREES /ACRE	AVG DBH	BOLE LEN	REL DEN	BASAL AREA	GROSS BF/AC	NET BF/AC	GROSS CF/AC	NET CF/AC
WHEMLOCK	6	78.7	21.6	92	43.0	199.7	33,143	32,423	8,620	8,624
<b>TOTAL</b>	<b>6</b>	<b>78.7</b>	<b>21.6</b>	<b>92</b>	<b>43.0</b>	<b>199.7</b>	<b>33,143</b>	<b>32,423</b>	<b>8,620</b>	<b>8,624</b>
CONFIDENCE LIMITS OF THE SAMPLE										
68.1 TIMES OUT OF 100 THE VOLUME WILL BE WITHIN THE SAMPLE ERROR										
CL:	68.1 %	COEFF	SAMPLE TREES - BF			# OF TREES REQ.		INF. POP.		
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10	
WHEMLOCK	19.4	8.7		382	418	455				
<b>TOTAL</b>	<b>19.4</b>	<b>8.7</b>		<b>382</b>	<b>418</b>	<b>455</b>	<b>18</b>	<b>9</b>	<b>4</b>	
CL:	68.1 %	COEFF	TREES/ACRE			# OF PLOTS REQ.		INF. POP.		
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10	
WHEMLOCK	31.5	21.8		62	79	96				
<b>TOTAL</b>	<b>31.5</b>	<b>21.8</b>		<b>62</b>	<b>79</b>	<b>96</b>	<b>57</b>	<b>29</b>	<b>14</b>	
CL:	68.1 %	COEFF	BASAL AREA/ACRE			# OF PLOTS REQ.		INF. POP.		
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10	
WHEMLOCK	31.5	21.8		156	200	243				
<b>TOTAL</b>	<b>31.5</b>	<b>21.8</b>		<b>156</b>	<b>200</b>	<b>243</b>	<b>57</b>	<b>29</b>	<b>14</b>	
CL:	68.1 %	COEFF	NET BF/ACRE			# OF PLOTS REQ.		INF. POP.		
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10	
WHEMLOCK	31.5	21.8		25,355	32,423	39,490				
<b>TOTAL</b>	<b>31.5</b>	<b>21.8</b>		<b>25,355</b>	<b>32,423</b>	<b>39,490</b>	<b>57</b>	<b>29</b>	<b>14</b>	
CL:	68.1 %	COEFF	V-BAR/ACRE			# OF PLOTS REQ.		INF. POP.		
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10	
WHEMLOCK				127	162	198				
<b>TOTAL</b>	<b>196.9</b>	<b>136.2</b>		<b>127</b>	<b>162</b>	<b>198</b>	<b>2,226</b>	<b>1,136</b>	<b>556</b>	

TC TSTATS		STATISTICS						PAGE	1	
Northwest		PROJECT		LOTSTND		DATE		1/19/2016		
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt	
28N	08E	12	LOTTA STRAND	0004	73.30	31	138	S	W	
		PLOTS	TREES	TREES PER PLOT	ESTIMATED TOTAL TREES	PERCENT SAMPLE TREES				
TOTAL		31	138	4.5						
CRUISE		19	56	2.9	11,057	.5				
DBH COUNT										
REFOREST										
COUNT		12	63	5.3						
BLANKS										
100 %										
STAND SUMMARY										
	SAMPLE TREES	TREES /ACRE	AVG DBH	BOLE LEN	REL DEN	BASAL AREA	GROSS BF/AC	NET BF/AC	GROSS CF/AC	NET CF/AC
WHEMLOCK	31	90.7	15.4	75	30.0	117.7	16,784	16,154	4,416	4,415
DOUG FIR	15	49.6	19.7	84	23.7	105.4	14,410	13,574	3,969	3,961
R ALDER	3	2.8	18.4	68	1.2	5.2	661	382	172	172
WR CEDAR	4	2.5	19.6	77	1.2	5.2	558	558	191	191
BL MAPLE	2	4.0	10.9	43	0.8	2.6	137	137	43	42
PS FIR	1	1.3	16.0	77	0.4	1.8	239	239	64	64
<b>TOTAL</b>	<b>56</b>	<b>150.8</b>	<b>17.0</b>	<b>77</b>	<b>57.7</b>	<b>237.7</b>	<b>32,789</b>	<b>31,044</b>	<b>8,854</b>	<b>8,845</b>
CONFIDENCE LIMITS OF THE SAMPLE										
68.1 TIMES OUT OF 100 THE VOLUME WILL BE WITHIN THE SAMPLE ERROR										
CL:	68.1 %	COEFF	SAMPLE TREES - BF			# OF TREES REQ.		INF. POP.		
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10	
WHEMLOCK	51.9	9.3		203	224	245				
DOUG FIR	52.5	14.0		285	332	379				
R ALDER	63.7	44.1		91	163	235				
WR CEDAR	39.5	22.6		195	253	310				
BL MAPLE	20.2	18.9		28	35	42				
PS FIR										
<b>TOTAL</b>	<b>58.4</b>	<b>7.8</b>		<b>225</b>	<b>244</b>	<b>264</b>	<b>136</b>	<b>70</b>	<b>34</b>	
CL:	68.1 %	COEFF	TREES/ACRE			# OF PLOTS REQ.		INF. POP.		
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10	
WHEMLOCK	90.5	16.2		76	91	105				
DOUG FIR	132.2	23.7		38	50	61				
R ALDER	292.2	52.4		1	3	4				
WR CEDAR	324.7	58.3		1	2	4				
BL MAPLE	393.8	70.7		1	4	7				
PS FIR	556.8	99.9		0	1	3				
<b>TOTAL</b>	<b>28.6</b>	<b>5.1</b>		<b>143</b>	<b>151</b>	<b>159</b>	<b>33</b>	<b>17</b>	<b>8</b>	
CL:	68.1 %	COEFF	BASAL AREA/ACRE			# OF PLOTS REQ.		INF. POP.		
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10	
WHEMLOCK	91.1	16.3		98	118	137				
DOUG FIR	129.3	23.2		81	105	130				
R ALDER	264.1	47.4		3	5	8				
WR CEDAR	331.3	59.5		2	5	8				
BL MAPLE	387.1	69.5		1	3	4				
PS FIR	556.8	99.9		0	2	4				
<b>TOTAL</b>	<b>31.9</b>	<b>5.7</b>		<b>224</b>	<b>238</b>	<b>251</b>	<b>41</b>	<b>21</b>	<b>10</b>	
CL:	68.1 %	COEFF	NET BF/ACRE			# OF PLOTS REQ.		INF. POP.		
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10	
WHEMLOCK	93.9	16.9		13,431	16,154	18,877				
DOUG FIR	129.9	23.3		10,410	13,574	16,737				
R ALDER	278.2	49.9		192	382	573				
WR CEDAR	337.5	60.6		220	558	896				
BL MAPLE	387.4	69.5		42	137	232				

TC TSTATS		STATISTICS						PAGE	2	
Northwest		PROJECT		LOTSTND		DATE		1/19/2016		
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt	
28N	08E	12	LOTTA STRAND	0004	73.30	31	138	S	W	
CL:	68.1 %	COEFF	NET BF/ACRE			# OF PLOTS REQ.		INF. POP.		
SD:	1.0	VAR.	S.E.%	LOW	AVG	HIGH	5	7	10	
PS FIR		556.8	99.9	0	239	478				
<b>TOTAL</b>		35.8	6.4	29,050	31,044	33,037	51	26	13	
CL:	68.1 %	COEFF	V-BAR/ACRE			# OF PLOTS REQ.		INF. POP.		
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10	
WHEMLOCK				114	137	160				
DOUG FIR				99	129	159				
R ALDER		239.5	43.0	37	74	111				
WR CEDAR		337.5	60.6	43	108	174				
BL MAPLE		387.4	69.5	16	53	90				
PS FIR		556.8	99.9	0	136	272				
<b>TOTAL</b>		250.7	45.0	122	131	139	2,510	1,280	627	

**Species Summary - Trees, Logs, Tons, CCF, MBF**

T28N R08E S01 Ty0001	4.1
T28N R08E S02 Ty0003	51.8
T28N R08E S12 Ty0004	73.3

**Project LOTSTND**  
**Acres 161.30**

**Page No 1**  
**Date: 1/19/2016**  
**Time 9:31:13AM**

Species	Total Trees	Total Logs	Total Tons	Net Cubic Ft/		CF/ LF	Total CCF		Total MBF	
				Tree	Log		Gross	Net	Gross	Net
WHEMLOCK	24,136	50,935	38,027	49.22	23.32	0.74	11,883	11,879	4,646	4,215
DOUG FIR	5,751	13,123	13,038	79.45	34.82	1.03	4,575	4,569	1,702	1,605
WR CEDAR	1,002	1,710	1,131	48.03	28.13	0.90	481	481	150	138
R ALDER	250	501	383	55.62	27.81	0.93	139	139	53	32
PS FIR	92	184	134	50.76	25.38	0.67	47	47	18	18
BL MAPLE	294	294	83	10.54	10.54	0.41	31	31	10	10
COTWOOD	26	52	69	109.00	54.50	1.43	28	28	11	9
<b>Totals</b>	<b>31,552</b>	<b>66,798</b>	<b>52,865</b>	<b>54.43</b>	<b>25.71</b>	<b>0.80</b>	<b>17,185</b>	<b>17,175</b>	<b>6,590</b>	<b>6,026</b>

Wood Type Species	Total Trees	Total Logs	Total Tons	Net Cubic Ft/		CF/ LF	Total CCF		Total MBF	
				Tree	Log		Gross	Net	Gross	Net
C	30,982	65,952	52,330	54.80	25.74	0.80	16,986	16,977	6,516	5,975
H	570	846	535	34.80	23.44	0.81	199	198	74	51
<b>Totals</b>	<b>31,552</b>	<b>66,798</b>	<b>52,865</b>	<b>54.43</b>	<b>25.71</b>	<b>0.80</b>	<b>17,185</b>	<b>17,175</b>	<b>6,590</b>	<b>6,026</b>

## PRE-CRUISE NARRATIVE

Sale Name: <b>Lotta Strands</b>	Region: <b>Northwest</b>
Agreement #: <b>30-093059</b>	District: <b>Cascade</b>
Contact Forester: <b>John Moon</b> Phone / Location: <b>360-691-7677 / Granite Falls</b>	County(s): <b>Snohomish</b>
Alternate Contact: <b>Jason Teller</b> Phone / Location: <b>360-691-7677 / Granite Falls</b>	Other information:

Type of Sale: Lump Sum	
Harvest System: Ground based	39%
Harvest System: Uphill Cable	43%
Harvest System: Downhill Cable	18%

### UNIT ACREAGES AND METHOD OF DETERMINATION:

Unit #  Harvest R/W or RMZ WMZ	Legal Description  (Enter only one legal for each unit)  Sec/Twp/Rng	Grant or Trust	Gross Proposal Acres	Deductions from Gross Acres (No harvest acres)				Net Harvest Acres	Acreage Determination  (List method and error of closure if applicable)
				RMZ/ WMZ Acres	Leave Tree Acres	Existing Road Acres	Other Acres (describe)		
1	S1 T28 R08E	07	4.5			0.4		4.1	GPS (Garmin)/GIS
2A	S2 T28 R08E	03	1.9					1.9	GPS (Garmin)/GIS
2B	S2 T28 R08E / S35 T29 R08E	03	7.7		0.2			7.5	GPS (Garmin)/GIS
2C	S2 T28 R08E	03	1.7					1.7	GPS (Garmin)/GIS
3	S2,3 T28 R08E	03 01	57.5		1.9	1.4*	2.4**	51.8	GPS (Garmin)/GIS
4	S1,12 T28 R08E	06 07	80.0		3.6	3.1		73.3	GPS (Garmin)/GIS
5	S10 T28 R08E	04	16.0		0.4			15.6	GPS (Garmin)/GIS
6	S11 T28 R08E	03	3.9					3.9	GPS (Garmin)/GIS
RMZ Corri dors	S2 T28 R08E	03	1.5					1.5	
<b>TOTAL ACRES</b>			174.7		6.1	4.9	2.4	161.3	

**HARVEST PLAN AND SPECIAL CONDITIONS:**

Unit #	Harvest Prescription: (Leave, take, paint color, tags, flagging etc.)	Special Management areas:	Other conditions (# leave trees, etc.)
1	Variable Retention Harvest (VRH), take all trees bounded by white "Timber Sale Boundary" tags. All trees marked with blue paint are designated as leave trees	N/A	33 Total Leave Trees (33 scattered)
2A	VRH, take all trees bounded by white "Timber Sale Boundary" tags. All trees marked with blue paint are designated as leave trees.	N/A	16 Total Leave Trees (16 scattered)
2B	VRH, take all trees bounded by white "Timber Sale Boundary" tags and young stand break. All trees marked with blue paint and/or within areas bounded by yellow "Leave Tree Area" tags are designated as leave trees.	N/A	62 Total Leave Trees (30 scattered, 32 clumped)
2C	VRH, take all trees bounded by white "Timber Sale Boundary" tags. All trees marked with blue paint are designated as leave trees.	N/A	14 Total Leave Trees (14 scattered)
3	VRH, take all trees bounded by white "Timber Sale Boundary" tags, young stand breaks and the PT-ML road. All trees marked with blue paint and/or within areas bounded by yellow "Leave Tree Area" tags are designated as leave trees.	N/A	430 Total Leave Trees (82 scattered, 348 clumped)
4	VRH, take all trees bounded by white "Timber Sale Boundary" tags, young stand breaks, and the HK-ML road. All trees marked with blue paint and/or within areas bounded by yellow "Leave Tree Area" tags are designated as leave trees.	N/A	620 Total Leave Trees (27 scattered, 593 clumped)
5	VRH, take all trees bounded by white "Timber Sale Boundary" tags, the PT-ML road, and trees painted with two red bands and a yellow "T". All trees marked with blue paint and/or within areas bounded by yellow "Leave Tree Area" tags are designated as leave trees.	N/A	128 Total Leave Trees (85 scattered, 43 clumped)
6	VRH, take all trees bounded by white "Timber Sale Boundary" tags, and the HK-ML road. All trees marked with blue paint and/or within areas bounded by yellow	N/A	31 Total Leave Trees (31 scattered)

	"Leave Tree Area" tags are designated as leave trees.		
RMZ Corridors	Unmarked (see remarks below for further description)	N/A	N/A

**OTHER PRE-CRUISE INFORMATION:**

Unit #	Primary,secondary Species / Estimated Volume (MBF)	Access information (Gates, locks, etc.)	Photos, traverse maps required
1	Western hemlock, redcedar/135	Access from Sultan Basin road, F1 key needed for locked PT-ML gate.	Traverse and vicinity maps are included
2A	Western hemlock, redcedar/47.5	Access from Sultan Basin road, F1 key needed for locked PT-ML gate.	Traverse and vicinity maps are included
2B	Western hemlock, redcedar/192.5	Access from Sultan Basin road, F1 key needed for locked PT-ML gate.	Traverse and vicinity maps are included
2C	Western hemlock, redcedar/42.5	Access from Sultan Basin road, F1 key needed for locked PT-ML gate.	Traverse and vicinity maps are included
3	Western hemlock, redcedar/2,300	Access from Sultan Basin road, F1 key needed for locked PT-ML gate.	Traverse and vicinity maps are included
4	Western hemlock, Douglas-fir /3,600	Access from Sultan Basin road, F1 key needed for locked HK-ML gate.	Traverse and vicinity maps are included
5	Western hemlock, Douglas-fir/560	Access from Sultan Basin road, F1 key needed for locked PT-ML gate.	Traverse and vicinity maps are included
6	Western hemlock, Douglas-fir/117	Access from Sultan Basin road, F1 key needed for locked HK-ML gate.	Traverse and vicinity maps are included
RMZ Corridors	Western hemlock, redcedar/30	Access from Sultan Basin Road, F1 key needed for locked PT-ML gate.	Traverse and vicinity maps are included
TOTAL MBF	7,025 MBF		

**REMARKS:**

**Driving Directions:**

To access Units 1, 2, 3, and 5:

From US Hwy 2 follow Sultan Basin Rd 6.5 miles to the Portal Mainline (PT-ML), F1 key needed for gate. Turn left onto the PT-ML, and continue 0.5 mile, Unit 5 will be on the left. Continue on the PT-ML 1.5 miles to reach the western end of Unit 3. Continue on the PT-ML 0.6 miles to reach an orphaned road grade in Unit 3, walk this grade across Marsh Creek to access Units 2A, 2B, and 2C. From the old grade continue on the PT-ML 0.4 miles to reach Unit 1.

To access Units 4, 6, and the HK-27 rock pit:

On Sultan Basin Rd continue past the PT-ML gate 0.4 mile to the Hawk Ridge Mainline (HK-ML), F1 key needed for gate. Turn left onto the HK-ML, Unit 6 is on the left. From the HK-ML gate follow the HK-ML 1.4 miles to reach the southwestern corner of Unit 4. Continue 1.3 miles to reach the HK-27 rock pit.

To access the SP-0202 rock pit:

On Sultan Basin Rd continue past the HK-ML gate 1.7 miles to the Studebaker Pass Mainline (SP-ML), F1 key needed for gate. Turn right onto the SP-ML and continue 0.2 mile to the SP-02 road. Turn right onto the SP-02 and continue 0.2 mile to the SP-0202 rock pit.

\* Existing road acres in unit 3 are for non-driveable orphaned road grades.

\*\* Other acres in unit 3 are for void areas that have almost no merchantable timber, they are: an old borrow pit, and three large areas of blowdown. Shapefiles for the void areas can be found with the other pre-cruise files.

Units 2A, 2B, and 2C will be harvested by downhill cable yarding methods across Marsh Creek with landings in Unit 3. The purchaser will be limited to a maximum of 5 corridors that shall be no wider than 20 feet. All timber within these corridors will be considered harvestable except for the 105 foot inner and core zones on either side of Marsh Creek. Based on landing locations and approximated corridor placement the harvestable corridor acreage was estimated at 1.5 acres. No corridor locations are marked on the ground.

