

**TIMBER NOTICE OF SALE**

**SALE NAME:** ELLEN CREEK VDT

**AGREEMENT NO:** 30-093511

**AUCTION:** June 15, 2016 starting at 10:00 a.m.,  
Olympic Region Office, Forks, WA

**COUNTY:** Clallam

**SALE LOCATION:** Sale located approximately 12 miles west of Forks, WA

**PRODUCTS SOLD  
AND SALE AREA:**

All timber as described in Schedule D for Units 1, 2, 3, 5, 6 and 7, except those trees described in Schedule C; bounded by timber sale boundary tags, the D-5000 Road, special management unit boundary tags, and the D-5500 Road in Unit 1; bounded by timber sale boundary tags, special management unit boundary tags; the D-5000 Road, D-5500 Road, D-5502 Road and the D-5510 Road in Unit 2; bounded by timber sale boundary tags, double blue painted slashes, special management unit boundary tags, the D-5500 Road and the D-5507 Road in Unit 3; timber sale boundary tags and the D-5509 Road in Unit 5; timber sale boundary tags and reprod in Unit 6; timber sale boundary tags, the D-3100 Road, the D-3120 Road, and reprod in Unit 7.

All timber, except trees marked with a band of blue paint, bounded by timber sale boundary tags, the D-5507 Road and the D-5507.1 Road in Unit 4.

All timber shown on the timber sale maps as gaps, bounded by special management unit boundary tags.

In no instance downed red cedar, or any trees that have been on the ground for five years or more (five years is defined by more than 1.5 inches of sap rot) be removed from any unit.

Located on part(s) of Sections 1, 2, 10, 11 and 23 all in Township 28 North, Range 15 West, Sections 18 and 19 all in Township 28 North, Range 14 West, Sections 15, 22, 35 and 36 all in Township 29 North, Range 15 West, W.M., containing 570 acres, more or less.

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

**ESTIMATED SALE VOLUMES AND QUALITY:**

Species	Avg Ring DBH	Ring Count	Total MBF	Total Tons	Price \$/Ton	MBF by Grade								
						1P	2P	3P	SM	1S	2S	3S	4S	UT
Hemlock	11.7	4	2,724	26,575	\$7.75							1,495	1,225	5
Douglas fir	12.3	4	2,449	23,622	\$7.75						33	1,379	985	53
Spruce	12	3	616	5,518	\$5.00						11	294	295	16
Red alder	11.7		191	1,739	\$15.00							21	170	
Red cedar	15.3		3		\$76.00							2	1	
Sale Total			5,983	57,454										

**MINIMUM BID:** \$7.75/ton (est. value \$445,000.00)      **BID METHOD:** Sealed Bids

**PERFORMANCE SECURITY:** \$89,000.00      **SALE TYPE:** Tonnage Scale

**EXPIRATION DATE:** October 31, 2018      **ALLOCATION:** Export Restricted

**BIDDABLE SPECIES:** Hemlock, Douglas fir combined

**BID DEPOSIT:** \$44,500.00 or Bid Bond. Said deposit shall constitute an opening bid at the appraised price.

## TIMBER NOTICE OF SALE

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**HARVEST METHOD:** 43% Cable/57% Ground. Rubber tire skidders will not be allowed unless skid trail and rutting requirements can be met and a harvest plan has been submitted and approved by the Contract Administrator. As indicated on the timber sale map, there will be no operations other than hauling, one hour before to two hours after official sunrise and from one hour before to one hour after official sunset from April 1 through September 23 in portions of Unit 6. Ground Based Yarding will not be permitted from October 1 to April 30 unless authorized in writing by the Contract Administrator in Unit 2 and Unit 6

**ROADS:** 2.02 stations of optional construction. 1.00 station of required pre-haul maintenance. 457.45 stations of optional pre-haul maintenance. 17.55 stations of required deactivation. There will be no operations, other than haul, on the 1+07 spur in Unit 6.

### ACREAGE DETERMINATION

**CRUISE METHOD:** Sale area was 100% GPS'd. Sale units were cruised using a variable plot sample.

**FEES:** \$106,198.00 is due on day of sale. \$1.00 per ton is due upon removal. These are in addition to the bid price.

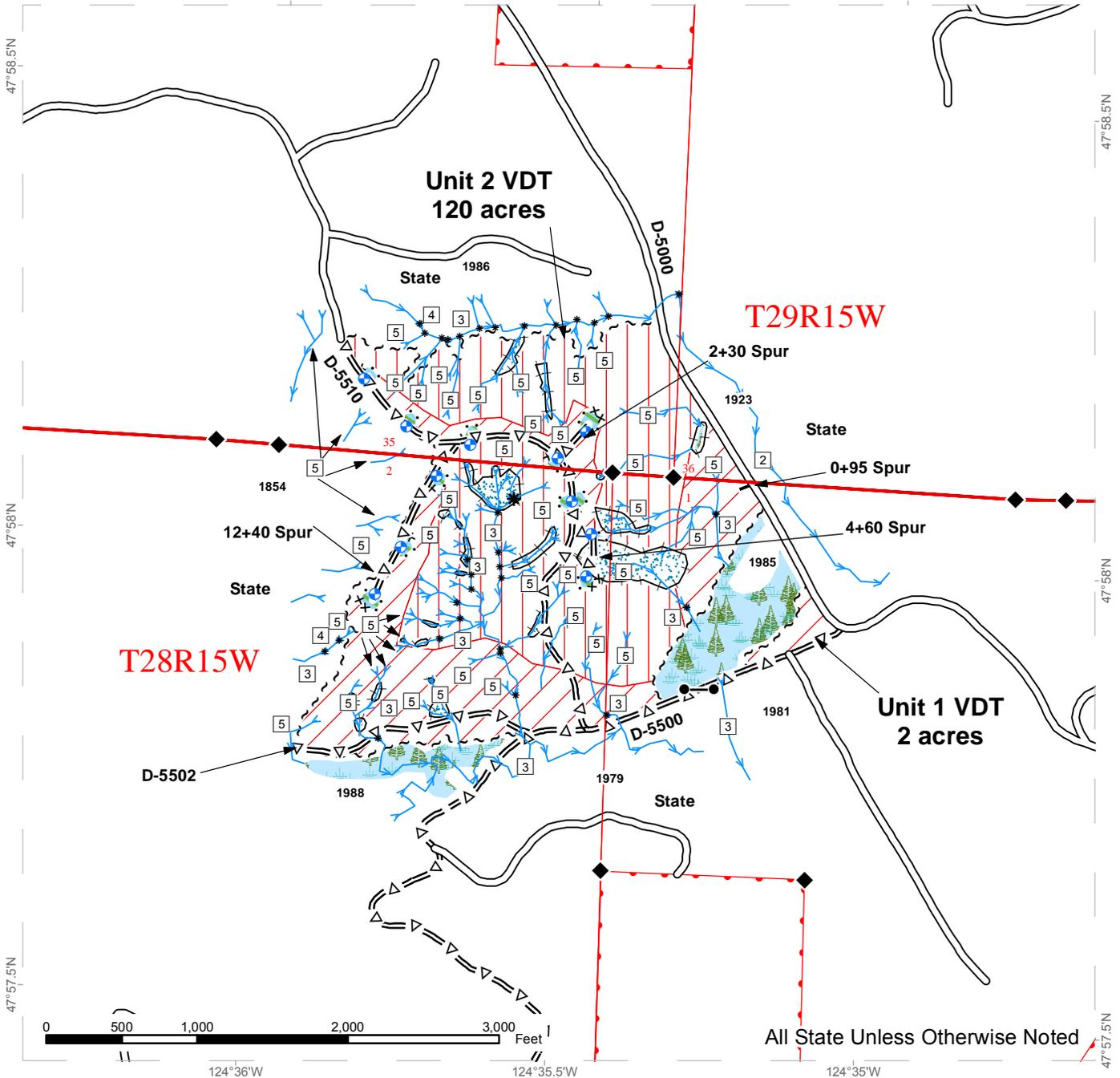
**SPECIAL REMARKS:** There is a locked gate on Mora Pit - contact Olympic Region Dispatch Center at 360-374-2811 to obtain a AA-1 key. Units 1, 2, 3, 5, 6 and 7 are Variable Density Thinning Units, while Unit 4 is a Variable Retention Harvest.

# TIMBER SALE MAP

**SALE NAME:** Ellen Creek VDT  
**AGREEMENT #:** 30-093511  
**TOWNSHIP(S):** T28R14W, T28R15W, T29R15W  
**TRUST(S):** State Forest Board-Transfer(1), Common School and Indemnity(3), Capitol Grant(7)

**REGION:** Olympic Region  
**COUNTY(S):** CLALLAM  
**ELEVATION RGE:** 60-580

124°36'W                      124°35.5'W                      124°35'W



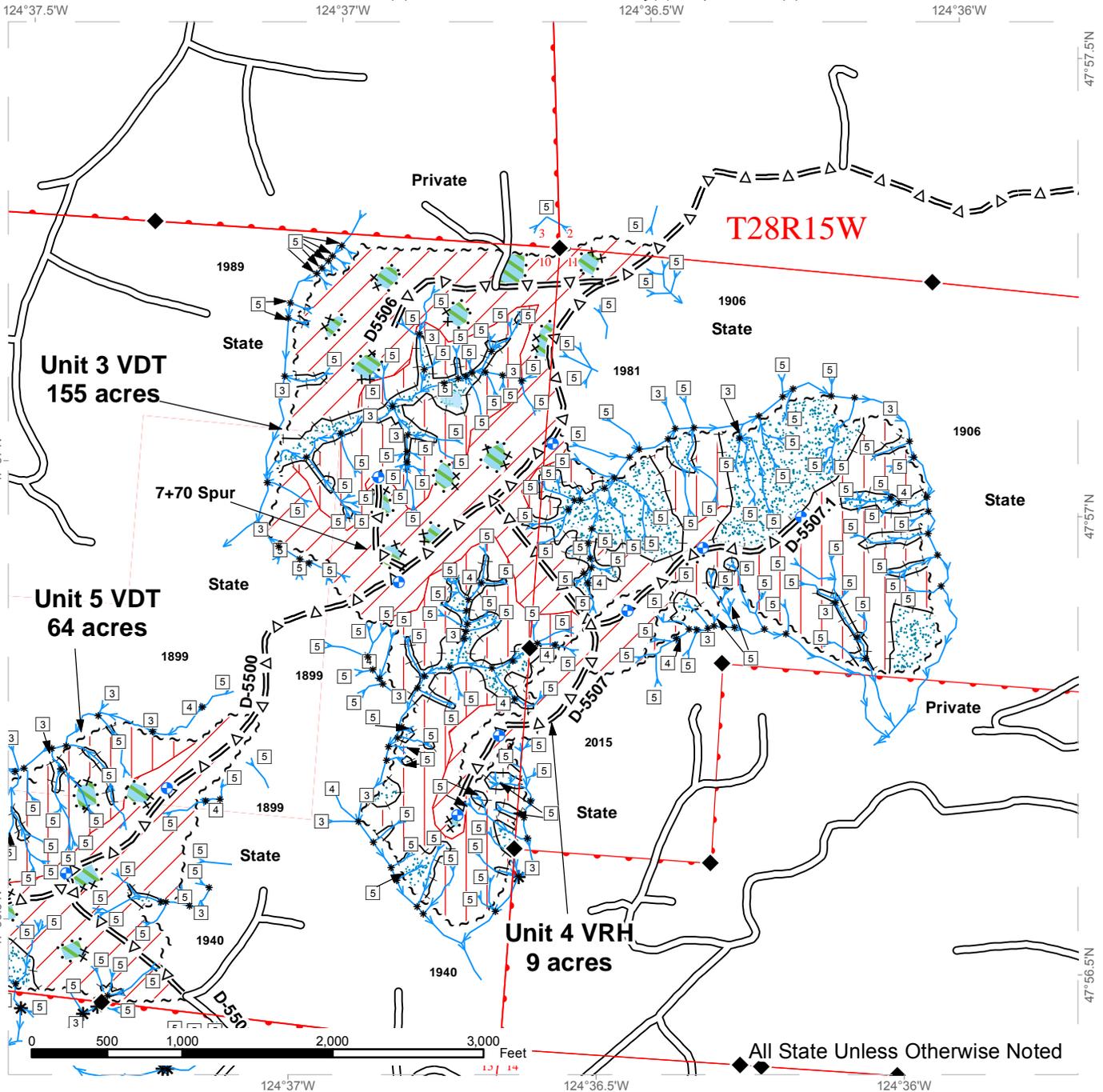
All State Unless Otherwise Noted

~ ~ ~ Sale Boundary Tags	Gap	DNR Managed Lands
— Reprod	Skip/RMZ/WMZ	Stream Type
... x Special Mgmt Area	Wetland	* Stream Type Break
—+— Double Blue Slash	Streams	●—● Gates (AA-1)
▲▲ Murrelet Timing Restrictions	Ground	◆ Monumented Corners
— Existing Roads	Cable	⊕ Landing
=Δ= Optional Pre-Haul Maintenance	Public Land Survey Townships	
— - - Optional Construction	Public Land Survey Sections	