GPS accuracy is often poor in Unit 4, likely due to the steepness of the slope.

<b>Prepared By: John Moon</b> <b>Date: 11/16/15</b>	<b>Title: Presales Forester</b>	<b>CC:</b>
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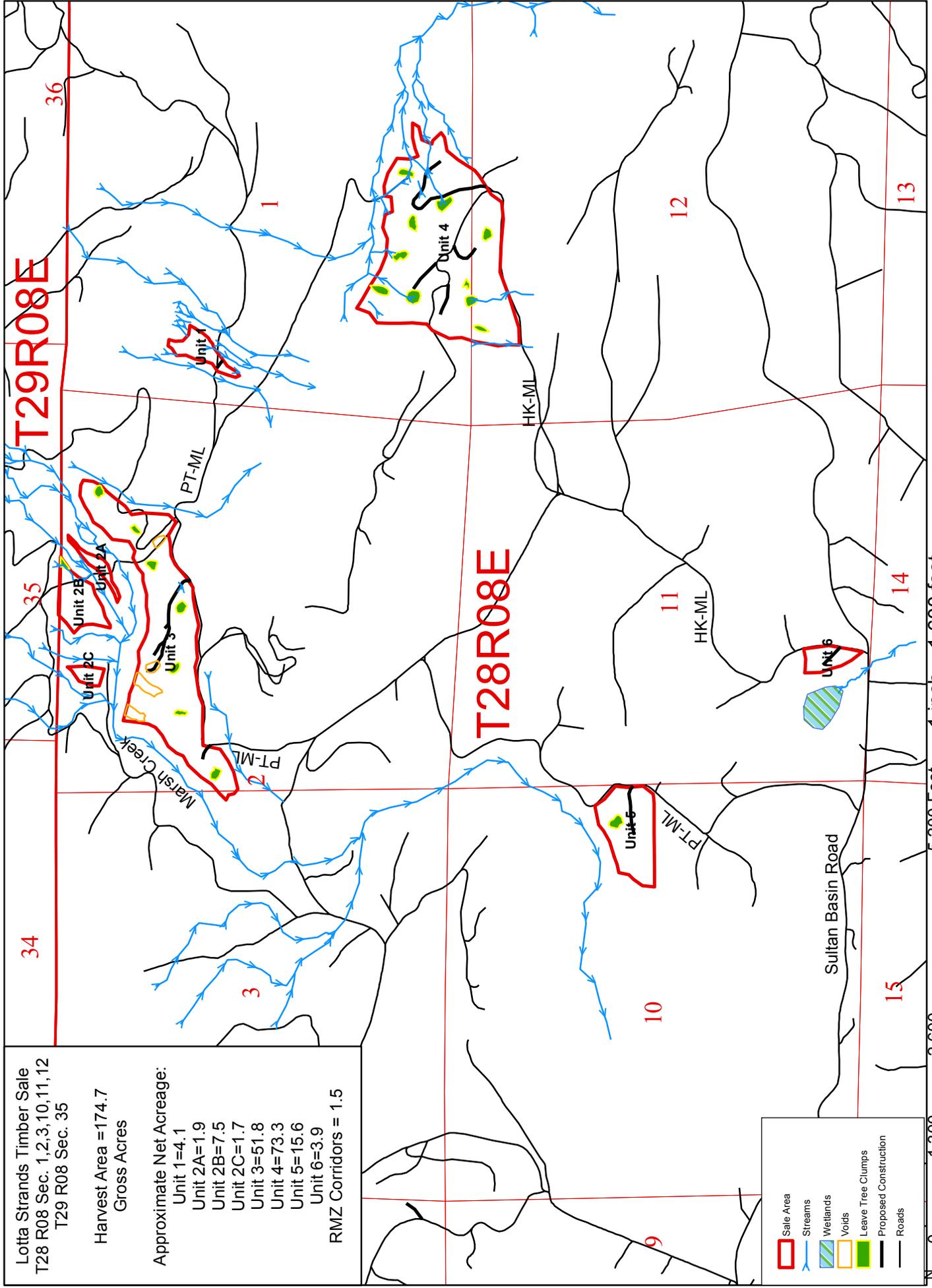
# Lotta Strands Timber Sale

Lotta Strands Timber Sale  
 T28 R08 Sec. 1, 2, 3, 10, 11, 12  
 T29 R08 Sec. 35

Harvest Area = 174.7  
 Gross Acres

Approximate Net Acreage:

- Unit 1=4.1
  - Unit 2A=1.9
  - Unit 2B=7.5
  - Unit 2C=1.7
  - Unit 3=51.8
  - Unit 4=73.3
  - Unit 5=15.6
  - Unit 6=3.9
- RMZ Corridors = 1.5



	Sale Area
	Streams
	Wetlands
	Voids
	Leave Tree Clumps
	Proposed Construction
	Roads

# Lotta Strands Timber Sale

Lotta Strands Timber Sale  
 T28 R08 Sec. 1, 2, 3, 10, 11, 12  
 T29 R08 Sec. 35

Harvest Area = 174.7  
 Gross Acres

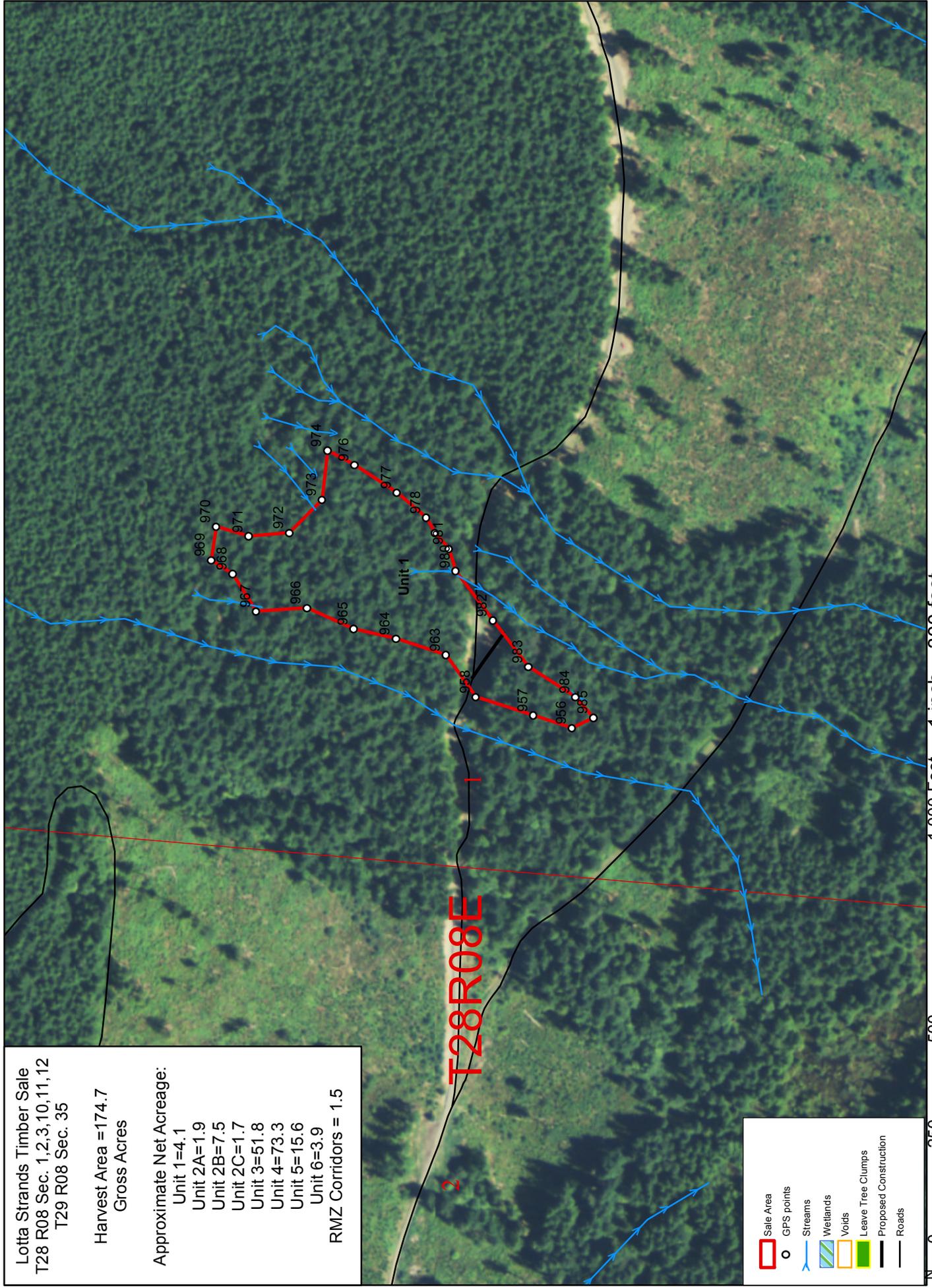
Approximate Net Acreage:

- Unit 1=4.1
  - Unit 2A=1.9
  - Unit 2B=7.5
  - Unit 2C=1.7
  - Unit 3=51.8
  - Unit 4=73.3
  - Unit 5=15.6
  - Unit 6=3.9
- RMZ Corridors = 1.5

**T28R08E**

Unit 1

-  Sale Area
-  GPS points
-  Streams
-  Wetlands
-  Voids
-  Leave Tree Clumps
-  Proposed Construction
-  Roads



# Lotta Strands Timber Sale

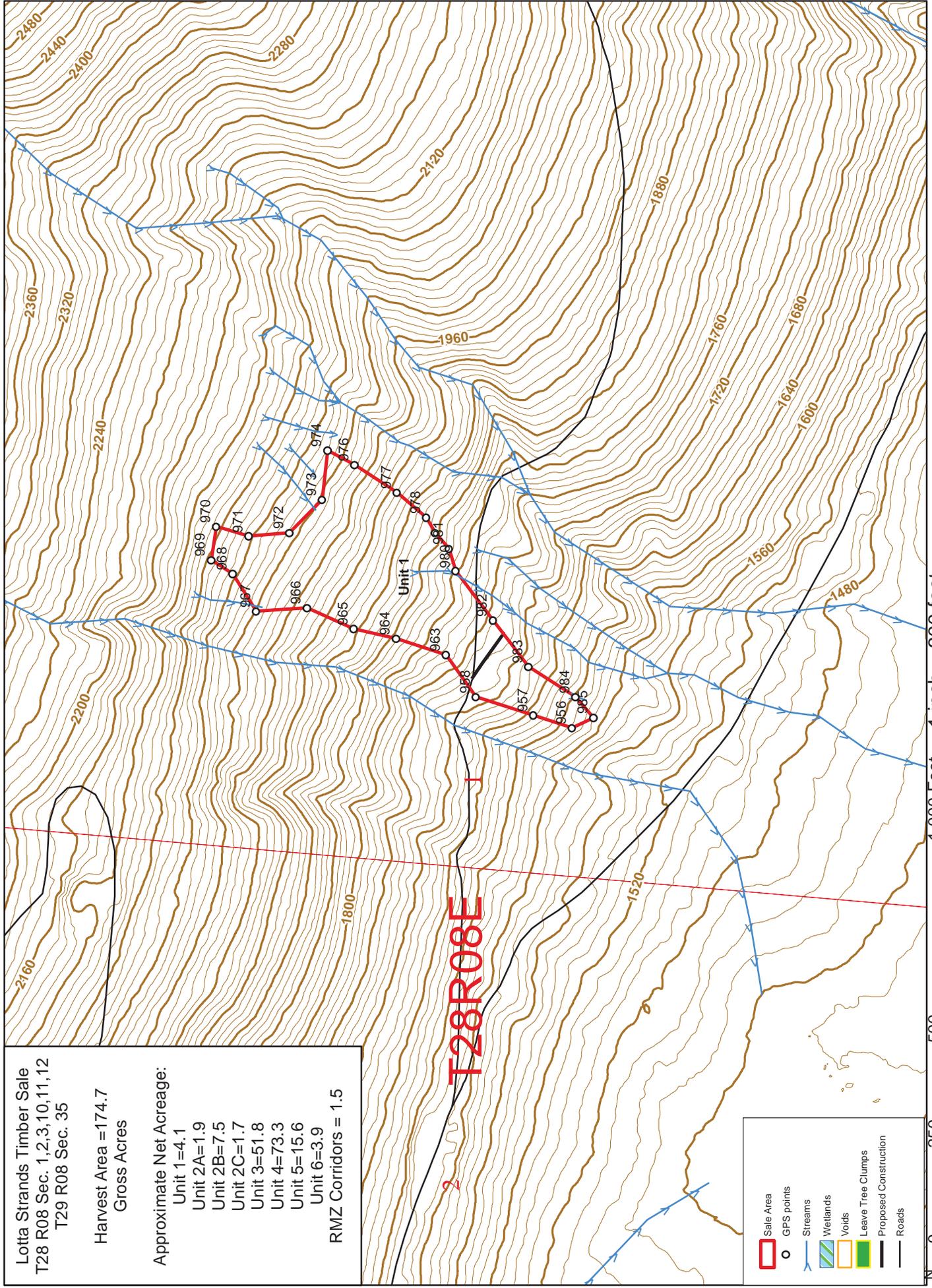
Lotta Strands Timber Sale  
 T28 R08 Sec. 1, 2, 3, 10, 11, 12  
 T29 R08 Sec. 35

Harvest Area = 174.7  
 Gross Acres

Approximate Net Acreage:

- Unit 1=4.1
- Unit 2A=1.9
- Unit 2B=7.5
- Unit 2C=1.7
- Unit 3=51.8
- Unit 4=73.3
- Unit 5=15.6
- Unit 6=3.9
- RMZ Corridors = 1.5

**T28R08E**



	Sale Area
	GPS points
	Streams
	Wetlands
	Voids
	Leave Tree Clumps
	Proposed Construction
	Roads

# Lotta Strands Timber Sale

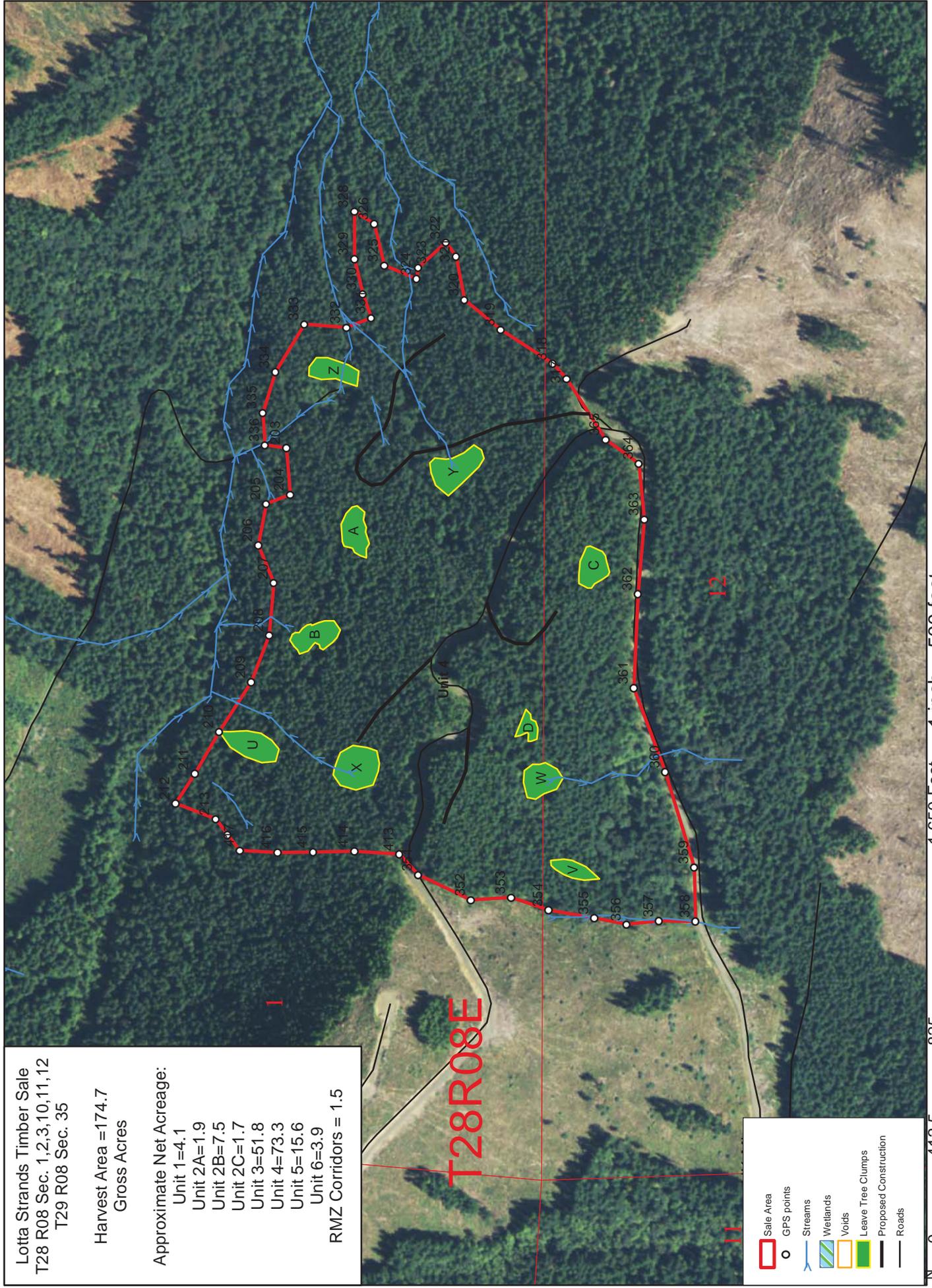
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**T28R08E**



- Sale Area
- GPS points
- Streams
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- Voids
- Leave Tree Clumps
- Proposed Construction
- Roads