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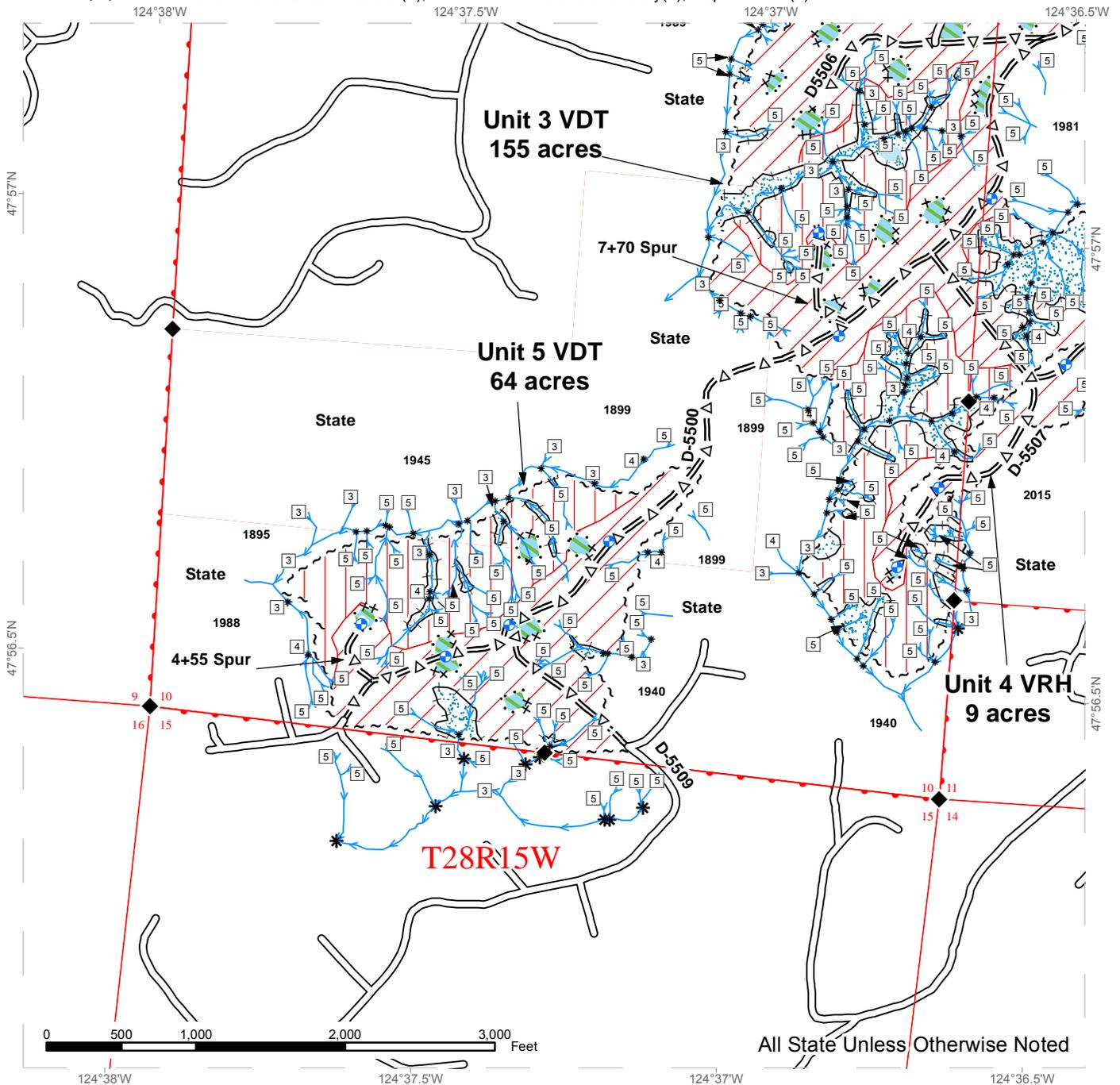


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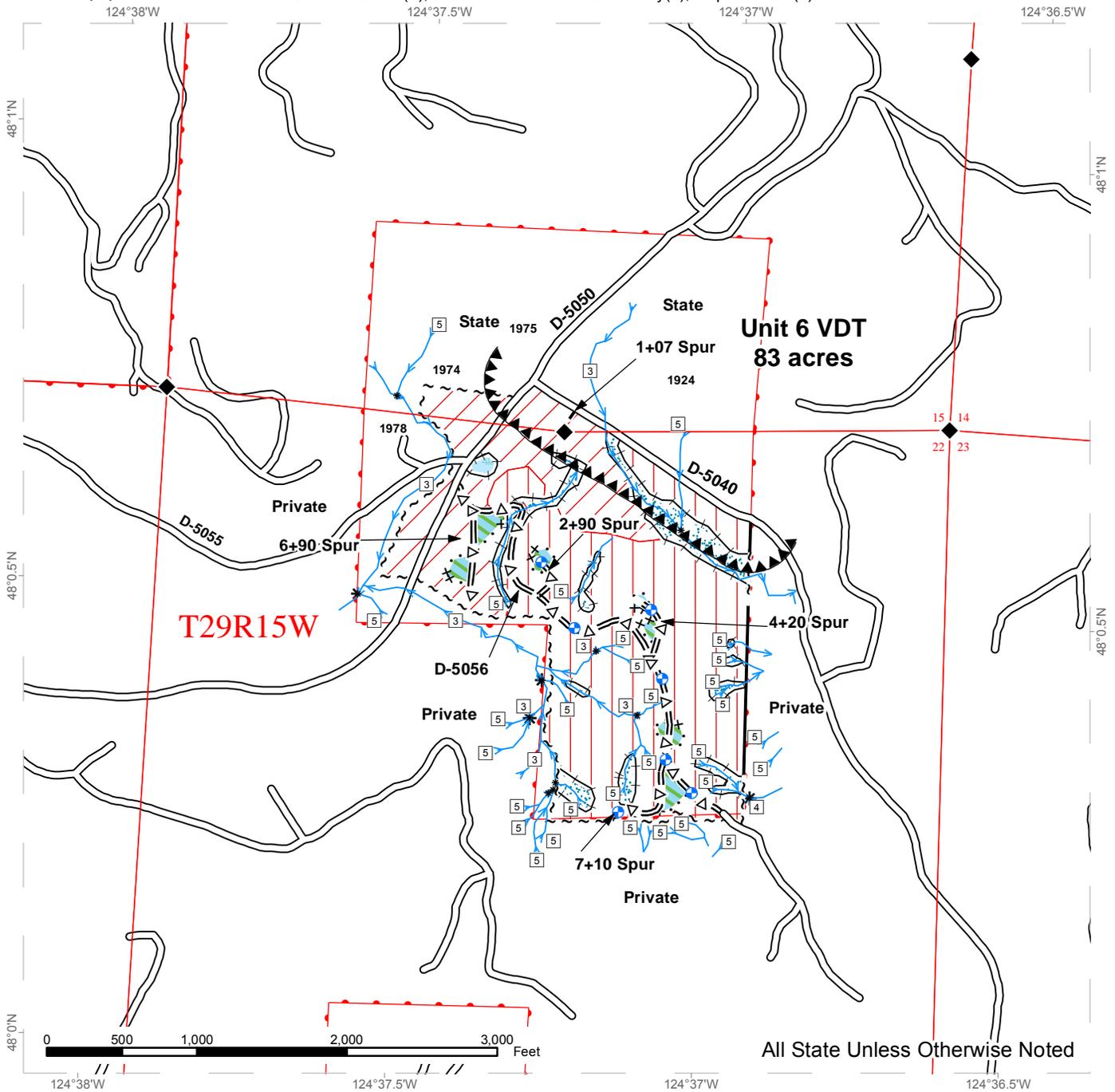
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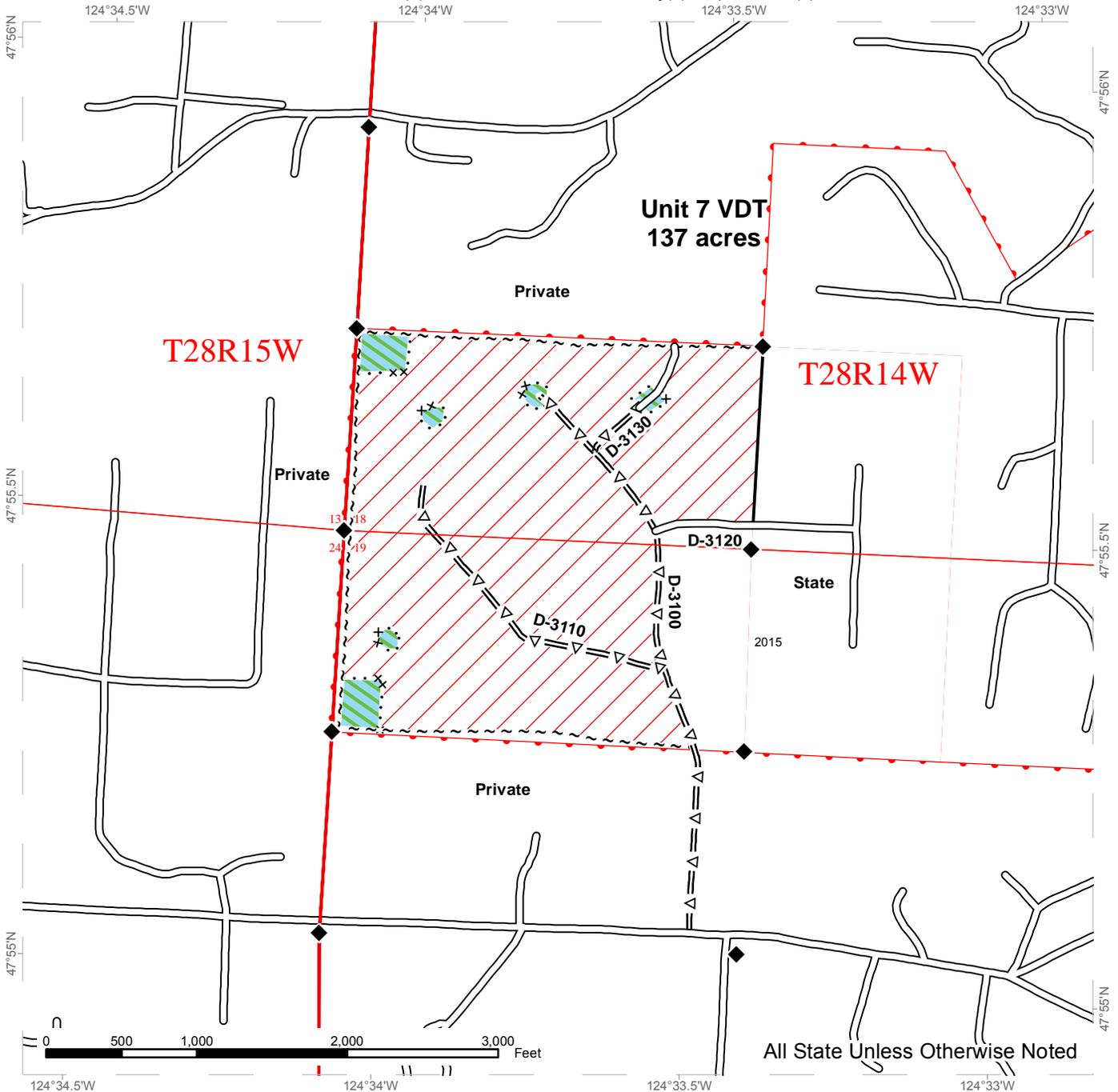
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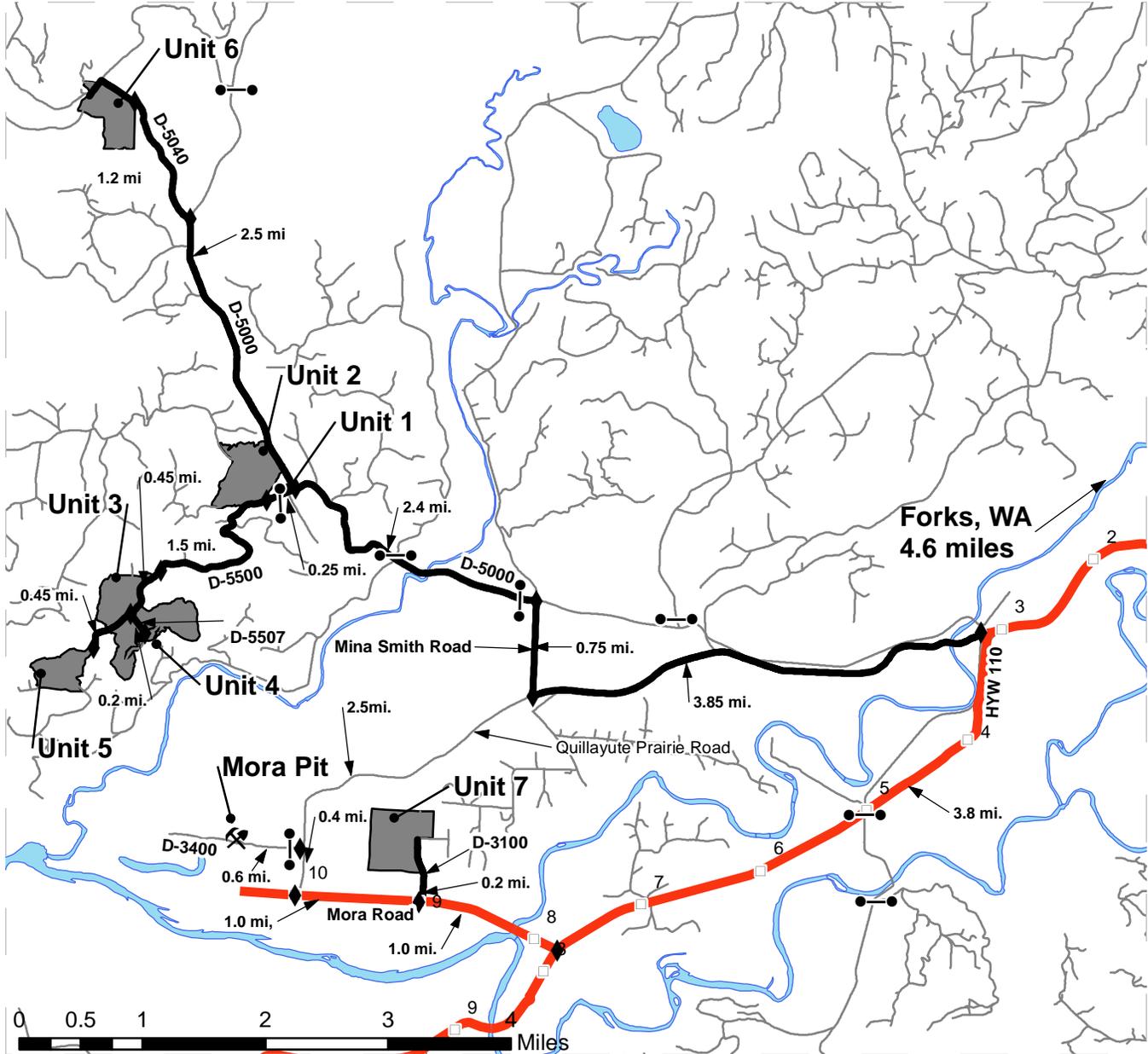
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# DRIVING MAP

**SALE NAME:** Ellen Creek VDT  
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**REGION:** Olympic Region  
**COUNTY(S):** CLALLAM  
**ELEVATION RGE:** 60-580'



	Timber Sale Unit
	Haul Route
	Routes
	Highways
	Distance Indicator
	Gate (AA-1)
	Existing Rock Pit
	Milepost Markers
	Open Water

**DRIVING DIRECTIONS:**

**Units 1-6:**  
 From Forks, WA travel north 1.4 miles on HYW 101 and turn left on HYW 110. Continue 3.2 miles and turn right on Quillayute Prairie Road. Continue 3.85 miles, and turn right on Mina Smith Road. Continue 0.75 miles and turn left on the D-5000. Continue 2.4 miles on the D-5000, and turn left on the D-5500; Unit one is on the right. Continue 0.25 miles to Unit 2 on the right. Continue another 1.5 miles to Unit 3 on right. Continue 0.45 miles and turn left on the D-5507. Continue 0.2 miles to Unit 4. From the D-5507 continue 0.45 miles on the D-5500 to the start of Unit 5. For Unit 6 stay on the D-5000 2.5 miles past the D-5500 and turn left on the D-5040. Continue 1.2 miles to Unit 6 on the left.