0 412.5 825 1,650 Feet 1 inch = 500 feet

# Lotta Strands Timber Sale

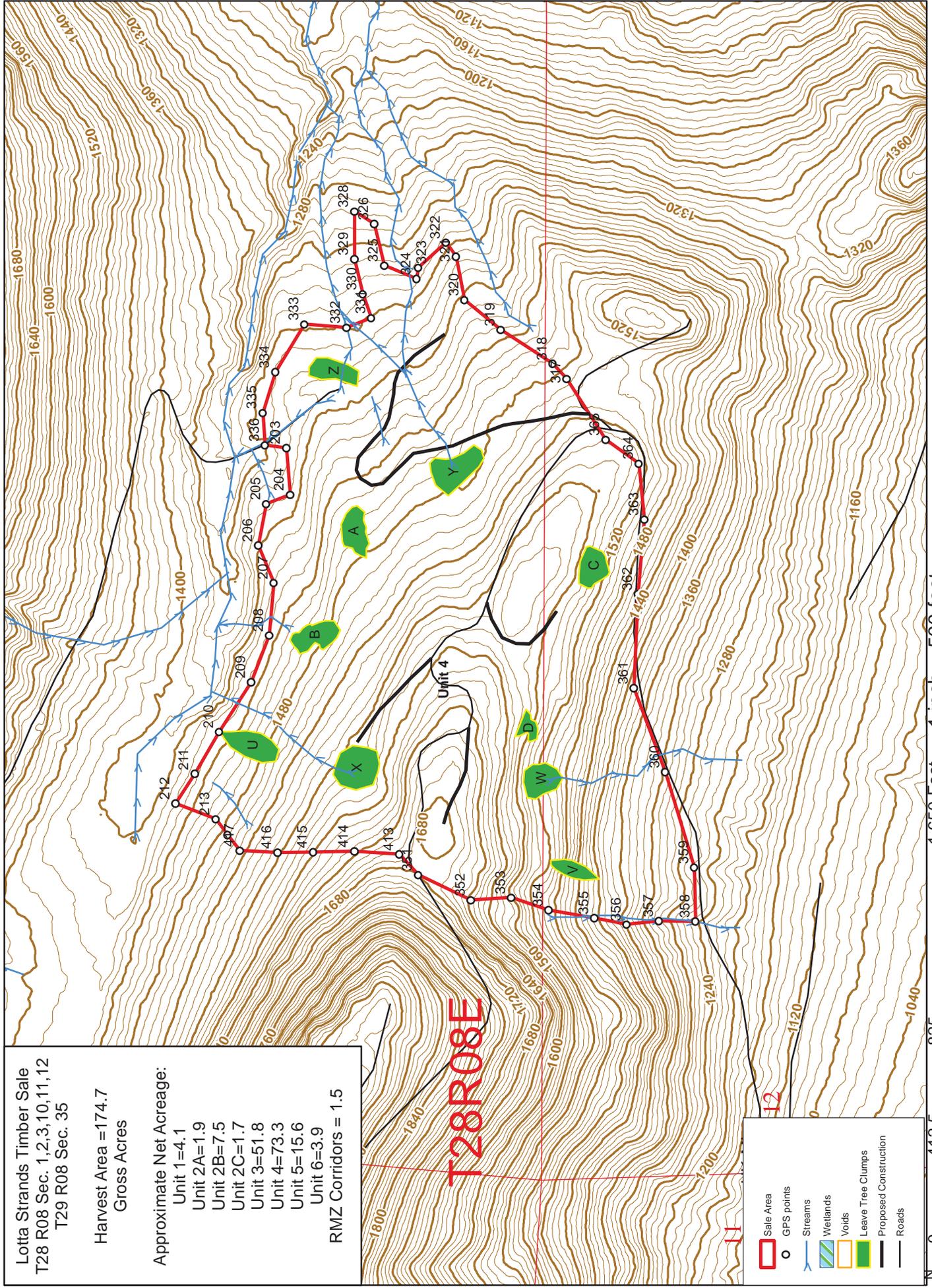
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**T28R08E**



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	GPS points
	Streams
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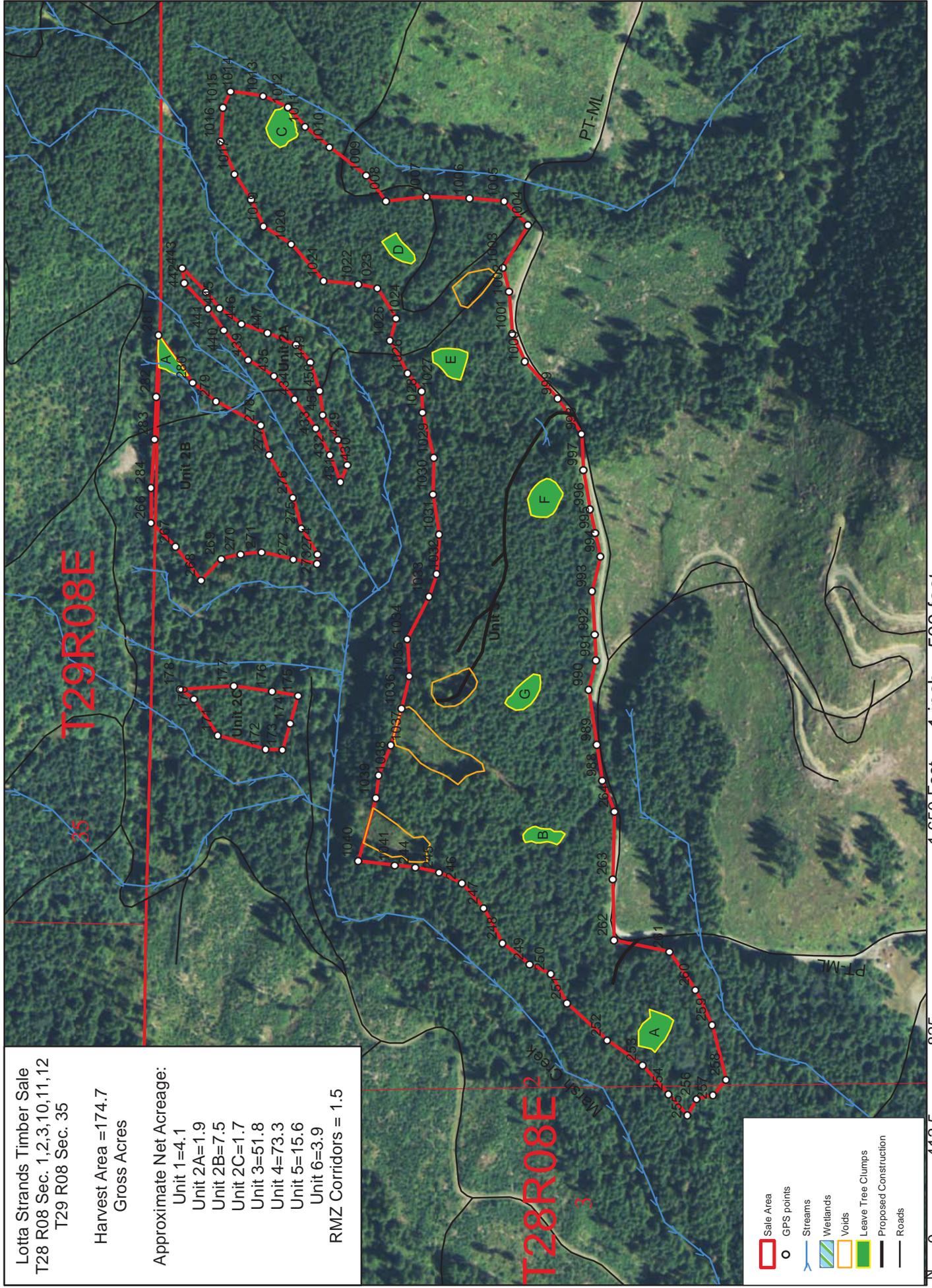
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- Unit 6=3.9

RMZ Corridors = 1.5



	Sale Area
	GPS points
	Streams
	Wetlands
	Voids
	Leave Tree Clumps
	Proposed Construction
	Roads



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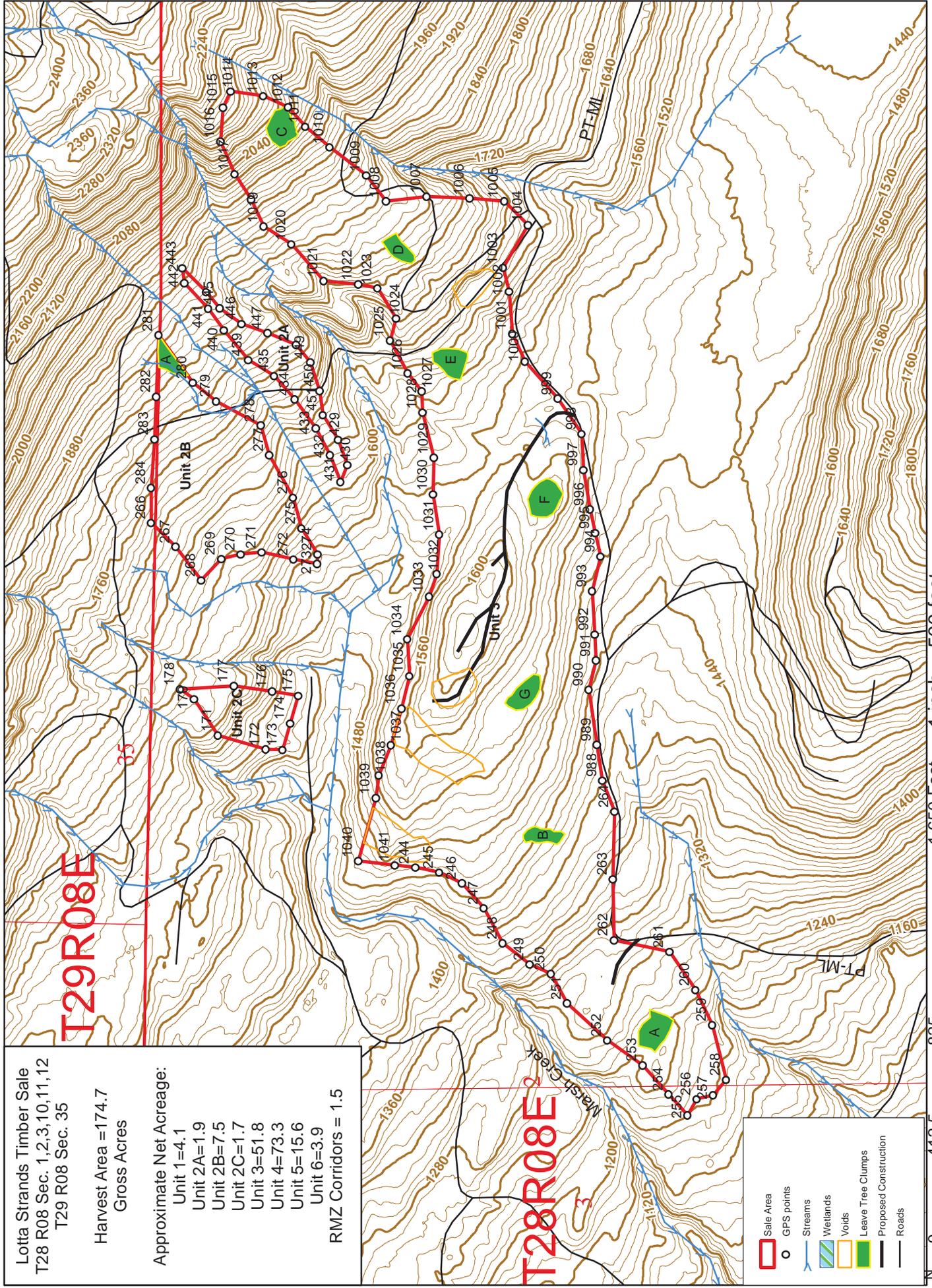
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	Roads



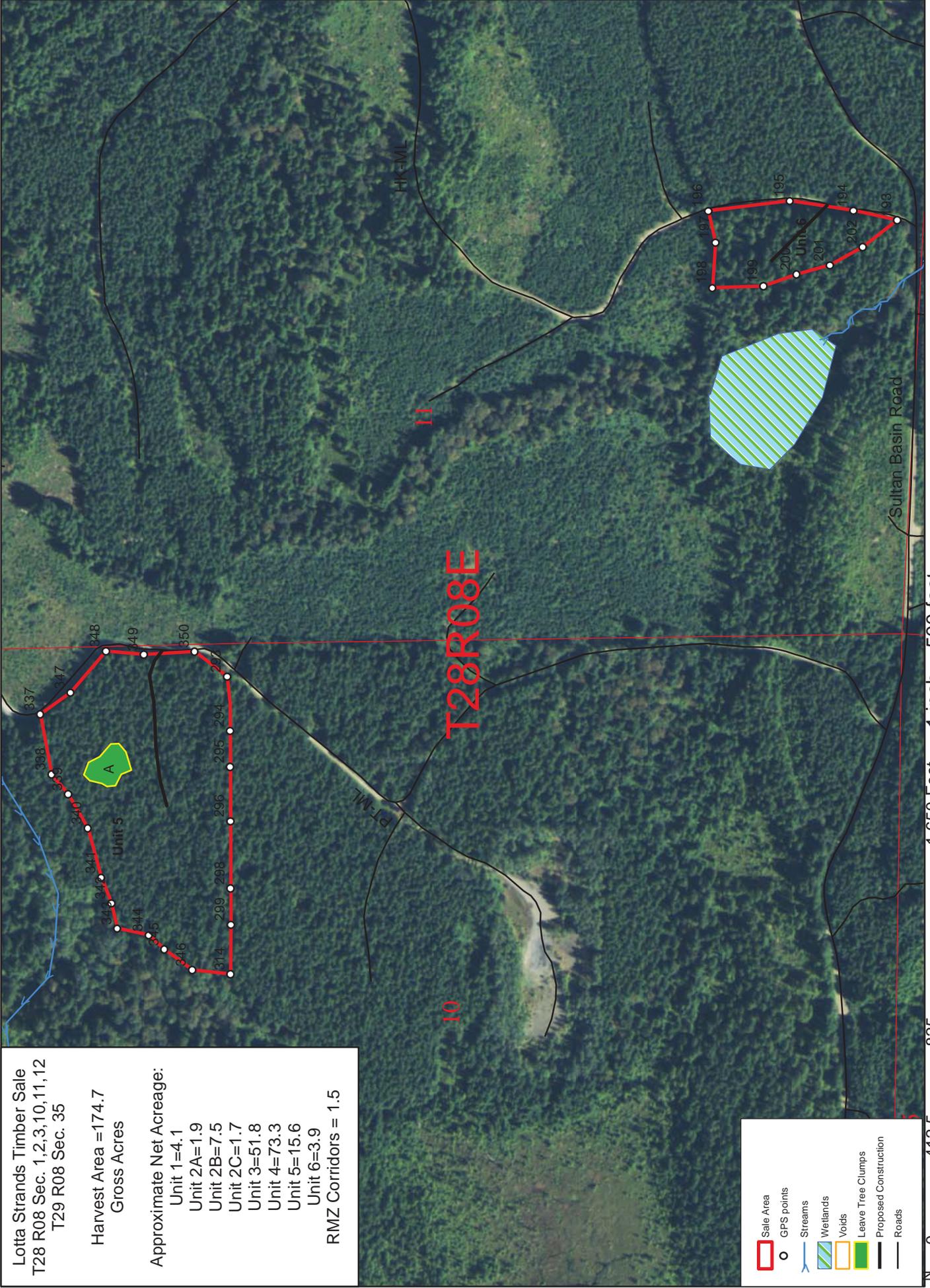
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	Sale Area
	GPS points
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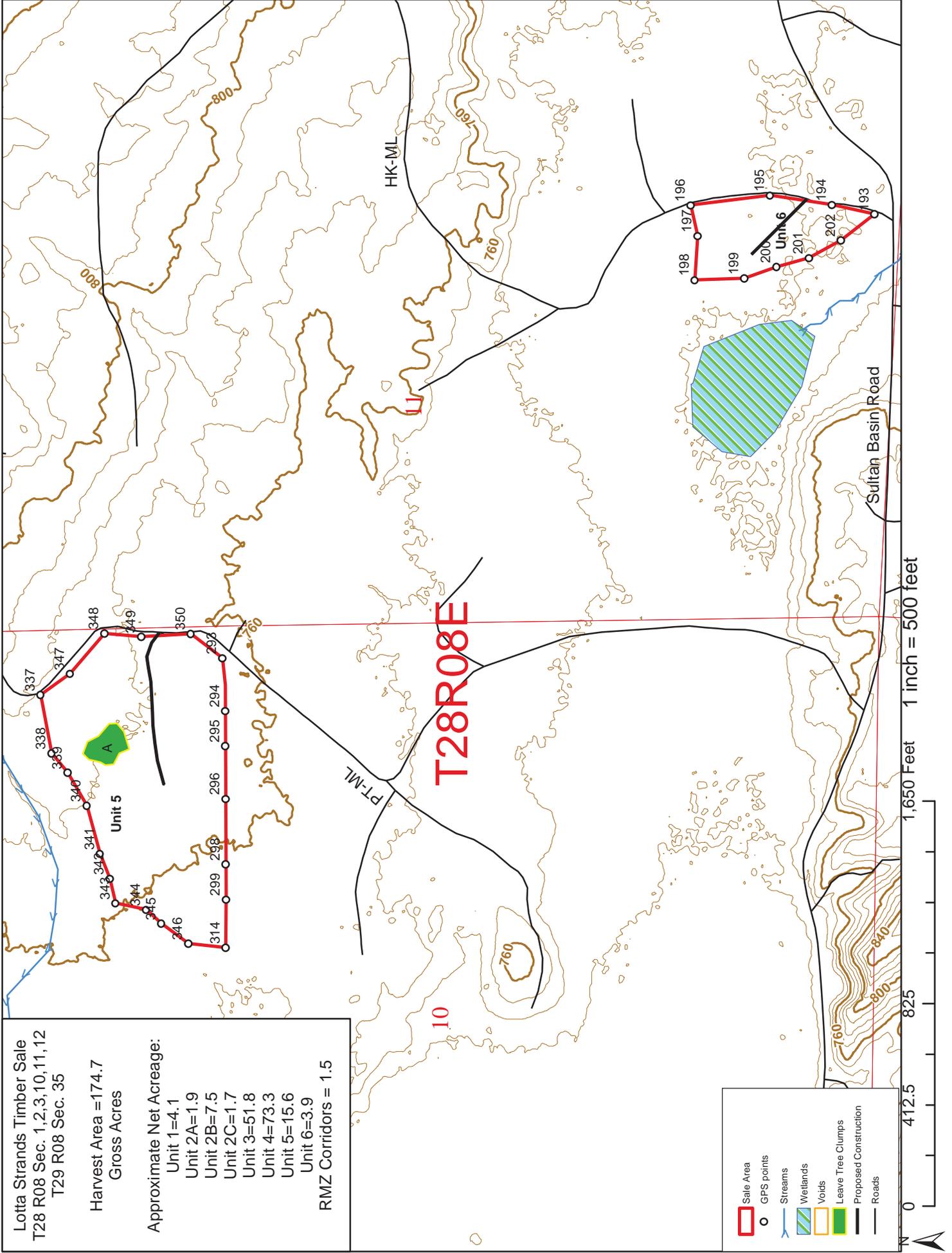
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T28R08E

10

Sultan Basin Road

0 412.5 825 1,650 Feet 1 inch = 500 feet



WASHINGTON STATE DEPARTMENT OF  
**Natural Resources**  
 Peter Goldmark - Commissioner of Public Lands

FPA/N No: 2814990

Effective Date: 2/26/2016

Expiration Date: 2/26/2019

**Forest Practices Application/Notification  
 Notice of Decision**

Shut Down Zone: 658

EARR Tax Credit:  Eligible  Non-eligible

Reference: Lotta Strands

**DECISION:**

- NOTIFICATION Operations shall not begin before the effective date.
- APPROVED This Forest Practices Application is subject to the conditions listed below.
- DISAPPROVED This Forest Practices Application is disapproved for the reasons listed below.
- CLOSED Applicant has withdrawn FPA/N.