**Unit 7 and Mora Pit:**  
 Continue past Quillayute Prairie Road on HYW 110 for 3.8 miles and turn right on Mora Road. Continue 1.0 mile and turn right on the D-3100. Continue 0.2 miles to Unit 7 on the left. On Mora Road continue past the D-3100 for 1.0 mile, and turn right on Quillayute Prairie Road. Continue 0.4 miles, and turn left on the D-3400. Continue 0.6 miles to Mora Pit. Or continue on Quillayute Praire Road past Mina Smith Road for 2.5 miles, and turn right on the D-3400. Continue 0.6 miles to Mora Pit.



**STATE OF WASHINGTON  
DEPARTMENT OF NATURAL RESOURCES**

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

**Export Restricted Tonnage Scale AGREEMENT NO. 30-093511**

**SALE NAME: ELLEN CREEK VDT**

**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-010 Products Sold and Sale Area

Purchaser was the successful bidder on June 15, 2016 and the sale was confirmed on \_\_\_\_\_. The State, as owner, agrees to sell to Purchaser, and Purchaser agrees to purchase, cut, and remove the following forest products: All timber as described in Schedule D for Units 1, 2, 3, 5, 6 and 7, except those trees described in Schedule C; bounded by timber sale boundary tags, the D-5000 Road, special management unit boundary tags, and the D-5500 Road in Unit 1; bounded by timber sale boundary tags, special management unit boundary tags; the D-5000 Road, D-5500 Road, D-5502 Road and the D-5510 Road in Unit 2; bounded by timber sale boundary tags, double blue painted slashes, special management unit boundary tags, the D-5500 Road and the D-5507 Road in Unit 3; timber sale boundary tags and the D-5509 Road in Unit 5; timber sale boundary tags and reprod in Unit 6; timber sale boundary tags, the D-3100 Road, the D-3120 Road, and reprod in Unit 7.

All timber, except trees marked with a band of blue paint, bounded by timber sale boundary tags, the D-5507 Road and the D-5507.1 Road in Unit 4.

All timber shown on the timber sale maps as gaps, bounded by special management unit boundary tags.

In no instance downed red cedar, or any trees that have been on the ground for five years or more (five years is defined by more than 1.5 inches of sap rot) be removed from any unit., located on approximately 570 acres on part(s) of Sections 1, 2, 10, 11, and 23 all in Township 28 North, Range 15 West, Sections 18, and 19 all in Township 28 North, Range 14 West, Sections 15, 22, 35, and 36 all in Township 29 North, Range 15 West W.M. in Clallam County(s) as shown on the attached timber sale map and as designated on the sale area.

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	SLASH PILING SPECS
B	GREEN TREE RETENTION PLAN
C	LEAVE TREE SELECTION CRITERIA
D	CUT TREE SELECTION CRITERIA
E	UNIT TARGET TABLE

G-030 Contract Term

Purchaser shall remove the forest products conveyed and complete all work required by this contract prior to October 31, 2018.

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-050 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 contract value based on the contract payment rate and advertised volume.

For the second extension, not to exceed 1 year, payment of at least 90 percent of the contract value based on the contract payment rate base and advertised volume.

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 timber value of the contract.

To determine the unpaid portion of the contract, multiply the contract payment rate for each item by the remaining volume for each item based on the volumes from the Timber Notice of Sale. In addition, all cash deposits that can be used for timber payments, except the initial deposit, will be deducted from the unpaid portion of the contract.

- e. Payment of \$3.00 per acre per annum for the acres on which an operating release has not been issued.
- 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-090 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, added forest products become a part of this contract and shall be paid for at the same rate and manner as other forest products under this contract.

G-100 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 shall be paid for at the same rate and manner as other forest products under this contract.

G-105 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 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 same rate and manner as other forest products under this contract.

G-110 Title and Risk of Loss

Title to the forest products conveyed passes at confirmation of the sale. Purchaser bears the risk of loss of or damage to and has an insurable interest in the forest products in this contract from the time of confirmation of the sale of forest products. In the event of loss of or damage to the forest products after passage of title, whether the cause is foreseeable or unforeseeable, the forest products shall be paid for by Purchaser. Breach of this contract shall have no effect on this provision. Title to the forest products not removed from the sale area within the period specified in this contract shall revert to the State as provided in RCW 79.15.100.

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 Forks, 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; D-3100, D-3110, D-3120, D-3130, D-3400, D-5000, D-5040, D-5050, D-5056, D-5500, D-5502, D-5506, D-5507, D-5507.1, D-5509, D-5510, 0+95 Spur, 1+07 Spur, 6+90 Spur, 2+90 Spur, 4+20 Spur, 7+10 Spur, 4+55 Spur, 7+70 Spur, 4+60 Spur, 2+30 Spur and the 12+40 Spur. 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 D-5000, D-5040, and the D-5050 Roads, unless authority is granted in writing by the Contract Administrator.

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.

Section P: Payments and Securities

P-010 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 the 'Payment for Forest Products' clause, 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-024 Payment for Forest Products

Purchaser agrees to pay the following rate per ton for forest products conveyed plus \$106,198.00 on day of sale and \$1.00 per ton upon removal in fees. Fees collected shall be retained by the state unless the contract is adjusted via the G-066 clause.

DATA MISSING

Species that are conveyed but are not listed in the table above shall be paid for at a rate to be determined by the State.

P-027 Payment for Removal of Optional Forest Products

Purchaser agrees to pay the rate of \$2.00 per ton for forest products approved for removal from the sale area under clause H-157.

P-040 Weighing and Scaling Costs

Purchaser agrees to pay for all scaling and weighing costs for logs and other products sold under this contract. Purchaser also agrees to pay for all costs associated with the transmission and reporting of scale or weight data.

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-052 Payment Procedure

If a third party Log and Load Reporting Service (LLRS) is required by this contract the State will compute and forward to the Purchaser statements of charges provided for in the contract. Purchaser shall deliver payment to the Olympic region office on or before the date shown on the billing statement.

If a third party LLRS is not required by this contract, Purchaser shall pay for forest products removed on a monthly basis. Payments will be submitted to the Olympic region office on or before the fourteenth of the month following the month in which the timber was removed or, according to an alternate payment schedule as approved by the State with at least one payment each month for timber removed. The alternate payment schedule, once approved by the State, shall become part of this contract and may be changed only with written approval of the State.

Payment will be based on the contract rate multiplied by the tons (tonnage contracts) or volume (mbf contracts) removed during the month or payment period. Included with the payment will be a summary report along with all related load tickets and the corresponding certified weight tickets for the payment period. The summary report will be generated using a computer spreadsheet and list the load tickets in ascending numerical order with the corresponding ticket number and weight or volume for each load.

## P-070 Payment for Products: Damage, Theft, Loss or Mismatch

Forest products included in this agreement which are destroyed, damaged, stolen, lost, or mismatched shall be paid for by Purchaser on demand of the State. The rates contained in clause P-024 shall apply.

## 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 \$89,000.00. 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 L: Log Definitions and Accountability

L-060 Load Tickets

Purchaser shall complete and use load tickets as directed by the Contract Administrator and, if required, use other identification as directed by the State to ensure accounting of forest products removed from the sale area. A load ticket must be fixed, as designated by the Contract Administrator, to each truck and trailer load prior to leaving the landing.

Purchaser shall account for all load tickets issued by the Contract Administrator. The State may treat load tickets not accounted for as lost forest products. All costs associated with computing the billings for lost loads shall be borne by Purchaser.

L-071 Log and Load Reporting Service

This contract requires the use of a State approved third party Log and Load Reporting Service (LLRS). Purchaser shall ensure log volume measurement data and/or load and weight data is received by the LLRS within 1 business day of logs being measured or weighed. Purchaser agrees to pay the LLRS for log and load data supplied to the State.

If during the term of this contract, the State discontinues use of the LLRS, the State will notify the Purchaser in writing and the Purchaser will then be responsible to send log scale and/or weight information to the State.

L-110 State Approval of Log Scaling and Weighing Locations

Forest Product measurement and weighing facilities required by this contract must be approved by the State. Forest products sold under the contract which require log scaling shall be scaled, measured, or counted by a State approved third party log scaling organization. Forest products sold under the contract which require weighing shall be weighed at a location that meets Washington State Department of Agriculture approval.

Prior to forest products being hauled, the Contract Administrator must authorize in writing the use of State approved measurement and/or weighing facilities that are at or en-route to final destinations. Forest products from this sale shall be measured or weighed at facilities, which are currently approved for use by the State and are currently authorized for this sale. The State reserves the right to verify load volume and weights with State employees or contractors at the State's own expense. The State reserves the right to revoke the authorization of previously approved measurement locations.

Section H: Harvesting Operations

H-010 Cutting and Yarding Schedule

Ground Based Yarding will not be permitted from October 1 to April 30 in Units 2 and 6 unless authorized in writing by the Contract Administrator.

H-011 Certification of Fallers and Yarder Operators

All persons engaged in the felling and yarding of timber must receive certification in writing from the Contract Administrator. Certification may be revoked when the Contract Administrator determines that non-compliance of leave tree selection criteria or cut tree selection criteria is occurring, or excessive damage to leave trees or skid trails is occurring.

Excessive damage for leave trees is defined in clause H-012.

Excessive skid trail damage is defined in clause H-015 or H-016.

When leave tree damage exceeds the limits set forth in clause H-012, Purchaser shall be subject to liquidated damages (clause D-040 or D-041).

H-012 Leave Tree Damage Definition

Leave trees are trees required for retention within the sale boundary. Purchaser shall protect leave trees from being cut, damaged, or removed during operations.

Leave tree damage exists when more than 5 percent of the leave trees are damaged in a unit and when one or more of the following criteria occur as a result of Purchaser's operation, as determined by the Contract Administrator:

- a. A leave tree has one or more scars on its trunk exposing the cambium layer, which in total exceeds 20 square inches.
- b. A leave tree top is broken or the live crown ratio is reduced below 30 percent.
- c. A leave 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 leave tree has been cut or damaged, the Purchaser may be required to pay liquidated damages for Excessive Leave Tree Damage as detailed in clause D-040.

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 20 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-015 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. Skid trails 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. Skid trail location will be pre-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. 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 12 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-030 Timber Falling
- Trees shall be felled and logs shall be bucked to obtain the greatest practicable utilization of forest products and other valuable materials conveyed.
- 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 utilizing rubber tire skidders in the sale area. The plan shall address the timing and location of desired use, 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-050 Rub Trees
- Trees designated for cutting along skid trails and cable corridors shall be left standing as rub trees until all timber that is tributary to the skid trail or cable corridor has been removed.
- H-052 Branding and Painting
- Forest products shall be branded with a brand furnished by the State prior to removal from the landing. 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-110 Stump Height
- Trees shall be cut as close to the ground as practicable. Stump height shall not exceed 12 inches in height measured on the uphill side, or 2 inches above the root collar, whichever is higher.

H-120 Harvesting Equipment

Forest products sold under this contract shall be harvested ground and cable methods (rubber tired skidders may be allowed if skid trail and rutting requirements can be met and a harvesting plan has been developed and accepted), 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.

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-127 Tailholds on Private Land

If Purchaser chooses to tailhold on private property, Purchaser shall obtain permit(s) and assumes responsibility for all costs and damages associated with the permit(s). Purchaser must provide the State with a copy of the executed permit(s) or a letter from the landowner indicating that a satisfactory tailhold permit(s) has been consummated between Purchaser and the landowner.

H-140 Special Harvest Requirements

Purchaser shall accomplish the following during the harvest operations:

1. Purchaser shall immediately repair all gate damage resulting from operations to an equal or better condition than existed at the time of the sale.
2. Yarding equipment shall not cross live streams without an HPA/FPHP.
3. The Purchaser shall notify all employees and contractors working on this sale that any danger tree, marked or unmarked, may be felled. Any felled marked danger tree shall be replaced with a suitable tree of similar size and species as approved 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:

As shown on the timber sale map, there will be no operations other than haul, one hour before to two hours after official sunrise and one hour before to one hour after official sunset from April 1 through September 23 in portions of Unit 6 for marbled murrelet restrictions.

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

H-150 Required Removal of Forest Products

Purchaser shall remove from the sale area and present for scaling or weighing all forest products conveyed in the G-010 clause that meet the following minimum dimensions:

Species	Net bd ft	Log length (ft)	Log dib
All	10	12	5

The State may treat failure to remove forest products left on the sale area that meet the above specifications as a breach of this contract. At the State's option, forest products that meet the above specifications and are left on the sale area may be scaled for volume or measured and converted to weight by the State or a third party scaling organization and billed to Purchaser at the contract payment rate. All costs associated with scaling, measuring and computing the billing will be borne by the Purchaser.

H-151 Required Harvesting Area

Unless otherwise authorized by the State, Purchaser is required to fall, yard and remove all forest products and other valuable materials conveyed and required to be removed under this contract within the percent slope and yarding distances listed below. The yarding distances are measured from all existing roads and those required roads constructed under this contract. Purchaser may yard beyond the required removal distances up to the designated sale boundaries. If Purchaser decides to yard beyond the required yarding distance, Purchaser must follow all requirements specified in this contract.

Yarding Method	Max Slope % Downhill	Slope Dist Downhill	Max Slope % Uphill	Slope Dist Uphill
Ground	35	1000	40	1000

Cable or aerial/helicopter equipment is permitted on all slopes. Cable or aerial/helicopter equipment may be used on any required harvest area of this sale where ground based equipment is not permitted or on designated ground based harvest areas where Purchaser does not choose to use ground based equipment.

H-157 Optional Removal of Forest Products Not Designated

If in the course of operations, Purchaser decides to remove forest products that are below the minimum designated removal specifications per the 'Required Removal of Forest Products' (H-150), the payment rates in clause P-027 shall apply.

Forest products designated as optional shall be decked separately from forest products designated as required for removal. Prior to removal from the sale area, optional forest products as described in this clause must be inspected and approved by the Contract Administrator. Optional forest products may not be mixed with forest products that are required for removal by this contract and shall be removed from the sale area in separate truck loads using load tickets specified by the Contract Administrator.

All material removed under this clause is subject to the same log and load accountability rules as defined in the Log Definitions and Accountability section of this contract. Purchaser shall follow the payment procedures as required in the P-052 clause and will submit a separate summary report for all forest products removed from the sale area under the authority of this clause.

H-160 Mismatch

Mismatch is defined as forest products remaining on the sale area that would have met the specifications in clause H-150 if bucking lengths had been varied to include such products.

The State may treat mismatch as a breach of this contract. At the State's option, forest products that are left on the sale area may be scaled for volume by the State or a third party scaling organization and billed to Purchaser at the contract payment rate. All costs associated with scaling and computing the billing will be borne by Purchaser.

H-180 Removal of Specialized Forest Products or Firewood

Prior to the removal of conveyed specialized forest products or firewood from the sale area, Purchaser and the State shall agree in writing to the method of accounting for/and removal of such products.