**FPA/N CLASSIFICATION**

**Number of Years Granted on Multi-Year Request**

Class II     Class III     Class IVG     Class IVS     4yrs     5 yrs

**Conditions on Approval / Reasons for Disapproval**

THIS OPERATION IS SUBJECT TO THESE CONDITIONS:

No additional condition.

FOR YOUR INFORMATION:

Notify DNR Northwest Region Office (360-856-3500) 48 business hours before commencing timber harvest operations. Please provide the application number and legal description for your operation.

Issued By: Steven Huang *L.H.*

Region: Northwest

Title: Skykomish Forest Practice Forester

Date: 2/26/2016

Copies to:  Landowner, Timber Owner and Operator

Issued in Person:  Landowner,  Timber Owner  Operator By: *L. Utgard*

**Appeal Information**

You have thirty (30) days to appeal this Decision and any related State Environmental Policy Act determinations to the Pollution Control Hearings Board in writing at the following addresses:

**Physical address: 1111 Israel Rd. SW, Ste 301, Tumwater, WA 98501**

**Mailing address: P.O. BOX 40903, OLYMPIA, WA 98504-0903**

Information regarding the Pollution Control Hearings Board can be found at: <http://www.eluho.wa.gov/>

At the same time you file an appeal with the Pollution Control Hearings Board, also send a copy of the appeal to the Department of Natural Resources' region office and the Office of the Attorney General at the following addresses:

Office of the Attorney General  
Natural Resources Division  
1125 Washington Street SE  
PO Box 40100  
Olympia, WA 98504-0100

And

Department Of Natural Resources  
Northwest Region  
919 N Township Street  
Sedro-Woolley, WA 98284

**Other Applicable Laws**

Operating as described in this application/notification does not ensure compliance with the Endangered Species Act, or other federal, state, or local laws.

**Hydraulic Project Approval (HPA) (Chapter 77.55RCW and WAC 222-50-020(2))**

The Department of Fish and Wildlife (WDFW), as the jurisdictional agency issuing HPAs, has final authority for approving water crossing structures in Type S and F waters. WDFW continues to have authority on Type N waters and may exercise that authority on some Type N waters.

Notice: The HPA water crossing requirements supersede what is indicated on the FPA. Landowners are required by law to follow the provisions as directed on the HPA.

**Transfer of Forest Practices Application/Notification (WAC 222-20-010)**

Use the "Notice of Transfer of Approved Forest Practices Application/Notification" form. This form is available at region offices and on the Forest Practices Division website: <http://www.dnr.wa.gov/businesspermits/forestpractices>. Notify DNR of new Operators within 48 hours.

**Continuing Forest Land Obligations (RCW 76.09.060, RCW 76.09.070, RCW 76.09.390, and WAC 222-20-055)**

Obligations include reforestation, road maintenance and abandonment plans, conversions of forest land to non-forestry use and/or harvest strategies on perennial non-fish habitat (Type Np) waters in Eastern Washington.

Before the sale or transfer of land or perpetual timber rights subject to continuing forest land obligations, the seller must notify the buyer of such an obligation on a form titled "Notice of Continuing Forest Land Obligation". The seller and buyer must both sign the "Notice of Continuing Forest Land Obligation" form and send it to the DNR Region Office for retention. This form is available at DNR region offices.

If the seller fails to notify the buyer about the continuing forest land obligation, the seller must pay the buyer's costs related to continuing forest land obligations, including all legal costs and reasonable attorneys' fees incurred by the buyer in enforcing the continuing forest land obligation against the seller.

Failure by the seller to send the required notice to the DNR at the time of sale will be prima facie evidence in an action by the buyer against the seller for costs related to the continuing forest land obligation prior to sale.

**DNR affidavit of mailing:**

On this day \_\_\_\_\_, I placed in the United States mail at Sedro-Woolley, WA, postage paid, a true and accurate copy of the attached document. Notice of Decision FPA # \_\_2814\_\_

\_\_\_\_\_ L Utgard \_\_\_\_\_

(Printed name)

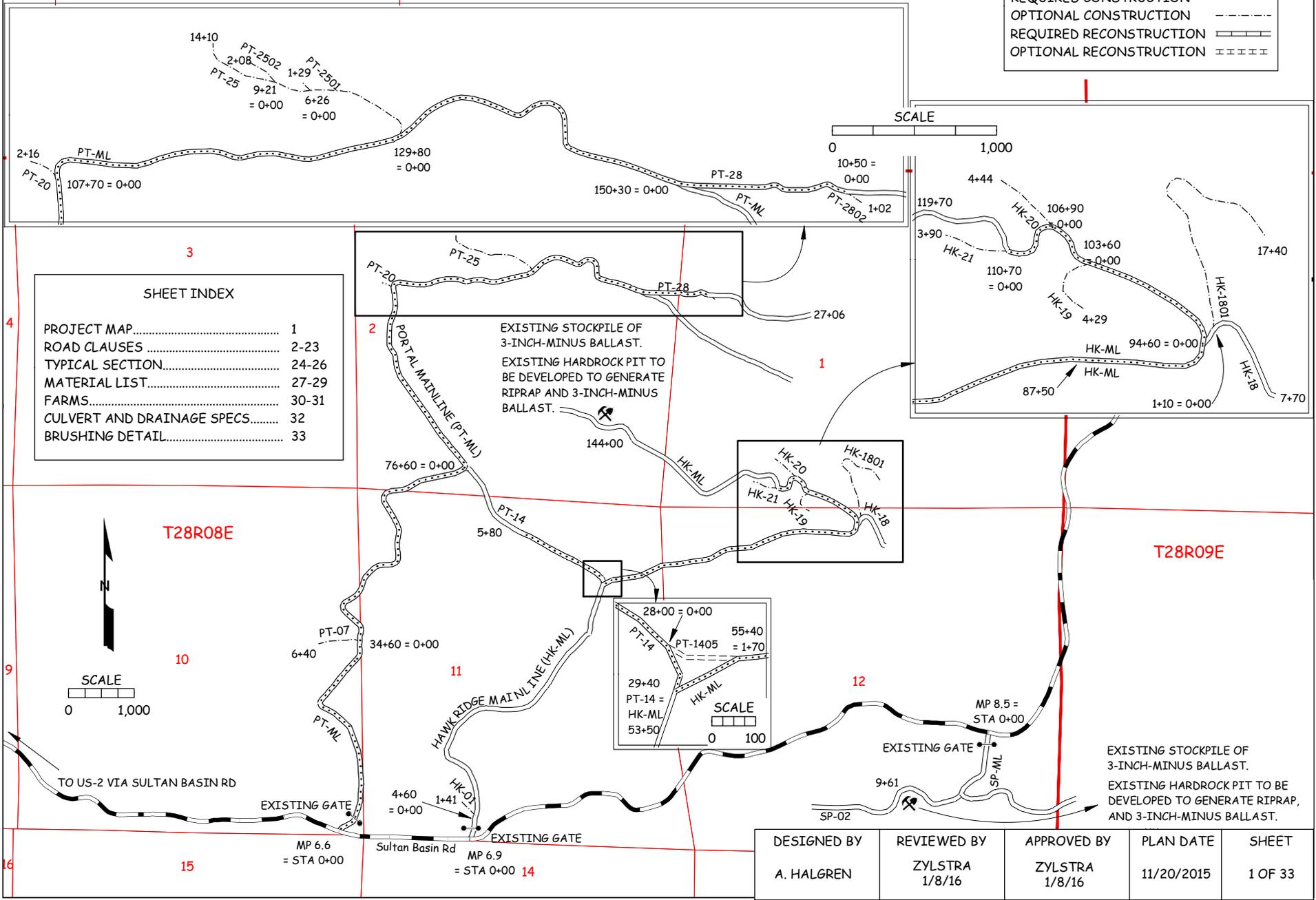
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(Signature)

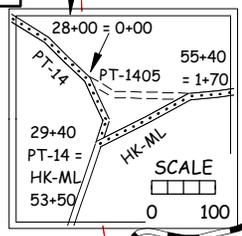


# ROAD PLAN AND SPECIFICATIONS #30-093059 LOTTA STRANDS

LEGEND	
PRE-HAUL MAINTENANCE	-----
REQUIRED CONSTRUCTION	=====
OPTIONAL CONSTRUCTION	-----
REQUIRED RECONSTRUCTION	=====
OPTIONAL RECONSTRUCTION	=====



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MATERIAL LIST.....	27-29
FARMS.....	30-31
CULVERT AND DRAINAGE SPECS.....	32
BRUSHING DETAIL.....	33



DESIGNED BY	REVIEWED BY	APPROVED BY	PLAN DATE	SHEET
A. HALGREN	ZYLSTRA 1/8/16	ZYLSTRA 1/8/16	11/20/2015	1 OF 33

STATE OF WASHINGTON  
DEPARTMENT OF NATURAL RESOURCES

LOTTA STRANDS TIMBER SALE ROAD PLAN  
SNOHOMISH COUNTY  
CASCADE DISTRICT

AGREEMENT NO.: 30-093059

STAFF ENGINEER: A. HALGREN

DATE: NOVEMBER, 20 2015

SECTION 0 – SCOPE OF PROJECT

**0-1 ROAD PLAN SCOPE**

Clauses in this road plan apply to all road related work, including landings and rock source development, unless otherwise noted.

**0-2 REQUIRED ROADS**

The specified work on the following roads is required.

<u>Road</u>	<u>Stations</u>	<u>Type</u>
PT-ML	0+00 to 150+30	PRE-HAUL
PT-14	5+80 to 29+40	PRE-HAUL
PT-1405	0+00 to 1+70	CONSTRUCTION
PT-28	0+00 to 10+50	PRE-HAUL
HK-ML	53+50 to 110+70	PRE-HAUL

**0-3 OPTIONAL ROADS**

The specified work on the following roads is not required. Any optional roads built by the Contractor must meet all the specifications in the road plan.

<u>Road</u>	<u>Stations</u>	<u>Type</u>
PT-07	0+00 to 6+40	CONSTRUCTION
PT-20	0+00 to 2+16	CONSTRUCTION
PT-25	0+00 to 14+10	CONSTRUCTION
PT-2501	0+00 to 1+29	CONSTRUCTION
PT-2502	0+00 to 2+08	CONSTRUCTION
PT-2802	0+00 to 1+02	CONSTRUCTION
HK-01	0+00 to 1+41	CONSTRUCTION
HK-19	0+00 to 4+29	CONSTRUCTION
HK-20	0+00 to 4+44	CONSTRUCTION
HK-21	0+00 to 3+90	CONSTRUCTION
HK-1801	0+00 to 17+40	CONSTRUCTION

**0-4 CONSTRUCTION**

Construction includes, but is not limited to clearing, grubbing, excavation and embankment to sub-grade, full bench sidecast, landing and turnout construction, culvert installation, geotextile installation, and application of 3-inch-minus ballast rock.

**0-6 PRE-HAUL MAINTENANCE**

This project includes, but is not limited to the following pre-haul maintenance requirements:

<u>Road</u>	<u>Stations</u>	<u>Requirements</u>
PT-ML	0+00 to 76+60	Spot application of 3-inch minus ballast as directed by the Contract Administrator.
PT-ML	76+60 to 150+30	Brushing (to be completed as directed in clause 1-20), blading, shaping, and ditching the road surface, existing culvert clean out, and application of 3-inch minus ballast as directed by the Contract Administrator.
PT-14	5+80 to 29+40	Culvert installation and application of 3-inch minus ballast.
PT-28	0+00 to 10+50	Blading, shaping, and ditching the road surface.
HK-ML	53+50 to 110+70	Brushing (to be completed as directed in clause 1-20)

**0-7 POST-HAUL MAINTENANCE**

This project includes post-haul road maintenance listed in Clause 9-5 POST-HAUL MAINTENANCE.

**0-10 ABANDONMENT**

This project includes abandonment listed in Clause 9-21 ROAD ABANDONMENT.

**0-12 DEVELOP ROCK SOURCE**

Purchaser shall develop a new rock source and may develop an existing rock source. Rock source development will involve clearing, stripping, drilling, shooting, and processing rock to generate riprap and 3-inch-minus ballast. Work for developing rock sources is listed in Section 6 ROCK AND SURFACING.

SECTION 1 – GENERAL

**1-1 ROAD PLAN CHANGES**

If the Purchaser desires a change from this road plan including, but not limited to, relocation, extension, change in design, or adding roads; a revised road plan must be submitted in writing to the Contract Administrator for consideration. Before work begins, Purchaser shall obtain approval from the State for the submitted plan.

**1-2 UNFORESEEN CONDITIONS**

Quantities established in this road plan are minimum acceptable values. Additional quantities required by the state due to unforeseen conditions, or Purchaser's choice of construction season or techniques will be at the Purchaser's expense. Unforeseen conditions include, but are not limited to, solid subsurface rock, subsurface springs, saturated ground, and unstable soils.

**1-3 ROAD DIMENSIONS**

Purchaser shall perform road work in accordance with the dimensions shown on the TYPICAL SECTION SHEET and the specifications within this road plan.

**1-4 ROAD TOLERANCES**

Purchaser shall perform road work within the tolerances listed below. The tolerance class for each road is listed on the TYPICAL SECTION SHEET.

<u>Tolerance Class</u>	<u>A</u>	<u>B</u>	<u>C</u>
Road and Subgrade Width (feet)	+1.5	+1.5	+2.0
Subgrade Elevation (feet +/-)	0.5	1.0	2.0
Centerline alignment (feet lt./rt.)	1.0	1.5	3.0

**1-6 ORDER OF PRECEDENCE**

Any conflict or inconsistency in the road plan will be resolved by giving the documents precedence in the following order:

1. Addenda.
2. Road Plan Clauses.
3. Typical Section Sheet.
4. Standard Lists.
5. Standard Details.

In case of any ambiguity or dispute over interpreting the road plan, the Contract Administrator's or designee's decision will be final.

**1-8 REPAIR OR REPLACEMENT OF DAMAGED MATERIALS**

Purchaser shall repair or replace all materials, roadway infrastructure, and road components damaged during road work or operation activities. The Contract Administrator will direct repairs and replacements. Repairs to structural materials must be made in accordance with the manufacturer’s recommendation.

**1-9 DAMAGED METALLIC COATING**

Any damaged galvanized or aluminized coating on existing or new bridge components, culverts, downspouts, and flumes must be cleaned and treated with a minimum of two coats of zinc rich paint.

**1-18 REFERENCE POINT DAMAGE**

Purchaser shall reset reference points (RPs) that were moved or damaged at any time during construction to their original locations. Excavation and embankment may not proceed on road segments controlled by said RPs until Purchaser resets all moved or damaged RPs.

**1-20 COMPLETE BY DATE**

Purchaser shall complete pre-haul road work by the specified date and before the start of timber haul.

<u>Road</u>	<u>Stations</u>	<u>Comments</u>
PT-ML	0+00 to 150+30	Brushing shall be completed by June 1, 2017
HK-ML	53+50 to 110+70	

**1-21 HAUL APPROVAL**

Purchaser shall not use roads under this road plan for any hauling other than timber cut on the right-of-way, without written approval from the Contract Administrator.

**1-25 ACTIVITY TIMING RESTRICTION**

The specified activities are not allowed during the listed closure period(s) unless authorized in writing by the Contract Administrator.

<u>Road</u>	<u>Stations</u>	<u>Activity</u>	<u>Closure Period</u>
ALL		Rock hauling, construction, pre-haul maintenance or abandonment	November 1 to March 31
HK-ML	87+50 to 119+70	Rock hauling, construction, pre-haul maintenance or abandonment	April 1 through August 31, from one hour before to two hours after official sunrise, and one hour before to one hour after official sunset.
HK-18	0+00 to 7+70		
HK-1801	0+00 to 17+40		
HK-19	0+00 to 4+29		
HK-20	0+00 to 4+44		
HK-21	0+00 to 3+90		

**1-26 OPERATING DURING CLOSURE PERIOD**

If permission is granted to operate during a closure period listed in Clause 1-25 ACTIVITY TIMING RESTRICTION, Purchaser shall provide a maintenance plan to include further protection of state resources. Purchaser shall obtain written approval from the Contract Administrator for the maintenance plan, and shall put preventative measures in place before operating during the closure period. Purchaser is required to maintain all haul roads at their own expense including those listed in Contract Clause C-060 DESIGNATED ROAD MAINTAINER. If other operators are using, or desire to use these designated maintainer roads, a joint operating plan must be developed. All parties shall follow this plan.