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.

Section C: Construction and Maintenance

C-040 Road Plan

Road construction and associated work provisions of the Road Plan for this sale, dated 1/19/2016 are hereby made a part of this contract.

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

Purchaser shall perform work at their own expense on all roads used within the sale are, excluding the D-3400, D-5000, D-5040, and the D-5050. 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 D-3400, D-5000, D-5040, and the D-5050. 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.

**C-140 Water Bars**

Purchaser shall, as directed by the Contract Administrator, construct water bars across haul roads, skid trails and fire trails as necessary to control soil erosion and water pollution.

**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-030 Landing Debris Clean Up**

Landing debris shall be disposed of 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 streams 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-110 Resource Protection**

No equipment may operate within the 30' from any typed stream unless authority is granted in writing by the Contract Administrator.

**S-120 Stream Protection**

No timber shall be felled into, across, or yarded through Type 3 and Type 4 streams.

**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-010 Liquidated Damages

The clauses in the DAMAGES section of this contract provide for payments by Purchaser to the State for certain breaches of the terms of this contract. These payments are agreed to as liquidated damages and not as penalties. They are reasonable estimates of anticipated harm to the State 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.

D-021 Failure to Remove Forest Products

Purchaser's failure to remove all or part of the forest products sold in this agreement prior to the expiration of the contract term results in substantial injury to the State. The value of the forest products sold at the time of breach is not readily ascertainable. Purchaser's failure to perform disrupts the State's management plans, the actual cost of which is difficult to assess. A resale involves additional time and expense and is not an adequate remedy. Therefore, Purchaser agrees to pay the State as liquidated damages a sum calculated using the following formula:

$$LD = .35V-ID-P+C+A$$

Where:

LD = Liquidated Damage value.

V = The unremoved value at the date of breach of contract. The value is determined by subtracting the removal tonnage to date from the cruised tonnage multiplied by the contract bid rates.

ID = Initial Deposit paid at date of contract that has not been applied to timber payments.

P = Advance payments received but not yet applied to specific contract requirements.

C = Charges assessed for contract requirements completed prior to breach of contract but not paid for.

A = Administrative Fee = \$2,500.00.

The above formula reflects the Purchaser's forfeiture of the initial deposit in accordance with clause P-010 by deducting the initial deposit from the amount owed. In no event

shall the liquidated damages be less than zero. Interest on the liquidated damage is owed from the date of breach until final payment, calculated using the following formula:  $\text{Interest} = r \times \text{LD} \times N$ .

Where:

$r$  = daily equivalent of an annual interest at current interest rate as established by WAC 332-100-030.

$\text{LD}$  = Liquidated damage value.

$N$  = Number of days from date of breach to date payment is received.

#### D-030 Inadequate Log Accountability

Removal of forest products from the sale area without adequate branding and/or valid load tickets attached to the load and scaling forest products in a location other than the facility approved by the State can result in substantial injury to the State. Failure to properly account for loads and scaling and/or weighing information can result in loss to the State. The potential loss from not having proper branding, ticketing, scaling and/or weighing location and accountability is not readily ascertainable. Purchaser's failure to perform results in a loss of log weight and scale accountability, increases the potential for unauthorized removal of forest products, and increases the State's administration costs, the actual costs of which are difficult to assess.

Enforcement actions for unauthorized removal of forest products for each improperly branded load, improperly ticketed load, lost or unaccounted for tickets, or use of a facility not authorized for this sale or improper submission of scaling data are impractical, expensive, time consuming and are not an adequate remedy. Therefore, Purchaser agrees to pay the State, as liquidated damages, a sum of \$100 each time a load of logs does not have branding as required in the contract, \$250 each time a load of logs does not have a load ticket as required by the contract, \$250 each time a load ticket has not been filled out as required by the plan of operations, \$250 each time a load is weighed or scaled at a location not approved as required under this contract, \$250 each time a log ticket summary report is not submitted properly, and if a third party Log and Load Reporting Service is required, \$250 each time scaling or weight data is not properly submitted to the Log and Load Reporting Service within 24 hours of log removal, and \$250 each time a ticket is either lost or otherwise unaccounted for.

#### D-040 Leave Tree Excessive Damage

When Purchaser's operations exceed the damage limits set forth in clause H-012, Leave Tree Damage Definition, the trees damaged result in substantial injury to the State. The value of the damaged leave trees at the time of the breach is not readily ascertainable. Therefore, Purchaser agrees to pay the State as liquidated damages at the rate of \$500.00 per tree for all damaged trees in Units 1, 2, 3, 5, 6 and 7.

#### 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 \$500.00 per tree for all damaged reserve trees that are not replaced in Unit 4.

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

STATE OF WASHINGTON  
DEPARTMENT OF NATURAL RESOURCES

\_\_\_\_\_  
Purchaser

\_\_\_\_\_  
Susan K. Trettevik  
Olympic 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**  
**SLASH PILING SPECS**

Specifications for Slash Piling

Areas shall be piled by creating circular piles of slash and brush conforming to the following specifications:

1. Piles shall be a minimum of 12 feet tall by 8 feet wide to a maximum of 30 feet tall and 16 feet wide. Piles shall be cone shaped and stable.
2. Piles shall be free of topsoil, large rotten logs and large stumps. No material larger than 8 inches in diameter shall be piled. Any burnable material shall be well scattered.
3. Piles shall not be placed on large stumps or logs.
4. Piles shall be stacked a minimum of 50 feet from all unit boundaries, Riparian Management Zones, leave tree areas and any standing timber; a minimum of 100 feet from any public roads and highways; and a minimum of 200 feet from any structures.
5. Piling shall be completed using an approved hydraulic shovel and grapples.
6. Slash and displaced soil shall be removed from swales and natural drainage channels concurrent with yarding.
7. Slash shall be placed in skid roads or ahead of machinery. Slash which accumulates on landings and/or roads shall be lopped and scattered within the harvest area or as designated by the Contract Administrator.
7. Slash generated during cable yarding shall be stacked in dirt free piles and shall not block roads or interfere with functioning of drainage structures, ditches or stream channels.

**Schedule B**  
**GREEN TREE RETENTION PLAN**

Leave the following as directed by the Contract Administrator:

1. All trees marked with a blue band of paint shall remain standing.

Unit #	# of Individually Marked Trees	# of Clumps	# of Trees Clumped	Total # of Leave Trees
4	72	0	0	72

Schedule C  
LEAVE TREE SELECTION CRITERIA

1. Leave trees are defined as follows:
  - a. All trees greater than or equal to 20 inches in diameter at a 12 inch stump height.
  - b. Trees greater than or equal to 16 inches in diameter at a 12 inch stump height, with good form, shall only be felled if leaving them results in a residual stand of higher relative density than shown in the Unit Target Table (Schedule E).
  - c. All trees less than 16 inches in diameter at a 12 inch stump height needed to achieve relative densities as shown in the Unit Target Table (Schedule E).
  - d. All trees within the non-operational areas, i.e., wetland and skip areas as shown on the timber sale map.
  
2. Leave trees shall be well distributed at the relative density and spacing shown in the Unit Target Table (Schedule E), and will consist of the largest diameter and best formed trees available.

Best form is defined as follows:

- a. Tallest Trees
  - b. Full Crowns
  - c. Straightest Boles
  - d. Smaller Diameter Limbs
- 
3. Leave trees will be identified by comparing their characteristics with other trees in the stand. Spacing will be varied to ensure the best trees available are left as leave trees. Felling of trees shall not result in creating an opening in the stand greater than 30 feet in diameter. If openings in the stand approach this diameter, then sufficient trees shall be left on the perimeter of the opening to maintain the target density or spacing (Unit Target Table - Schedule E).

**Schedule D**  
**CUT TREE SELECTION CRITERIA**

1. Cut trees are defined as all trees in the sale area, as shown on the timber sale maps that meet the following criteria:
  - a. All trees less than 16 inches in diameter at a 12 inch stump height provided that enough evenly distributed trees per acre remain to achieve the relative densities shown in the Unit Target Table (Schedule E).
  - b. All trees which are severely deformed, as defined below in part 2, provided that the remaining stand is not reduced below the relative densities shown in the Unit Target Table (Schedule E); or unless designated by the Contract Administrator for snag recruitment.
  - c. Those trees which are not defined as leave trees.
  - d. Trees within the gap areas.
  
2. Severely deformed trees are defined as trees with one or more of the following characteristics:
  - a. Trees with three (3) or more tops.
  - b. Trees with a broken top.
  - c. Trees with two (2) tops if they twist around each other or are otherwise badly deformed.
  - d. Trees with basal scars or scars on the lower stem if visible soft decay is evident. Trees with scars that have healed over are not to be considered severely deformed.

**Schedule E**  
**UNIT TARGET TABLE**

Unit	Acres	Approx Stems/acre	Approx Spacing	Approx Basal Area	RD
1	2	100	21'x21'	170	40
2	117	105	20'x20'	160	40
3	148	131	18'x18'	150	40
5	61	134	18'x18'	180	45
6	80	108	20'x20'	160	40
7	130	100	21'x21'	170	40



## 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 4/09)

**PRE-CRUISE NARRATIVE**

Sale Name: <b>Ellen Creek VDT/VRH</b>	Region: <b>Olympic</b>
Agreement #: <b>30-093511</b>	District: <b>Coast</b>
Contact Forester: Devin Schlapbach Phone / Location: 360-640-4343 / Forks, WA	County(s): Clallam
Alternate Contact: Mike Potter Phone / Location: 360-640-0722 / Forks, WA	Other information:

Type of Sale: Weight Scale	
Harvest System: Ground based	60%
Harvest System: Uphill Cable	40%

**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/ Skip Acres	Leave Tree Acres	Existing Road Acres	Other Acres		
1	Sec. 1/T28/R15W		2.7	0	0	0.5	0	2.2	GPS (Garmin)
2	Sec. 1, 2/T28/R15W Sec. 35, 36/T29/R15W		132.8	8.8	0	4.5	0	119.5	GPS (Garmin)
3	Sec. 10, 11/T28/R15W		208.7	48.6	0	5.4	0	154.7	GPS (Garmin)
4	Sec. 10, 11/T28/R15W		10.7	0	0	1.6	0	9.1	GPS (Garmin)
5	Sec. 10/T28/R15W		72.2	3.9	0	3.9	0	64.4	GPS (Garmin)
6	Sec. 15, 22/T29/R15W		100.2	10.7	0	6.2	0	83.3	GPS (Garmin)
7	Sec. 18, 19/T28/R14W		142.3	0	0	5.8	0	136.5	GPS (Garmin)
<b>TOTAL ACRES</b>			669.6	72.0	0	27.9	0	569.7	

**HARVEST PLAN AND SPECIAL CONDITIONS:**

Unit #	Harvest Prescription: (Leave, take, paint color, tags, flagging etc.)	Special Management areas:	Other conditions (# leave trees, etc.)
1	Unit Boundaries are marked with white "Timber Sale Boundary" tags, red flashers, pink ribbon, and blue paint, or the D-5500, or the D-5000.		
2	Unit Boundaries are marked with white "Timber Sale Boundary" tags, red flashers, pink ribbon, and blue paint, or the D-5502, or the D-5510, or Unit 4, or Skip. Skip line is marked with double blue slash marks around DBH and blue	12 – Gaps 2.8 acres	

	butt-marks. <u>Special Management Areas</u> are marked with blue “Special Management Area” tags, red flashers, pink ribbon, and blue paint.		
3	<u>Unit Boundaries</u> are marked with white “Timber Sale Boundary” tags, red flashers, pink ribbon, and blue paint, or the D-5500, or Unit 5, or Skip. <u>Skip line</u> is marked with double blue slash marks around DBH and blue butt-marks. <u>Special Management Areas</u> are marked with blue “Special Management Area” tags, red flashers, pink ribbon, and blue paint.	14 – Gaps 6.6 acres	
4	<u>Unit Boundaries</u> are marked with white “Timber Sale Boundary” tags, red flashers, pink ribbon, and blue paint, or Unit 2, or a distinct timber type change, or the D-5507. <u>Individual Leave Trees</u> are marked with a blue paint line encircling the tree approximately at DBH, and blue paint butt marks.	N/A	Total Leave Trees 72 -Individual 72 trees
5	<u>Unit Boundaries</u> are marked with white “Timber Sale Boundary” tags, red flashers, pink ribbon, and blue paint, or the D-5509, or Skip. <u>Skip line</u> is marked with double blue slash marks around DBH and blue butt-marks. <u>Special Management Areas</u> are marked with blue “Special Management Area” tags, red flashers, pink ribbon, and blue paint.	7 – Gaps 3.4 acres	
6	<u>Unit Boundaries</u> are marked with white “Timber Sale Boundary” tags, red flashers, pink ribbon, and blue paint, or the D-5040, or the D5050, or the D-5050.1, or orange blaze marks, or Skip. <u>Skip line</u> is marked with double blue slash marks around DBH and blue butt-marks. <u>Special Management Areas</u> are marked with blue “Special Management Area” tags, red flashers, pink ribbon, and blue paint.	8 – Gaps 3.4 acres	
7	<u>Unit Boundaries</u> are marked with white “Timber Sale Boundary” tags, red flashers, pink ribbon, and blue paint, or the D-3100, or a distinct timber type change. <u>Special Management Areas</u>	6 – Gaps 6.1 acres	

	are marked with blue "Special Management Area" tags, red flashers, pink ribbon, and blue paint.		
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**OTHER PRE-CRUISE INFORMATION:**

Unit #	Primary, secondary Species / Estimated Volume (MBF)	Access information (Gates, locks, etc.)	Photos, traverse maps required
	PSME/TSHE		Cruise Map
1			

**REMARKS:**

<b>Prepared By:</b> Devin Schlapbach <b>Date:</b> 01/04/2016	<b>Title:</b> Natural Resource Specialist 1	<b>CC:</b>

## Cruise Narrative

<b>Sale Name:</b> Ellen Creek VDT/VRH	<b>Region:</b> Olympic
<b>Agreement #:</b> 30-	<b>District:</b> Coast
<b>Lead Cruiser:</b> Jason Michaud	<b>Completion Date:</b> 1/5/2016
<b>Other Cruisers:</b> None	

### Unit acreage specifications:

Unit #	Cruised Acres	Cruised acres agree with sale acres? Y/N	If acres do not agree explain why.
1	2.2	Y	
2	116.7	Y	
2 gaps	2.8	Y	
3	148.1	Y	
3 gaps	6.6	Y	
4	9.1	Y	
5	61	Y	
5 gaps	3.4	Y	
6	79.9	Y	
6 gaps	3.4	Y	
7	130.4	Y	
7 gaps	6.1	Y	
<b>Total</b>	<b>569.7</b>	<b>Y</b>	