**1-29 SEDIMENT RESTRICTION**

Purchaser shall not allow silt-bearing runoff to enter any streams.

**1-30 CLOSURE TO PREVENT DAMAGE**

In accordance with Contract Clause G-220 STATE SUSPENDS OPERATION, the Contract Administrator will suspend road work or hauling right-of-way timber, forest products, or rock under the following conditions:

- Surface or base stability problems persist.
- Weather is such that satisfactory results cannot be obtained in an area of operations.
- When, in the opinion of the Contract Administrator excessive road damage or rutting may occur.

Operations must stop unless authority to continue working or hauling is granted in writing by the Contract Administrator. In the event that surface or base stability problems persist, Purchaser shall cease operations, or perform corrective maintenance or repairs, subject to specifications within this road plan. Before and during any suspension, Purchaser shall protect the work from damage or deterioration.

**1-33 SNOW PLOWING RESTRICTION**

Snowplowing will be allowed after the execution of a SNOW PLOWING AGREEMENT, which is available from the Contract Administrator upon request. If damage occurs while plowing, further permission to plow may be revoked by the Contract Administrator.

**SECTION 2 – MAINTENANCE**

**2-1 GENERAL ROAD MAINTENANCE**

Purchaser shall maintain all roads used under this contract in accordance with the FOREST ACCESS ROAD MAINTENANCE SPECIFICATIONS for the entire term of this contract. Maintenance is required even during periods of inactivity.

**2-2 ROAD MAINTENANCE – PURCHASER MAINTENANCE**

Purchaser shall perform maintenance on roads listed in Contract Clause C-050 PURCHASER ROAD MAINTENANCE AND REPAIR in accordance with FOREST ACCESS ROAD MAINTENANCE SPECIFICATIONS.

**2-3 ROAD MAINTENANCE – DESIGNATED MAINTAINER**

Purchaser may be required to perform maintenance on roads listed in Contract Clause C-060 DESIGNATED ROAD MAINTAINER as directed by the Contract Administrator. Purchaser shall maintain roads in accordance with FOREST ACCESS ROAD MAINTENANCE SPECIFICATIONS.

**2-5 MAINTENANCE GRADING – EXISTING ROAD**

On the following road(s), Purchaser shall use a grader to shape the existing surface before application of ballast rock or timber haul.

<u>Road</u>	<u>Stations</u>
PT-ML	76+60 to 150+30
PT-14	5+80 to 29+40
PT-28	0+00 to 10+50

**2-7 CLEANING DITCHES, HEADWALLS, AND CATCH BASINS**

Purchaser shall clean ditches, headwalls, and catchbasins. Work must be completed before application of rock and must be done in accordance with the TYPICAL SECTION.

**SECTION 3 – CLEARING, GRUBBING, AND DISPOSAL**

**3-1 BRUSHING**

On the following road(s), Purchaser shall cut vegetative material up to 3 inches in diameter, including limbs, as shown on the BRUSHING DETAIL. Brushing must be achieved by manual cutting of brush, trees, and branches. Root systems and stumps of cut vegetation may not be disturbed unless directed by the Contract Administrator. Purchaser shall remove brushing debris from the road surface, ditchlines, and culvert inlets and outlets.

<u>Road</u>	<u>Stations</u>
PT-ML	0+00 to 150+30
HK-ML	53+50 to 110+70

### **3-5 CLEARING**

Purchaser shall fall all vegetative material larger than 2 inches DBH or over 5 feet high between the marked right-of-way boundaries or if not marked in the field, between the clearing limits specified on the TYPICAL SECTION SHEET. Clearing must be completed before starting excavation and embankment.

### **3-8 PROHIBITED DECKING AREAS**

Purchaser shall not deck right-of-way timber in the following areas:

- Within the grubbing limits.
- Within 50 feet of any stream.
- In locations that interfere with the construction of the road prism.
- In locations that impede drainage.
- On slopes greater than 40%.
- Against standing trees unless approved by the Contract Administrator.

### **3-10 GRUBBING**

Purchaser shall remove all stumps between the grubbing limits specified on the TYPICAL SECTION SHEET. Purchaser shall also remove stumps with undercut roots outside the grubbing limits. Grubbing must be completed before starting excavation and embankment.

### **3-20 ORGANIC DEBRIS DEFINITION**

Organic debris is defined as all vegetative material not eligible for removal by Contract Clause G-010 PRODUCTS SOLD AND SALE AREA or G-011 RIGHT TO REMOVE FOREST PRODUCTS AND CONTRACT AREA, that is larger than one cubic foot in volume within the clearing limits as shown on the TYPICAL SECTION SHEET.

### **3-21 DISPOSAL COMPLETION**

Purchaser shall remove organic debris from the road surface, ditchlines, and culvert inlets and outlets. Purchaser shall complete all disposal of organic debris before the application of rock.

### **3-23 PROHIBITED DISPOSAL AREAS**

Purchaser shall not place organic debris in the following areas:

- Within 50 feet of a cross drain culvert.
- Within 100 feet of a live stream, or wetland
- On embankments.
- On road subgrades, or excavation and embankment slopes.
- On slopes greater than 40%.
- Within the operational area for cable landings where debris may shift or roll.
- On locations where brush can fall into the ditch or onto the road surface.
- Against standing timber.

**3-24 BURYING ORGANIC DEBRIS RESTRICTED**

Purchaser shall not bury organic debris unless otherwise stated in this plan.

**3-25 SCATTERING ORGANIC DEBRIS**

Purchaser shall scatter organic debris outside of the clearing limits in natural openings unless otherwise detailed in this road plan.

**SECTION 4 – EXCAVATION**

**4-2 PIONEERING**

Pioneering may not extend past construction that will be completed during the current construction season. Pioneering may not extend more than 500 feet beyond completed construction unless approved in writing by the Contract Administrator. In addition, the following actions must be taken as pioneering progresses:

- Drainage must be provided on all uncompleted construction.
- Road pioneering operations may not undercut the final cut slope or restrict drainage.
- Culverts at live stream crossings must be installed during pioneering operations prior to embankment.

**4-3 ROAD GRADE AND ALIGNMENT STANDARDS**

Purchaser shall follow these standards for road grade and alignment:

- Grade and alignment must have smooth continuity, without abrupt changes in direction.
- Maximum grades may not exceed 18 percent favorable and 15 percent adverse.
- Minimum curve radius is 50 feet at centerline.
- Maximum grade change for sag vertical curves is 5% in 100 feet.
- Maximum grade change for crest vertical curves is 4% in 100 feet.

**4-4 SWITCHBACK STANDARDS**

A switchback is defined as a curved segment of road between a beginning and end of the same curve, where the change of traffic travel direction is greater than 90 degrees.

Purchaser shall follow these standards for switchbacks:

- Maximum adverse grades for switchbacks is 7%
- Maximum favorable grades for switchbacks is 12%.
- Maximum transition grades entering and leaving switchbacks is a 5% grade change.
- Transition grades required to meet switchback grade limitations must be constructed on the tangents preceding and departing from the switchbacks.

**4-5 CUT SLOPE RATIO**

Purchaser shall construct excavation slopes no steeper than shown on the following table, unless construction staked or designed:

<u>Material Type</u>	<u>Excavation Slope Ratio</u>	<u>Excavation Slope Percent</u>
Common Earth (on side slopes up to 55%)	1:1	100
Fractured or loose rock	½:1	200
Hardpan or solid rock	¼:1	400

**4-6 EMBANKMENT SLOPE RATIO**

Purchaser shall construct embankment slopes no steeper than shown on the following table, unless construction staked or designed:

<u>Material Type</u>	<u>Embankment Slope Ratio</u>	<u>Embankment Slope Percent</u>
Sandy Soils	2:1	50
Common Earth and Rounded Gravel	1½:1	67
Angular Rock	1¼:1	80

**4-7 SHAPING CUT AND FILL SLOPE**

Purchaser shall construct excavation and embankment slopes to a uniform line and left rough for easier revegetation.

**4-8 CURVE WIDENING**

The minimum widening placed on the inside of curves is:

- 6 feet for curves of 50 to 79 feet radius.
- 4 feet for curves of 80 to 100 feet radius.

**4-9 EMBANKMENT WIDENING**

The minimum embankment widening is:

- 2 feet for embankment heights at centerline of 2 to 6 feet.
- 4 feet for embankment heights at centerline of greater than 6 feet.

Purchaser shall apply embankment widening equally to both sides of the road to achieve the required width.

**4-12 FULL BENCH CONSTRUCTION**

Where side slopes exceed 50%, Purchaser shall use full bench construction for the entire subgrade width except as construction staked or designed.

#### **4-21 TURNOUTS**

Purchaser shall construct turnouts intervisible with a maximum distance of 1,000 feet between turnouts unless otherwise shown on drawings. Locations may be adjusted to fit the final subgrade alignment and sight distances. Locations are subject to written approval by the Contract Administrator. Minimum dimensions are shown on the TYPICAL SECTION SHEET.

#### **4-25 DITCH CONSTRUCTION AND RECONSTRUCTION**

Purchaser shall construct or reconstruct ditches into the subgrade as specified on the TYPICAL SECTION SHEET. Ditches must be constructed concurrently with construction of the subgrade.

#### **4-28 DITCH DRAINAGE**

Ditches must drain to cross-drain culverts or ditchouts.

#### **4-35 WASTE MATERIAL DEFINITION**

Waste material is defined as all dirt, rock, mud, or related material that is extraneous or unsuitable for construction material. Waste material, as used in Section 4 EXCAVATION, is not organic debris.

#### **4-36 DISPOSAL OF WASTE MATERIAL**

Purchaser may sidecast waste material on side slopes up to 50% if the waste material is compacted and free of organic debris. On side slopes greater than 50%, all waste material must be end hauled or pushed to the designated embankment sites and waste areas identified in Clause 4-37 WASTE AREA LOCATION.

#### **4-37 WASTE AREA LOCATION**

Purchaser shall deposit waste material in areas identified or approved by the Contract Administrator. The amount of material allowed in a waste area is at the discretion of the Contract Administrator.

#### **4-38 PROHIBITED WASTE DISPOSAL AREAS**

Purchaser shall not deposit waste material in the following areas, except as otherwise specified in this plan:

- Within 50 feet of a cross drain culvert.
- Within 100 feet of a live stream or wetland.
- In locations that interfere with the construction of the road prism.
- In locations that impede drainage.
- Against standing timber.
- Outside the clearing limits.

**4-55 ROAD SHAPING**

Purchaser shall shape the subgrade and surface as shown on the TYPICAL SECTION SHEET. The subgrade and surface shape must ensure runoff in an even, un-concentrated manner, and must be uniform, firm, and rut-free.

**4-60 FILL COMPACTION**

Purchaser shall compact all embankment and waste material by routing equipment over the entire width of each lift.

**4-61 SUBGRADE COMPACTION**

Purchaser shall compact constructed and reconstructed subgrades by routing equipment over the entire width.

**4-70 SUBGRADE REINFORCEMENT**

On the following road(s), Purchaser shall provide and install geotextile fabric. Subgrade reinforcement must be installed to a width that is 2 feet more than the subgrade width, including turnouts. Geotextile fabric must overlap by a minimum of 2 feet at all joints. The geotextile fabric must be covered with a minimum of 12 inches of compacted 3-inch-minus ballast rock/gravel ballast. Geotextile fabric must meet the specifications in Clause 10-3 GEOTEXTILE FOR STABILIZATION.

<u>Road</u>	<u>Stations</u>
HK-1801	5+53 to 7+60
HK-1801	14+98 to 16+01

**SECTION 5 – DRAINAGE**

**5-5 CULVERTS**

Purchaser shall install culverts as part of this contract. Culverts must be installed concurrently with subgrade work and must be installed before subgrade compaction and rock application. Culvert locations and the minimum requirements for culvert length and diameter are designated on MATERIALS LIST. Culvert, downspout, and flume lengths may be adjusted to fit as-built conditions and may not terminate directly on unprotected soil. Culverts may be new or used material and must meet the specifications in Clauses 10-15 through 10-23. Purchaser shall obtain approval from the Contract Administrator for the quality of used culverts before installation.

**5-6 USED CULVERT MATERIAL**

Purchaser may install used culverts on optional roads. All other roads must have new culverts installed.

**5-11 UNUSED MATERIALS STATE PROPERTY**

On required roads, any materials listed on the MATERIALS LIST that are not installed will become the property of the state. Purchaser shall stockpile materials as directed by the Contract Administrator.

**5-15 CULVERT INSTALLATION**

Culvert installation must be in accordance with the CULVERT AND DRAINAGE SPECIFICATION DETAIL and the National Corrugated Metal Pipe Association's "Installation Manual for Corrugated Steel Drainage Structures" and the Corrugated Polyethylene Pipe Association's "Recommended Installation Practices for Corrugated Polyethylene Pipe and Fittings".

**5-16 APPROVAL FOR LARGER CULVERT INSTALLATION**

Purchaser shall obtain written approval from the Contract Administrator for the installation of culverts 30 inches in diameter and over before backfilling.

**5-17 CROSS DRAIN SKEW AND SLOPE**

Cross drains, on road grades in excess of 3%, must be skewed at least 30 degrees from perpendicular to the road centerline, except where the cross drain is at the low point in the road culverts will not be skewed. Cross drain culverts must be installed at a slope steeper than the incoming ditch grade, but not less than 3% or more than 10%.

**5-18 CULVERT DEPTH OF COVER**

Cross drain culverts must be installed with a depth of cover of not less than 1 foot of compacted subgrade over the top of the culvert at the shallowest point. Stream crossing culverts must be installed with a depth of cover recommended by the culvert manufacturer for the type and size of the pipe.

**5-25 CATCH BASINS**

Purchaser shall construct catch basins in accordance with CULVERT AND DRAINAGE SPECIFICATION DETAIL. Minimum dimensions of catch basins are 2 feet wide and 4 feet long.

**5-26 HEADWALLS FOR CROSS DRAIN CULVERTS**

Purchaser shall construct headwalls in accordance with the CULVERT AND DRAINAGE SPECIFICATION DETAIL at all cross drain culverts. Rock used for headwalls must weigh at least 50 pounds. Rock must be placed on shoulders, slopes, and around culvert inlets and outlets. Rock may not restrict the flow of water into culvert inlets or catch basins. No placement by end dumping or dropping of rock is allowed.

**5-27 ARMORING FOR STREAM CROSSING CULVERTS**

Purchaser shall place riprap in conjunction with construction of the embankment. Rock must be placed on shoulders, slopes, and around culvert inlets and outlets as designated on the Materials List and Culvert and Drainage Specifications or as directed by the Contract Administrator. Rock may not restrict the flow of water into culvert inlets or catch basins. Rock must be set in place by machine. No placement by end dumping or dropping of rock is allowed.

**SECTION 6 – ROCK AND SURFACING**

**6-2 ROCK SOURCE ON STATE LAND**

Rock used in accordance with the quantities on the TYPICAL SECTION and MATERIALS LIST may be obtained from the following source(s) on state land at no charge to the Purchaser. Purchaser shall obtain written approval from the Contract Administrator for the use of material from any other source. If other operators are using, or desire to use the rock source(s), a joint operating plan must be developed. All parties shall follow this plan.

<u>Source</u>	<u>Location</u>	<u>Rock Type</u>
HK-27 Hard Rock Pit	STA 144+00 of the HK-27 road	3-inch-minus ballast and riprap
SP-0202 Hard Rock Pit	STA 9+61 of the SP-02 road	3-inch-minus ballast and riprap

**6-3 ROCK SOURCE STATE LAND, EXISTING STOCKPILE**

Rock used in accordance with the quantities on the TYPICAL SECTION and MATERIALS LIST may be obtained from the following existing stockpile(s) on state land at no charge to the Purchaser. Purchaser shall not remove more than 2000 cubic yards of 3-inch-minus ballast rock. Purchaser shall not remove additional yardage without prior written approval from the Contract Administrator. Other stockpiles may not be used without prior written approval from the Contract Administrator.

<u>Source</u>	<u>Location</u>	<u>Rock Type</u>
HK-27 Hard Rock Pit	STA 144+00 of the HK-27 road	3-inch-minus ballast
SP-0202 Hard Rock Pit	STA 9+61 of the SP-02 road	3-inch-minus ballast

**6-5 ROCK FROM COMMERCIAL SOURCE**

Rock used in accordance with the quantities on the TYPICAL SECTION and MATERIALS LIST may be obtained from any commercial source at the Purchaser's expense. Rock sources are subject to written approval by the Contract Administrator before their use.

**6-11 ROCK SOURCE DEVELOPMENT PLAN BY PURCHASER**

Purchaser shall conduct rock source development and use at the following sources, in accordance with a written ROCK SOURCE DEVELOPMENT PLAN to be prepared by the Purchaser. The plan is subject to written approval by the Contract Administrator before any rock source operations. Upon completion of operations, the rock source must be left in the condition specified in the ROCK SOURCE DEVELOPMENT PLAN, and approved in writing by the Contract Administrator. Purchaser shall notify the Contract Administrator a minimum of 5 calendar days before starting any operations in the rock source.

<u>Source</u>	<u>Rock Type</u>
HK-27 Hard Rock Pit	3-inch-minus ballast and riprap
SP-0202 Hard Rock Pit	3-inch-minus ballast and riprap

Rock source development plans prepared by the Purchaser must show the following information:

- Rock source location.
- Rock source overview showing access roads, development areas, stockpile locations, waste areas, and floor drainage.
- Rock source profiles showing development areas, bench locations including widths, and wall faces including heights.