### Unit cruise specifications:

Unit #	Sample Type (VP,FP,ITS,100%)	Expansion Factor (baf,full/half)	Sighting Height (4.5', 16')	Grid Size (plot spacing)	Plot Ratio (cruise/co unt)	Number of plots
1	VP	54.45, 40	4.5', 16'	200X200	1:1	4
2	VP	54.45, 40	4.5', 16'	500X500	1:1	25
3	VP	54.45, 40	4.5', 16'	450X450	1:1	37
4	VP	54.45, 40	4.5', 16'	300X300	1:1	5
5	VP	54.45, 40	4.5', 16'	300X300	1:1	31
6	VP	54.45, 40	4.5', 16'	450X450	1:1	19
7	VP	54.45, 40	4.5', 16'	450X450	1:1	29
All Gaps	VP	Plots From Units	4.5', 16'	N/A	Cruise	N/A

**Sale/Cruise Description:**

<b>Minor species cruise intensity</b>	Minor species sampled using same cruise plots.					
<b>Minimum cruise spec:</b>	40% of Form Factor at 16 ft. D.O.B or 5 inch top or merchantable top					
<b>Average ring count:</b>	<b>DF =</b>	4	<b>WH =</b>	4	<b>SS =</b>	3
<b>Leave/take tree description:</b>	Leave tree clumps are bounded out with yellow tags, pink flashers and blue paint. Individual leave trees are marked with blue bands and two blue butt marks.					
<b>Other conditions:</b>	Exterior boundaries are marked with white tags and pink flashers					

<b>Sort Description:</b>	<p><b>HA</b>– Logs meeting the following criteria: Surface characteristics for a high quality A sort will have sound tight knots not to exceed 1 ½” in diameter, numbering not more than an average of one per foot of log length. May include logs with not more than two larger knots. Knots and knot indicators ½” in diameter and smaller shall not be a determining factor. Logs will have a growth ring count of 6 or more rings per inch in the outer third top end of the log. (minimum diameter 8”.)</p> <p><b>HB</b> – Logs meeting the following criteria: Surface characteristics for a B sort will have sound tight knots not to exceed 1 ½” in diameter. May include logs with not more than two larger knots up to 2 ½” in diameter. Logs will have a growth ring count of 6 or more rings per inch in the outer third to end of the log. (minimum diameter 8”.)</p> <p><b>R</b> – Logs meeting the following criteria: Gross diameter of 12 inches or greater, excessive knots greater than 2 ½ inches with recovery less than 65% of the net scale.</p>
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**Field Observations:**

Ellen Creek VDT is a 31-37 year old variable density harvest located on the D-5000, D-5500 and D- 5040 road systems. Unit 1, 2, 3, 5, 6 and 7 are variable density thinning units. These units have Douglas-fir, western hemlock and Sitka spruce as their main species. The average bole height is close to 60 feet for all of these species. The main defect is forked tops in the Douglas-fir and big bad bear damage in the spruce. The hemlock defect consists mostly of sweep present in the butt log. There are minor species of alder scattered throughout all of the units. The average bole height is 47 feet with sweep also as the major defect. In Unit 1 there is a component of red cedar. The cedars main defect is butt rot and it is extensive in this unit. Unit 4 is a variable retention harvest unit. This unit has experienced severe blowdown along the edge of a recent cut. The main defect in this unit is broken boles and missing tops.

**Grants:** 01/07

**Prepared By:** Jason Michaud

Forester / Timber Cruiser

TC PSPCSTGR **Species, Sort Grade - Board Foot Volumes (Project)**

T028 R015 S10 TyU1 THRU T028 R015 S16 TyU9	<b>Project: ELLENS</b> <b>Acres 569.70</b>	<b>Page 1</b> <b>Date 1/14/2016</b> <b>Time 3:54:25PM</b>
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S Spp	So T	Gr rt	%	Bd. Ft. per Acre			Total Net MBF	Percent of 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					
SS	D	2S	17	7.4	492	456	260			100					100	40	13	215	2.04	2.1				
SS	D	3S	67	6.0	1,914	1,799	1,025			100					1	99	40	9	113	1.08	15.9			
SS	D	4S	15	2.5	424	414	236	81	19				25	63	5	7	23	5	24	0.34	17.0			
SS	D	UT	1		9	9	5	100						100			17	5	20	0.24	.4			
<b>SS Totals</b>			11	5.7	2,839	2,677	1,525	13	70	17			4	10	2	84	32	7	75	0.89	35.5			
SS	T	D 2S	1	6.7	22	20	11			100					100	40	13	211	2.00	.1				
SS	T	D 3S	48	3.9	536	515	294			100					0	100	40	8	87	0.79	5.9			
SS	T	D 4S	48	3.2	536	518	295	70	30				9	20	14	58	29	5	33	0.36	15.7			
SS	T	D UT	3		27	27	16	100					8	92			24	5	27	0.33	1.0			
<b>SS Totals</b>			4	3.5	1,121	1,081	616	36	62	2			4	12	7	77	32	6	47	0.51	22.8			
WH	T	D 3S	54	5.4	2,775	2,624	1,495			100	0				2	98	40	8	80	0.66	32.6			
WH	T	D 4S	45	4.0	2,240	2,150	1,225	75	25				16	13	12	60	29	5	32	0.31	67.4			
WH	T	D UT	1		8	8	5	100						100			13	5	10	0.20	.8			
<b>WH Totals</b>			19	4.8	5,023	4,782	2,724	34	66	0			7	6	7	80	32	6	47	0.45	100.8			
WH	D	2S	2	50.0	153	76	43			100					100	40	12	111	1.57	.7				
WH	D	3S	77	5.4	2,971	2,810	1,601			100					1	99	40	9	111	0.89	25.3			
WH	D	4S	21	4.1	769	738	420	85	15				25	38	14	23	24	5	26	0.34	28.6			
<b>WH Totals</b>			15	6.9	3,893	3,623	2,064	17	81	2			5	8	3	84	31	7	66	0.68	54.6			
RA	T	D 3S	10	7.6	39	36	21			100					100	20	10	69	0.99	.5				
RA	T	D 4S	90	10.5	334	299	170	46	54				21	5	23	51	32	6	41	0.43	7.3			
<b>RA Totals</b>			1	10.2	373	335	191	41	59				29	5	21	45	31	6	43	0.45	7.8			
DF	D	2S	13	6.9	1,156	1,076	613			100					5	95	39	12	198	1.80	5.4			
DF	D	3S	71	9.0	6,122	5,571	3,174			100					5	95	39	8	97	0.95	57.3			
DF	D	4S	14	7.9	1,262	1,162	662	91	9				26	58	8	7	23	5	22	0.31	53.0			
DF	D	UT	2		84	84	48	62	38				68	32			19	6	26	0.32	3.3			
<b>DF Totals</b>			32	8.5	8,623	7,893	4,497	14	73	13			5	10	5	81	31	7	66	0.78	119.0			
DF	T	D 2S	1	6.9	62	58	33			100					5	95	39	12	186	1.71	.3			
DF	T	D 3S	56	8.4	2,643	2,420	1,379			100					14	86	39	7	73	0.70	33.0			
DF	T	D 4S	40	1.8	1,761	1,728	985	79	21				22	23	3	53	26	5	28	0.32	60.8			
DF	T	D UT	3		93	93	53	98	2				90	10			18	5	19	0.23	4.9			
<b>DF Totals</b>			17	5.7	4,559	4,299	2,449	34	65	1			11	10	9	71	30	6	43	0.49	98.9			
RC	D	3S	100	24.2	9	7	4			100					18	82	37	9	72	1.40	.1			
<b>RC Totals</b>			0	24.2	9	7	4			100					18	82	37	9	72	1.40	.1			
RC	T	D 3S	87		4	4	2			100					100	40	7	70	0.92	.1				
RC	T	D 4S	13		1	1	0	100					100			14	5	10	0.20	.1				
<b>RC Totals</b>			0		5	5	3	12	88				12		88	27	6	40	0.74	.1				
<b>Totals</b>				6.6	26,444	24,702	14,073	23	71	6			7	9	6	79	31	6	56	0.62	439.7			

Take Volumes  
 WH- 2724mbf  
 DF- 2449mbf  
 RC-3mbf  
 SS- 616mbf

RA-191mbf  
 Total Take volume -- 5983mbf

TC PSTATS		<b>PROJECT STATISTICS</b>								PAGE	1
		<b>PROJECT</b>				<b>ELLENS</b>				DATE	1/14/2016
TWP	RGE	SC	TRACT	TYPE		ACRES	PLOTS	TREES	CuFt	BdFt	
028	015	10	ELLENS	U1	THR	569.70	291	1,597	S	W	
028	015	16	ELLENS	U7							
		PLOTS	TREES	TREES PER PLOT	ESTIMATED TOTAL TREES	PERCENT SAMPLE TREES					
TOTAL		291	1597	5.5							
CRUISE		174	873	5.0	158,463	.6					
DBH COUNT REFOREST COUNT		117	639	5.5							
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		137	61.4	16.9	65	23.4	96.1	8,623	7,893	2,917	2,918
DOUG FIR-T		270	71.6	12.3	53	16.8	58.8	4,559	4,299	1,455	1,454
WHEMLOCK		48	29.2	15.2	64	9.5	37.0	3,893	3,623	1,169	1,170
WHEMLOCK-T		200	72.4	11.7	55	15.9	54.4	5,023	4,782	1,458	1,458
S SPRUCE		60	18.3	17.3	65	7.2	29.8	2,839	2,677	993	993
S SPRUCE-T		113	17.7	12.0	51	4.0	13.9	1,121	1,081	373	373
WR CEDAR		5	.1	18.9	53	0.0	.2	9	7	5	5
WR CEDAR-T		1	.1	15.3	60	0.0	.1	5	5	2	2
R ALDER-T		39	7.3	11.7	47	1.6	5.4	373	335	111	110
<b>TOTAL</b>		<b>873</b>	<b>278.2</b>	<b>14.0</b>	<b>58</b>	<b>79.1</b>	<b>295.7</b>	<b>26,444</b>	<b>24,702</b>	<b>8,482</b>	<b>8,483</b>
CONFIDENCE LIMITS OF THE SAMPLE											
68.1 TIMES OUT OF 100 THE VOLUME WILL BE WITHIN THE SAMPLE ERROR											
CL	68.1	COEFF	TREES/ACRE				# OF PLOTS REQ.		INF. POP.		
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10		
DOUG FIR		155.1	9.1	56	61	67					
DOUG FIR-T		167.2	9.8	65	72	79					
WHEMLOCK		248.7	14.6	25	29	34					
WHEMLOCK-T		177.4	10.4	65	72	80					
S SPRUCE		263.0	15.4	15	18	21					
S SPRUCE-T		319.6	18.7	14	18	21					
WR CEDAR		1349.1	79.0	0	0	0					
WR CEDAR-T		1204.2	70.5	0	0	0					
R ALDER-T		617.5	36.2	5	7	10					
<b>TOTAL</b>		<b>103.0</b>	<b>6.0</b>	<b>261</b>	<b>278</b>	<b>295</b>	<b>423</b>	<b>216</b>	<b>106</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		
DOUG FIR		153.7	9.0	87	96	105					
DOUG FIR-T		151.7	8.9	54	59	64					
WHEMLOCK		255.2	14.9	31	37	43					
WHEMLOCK-T		168.1	9.8	49	54	60					
S SPRUCE		260.1	15.2	25	30	34					
S SPRUCE-T		295.6	17.3	12	14	16					
WR CEDAR		1405.6	82.3	0	0	0					
WR CEDAR-T		1204.2	70.5	0	0	0					
R ALDER-T		635.3	37.2	3	5	7					
<b>TOTAL</b>		<b>100.4</b>	<b>5.9</b>	<b>278</b>	<b>296</b>	<b>313</b>	<b>402</b>	<b>205</b>	<b>101</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		
DOUG FIR		155.7	9.1	7,173	7,893	8,613					
DOUG FIR-T		154.9	9.1	3,909	4,299	4,689					
WHEMLOCK		264.4	15.5	3,062	3,623	4,185					
WHEMLOCK-T		172.4	10.1	4,299	4,782	5,265					

TC PSTATS		<b>PROJECT STATISTICS</b>							PAGE	<b>2</b>		
		PROJECT		ELLENS					DATE	1/14/2016		
TWP	RGE	SC	TRACT	TYPE		ACRES			PLOTS	TREES	CuFt	BdFt
028	015	10	ELLENS	U1	THR	569.70			291	1,597	S	W
028	015	16	ELLENS	U7								
CL	68.1		COEFF	NET BF/ACRE			# OF PLOTS REQ.			INF. POP.		
SD:	1.00		VAR.	S.E.%	LOW	AVG	HIGH	5		7	10	
S SPRUCE			260.4	15.3	2,269	2,677	3,085					
S SPRUCE-T			288.8	16.9	899	1,081	1,264					
WR CEDAR			1396.0	81.8	1	7	13					
WR CEDAR-T			1204.2	70.5	1	5	8					
R ALDER-T			631.2	37.0	211	335	458					
<b>TOTAL</b>			<b>104.5</b>	<b>6.1</b>	<b>23,190</b>	<b>24,702</b>	<b>26,214</b>	<b>436</b>	<b>223</b>	<b>109</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	
DOUG FIR			88.8	5.2	75	82	90					
DOUG FIR-T			81.5	4.8	67	73	80					
WHEMLOCK			138.8	8.1	83	98	113					
WHEMLOCK-T			88.7	5.2	79	88	97					
S SPRUCE			207.4	12.1	76	90	104					
S SPRUCE-T			213.4	12.5	64	78	91					
WR CEDAR			1396.0	81.8	7	37	67					
WR CEDAR-T			848.5	49.7	18	63	107					
R ALDER-T			631.2	37.0	39	62	84					
<b>TOTAL</b>			<b>103.8</b>	<b>6.1</b>	<b>78</b>	<b>84</b>	<b>89</b>	<b>430</b>	<b>220</b>	<b>108</b>		