## 6-12 ROCK SOURCE SPECIFICATIONS

Rock sources must be in accordance with the following specifications:

- Pit walls may not be undermined or over steepened. The maximum slope of the walls must be consistent with recognized engineering standards for the type of material being excavated in accordance with the following table:

Material	Maximum Slope Ratio (Horiz. :Vert.)	Maximum Slope Percent
Sand	2:1	50
Gravel	1.5:1	67
Common Earth	1:1	100
Fractured Rock	0.5:1	200
Solid Rock	0:1	vertical

- Pit walls must be maintained in a condition to minimize the possibility of the walls sliding or failing.
- The width of pit benches must be a minimum of 1.5 times the maximum length of the largest machine used.
- The surface of pit floors and benches must be uniform and free-draining at a minimum 2% outslope gradient.
- All operations must be carried out in compliance with all regulations of the Regulations and Standards Applicable to Metal and Nonmetal Mining and Milling Operations (30 CFR) U.S. Department of Labor, Mine Safety and Health Administration and Safety Standards for Construction Work (296-155 WAC), Washington Department of Labor and Industries.
- All vehicle access to the top of the pit faces must be blocked.

## 6-20 ROCK GRADATION TYPES

Purchaser shall provide rock in accordance with the types and amounts listed in the TYPICAL SECTION and MATERIALS LIST. Rock must meet the following specifications for gradation and uniform quality when placed in hauling vehicles or during manufacture and placement into a stockpile. The exact point of evaluation for conformance to specifications will be determined by the Contract Administrator.

## 6-34 3-INCH MINUS BALLAST ROCK

Ballast rock must be 100% equal to, or smaller than, 3 inches in at least one dimension.

Rock may contain no more than 5 percent organic debris, dirt, and trash. All percentages are by weight.

**6-50 LIGHT LOOSE RIP RAP**

Rip rap must consist of angular, hard, sound, and durable stone. It must be free from segregation, seams, cracks, and other defects. Light loose rip rap must be free of rock fines, soil, organic debris or other extraneous material, and must meet the following requirements:

<u>At Least/Not More Than</u>	<u>Weight Range</u>
20% / 90%	300 lbs. to 1 ton
80% / --	50 lbs. to ½ ton
10% / 20%	50 lbs. max

**6-51 HEAVY LOOSE RIP RAP**

Rip rap must consist of angular, hard, sound, and durable stone. It must be free from segregation, seams, cracks, and other defects. Heavy loose riprap must be free of rock fines, soil, organic debris or other extraneous material, and must meet the following requirements:

<u>At Least/Not More Than</u>	<u>Weight Range</u>	<u>Size Range</u>
30% / 90%	1 ton to 3 ton	36" - 54"
70% / 90%	500 lbs. to 1 ½ ton	24" - 42"
10% / 30%	50 lbs. max	3" - 8"

**6-55 ROCK APPLICATION MEASURED BY COMPACTED DEPTH**

Measurement of specified rock depths, are defined as the compacted depth(s) using the compaction methods required in this road plan. Estimated quantities specified in the TYPICAL SECTION are loose yards. Purchaser shall apply adequate amounts of rock to meet the specified rock depths. Specified rock depths are minimum requirements, and are not subject to reduction.

**6-70 APPROVAL BEFORE ROCK APPLICATION**

Purchaser shall obtain written approval from the Contract Administrator for culvert installation, ditch construction, ditch reconstruction, headwall construction, and headwall reconstruction before rock application.

**6-71 ROCK APPLICATION**

Purchaser shall apply rock in accordance with the specifications and quantities shown on the TYPICAL SECTION. Rock must be spread, shaped, and compacted full width concurrent with rock hauling operations. The Contract Administrator will direct locations for rock that is to be applied as spot patching. Road surfaces must be compacted in accordance with the TYPICAL SECTION by routing equipment over the entire width.

**6-73 ROCK FOR WIDENED PORTIONS**

Purchaser shall apply rock to turnarounds, turnouts, and areas with curve widening to the same depth and specifications as the traveled way

**SECTION 8 – EROSION CONTROL**

**8-15 REVEGETATION**

Purchaser shall spread seed and fertilizer on all exposed soils within the grubbing limits resulting from road work activities. Cover all exposed soils using manual dispersal of grass seed and fertilizer. Other methods of covering must be approved in writing by the Contract Administrator.

**8-16 REVEGETATION SUPPLY**

The Purchaser shall provide the grass seed and fertilizer as directed in clauses 8-25 GRASS SEED and 8-27 FERTILIZER.

**8-17 REVEGETATION TIMING**

Purchaser shall revegetate during the first available opportunity after road work is completed. Soils may not be allowed to sit exposed for longer than one month without receiving revegetation treatment unless otherwise approved in writing by the Contract Administrator.

**8-18 PROTECTION FOR SEED**

Purchaser shall provide a protective cover for seed if revegetation occurs between July 1 and March 31. The protective cover may consist of dispersed straw, jute matting, or clear plastic sheets. The protective cover requirement may be waived in writing by the Contract Administrator if Purchaser is able to demonstrate a revegetation plan that will result in the establishment of a uniform dense crop (at least 50% coverage) of 3-inch tall grass by October 31.

**8-19 ASSURANCE FOR SEEDED AREA**

Purchaser shall ensure the growth of a uniform and dense crop (at least 50% coverage) of 3-inch tall grass. Purchaser shall reapply the grass seed and fertilizer in areas that have failed to germinate or have been damaged through any cause. Restore eroded or disturbed areas, clean up and properly dispose of eroded materials, and reapply the seed and fertilizer at no addition cost to the state.

**8-25 GRASS SEED**

Purchaser shall evenly spread the seed mixture listed below on all exposed soil inside the grubbing limits at a rate of 50 pounds per acre of exposed soil. Grass seed must meet the following specifications:

1. Weed seed may not exceed 0.5% by weight.
2. All seed species must have a minimum 90% germination rate, unless otherwise specified.
3. Seed must be certified.
4. Seed must be furnished in standard containers showing the following information:
  - a. Common name of seed
  - b. Net weight
  - c. Percent of purity
  - d. Percentage of germination
  - e. Percentage of weed seed and inert material
5. Seed must conform to the following mixture.

<u>Kind and Variety of Seed in Mixture</u>	<u>% by Weight</u>
Creeping Red Fescue	50
Elf Perennial Rye Grass	25
Highland Colonial Bentgrass	15
White Clover	10
Inert and Other Crop	0.5

**8-27 FERTILIZER**

Purchaser shall evenly spread the fertilizer listed below on all exposed soil inside the grubbing limits at a rate of 200 pounds per acre of exposed soil. Fertilizer must meet the following specifications:

<u>Chemical Component</u>	<u>% by Weight</u>
Nitrogen	16
Phosphorous	16
Potassium	16
Sulphur	3
Inerts	49

SECTION 9 – POST-HAUL ROAD WORK

**9-3 CULVERT MATERIAL REMOVED FROM STATE LAND**

Culverts removed from roads become the property of the Purchaser and must be removed from state land.

**9-5 POST-HAUL MAINTENANCE**

Purchaser shall perform post-haul maintenance in accordance with the FOREST ACCESS ROAD MAINTENANCE SPECIFICATIONS.

**9-10 LANDING DRAINAGE**

Purchaser shall provide for drainage of the landing surface.

**9-12 LANDING EMBANKMENT REMOVAL**

Purchaser shall reduce or relocate the landing embankment. Place excavated material in a waste area approved in writing by the Contract Administrator.

**9-21 ROAD ABANDONMENT**

Purchaser shall abandon the following before the termination of this contract.

<u>Road</u>	<u>Stations</u>
PT-07	0+00 to 6+40
PT-20	0+00 to 2+16
PT-25	0+00 to 14+10
PT-2501	0+00 to 1+29
PT-2502	0+00 to 2+08
PT-28	0+00 to 27+06
PT-2802	0+00 to 1+02
HK-01	0+00 to 1+41
HK-19	0+00 to 4+29
HK-20	0+00 to 4+44
HK-21	0+00 to 3+90
HK-1801	0+00 to 17+40

## 9-22 ABANDONMENT

- Remove all ditch relief culverts. The resulting slopes must be 1:1 or flatter. Place and compact the removed fill material in a location that will not erode into any Type 1 through 5 waters or wetlands.
- Remove all culverts in natural drainages. The resulting slopes must be 1:1 or flatter. Strive to match the existing native stream bank gradient. The natural streambed width must be re-established. Place and compact the removed fill material in a location that will not erode into any Type 1 through 5 waters or wetlands.
- Transport all removed culverts off site. All removed culverts are the property of the Purchaser.
- Construct non-drivable waterbars at natural drainage points and at a spacing that will produce a vertical drop of no more than 20 feet between waterbars and with a maximum horizontal spacing of 400 feet.
- Skew waterbars at least 30 degrees from perpendicular to the road centerline on roads in excess of 3 percent grade.
- Key waterbars into the cut-slope to intercept the ditch. Waterbars must be outsloped to provide positive drainage. Outlets must be on stable locations.
- Inslope or outslope the road as appropriate.
- Remove bridges and other structures.
- Pull back unstable fill that has potential of failing and entering any Type 1 through 5 waters or wetlands. Place and compact removed material in a stable location.
- Remove berms except as designed.
- Block the road by constructing an aggressive barrier of dense interlocked large woody debris (logs, stumps, root wads, etc.) so that four wheel highway vehicles cannot pass the point of abandonment. Typical barrier dimensions are 10 feet high by 20 feet deep, spanning the entire road prism from top of cutslope to toe of fillslope. Long term effectiveness is the primary objective. If necessary construct a vehicular turn-around near the point of abandonment.
- Apply grass seed to all exposed soils resulting from the abandonment work and in accordance with Section 8 EROSION CONTROL

## SECTION 10 MATERIALS

### 10-3 GEOTEXTILE FOR STABILIZATION

Geotextiles must meet the following minimum requirements for strength and property qualities, and must be designed by the manufacturer to be used for stabilization or reinforcement, and filtration. Material must be free of defects, cuts, and tears.

	<u>ASTM Test</u>	<u>Requirements</u>
Type	--	Woven
Apparent opening size	D 4751	No. 40 max
Water permittivity	D 4491	0.10 sec <sup>-1</sup>
Grab tensile strength	D 4632	315 lb
Grab tensile elongation	D 4632	50%
Puncture strength	D 6241	620 lb
Tear strength	D 4533	112 lb
Ultraviolet stability	D 4355	50% retained after 500 hours of exposure

### 10-15 CORRUGATED STEEL CULVERT

Metallic coated steel culverts must meet AASHTO M-36 (ASTM A-760) specifications. Culverts must be galvanized (zinc coated meeting AASHTO M-218).

### 10-16 CORRUGATED ALUMINUM CULVERT

Aluminum culverts must meet AASHTO M-196 (ASTM A-745) specifications.

### 10-17 CORRUGATED PLASTIC CULVERT

Polyethylene culverts must meet AASHTO M-294 specifications, or ASTM F-2648 specifications for recycled polyethylene. Culverts must be Type S – double walled with a corrugated exterior and smooth interior.

### 10-21 METAL BAND

Metal coupling and end bands must meet the AASHTO specification designated for the culvert and must have matching corrugations. Culverts 24 inches and smaller must have bands with a minimum width of 12 inches. Culverts over 24 inches must have bands with a minimum width of 24 inches.

### 10-22 PLASTIC BAND

Plastic coupling and end bands must meet the AASHTO specification designated for the culvert. Only fittings supplied or recommended by the culvert manufacturer may be used.

**10-24 GAGE AND CORRUGATION**

Metal culverts must conform to the following specifications for gage and corrugation as a function of diameter.

<u>Diameter</u>	<u>Gage</u>	<u>Corrugation</u>
18"	16 (0.064")	2 <sup>2</sup> / <sub>3</sub> " X 1/2"
24" to 48"	14 (0.079")	2 <sup>2</sup> / <sub>3</sub> " X 1/2"
54" to 96"	14 (0.079")	3" X 1"

**SECTION 11 SPECIAL NOTES**

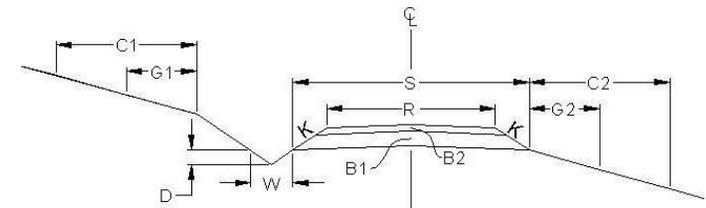
**11-1 DRILL AND SHOOT CONSTRUCTION RESTRICTIONS**

In the following locations, blasting is not permitted for road construction due to the proximity of the Snohomish County PUD pipeline, unless specifically authorized in writing by the State:

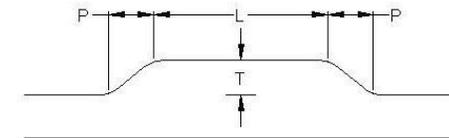
<u>Road</u>	<u>Stations</u>
PT-20	0+00 to 2+16
PT-25	0+00 to 14+10
PT-2501	0+00 to 1+29
PT-2502	0+00 to 2+08

ROAD #		PT-ML*	PT-ML*	PT-07	PT-14
REQUIRED / OPTIONAL		REQUIRED	REQUIRED	OPTIONAL	REQUIRED
CONSTRUCT / RECONSTRUCT		MAINTENANCE	MAINTENANCE	CONSTRUCT	MAINTENANCE
TOLERANCE CLASS (A/B/C)		C	C	C	C
STATION / MP TO		0+00	76+60	0+00	5+80
STATION / MP		76+60	150+30	6+40	29+40
ROAD WIDTH	R	12	12	12	12
CROWN (INCHES @ C/L)		3	3	3	3
DITCH WIDTH	W	3	3	2	3
DITCH DEPTH	D	1	1	1	1
TURNOUT LENGTH	L	50	50	25	50
TURNOUT WIDTH	T	10	10	10	10
TURNOUT TAPER	P	25	25	25	25
GRUBBING	G1	-	-	5	-
	G2	-	-	5	-
CLEARING	C1	-	-	10	-
	C2	-	-	10	-
ROCK FILLSLOPE	K:1	1 ½	1 ½	1 ½	1 ½
❖ BALLAST DEPTH	B1	-	-	18	6
CUBIC YARDS / STATION		-	-	114	34
➤ TOTAL CY BALLAST		300	800	730	810
❖ SURFACING DEPTH	B2	-	-	-	-
CUBIC YARDS / STATION		-	-	-	-
➤ TOTAL CY SURFACING		-	-	-	-
➤ TOTAL CUBIC YARDS		300*	800*	730	810
SUBGRADE WIDTH	S	-	-	16.5	13.5
BRUSHCUT (Y/N)		N	Y	N/A	Y
BLADE, SHAPE, & DITCH (Y/N)		N	Y	N/A	Y

### TYPICAL SECTION



### TURNOUT DETAIL (PLAN VIEW)



### SYMBOL NOTES

- ❖ Specified Rock Depth is FINISHED COMPACTED DEPTH in inches.
- Specified Rock Quantity is LOOSE MEASURE (Truck Cubic Yards) needed to accomplish specified FINISHED COMPACTED DEPTH. Rock quantities include volume for turnouts, curve widening and landings.

\* Ballast rock is for spot patching as directed by Contract Administrator or backfill over culvert installations.

### Rock Totals Summary

Type	Quantity (Cubic Yards)
Ballast	16590
Rip Rap	224

ROAD #		PT-1405	PT-20	PT-25	PT-2501	PT-2502	PT-28	PT-2802
REQUIRED / OPTIONAL		REQUIRED	OPTIONAL	OPTIONAL	OPTIONAL	OPTIONAL	REQUIRED	OPTIONAL
CONSTRUCT / RECONSTRUCT		CONSTRUCT	CONSTRUCT	CONSTRUCT	CONSTRUCT	CONSTRUCT	MAINTENANCE	CONSTRUCT
TOLERANCE CLASS (A/B/C)		C	C	C	C	C	C	C
STATION / MP TO		0+00	0+00	0+00	0+00	0+00	0+00	0+00
STATION / MP		1+70	2+16	14+10	1+29	2+08	10+50	1+02
ROAD WIDTH	R	12	12	12	12	12	12	12
CROWN (INCHES @ C/L)		3	3	3	3	3	3	3
DITCH WIDTH	W	3	2	2	2	2	3	2
DITCH DEPTH	D	1	1	1	1	1	1	1
TURNOUT LENGTH	L	50	25	25	25	25	50	25
TURNOUT WIDTH	T	10	10	10	10	10	10	10
TURNOUT TAPER	P	25	25	25	25	25	25	25
GRUBBING	G1	5	5	5	5	5	-	5
	G2	5	5	5	5	5	-	5
CLEARING	C1	10	10	10	10	10	-	10
	C2	10	10	10	10	10	-	10
ROCK FILLSLOPE	K:1	1 ½	1 ½	1 ½	1 ½	1 ½	1 ½	1 ½
❖ BALLAST DEPTH	B1	18	18	12	12	12	-	12
CUBIC YARDS / STATION		114	114	72	72	72	-	72
➤ TOTAL CY BALLAST		200	250	1020	100	150	-	80
❖ SURFACING DEPTH	B2	-	-	-	-	-	-	-
CUBIC YARDS / STATION		-	-	-	-	-	-	-
➤ TOTAL CY SURFACING		-	-	-	-	-	-	-
➤ TOTAL CUBIC YARDS		200	250	1020	100	150	-	80
SUBGRADE WIDTH	S	16.5	16.5	15	15	15	-	15
BRUSHCUT (Y/N)		N/A	N/A	N/A	N/A	N/A	-	N/A
BLADE, SHAPE, & DITCH (Y/N)		N/A	N/A	N/A	N/A	N/A	Y	N/A

<b>ROAD #</b>		HK-ML	HK-01	HK-19	HK-20	HK-21	HK-1801	
<b>REQUIRED / OPTIONAL</b>		REQUIRED	OPTIONAL	OPTIONAL	OPTIONAL	OPTIONAL	OPTIONAL	
<b>CONSTRUCT / RECONSTRUCT</b>		MAINTENANCE	CONSTRUCT	CONSTRUCT	CONSTRUCT	CONSTRUCT	CONSTRUCT	
<b>TOLERANCE CLASS (A/B/C)</b>		C	C	C	C	C	C	
<b>STATION / MP TO</b>		53+50	0+00	0+00	0+00	0+00	0+00	
<b>STATION / MP</b>		110+70	1+41	4+29	4+44	3+90	17+40	
<b>ROAD WIDTH</b>	R	12	12	12	12	12	12	
<b>CROWN (INCHES @ C/L)</b>		3	3	3	3	3	3	
<b>DITCH WIDTH</b>	W	3	2	2	2	2	2	
<b>DITCH DEPTH</b>	D	1	1	1	1	1	1	
<b>TURNOUT LENGTH</b>	L	-	25	25	25	25	25	
<b>TURNOUT WIDTH</b>	T	-	10	10	10	10	10	
<b>TURNOUT TAPER</b>	P	-	25	25	25	25	25	
<b>GRUBBING</b>	G1	-	5	5	5	5	5	
	G2	-	5	5	5	5	5	
<b>CLEARING</b>	C1	-	10	10	10	10	10	
	C2	-	10	10	10	10	10	
<b>ROCK FILLSLOPE</b>	K:1	-	1 ½	1 ½	1 ½	1 ½	1 ½	
❖ <b>BALLAST DEPTH</b>	B1	-	12	12	12	12	18	
<b>CUBIC YARDS / STATION</b>		-	72	72	72	72	114	
➤ <b>TOTAL CY BALLAST</b>		-	110	310	320	290	1990	
❖ <b>SURFACING DEPTH</b>	B2	-	-	-	-	-	-	
<b>CUBIC YARDS / STATION</b>		-	-	-	-	-	-	
➤ <b>TOTAL CY SURFACING</b>		-	-	-	-	-	-	
➤ <b>TOTAL CUBIC YARDS</b>		-	110	310	320	290	1990	
<b>SUBGRADE WIDTH</b>	S	-	15	15	15	15	16.5	
<b>BRUSHCUT (Y/N)</b>		Y	N/A	N/A	N/A	N/A	N/A	
<b>BLADE, SHAPE, &amp; DITCH (Y/N)</b>		N	N/A	N/A	N/A	N/A	N/A	

## MATERIALS LIST

LOCATION		CULVERT			DWNSPT		RIPRAP			FILL TYPE	TOLERANCE	REMARKS		
ROAD #	STATION	DIAMETER	LENGTH	TYPE	LENGTH	TYPE	INLET	OUTLET	TYPE			<u>Note:</u> Galvanized metal culverts shall conform to the following specifications for gage and corrugation as a function of the diameter:		
												Diameter	Gage	Corrugation
PT-07	0+00	18	36	XX	-	-	2	3	L	NT	C			
	3+42	18	32	XX	-	-	2	3	L	NT	C			
	6+40	-	-	-	-	-	-	-	-	-	-	Ditchout		
PT-14	7+80	18	32	XX	-	-	2	3	L	NT	C			
	9+50	18	32	XX	-	-	2	3	L	NT	C			
	12+50	18	32	XX	-	-	2	3	L	NT	C			
	15+30	18	32	XX	-	-	2	3	L	NT	C			
	17+20	18	32	XX	-	-	2	3	L	NT	C			
	19+90	18	32	XX	-	-	2	3	L	NT	C			
	22+20	18	32	XX	-	-	2	3	L	NT	C			
	26+00	18	32	XX	-	-	2	3	L	NT	C			
	28+00	18	36	XX	-	-	2	3	L	NT	C			
	29+00	24	32	GM	-	-	3	5	L/H	NT	C	Replace existing culvert		
PT-1405	1+40	18	32	GM	-	-	3	5	L	NT	C			
	1+70	18	36	GM	-	-	2	3	L	NT	C	Intercept ditch from HK-ML		
PT-20	0+00	18	36	XX	-	-	3	5	L	NT	C	Intercept ditch from PT-ML		

GM – Galvanized Metal    PS – Polyethylene Pipe Single Wall    PD – Polyethylene Pipe Dual Wall    AM – Aluminized Metal    C – Concrete    XX – PD or GM  
 H – Heavy Loose Riprap    L – Light Loose Riprap    SR – Shot Rock    NT – Native (Bank Run)    QS – Quarry Spalls

## MATERIALS LIST

LOCATION		CULVERT			DWNSPT		RIPRAP			FILL TYPE	TOLERANCE	REMARKS		
ROAD #	STATION	DIAMETER	LENGTH	TYPE	LENGTH	TYPE	INLET	OUTLET	TYPE			<u>Note:</u> Galvanized metal culverts shall conform to the following specifications for gage and corrugation as a function of the diameter:		
												Diameter	Gage	Corrugation
												18"                      16                      2 2/3" x 1/2" 24" – 48"              14                      2 2/3" x 1/2" 54" – 96"              14                      3" x 1"		
PT-25	0+00	18	40	XX	-	-	2	3	L	NT	C			
	0+72	24	36	GM	-	-	3	5	L/H	NT	C	Stream		
	1+24	-	-	-	-	-	-	-	-	-	-	Ditchout		
	4+48	18	32	XX	-	-	2	3	L	NT	C			
	7+46	18	36	XX	-	-	2	3	L	NT	C			
	9+21	18	36	XX	-	-	2	3	L	NT	C	Intercept outlet from culvert on PT-2502 road		
	12+31	18	36	GM	-	-	2	3	L	NT	C			
	14+10	-	-	-	-	-	-	-	-	-	-	Ditchout		
PT-2501	0+00	18	36	XX	-	-	2	3	L	NT	C			
PT-2502	0+00	18	36	XX	-	-	2	3	L	NT	C			
HK-01	0+00	18	36	XX	-	-	2	3	L	NT	C			
HK-19	0+00	18	40	GM	-	-	3	5	L	NT	C			
	2+59	-	-	-	-	-	-	-	-	-	-	Ditchout		
	4+29	-	-	-	-	-	-	-	-	-	-	Ditchout		
HK-20	2+89	18	36	XX	-	-	2	3	L	NT	C			
	4+44	-	-	-	-	-	-	-	-	-	-	Ditchout		
HK-21	0+00	18	36	XX	-	-	2	3	L	NT	C			

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 H – Heavy Loose Riprap    L – Light Loose Riprap    SR – Shot Rock    NT – Native (Bank Run)    QS – Quarry Spalls



## FOREST ACCESS ROAD MAINTENANCE SPECIFICATIONS

### Cuts and Fills

- Maintain slope lines to a stable gradient compatible with the construction materials. Remove slides from ditches and the roadway. Repair fill-failures, in accordance with Clause 4-6 EMBANKMENT SLOPE RATIO, with selected material or material approved by the Contract Administrator. Remove overhanging material from the top of cut slopes.
- Waste material from slides or other sources shall be placed and compacted in stable locations identified in the road plan or approved by the Contract Administrator, so that sediment will not deliver to any streams or wetlands.
- Slide material and debris shall not be mixed into the road surface materials, unless approved by the Contract Administrator.

### Surface

- Grade and shape the road surface, turnouts, and shoulders to the original shape on the TYPICAL SECTION SHEET. Inslope or outslope as directed to provide a smooth, rut-free traveled surface and maintain surface water runoff in an even, unconcentrated manner.
- Blading shall not undercut the backslope or cut into geotextile fabric on the road.
- If required by the Contract Administrator, water shall be applied as necessary to control dust and retain fine surface rock.
- Surface material shall not be bladed off the roadway. Replace surface material when lost or worn away, or as directed by the Contract Administrator.
- Remove shoulder berms, created by grading, to facilitate drainage, except as marked or directed by the Contract Administrator.
- For roads with geotextile fabric: spread surface aggregate to fill in soft spots and wheel ruts (barrel spread) to prevent damage to the geotextile fabric.

### Drainage

- Prevent silt bearing road surface and ditch runoff from delivering sediment to any streams or wetlands.
- Maintain rolling dips and drivable waterbars as needed to keep them functioning as intended.
- Maintain headwalls to the road shoulder level with material that will resist erosion.
- Maintain energy dissipaters at culvert outlets with non-erodible material or rock.
- Keep ditches, culverts, and other drainage structures clear of obstructions and functioning as intended.
- Inspect and clean culverts at least monthly, with additional inspections during storms and periods of high runoff. This shall be done even during periods of inactivity.

### Preventative Maintenance

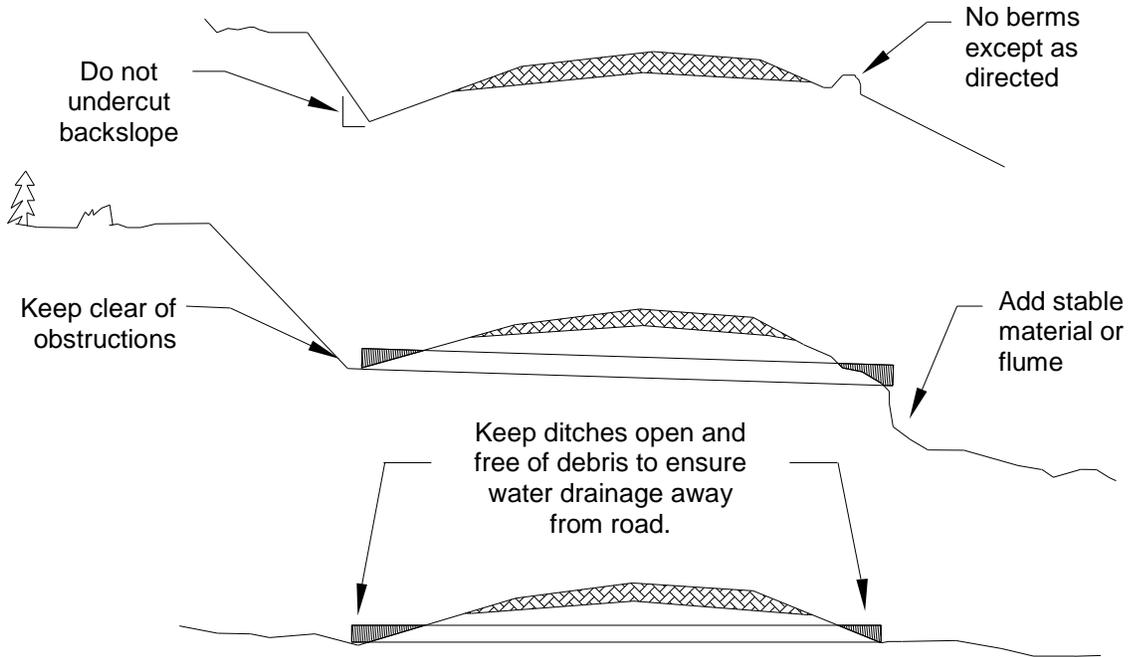
- Perform preventative maintenance work to safeguard against storm damage, such as blading to ensure correct runoff, ditch and culvert cleaning, and waterbar maintenance.

**Termination of Use or End of Season**

- At the conclusion of logging operations, ensure all conditions of these specifications have been met.

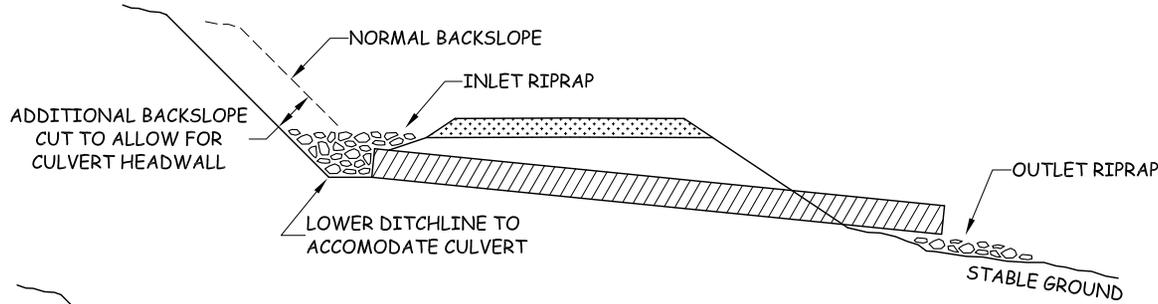
**Debris**

- Remove fallen timber, limbs, and stumps from the slopes, roadway, ditchlines, and culvert inlets.

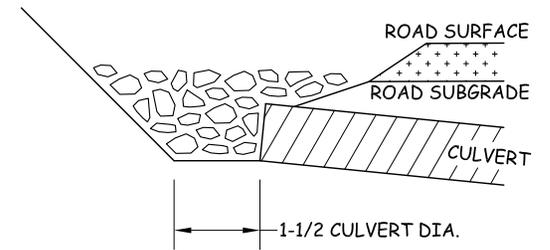


# CULVERT AND DRAINAGE SPECIFICATIONS

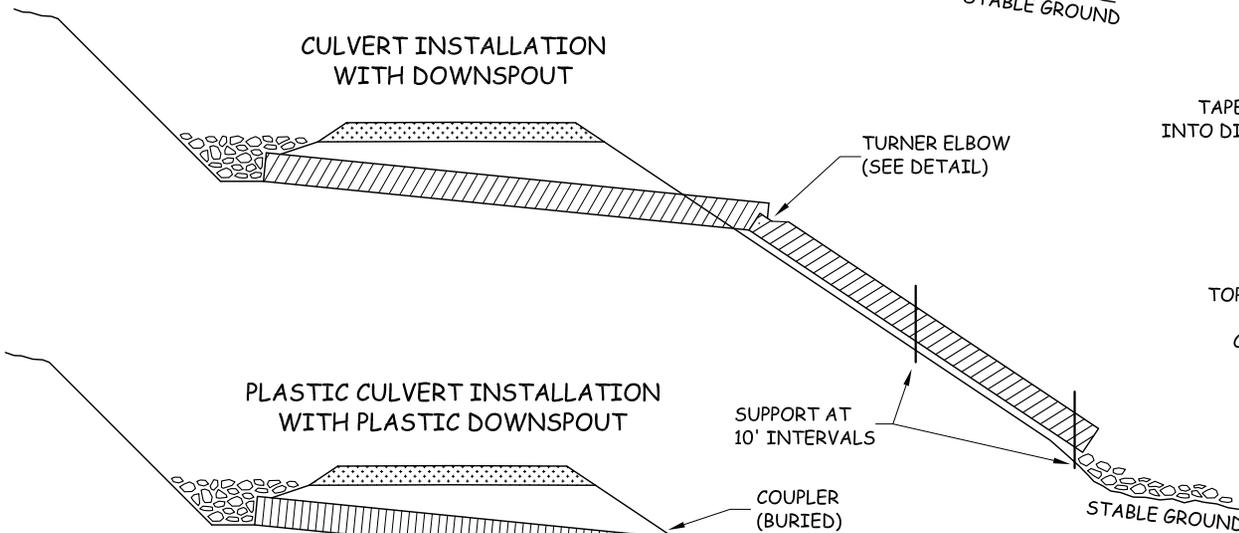
CULVERT INSTALLATION (TYPICAL)



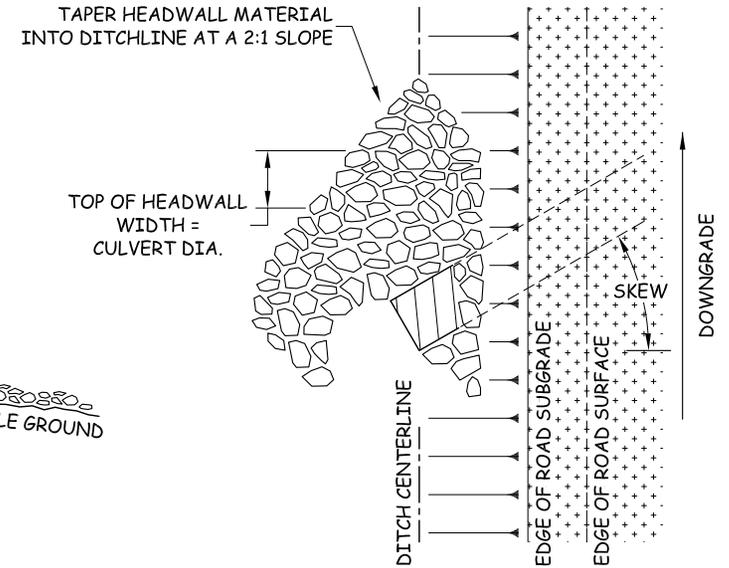
CULVERT HEADWALL - SECTION VIEW



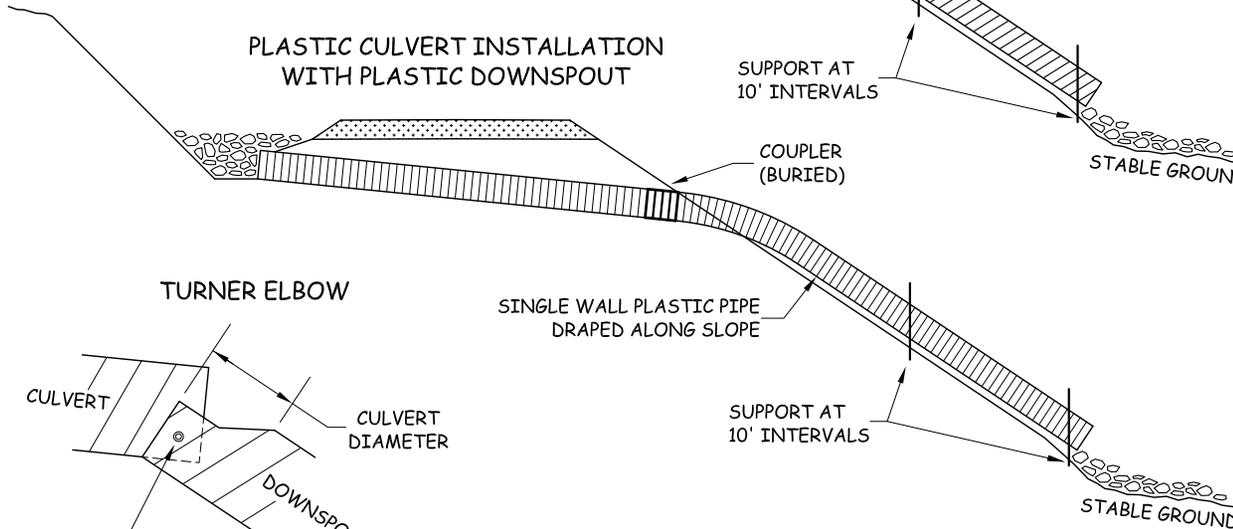
CULVERT INSTALLATION WITH DOWNSPOUT



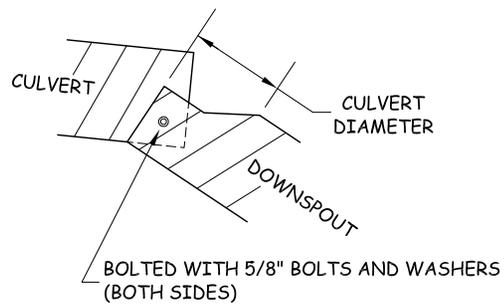
CULVERT HEADWALL - PLAN VIEW



PLASTIC CULVERT INSTALLATION WITH PLASTIC DOWNSPOUT



TURNER ELBOW

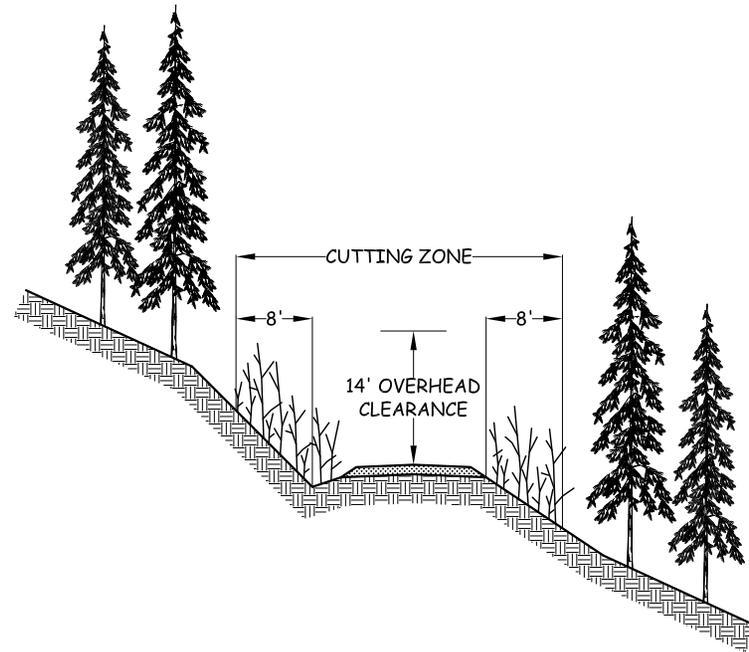


**HEADWALL NOTE:**

HEADWALL TO BE CONSTRUCTED OF IMPERVIOUS MATERIAL THAT WILL RESIST EROSION AND ARMORED WITH RIPRAP QUANTITY SPECIFIED IN ROAD PLAN.