TC		PSTNDSUM											Stand Table Summary			Page	1
															Date:	1/14/2016	
T028 R015 S10 TyU1 THRU T028 R015 S16 TyU7					Project		ELLENS					Time:	3:59:57PM				
					Acres		569.70					Grown Year:					
S Spc	T	DBH	Sample Trees	FF 16'	Av Ht	Trees/ Acre	BA/ Acre	Logs Acre	Average Log		Tons/ Acre	Net Cu.Ft. Acre	Net Bd.Ft. Acre	Totals			
									Net Cu.Ft.	Net Bd.Ft.				Tons	Cunits	MBF	
DF		12	2	78	68	1.766	1.42	1.77	19.0	45.0	.96	34	79	546	191	45	
DF		13	5	81	73	3.649	3.35	5.99	14.0	41.5	2.38	84	248	1,356	479	142	
DF		14	11	78	75	6.254	6.85	11.86	15.7	40.1	5.29	186	476	3,012	1,059	271	
DF		15	13	79	77	6.382	7.86	12.15	18.1	49.9	6.25	220	606	3,560	1,251	345	
DF		16	24	79	79	11.740	16.35	23.48	20.8	54.7	13.87	488	1,283	7,904	2,778	731	
DF		17	21	79	82	10.350	16.29	20.70	24.1	68.5	14.23	498	1,417	8,110	2,837	807	
DF		18	23	78	83	8.010	13.92	16.02	26.7	69.0	12.20	428	1,105	6,951	2,438	630	
DF		19	16	78	86	6.014	11.78	12.48	29.8	84.1	10.59	372	1,050	6,035	2,121	598	
DF		20	5	77	84	1.737	3.65	3.47	32.8	91.2	3.23	114	317	1,840	649	180	
DF		21	5	79	88	1.816	4.25	3.63	37.9	92.1	3.93	138	334	2,240	785	191	
DF		22	6	77	94	2.007	5.28	4.01	44.5	120.0	5.08	178	481	2,895	1,017	274	
DF		23	4	77	94	1.170	3.36	2.34	48.5	126.3	3.24	113	296	1,845	646	168	
DF		24	2	77	112	.541	1.73	1.08	60.7	184.1	1.87	66	199	1,063	374	113	
DF		Totals	137	78	81	61.435	96.10	118.99	24.5	66.3	83.12	2,918	7,893	47,356	16,624	4,497	
WHT		8	2	87	40	2.537	.89	2.54	5.0	30.0	.41	13	76	233	73	43	
WHT		9	17	84	57	12.294	5.34	12.29	9.2	34.8	3.60	113	427	2,049	645	243	
WHT		10	15	87	61	9.199	4.87	9.20	11.7	43.2	3.46	108	398	1,971	614	226	
WHT		11	34	84	64	12.411	8.10	12.41	15.3	46.2	6.07	190	573	3,459	1,080	327	
WHT		12	28	85	72	12.126	9.40	17.97	14.1	48.5	8.13	254	871	4,631	1,448	496	
WHT		13	35	85	75	10.652	9.90	20.94	13.8	42.7	9.26	289	895	5,274	1,648	510	
WHT		14	21	85	76	5.528	5.89	10.56	16.8	51.7	5.69	178	546	3,243	1,011	311	
WHT		15	15	84	78	3.467	4.13	6.80	18.5	63.3	4.03	126	430	2,297	718	245	
WHT		16	19	81	80	3.937	5.44	7.61	22.7	68.9	5.53	173	524	3,153	984	299	
WHT		17	3	80	74	.068	.10	.12	25.5	70.1	.10	3	8	55	17	5	
WHT		18	7	81	89	.113	.20	.23	30.8	94.9	.22	7	22	127	40	12	
WHT		19	2	78	88	.040	.08	.08	33.7	95.3	.09	3	8	50	15	4	
WHT		20	1	85	78	.019	.04	.04	34.9	55.0	.04	1	2	24	8	1	
WHT		24	1	86	89	.005	.02	.01	54.7	180.0	.02	1	2	11	3	1	
WHT		Totals	200	85	67	72.395	54.40	100.79	14.5	47.4	46.65	1,458	4,782	26,575	8,305	2,724	
DF T		8	2	80	27	1.885	.66	1.88	3.6	20.0	.20	7	38	111	39	21	
DF T		9	10	84	46	10.855	4.50	10.86	6.1	25.6	1.90	66	277	1,082	379	158	
DF T		10	14	83	55	10.629	5.70	10.63	9.7	34.5	2.95	103	367	1,678	589	209	
DF T		11	12	83	64	7.817	5.06	7.82	14.2	46.1	3.16	111	360	1,798	631	205	
DF T		12	18	80	65	8.019	6.20	9.79	15.0	39.0	4.21	147	382	2,401	837	218	
DF T		13	36	81	74	14.226	13.02	24.64	13.8	40.9	9.71	340	1,008	5,534	1,936	574	
DF T		14	29	80	72	6.671	7.17	10.77	16.8	44.7	5.16	181	481	2,942	1,034	274	
DF T		15	29	81	80	5.491	6.73	10.82	18.3	54.5	5.62	198	590	3,204	1,128	336	
DF T		16	32	78	76	2.027	2.76	3.68	21.4	49.9	2.24	79	183	1,274	447	104	
DF T		17	25	80	84	1.382	2.09	2.76	23.7	64.8	1.88	66	179	1,071	374	102	
DF T		18	25	78	85	2.079	3.63	4.16	27.6	76.8	3.27	115	319	1,861	653	182	
DF T		19	16	78	86	.258	.51	.54	29.7	84.0	.45	16	45	259	91	26	
DF T		20	5	77	85	.065	.14	.13	33.0	92.4	.12	4	12	69	24	7	
DF T		21	5	79	89	.077	.18	.15	38.2	97.7	.17	6	15	96	33	9	
DF T		22	6	77	95	.089	.24	.18	44.7	121.3	.23	8	22	129	45	12	
DF T		23	4	77	95	.047	.14	.09	49.2	128.9	.13	5	12	76	26	7	
DF T		24	2	76	110	.020	.06	.04	60.0	176.1	.07	2	7	39	14	4	
DF T		Totals	270	81	64	71.638	58.77	98.94	14.7	43.4	41.46	1,454	4,299	23,622	8,281	2,449	
WH		10	1	84	60	1.157	.67	1.16	13.6	40.0	.50	16	46	288	90	26	
WH		11	3	82	65	1.282	.87	1.28	16.3	46.6	.67	21	60	382	119	34	
WH		12	2	82	72	.750	.58	.75	18.9	60.0	.45	14	45	259	81	26	
WH		13	6	83	75	4.952	4.66	9.90	13.9	43.3	4.38	137	429	2,496	782	244	

TC		PSTNDSUM											Stand Table Summary			Page	2
															Date:	1/14/2016	
T028 R015 S10 TyU1 THRU T028 R015 S16 TyU7					Project		ELLENS					Time:	3:59:57PM				
					Acres		569.70					Grown Year:					
S Spc	T	DBH	Sample Trees	FF 16'	Av Ht	Trees/ Acre	BA/ Acre	Logs Acre	Average Log		Tons/ Acre	Net Cu.Ft. Acre	Net Bd.Ft. Acre	Totals			
									Net Cu.Ft.	Net Bd.Ft.				Tons	Cunits	MBF	
WH		14	7	82	76	3.997	4.25	7.73	16.6	47.9	4.10	128	370	2,334	730	211	
WH		15	7	83	78	4.216	5.17	8.43	19.3	64.3	5.21	163	542	2,967	928	309	
WH		16	8	84	83	5.738	8.11	11.48	23.2	80.5	8.52	267	924	4,855	1,519	526	
WH		17	3	81	74	1.782	2.72	3.13	25.7	68.7	2.57	80	215	1,465	458	122	
WH		18	7	82	90	3.786	6.68	7.57	30.7	95.7	7.43	232	725	4,233	1,323	413	
WH		19	2	77	88	.892	1.72	1.78	33.4	94.4	1.91	60	168	1,088	340	96	
WH		20	1	86	78	.599	1.31	1.20	34.9	55.0	1.34	42	66	766	238	38	
WH		24	1	86	89	.092	.29	.18	54.7	180.0	.32	10	33	184	57	19	
WH	Totals		48	83	78	29.241	37.04	54.59	21.4	66.4	37.41	1,170	3,623	21,315	6,665	2,064	
SS		10	1	87	61	.690	.39	.69	13.6	40.0	.24	9	28	139	54	16	
SS		13	1	77	69	.054	.05	.05	25.0	50.0	.04	1	3	20	8	2	
SS		14	7	82	77	3.169	3.42	5.97	17.8	56.8	2.76	106	339	1,574	606	193	
SS		15	3	77	77	1.068	1.34	2.14	19.5	52.7	1.09	42	113	618	238	64	
SS		16	8	77	77	3.090	4.26	6.18	22.1	53.9	3.55	137	333	2,020	778	190	
SS		17	6	79	81	2.358	3.69	4.72	25.7	70.0	3.16	121	330	1,798	691	188	
SS		18	11	78	82	3.066	5.37	6.13	29.0	80.9	4.62	178	496	2,634	1,012	283	
SS		19	7	78	83	1.441	2.77	2.88	32.3	84.2	2.41	93	243	1,374	530	138	
SS		20	6	76	86	1.300	2.85	2.60	38.4	101.1	2.59	100	263	1,478	569	150	
SS		21	4	77	93	.847	2.03	1.69	44.4	117.7	1.95	75	199	1,113	428	114	
SS		22	3	76	88	.640	1.68	1.28	47.2	120.3	1.57	60	154	893	344	88	
SS		23	1	75	89	.228	.67	.46	51.6	100.0	.61	24	46	348	134	26	
SS		24	1	74	84	.211	.67	.42	56.0	125.0	.62	24	53	351	135	30	
SS		26	1	77	115	.153	.57	.31	75.1	255.0	.60	23	78	341	131	44	
SS	Totals		60	78	81	18.317	29.76	35.52	28.0	75.4	25.81	993	2,677	14,702	5,656	1,525	
SST		9	4	79	37	2.858	1.26	2.86	6.9	23.4	.51	20	67	290	112	38	
SST		10	8	78	52	3.296	1.77	3.30	11.5	37.4	.99	38	123	562	216	70	
SST		11	12	80	65	2.822	1.86	2.82	16.5	46.2	1.21	47	130	689	265	74	
SST		12	7	83	65	2.398	1.77	2.40	17.3	49.5	1.08	41	119	615	236	68	
SST		13	15	81	74	2.651	2.46	4.16	17.0	48.6	1.84	71	202	1,050	404	115	
SST		14	14	82	79	2.182	2.39	4.34	17.8	55.9	2.01	77	243	1,143	441	138	
SST		15	5	77	74	.367	.43	.73	17.2	43.5	.33	13	32	187	72	18	
SST		16	8	77	77	.151	.21	.30	22.1	54.0	.17	7	16	99	38	9	
SST		17	6	78	81	.078	.12	.16	25.7	70.4	.10	4	11	59	23	6	
SST		18	13	76	81	.675	1.21	1.35	29.3	71.3	1.03	40	96	587	225	55	
SST		19	5	79	82	.054	.10	.11	32.2	83.9	.09	3	9	51	20	5	
SST		20	6	76	86	.057	.12	.11	38.3	101.0	.11	4	11	64	25	7	
SST		21	4	77	91	.033	.08	.07	43.4	113.8	.07	3	7	42	16	4	
SST		22	3	76	88	.025	.06	.05	47.3	123.0	.06	2	6	35	13	3	
SST		23	1	75	89	.010	.03	.02	51.6	100.0	.03	1	2	15	6	1	
SST		24	1	74	84	.009	.03	.02	56.0	125.0	.03	1	2	15	6	1	
SST		26	1	78	115	.006	.02	.01	75.1	255.0	.02	1	3	14	5	2	
SST	Totals		113	80	62	17.672	13.94	22.81	16.3	47.4	9.69	373	1,081	5,518	2,123	616	
RAT		8	3	87	54	.490	.18	.49	7.9	35.5	.11	4	17	61	22	10	
RAT		9	2	89	34	.664	.29	.66	5.8	20.0	.11	4	13	61	22	8	
RAT		10	2	85	49	.641	.34	.64	10.0	40.0	.17	6	26	99	37	15	
RAT		11	10	85	56	1.942	1.24	1.94	12.3	36.8	.65	24	72	372	136	41	
RAT		12	8	80	57	1.507	1.20	1.51	16.7	47.6	.69	25	72	392	143	41	
RAT		13	6	84	56	.946	.88	.95	17.9	43.3	.50	17	41	283	96	23	
RAT		14	4	83	72	.634	.67	.93	18.4	53.6	.47	17	50	267	97	28	
RAT		15	2	80	60	.242	.29	.24	18.0	60.0	.12	4	15	67	25	8	
RAT		16	2	79	78	.228	.33	.46	19.3	65.0	.24	9	30	138	50	17	

TC PSTNDSUM		Stand Table Summary											Page	3		
													Date:	1/14/2016		
		T028 R015 S10 TyU1		THRU		T028 R015 S16 TyU7		Project		ELLENS		Time:		3:59:57PM		
								Acres		569.70		Grown Year:				
S Spc	T	Sample DBH	FF Trees	Av 16'	Tot Ht	Trees/ Acre	BA/ Acre	Logs Acre	Average Log		Tons/ Acre	Net Cu.Ft. Acre	Net Bd.Ft. Acre	Totals		
									Net Cu.Ft.	Net Bd.Ft.				Tons	Cunits	MBF
RA	T	Totals	39	84	56	7.295	5.43	7.82	14.1	42.8	3.05	110	335	1,739	629	191
RC		17	1	72	61	.024	.04	.02	41.0	60.0	.02	1	1	13	6	1
RC		18	2	71	66	.043	.08	.04	43.0	65.0	.04	2	3	25	11	2
RC		19	1	69	68	.020	.04	.02	55.0	70.0	.03	1	1	15	6	1
RC		26	1	70	68	.010	.04	.01	105.0	130.0	.03	1	1	15	6	1
RC		Totals	5	71	65	.099	.19	.10	51.6	71.7	.12	5	7	68	29	4
RC	T	15	1	73	74	.060	.08	.12	19.8	40.0	.06	2	5	32	14	3
RC	T	Totals	1	73	74	.060	.08	.12	19.8	40.0	.06	2	5	32	14	3
Totals			873	82	71	278.152	295.69	439.68	19.3	56.2	247.37	8,483	24,702	140,927	48,326	14,073

T	TSPCSTGR	Species, Sort Grade - Board Foot Volumes (Type)										Page	1								
												Date		1/14/2016							
												Time		4:00:37PM							
T028 R015 S10 TU1										T028 R015 S10 TU1											
Twp	Rge	Sec	Tract	Type	Acres	Plots	Sample Trees	CuFt	BdFt												
028	015	10	ELLENS	U1	2.20	4	27	S	W												
Spp	So	Gr	%	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			
SS	T	DM	3S	70	11.0	3,632	3,232		7	100					100	40	7	60	0.63	53.7	
SS	T	DM	4S	30		1,344	1,344		3	100			20		80	32	5	33	0.37	40.4	
<b>SS T Totals</b>				21	8.0	4,975	4,575		10	29	71		6		94	37	6	49	0.53	94.1	
SS		DM	3S	83	7.4	2,975	2,756		6	100					100	40	8	85	0.86	32.6	
SS		DM	4S	17		554	554		1	100			100			26	5	30	0.29	18.5	
<b>SS Totals</b>				15	6.2	3,528	3,309		7	17	83		17		83	35	7	65	0.70	51.0	
WH	T	DM	3S	64		3,981	3,981		9	100					100	40	7	70	0.59	56.9	
WH	T	DM	4S	36	.0	2,219	2,219		5	100			26		74	25	5	23	0.33	98.1	
<b>WH T Totals</b>				28		6,199	6,199		14	36	64		9		91	30	6	40	0.46	155.0	
WH		DM	3S	80	11.1	998	887		2	100					100	40	8	80	0.79	11.1	
WH		DM	4S	20		222	222		0	100			100			20	5	20	0.24	11.1	
<b>WH Totals</b>				5	9.1	1,220	1,109		2	20	80		20		80	30	7	50	0.61	22.2	
RC		DM	3S	100	24.2	2,417	1,832		4	100			18		82	37	9	72	1.40	25.6	
<b>RC Totals</b>				8	24.2	2,417	1,832		4	100			18		82	37	9	72	1.40	25.6	
RC	T	DM	3S	87		1,097	1,097		2	100					100	40	7	70	0.92	15.7	
RC	T	DM	4S	13		157	157		0	100			100			14	5	10	0.20	15.7	
<b>RC T Totals</b>				6		1,253	1,253		3	12	88		12		88	27	6	40	0.74	31.3	
DF		DM	3S	84	15.6	3,436	2,899		6	100					100	40	9	95	1.16	30.7	
DF		DM	4S	16	13.3	613	532		1	100			15	85		21	5	17	0.28	30.7	
<b>DF Totals</b>				15	15.3	4,050	3,431		8	16	84		2	13	84	30	7	56	0.86	61.3	
RA	T	DM	4S	100		573	573		1	100			100			21	5	20	0.24	28.6	
<b>RA T Totals</b>				3		573	573		1	100			100			21	5	20	0.24	28.6	
<b>Type Totals</b>					8.0	24,216	22,282		49	25	75		6	9	86	32	6	47	0.63	469.2	

TC TSTATS				STATISTICS						PAGE	1
				PROJECT	ELLENS				DATE	1/14/2016	
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt		
028	015	10	ELLENS	U1	2.20	4	27	S	W		
				TREES	ESTIMATED	PERCENT					
				PER PLOT	TOTAL	SAMPLE					
				PLOTS	TREES	TREES	TREES				
TOTAL		4	27	6.8							
CRUISE		3	22	7.3	710		3.1				
DBH COUNT											
REFOREST											
COUNT		1	5	5.0							
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	
S SPRUCE	3	32.6	15.2	63	10.5	40.8	3,528	3,309	1,257	1,251	
S SPRUCE-T	4	80.4	12.5	54	19.3	68.1	4,975	4,575	1,851	1,837	
WHEMLOCK	1	11.1	15.0	65	3.5	13.6	1,220	1,109	404	404	
WHEMLOCK-T	3	98.1	12.4	57	23.2	81.7	6,199	6,199	2,170	2,170	
WR CEDAR	5	25.6	18.9	53	11.5	50.0	2,417	1,832	1,316	1,318	
WR CEDAR-T	1	15.7	15.3	60	5.1	20.0	1,253	1,253	622	622	
DOUG FIR	4	30.7	18.0	64	12.8	54.5	4,050	3,431	1,610	1,604	
R ALDER-T	1	28.6	8.0	30	3.5	10.0	573	573	146	146	
<b>TOTAL</b>	<b>22</b>	<b>322.7</b>	<b>13.9</b>	<b>55</b>	<b>90.9</b>	<b>338.6</b>	<b>24,216</b>	<b>22,282</b>	<b>9,376</b>	<b>9,350</b>	
CONFIDENCE LIMITS OF THE SAMPLE											
68.1 TIMES OUT OF 100 THE VOLUME WILL BE WITHIN THE SAMPLE ERROR											
CL:	68.1 %	COEFF	TREES/ACRE			# OF PLOTS REQ.		INF. POP.			
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10		
S SPRUCE	200.0	114.3			33	70					
S SPRUCE-T	115.3	65.9		27	80	133					
WHEMLOCK	200.0	114.3			11	24					
WHEMLOCK-T	88.7	50.7		48	98	148					
WR CEDAR	141.8	81.0		5	26	46					
WR CEDAR-T	115.5	66.0		5	16	26					
DOUG FIR	200.0	114.3			31	66					
R ALDER-T	200.0	114.3			29	61					
<b>TOTAL</b>	<b>39.5</b>	<b>22.5</b>		<b>250</b>	<b>323</b>	<b>396</b>	<b>81</b>	<b>41</b>	<b>20</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		
S SPRUCE	200.0	114.3			41	88					
S SPRUCE-T	100.7	57.5		29	68	107					
WHEMLOCK	200.0	114.3			14	29					
WHEMLOCK-T	86.1	49.2		42	82	122					
WR CEDAR	151.4	86.5		7	50	93					
WR CEDAR-T	115.5	66.0		7	20	33					
DOUG FIR	200.0	114.3			54	117					
R ALDER-T	200.0	114.3			10	21					
<b>TOTAL</b>	<b>28.2</b>	<b>16.1</b>		<b>284</b>	<b>339</b>	<b>393</b>	<b>42</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		
S SPRUCE	200.0	114.3			3,309	7,090					
S SPRUCE-T	88.7	50.7		2,257	4,575	6,893					
WHEMLOCK	200.0	114.3			1,109	2,377					
WHEMLOCK-T	84.6	48.3		3,203	6,199	9,196					
WR CEDAR	149.8	85.6		264	1,832	3,400					
WR CEDAR-T	115.5	66.0		426	1,253	2,080					
DOUG FIR	200.0	114.3			3,431	7,351					

TC TSTATS				STATISTICS				PAGE	2	
				PROJECT	ELLENS			DATE	1/14/2016	
TWP	RGE	SECT	TRACT	TYPE	ACRES		PLOTS	TREES	CuFt	BdFt
028	015	10	ELLENS	U1	2.20		4	27	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	
R ALDER-T		200.0	114.3		573	1,228				
<b>TOTAL</b>		33.3	19.0	18,048	22,282	26,516	58	29	14	
CL:	68.1 %	COEFF		V-BAR/ACRE			# OF PLOTS REQ.		INF. POP.	
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10	
S SPRUCE		200.0	114.3		81	174				
S SPRUCE-T		75.7	43.2	33	67	101				
WHEMLOCK		200.0	114.3		81	175				
WHEMLOCK-T				39	76	113				
WR CEDAR		149.8	85.6	5	37	68				
WR CEDAR-T				21	63	104				
DOUG FIR		200.0	114.3		63	135				
R ALDER-T		200.0	114.3		57	123				
<b>TOTAL</b>		95.0	54.3	53	66	78	471	240	118	

TC		TSTNDSUM											Stand Table Summary			
Project														ELLENS		
T028 R015 S10 TU1											T028 R015 S10 TU1					
Twp	Rge	Sec	Tract	Type	Acres	Plots	Sample Trees	Page:	1							
028	015	10	ELLENS	U1	2.20	4	27	Date:	1/14/2016							
								Time:	4:00:37PM							
Spc	T	Sample		Av		Trees/ Acre	BA/ Acre	Logs Acre	Average Log		Tons/ Acre	Net Cu.Ft. Acre	Net Bd.Ft. Acre	Totals		
		DBH	Trees	FF 16'	Ht Tot				Net Cu.Ft.	Net Bd.Ft.				Tons	Cunits	MBF
WH	T	11	1	86	63	41.253	27.23	41.25	15.9	40.0	21.02	657	1,650	46	14	4
WH	T	13	2	85	73	56.867	54.45	113.73	13.3	40.0	48.41	1,513	4,549	107	33	10
WH		Totals	3	85	69	98.120	81.68	154.99	14.0	40.0	69.44	2,170	6,199	153	48	14
SS	T	11	1	78	61	26.747	17.02	26.75	15.9	40.0	11.08	426	1,070	24	9	2
SS	T	12	1	77	68	20.960	17.02	20.96	22.0	50.0	12.19	461	1,048	27	10	2
SS	T	13	1	77	69	19.041	17.02	19.04	22.0	50.0	11.07	419	952	24	9	2
SS	T	15	1	78	74	13.683	17.02	27.37	19.4	55.0	13.80	531	1,505	30	12	3
SS		Totals	4	78	67	80.431	68.06	94.11	19.5	48.6	48.13	1,837	4,575	106	40	10
DF		18	4	74	79	30.673	54.45	61.35	26.1	55.9	45.87	1,604	3,431	101	35	8
DF		Totals	4	74	79	30.673	54.45	61.35	26.1	55.9	45.87	1,604	3,431	101	35	8
SS		13	1	77	69	14.109	13.61	14.11	25.0	50.0	9.28	353	705	20	8	2
SS		15	1	77	85	10.662	13.61	21.32	20.4	60.0	11.29	434	1,279	25	10	3
SS		18	1	77	88	7.789	13.61	15.58	29.8	85.0	12.12	464	1,324	27	10	3
SS		Totals	3	77	79	32.561	40.84	51.01	24.5	64.9	32.69	1,251	3,309	72	28	7
RC		17	1	72	61	6.344	10.00	6.34	41.0	60.0	6.07	260	381	13	6	1
RC		18	2	71	66	11.255	20.00	11.26	43.0	65.0	11.39	484	732	25	11	2
RC		19	1	69	68	5.243	10.00	5.24	55.0	70.0	6.79	288	367	15	6	1
RC		26	1	70	68	2.712	10.00	2.71	105.0	130.0	6.69	285	353	15	6	1
RC		Totals	5	71	65	25.555	50.00	25.55	51.6	71.7	30.94	1,318	1,832	68	29	4
RC	T	15	1	73	74	15.665	20.00	31.33	19.8	40.0	14.61	622	1,253	32	14	3
RC		Totals	1	73	74	15.665	20.00	31.33	19.8	40.0	14.61	622	1,253	32	14	3
WH		15	1	80	80	11.092	13.61	22.18	18.2	50.0	12.91	404	1,109	28	9	2
WH		Totals	1	80	80	11.092	13.61	22.18	18.2	50.0	12.91	404	1,109	28	9	2
RA	T	8	1	80	34	28.648	10.00	28.65	5.1	20.0	4.02	146	573	9	3	1
RA		Totals	1	80	34	28.648	10.00	28.65	5.1	20.0	4.02	146	573	9	3	1
Totals			22	79	68	322.744	338.64	469.17	19.9	47.5	258.61	9350	22,282	569	206	49

T TSPCSTGR		Species, Sort Grade - Board Foot Volumes (Type)										Page 1											
Project: ELLENS												Date 1/14/2016											
												Time 4:02:06PM											
T028 R015 S16 TU9										T028 R015 S16 TU9													
Twp	Rge	Sec	Tract	Type	Acres	Plots	Sample Trees	CuFt	BdFt														
028	015	16	ELLENS	U2	116.70	25	120	S	W														
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			
				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					
DF	DM	2S	11	10.3	1,076	966	113	100				100				40	13	221	1.94		4.4		
DF	DM	3S	74	11.9	6,841	6,029	704	100				100				40	9	105	1.05		57.2		
DF	DM	4S	15	14.1	1,330	1,142	133	87	13					26	59	5	9	23	5	21	0.32	54.4	
<b>DF</b>	<b>Totals</b>		37	12.0	9,247	8,137	950	12	76	12					4	8	1	87	32	7	70	0.84	115.9
DF	T	DM	3S	33	11.4	1,022	905	100				100				40	7	70	0.68		13.0		
DF	T	DM	4S	67	1.7	1,832	1,801	52	48					3	18	79		33	5	40	0.35	45.6	
<b>DF</b>	<b>T</b>	<b>Totals</b>	12	5.2	2,854	2,706	316	34	66					2	12	86		35	6	46	0.44	58.6	
WH	DM	3S	82	5.2	4,023	3,814	445	100				100				40	10	131	1.03		29.1		
WH	DM	4S	18	8.7	868	792	92	100					23	24	53			26	5	27	0.34	29.1	
<b>WH</b>	<b>Totals</b>		21	5.8	4,891	4,606	538	17	83					4	4	9	83	33	7	79	0.76	58.2	
WH	T	DM	3S	58	2.1	2,288	2,239	100				100				40	8	86	0.66		26.1		
WH	T	DM	4S	42	3.0	1,625	1,577	184	64	36					17	8	75		31	5	35	0.32	44.7
<b>WH</b>	<b>T</b>	<b>Totals</b>	17	2.5	3,913	3,816	445	26	74					7	3	90		34	6	54	0.47	70.8	
SS	DM	2S	22	9.0	571	520	61	100				100				40	13	201	1.94		2.6		
SS	DM	3S	63	5.2	1,569	1,487	173	100				100				40	9	109	1.08		13.7		
SS	DM	4S	15		331	331	39	85	15					15	85			23	5	24	0.32	13.5	
<b>SS</b>	<b>Totals</b>		11	5.4	2,471	2,337	273	12	66	22					2	12	86		32	7	79	0.92	29.8
SS	T	DM	3S	36	11.1	178	158	18	100				100				40	8	80	0.80		2.0	
SS	T	DM	4S	36	11.1	178	158	18	100					13	87			26	5	24	0.28	6.6	
SS	T	DM	UT	28		120	120	14	100					100				27	5	30	0.34	4.0	
<b>SS</b>	<b>T</b>	<b>Totals</b>	2	8.3	476	437	51	64	36					5	59	36		28	5	35	0.41	12.6	
RA	T	DM	4S	100	6.9	235	219	26	56	44					56 44				36	6	47	0.41	4.7
<b>RA</b>	<b>T</b>	<b>Totals</b>	1	6.9	235	219	26	56	44					56 44				36	6	47	0.41	4.7	
<b>Type Totals</b>				7.6	24,087	22,257	2,597	20	74	7					4	8	3	85	33	7	63	0.67	350.5