CONTRACT #	PROJECT	SHEET
30-093059	LOTTA STRANDS	32 OF 33

## ROAD BRUSHING DETAILS



### SPECIFICATIONS

BRUSH SHALL BE CUT ON THE ROAD SURFACE AND 8 ft. BACK FROM ROAD DITCH AND OUTSIDE EDGE OF RUNNING SURFACE.

ON THE INSIDE OF SWITCHBACKS AND TIGHT CURVES, BRUSH SHALL BE CUT BACK 16 ft. FOR VISIBILITY.

ON TRUCK TURNOUTS, BRUSH SHALL BE CUT 8 ft. BACK FROM OUTSIDE EDGE.

BRUSH SHALL BE CUT TO PROVIDE AN OVERHEAD CLEARANCE OF 14 ft. ABOVE THE ROAD RUNNING SURFACE.

BRUSH SHALL BE CUT TO WITHIN 6 in. OF THE GROUND.

SLASH SHALL BE REMOVED FROM CUT SLOPES ABOVE THE ROAD AND SCATTERED ON EMBANKMENT SLOPES.

DITCHES SHALL BE CLEARED OF WOODY DEBRIS.

CULVERT INLETS AND OUTLETS SHALL BE CLEANED A MINIMUM DISTANCE OF TWO PIPE DIAMETERS AWAY.

CONTRACT #	PROJECT	SHEET
30-093059	LOTTA STRANDS	33 OF 33

## SUMMARY - Road Development Costs

REGION: NW  
DISTRICT: Cascade

SALE/PROJECT NAME: Lotta Strands

CONTRACT #: 30-093059

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ROAD NUMBERS: PT-07, PT-1405, PT-20, PT-25, - PT-ML, PT-14, PT-28, HK-ML  
PT-2501, PT-2502, PT-2802,

ROAD STANDARD:	Construction	Reconstruction	Maintenance
NUMBER OF STATIONS:	60.19		241.60
CLEARING & GRUBBING:	\$12,578		\$0
EXCAVATION AND FILL:	\$8,557		\$0
MISC. MAINTENANCE:			\$5,083
ROAD ROCK:	\$68,445		\$13,759
ROCK STOCKPILE PROD:	-		-
CULVERTS AND FLUMES:	\$24,504		\$5,497
STRUCTURES:	-		-
MOBILIZATION:	\$8,125		-
TOTAL COSTS:	\$122,209		\$24,340
COST PER STATION:	\$2,030		\$101
ROAD DEACTIVATION & ABANDONMENT COSTS:		\$8,949	

**TOTAL (All Roads) = \$155,498**  
**SALE VOLUME MBF = 7025**  
**TOTAL \$/MBF = \$22**

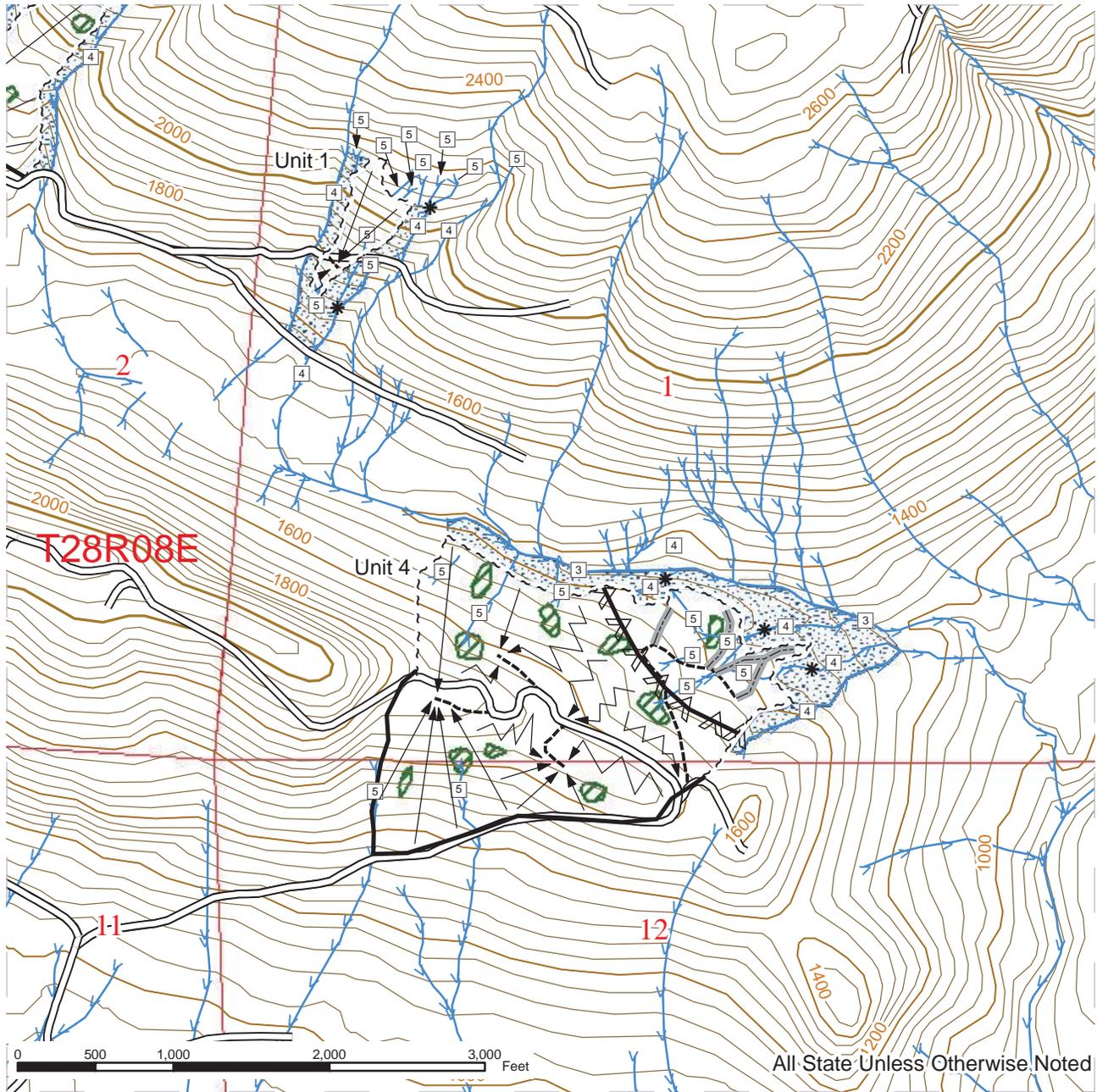
Compiled by: A. Halgren

Date: 42348

# LOGGING PLAN MAP

SALE NAME: LOTTA STRANDS  
 APPLICATION #: 30-093059

COUNTY(S): SNOHOMISH  
 TOWNSHIP(S): T29R08E, T28R08E

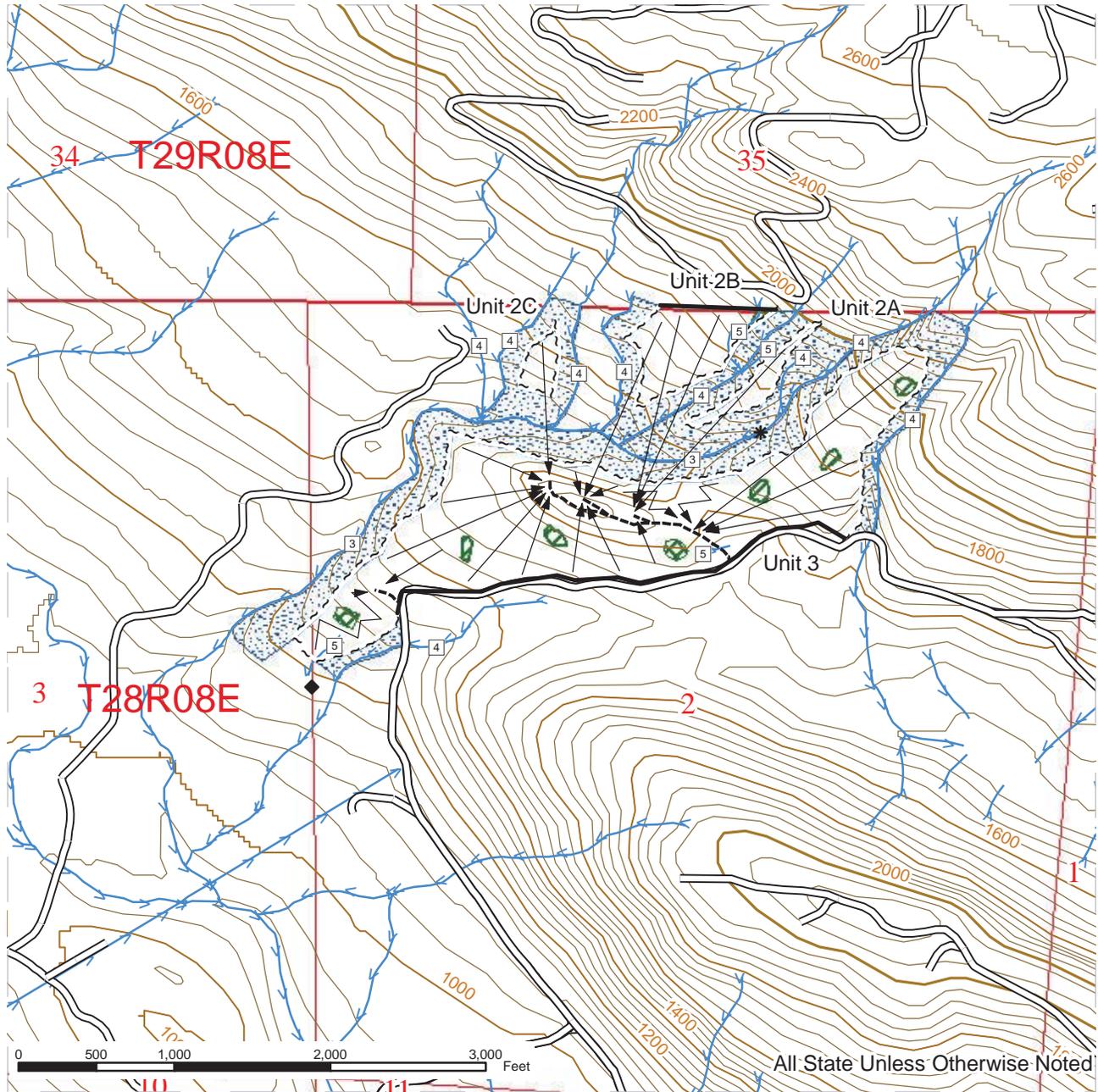


--- Sale Boundary Tags	Wetlands	Streams
— Sale Boundary (No Tags)	Wetland Management Zone	Stream Type
— Existing Roads	Riparian Management Zone	Stream Type Break
- - - Proposed Construction	Non-Tradeable Leave Tree Area	Survey Corners
Equipment Restriction Zone	Leave Tree Area	Gate
— Skid Trails		Ground Based Yarding
		Cable Yarding

# LOGGING PLAN MAP

SALE NAME: LOTTA STRANDS  
 APPLICATION #: 30-093059

COUNTY(S): SNOHOMISH  
 TOWNSHIP(S): T29R08E, T28R08E



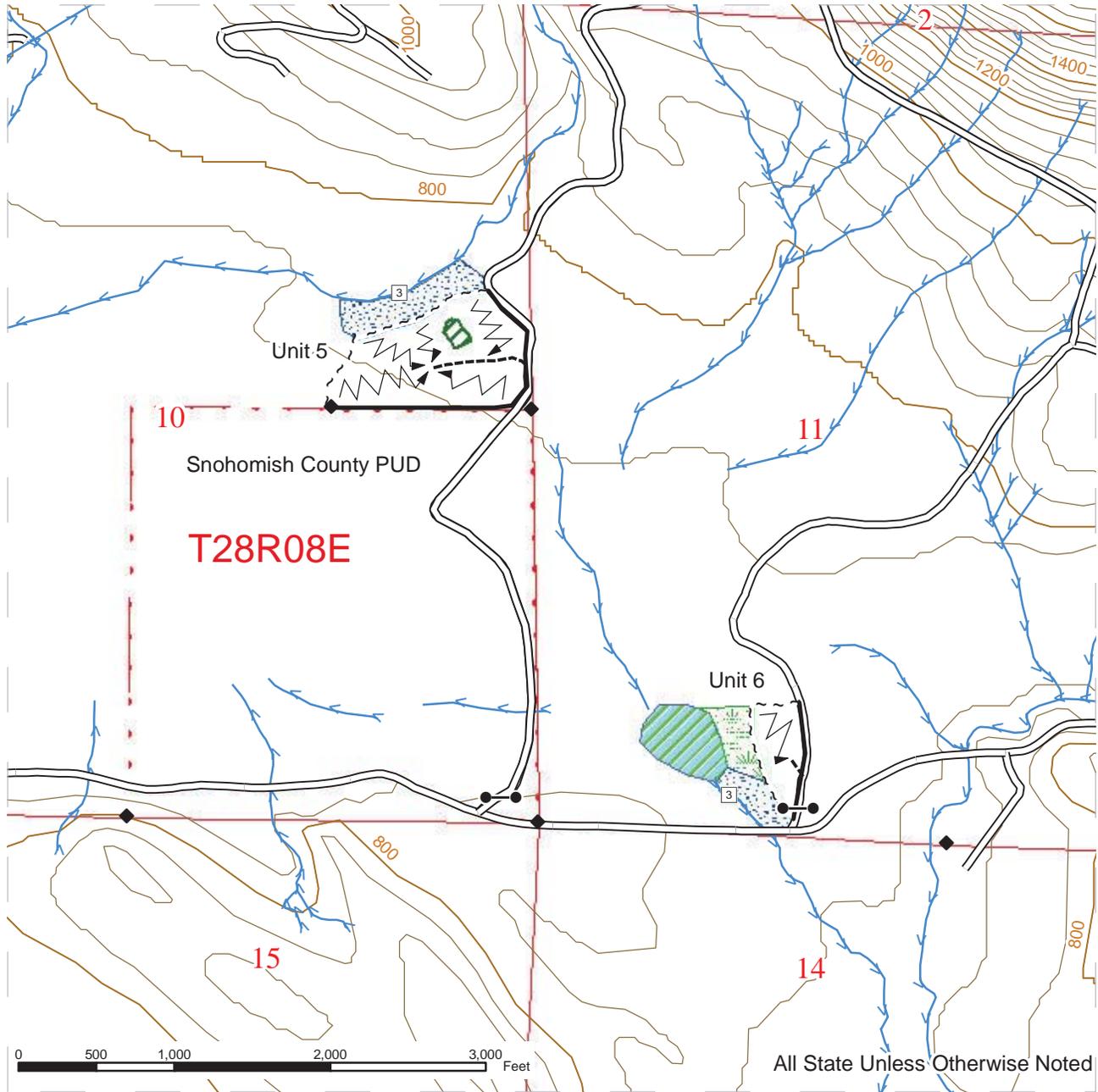
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Equipment Restriction Zone	Leave Tree Area	Gate
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		Cable Yarding



# LOGGING PLAN MAP

SALE NAME: LOTTA STRANDS  
 APPLICATION #: 30-093059

COUNTY(S): SNOHOMISH  
 TOWNSHIP(S): T29R08E, T28R08E



~ ~ ~ Sale Boundary Tags	Wetlands	Streams
Sale Boundary (No Tags)	Wetland Management Zone	Stream Type
Existing Roads	Riparian Management Zone	Stream Type Break
Proposed Construction	Non-Tradeable Leave Tree Area	Survey Corners
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