TC TSTATS				STATISTICS						PAGE	1
				PROJECT	ELLENS				DATE	1/14/2016	
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt		
028	015	16	ELLENS	U2	116.70	25	120	S	W		
				TREES	ESTIMATED	PERCENT					
				PER PLOT	TOTAL	SAMPLE					
				PLOTS	TREES	TREES	TREES				
TOTAL		25	120	4.8							
CRUISE		14	63	4.5	25,733		.2				
DBH COUNT											
REFOREST											
COUNT		11	54	4.9							
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	
DOUG FIR	25	60.2	17.7	66	24.4	102.4	9,247	8,137	3,132	3,133	
DOUG FIR-T	8	50.0	11.7	52	10.8	37.0	2,854	2,706	885	884	
WHEMLOCK	9	29.1	16.6	69	10.7	43.6	4,891	4,606	1,451	1,450	
WHEMLOCK-T	8	51.0	12.2	58	11.8	41.4	3,913	3,816	1,134	1,132	
S SPRUCE	8	14.9	17.9	67	6.2	26.1	2,471	2,337	891	891	
S SPRUCE-T	3	10.6	10.6	42	2.0	6.5	476	437	147	147	
R ALDER-T	2	4.7	11.2	47	1.0	3.2	235	219	68	69	
<b>TOTAL</b>	<b>63</b>	<b>220.5</b>	<b>14.7</b>	<b>60</b>	<b>67.8</b>	<b>260.2</b>	<b>24,087</b>	<b>22,257</b>	<b>7,709</b>	<b>7,707</b>	
CONFIDENCE LIMITS OF THE SAMPLE											
68.1 TIMES OUT OF 100 THE VOLUME WILL BE WITHIN THE SAMPLE ERROR											
CL:	68.1 %	COEFF	TREES/ACRE			# OF PLOTS REQ.		INF. POP.			
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10		
DOUG FIR	63.7	13.0		52	60	68					
DOUG FIR-T	113.5	23.1		38	50	62					
WHEMLOCK	154.7	31.6		20	29	38					
WHEMLOCK-T	97.4	19.9		41	51	61					
S SPRUCE	251.5	51.3		7	15	23					
S SPRUCE-T	357.3	72.9		3	11	18					
R ALDER-T	500.0	102.0			5	9					
<b>TOTAL</b>	<b>29.2</b>	<b>6.0</b>		<b>207</b>	<b>221</b>	<b>234</b>	<b>35</b>	<b>18</b>	<b>9</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		
DOUG FIR	65.7	13.4		89	102	116					
DOUG FIR-T	110.0	22.4		29	37	45					
WHEMLOCK	153.1	31.2		30	44	57					
WHEMLOCK-T	95.2	19.4		33	41	49					
S SPRUCE	248.8	50.7		13	26	39					
S SPRUCE-T	366.4	74.7		2	7	11					
R ALDER-T	500.0	102.0			3	6					
<b>TOTAL</b>	<b>21.4</b>	<b>4.4</b>		<b>249</b>	<b>260</b>	<b>272</b>	<b>19</b>	<b>10</b>	<b>5</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		
DOUG FIR	65.3	13.3		7,054	8,137	9,220					
DOUG FIR-T	112.2	22.9		2,087	2,706	3,325					
WHEMLOCK	153.5	31.3		3,164	4,606	6,048					
WHEMLOCK-T	97.6	19.9		3,056	3,816	4,575					
S SPRUCE	251.8	51.3		1,137	2,337	3,537					
S SPRUCE-T	382.5	78.0		96	437	777					
R ALDER-T	500.0	102.0			219	442					
<b>TOTAL</b>	<b>24.1</b>	<b>4.9</b>		<b>21,163</b>	<b>22,257</b>	<b>23,351</b>	<b>24</b>	<b>12</b>	<b>6</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		

TC TSTATS				STATISTICS				PAGE	2	
				PROJECT	ELLENS			DATE	1/14/2016	
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt	
<b>028</b>	<b>015</b>	<b>16</b>	<b>ELLENS</b>	<b>U2</b>	116.70	25	120	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	
DOUG FIR				69	79	90				
DOUG FIR-T				56	73	90				
WHEMLOCK		27.9	5.7	73	106	139				
WHEMLOCK-T				74	92	111				
S SPRUCE		229.2	46.7	44	89	135				
S SPRUCE-T		382.5	78.0	15	67	119				
R ALDER-T		500.0	102.0		68	138				
<b>TOTAL</b>		<i>174.4</i>	<i>35.6</i>	<i>81</i>	<i>86</i>	<i>90</i>	<i>1,265</i>	<i>646</i>	<i>316</i>	

TC		TSTNDSUM		Stand Table Summary												
Project														ELLENS		
T028 R015 S16 TU9										T028 R015 S16 TU9						
Twp	Rge	Sec	Tract	Type	Acres	Plots	Sample Trees	Page:	1		Date: 1/14/2016					
028	015	16	ELLENS	U2	116.70	25	120	Time:	4:02:06PM							
S Spc	T	Sample		Av	Trees/ Acre	BA/ Acre	Logs Acre	Average Log		Net Tons/ Acre	Net Cu.Ft. Acre	Net Bd.Ft. Acre	Totals			
		DBH	Trees	FF 16'				Ht Tot	Net Cu.Ft.				Net Bd.Ft.	Tons	Cunits	MBF
DF		13	1	84	70	4.582	4.09	4.58	20.0	50.0	2.56	92	229	299	107	27
DF		16	4	79	76	11.667	16.38	23.33	20.1	47.5	13.31	469	1,108	1,553	547	129
DF		17	7	79	83	18.042	28.66	36.08	24.6	68.8	25.40	887	2,481	2,965	1,035	290
DF		18	4	77	82	9.615	16.38	19.23	25.5	62.5	13.99	490	1,203	1,632	572	140
DF		19	3	77	86	6.424	12.28	12.85	31.1	84.9	11.39	400	1,090	1,329	466	127
DF		20	2	78	82	3.851	8.19	7.70	32.5	89.7	7.08	250	691	826	292	81
DF		21	1	80	81	1.702	4.09	3.40	35.5	40.0	3.45	121	136	403	141	16
DF		22	1	80	90	1.609	4.09	3.22	41.9	105.0	3.82	135	338	445	157	39
DF		23	1	75	89	1.483	4.09	2.97	43.8	110.0	3.70	130	326	432	152	38
DF		24	1	78	119	1.271	4.09	2.54	63.0	210.0	4.57	160	534	533	187	62
DF		Totals	25	79	82	60.247	102.37	115.91	27.0	70.2	89.27	3,133	8,137	10,418	3,656	950
WH		14	1	83	73	4.798	4.84	9.60	13.4	40.0	4.12	129	384	480	150	45
WH		15	1	81	77	3.742	4.84	7.48	21.3	65.0	5.09	159	486	594	186	57
WH		16	1	87	86	3.694	4.84	7.39	22.5	90.0	5.32	166	665	621	194	78
WH		17	1	78	77	3.107	4.84	6.21	25.0	60.0	4.97	155	373	580	181	44
WH		18	5	82	91	13.762	24.20	27.52	30.5	98.0	26.95	841	2,698	3,145	981	315
WH		Totals	9	82	84	29.102	43.56	58.20	24.9	79.1	46.44	1,450	4,606	5,420	1,692	538
WH	T	10	1	88	73	9.484	5.17	9.48	12.8	60.0	3.87	121	569	452	141	66
WH	T	11	2	85	58	15.429	10.35	15.43	14.5	40.0	7.17	224	617	837	262	72
WH	T	12	2	83	77	12.538	10.35	18.81	16.6	56.7	10.01	313	1,066	1,168	365	124
WH	T	14	1	84	77	4.839	5.17	9.68	16.2	45.0	5.07	157	435	591	183	51
WH	T	15	2	84	79	8.726	10.35	17.45	18.2	64.7	10.16	318	1,128	1,186	371	132
WH		Totals	8	85	71	51.015	41.38	70.85	16.0	53.9	36.29	1,132	3,816	4,235	1,321	445
DF	T	10	2	80	51	16.657	9.26	16.66	10.4	34.8	4.95	174	580	578	203	68
DF	T	11	2	88	71	14.550	9.26	14.55	14.8	60.0	6.15	216	873	718	252	102
DF	T	12	1	80	57	5.796	4.63	5.80	18.4	40.0	3.05	107	232	355	125	27
DF	T	13	1	84	75	5.431	4.63	10.86	11.8	35.0	3.66	128	380	428	150	44
DF	T	14	1	78	70	4.456	4.63	4.46	25.3	60.0	3.21	113	267	375	132	31
DF	T	17	1	80	83	3.117	4.63	6.23	23.5	60.0	4.20	146	374	490	171	44
DF		Totals	8	83	64	50.006	37.03	58.55	15.1	46.2	25.23	884	2,706	2,944	1,032	316
SS		15	1	78	76	2.559	3.27	5.12	19.5	50.0	2.60	100	256	303	117	30
SS		17	3	78	82	6.318	9.80	12.64	25.6	68.4	8.40	323	864	980	377	101
SS		18	1	78	80	1.934	3.27	3.87	27.3	70.0	2.74	106	271	320	123	32
SS		20	1	74	89	1.483	3.27	2.97	38.8	100.0	2.99	115	297	349	134	35
SS		21	1	77	104	1.358	3.27	2.72	49.3	140.0	3.48	134	380	406	156	44
SS		22	1	75	89	1.226	3.27	2.45	46.6	110.0	2.96	114	270	345	133	31
SS		Totals	8	77	84	14.878	26.14	29.76	30.0	78.5	23.16	891	2,337	2,703	1,040	273
SS	T	9	1	82	46	4.617	2.18	4.62	8.4	30.0	1.01	39	139	117	45	16
SS	T	10	1	80	40	3.993	2.18	3.99	9.2	30.0	.96	37	120	112	43	14
SS	T	14	1	79	78	1.980	2.18	3.96	18.2	45.0	1.85	72	178	216	84	21
SS		Totals	3	81	50	10.591	6.53	12.57	11.7	34.7	3.81	147	437	445	172	51
RA	T	10	1	85	49	3.055	1.60	3.05	10.0	40.0	.83	31	122	96	36	14
RA	T	14	1	85	69	1.610	1.60	1.61	24.0	60.0	1.05	39	97	123	45	11
RA		Totals	2	85	56	4.664	3.20	4.66	14.8	46.9	1.88	69	219	219	81	26
Totals			63	82	73	220.503	260.20	350.51	22.0	63.5	226.08	7707	22,257	26,384	8,995	2,597

<b>T028 R015 S16 TU2G</b>										<b>T028 R015 S16 TU2G</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>					
028	015	16	ELLENS	U2G	2.80	25	120	S	W					

Spp	So	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								
DF	T	DM	2S	14	8.8	1,764	1,609	5	38	62					100	40	12	190	1.68	8.5				
DF	T	DM	3S	60	12.3	7,336	6,432	18	100						100	40	9	96	0.96	66.9				
DF	T	DM	4S	26	7.3	3,045	2,822	8	67	33	13	35	2	50		27	5	29	0.34	97.7				
<b>DF</b>	<b>T</b>	<b>Totals</b>		49	10.5	12,144	10,864	30	17	74	9				3	9	1	87		33	7	63	0.71	173.0
WH	T	DM	3S	72	4.1	6,363	6,100	17	100						100	40	9	110	0.86	55.3				
WH	T	DM	4S	28	5.1	2,465	2,341	7	77	23	19	14	18	49		29	5	32	0.33	73.3				
<b>WH</b>	<b>T</b>	<b>Totals</b>		38	4.4	8,829	8,441	24	21	79					5	4	5	86		34	7	66	0.60	128.5
SS	T	DM	2S	17	9.0	519	472	1		100					100	40	13	201	1.94	2.3				
SS	T	DM	3S	58	6.1	1,669	1,568	4		100					100	40	9	104	1.03	15.1				
SS	T	DM	4S	19	5.0	544	517	1	91	9	14	86				24	5	24	0.30	21.3				
SS	T	DM	UT	6	.0	163	163	0	100						100	27	5	30	0.34	5.4				
<b>SS</b>	<b>T</b>	<b>Totals</b>		12	6.1	2,895	2,720	8	23	59	17				3	22		75		31	7	62	0.74	44.2
RA	T	DM	4S	100	6.9	235	219	1	56	44					56	44	36	6	47	0.41	4.7			
<b>RA</b>	<b>T</b>	<b>Totals</b>		1	6.9	235	219	1	56	44					56	44	36	6	47	0.41	4.7			
<b>Type Totals</b>					7.7	24,103	22,243	62	20	74	7				4	9	3	85		33	7	63	0.67	350.4

TC TSTATS				STATISTICS				PAGE	1	
				PROJECT	ELLENS			DATE	1/14/2016	
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt	
028	015	16	ELLENS	U2G	2.80	25	120	S	W	
		PLOTS	TREES	TREES PER PLOT	ESTIMATED TOTAL TREES	PERCENT SAMPLE TREES				
TOTAL		25	120	4.8						
CRUISE		14	63	4.5	615	10.2				
DBH COUNT REFOREST COUNT		11	54	4.9						
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-T	33	107.8	15.4	60	35.5	139.4	12,144	10,864	4,039	4,039
WHEMLOCK-T	17	79.3	14.0	62	22.7	84.9	8,829	8,441	2,594	2,591
S SPRUCE-T	11	28.0	14.6	54	8.5	32.7	2,895	2,720	1,010	1,012
R ALDER-T	2	4.7	11.2	47	1.0	3.2	235	219	68	69
<b>TOTAL</b>	<b>63</b>	<b>219.7</b>	<b>14.7</b>	<b>60</b>	<b>67.8</b>	<b>260.2</b>	<b>24,103</b>	<b>22,243</b>	<b>7,711</b>	<b>7,710</b>
CONFIDENCE LIMITS OF THE SAMPLE										
68.1 TIMES OUT OF 100 THE VOLUME WILL BE WITHIN THE SAMPLE ERROR										
CL:	68.1 %	COEFF	TREES/ACRE			# OF PLOTS REQ.		INF. POP.		
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10	
DOUG FIR-T	61.4	12.5		94	108	121				
WHEMLOCK-T	88.7	18.1		65	79	94				
S SPRUCE-T	267.6	54.6		13	28	43				
R ALDER-T	500.0	102.0			5	9				
<b>TOTAL</b>	<b>28.6</b>	<b>5.8</b>		<b>207</b>	<b>220</b>	<b>233</b>	<b>34</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	
DOUG FIR-T	59.8	12.2		122	139	156				
WHEMLOCK-T	90.8	18.5		69	85	101				
S SPRUCE-T	267.9	54.6		15	33	51				
R ALDER-T	500.0	102.0			3	6				
<b>TOTAL</b>	<b>21.4</b>	<b>4.4</b>		<b>249</b>	<b>260</b>	<b>272</b>	<b>19</b>	<b>10</b>	<b>5</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	
DOUG FIR-T	62.2	12.7		9,485	10,864	12,242				
WHEMLOCK-T	94.2	19.2		6,819	8,441	10,063				
S SPRUCE-T	272.4	55.5		1,209	2,720	4,231				
R ALDER-T	500.0	102.0			219	442				
<b>TOTAL</b>	<b>23.5</b>	<b>4.8</b>		<b>21,179</b>	<b>22,243</b>	<b>23,307</b>	<b>23</b>	<b>12</b>	<b>6</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	
DOUG FIR-T				68	78	88				
WHEMLOCK-T				80	99	118				
S SPRUCE-T	259.3	52.9		37	83	129				
R ALDER-T	500.0	102.0			68	138				
<b>TOTAL</b>	<b>174.0</b>	<b>35.5</b>		<b>81</b>	<b>85</b>	<b>90</b>	<b>1,258</b>	<b>642</b>	<b>315</b>	

T TSPCSTGR		Species, Sort Grade - Board Foot Volumes (Type)										Page 1									
Project: ELLENS												Date 1/14/2016									
												Time 4:05:45PM									
T028 R015 S10 TU2										T028 R015 S10 TU2											
Twp	Rge	Sec	Tract	Type	Acres	Plots	Sample Trees	CuFt	BdFt												
028	015	10	ELLENS	U3	148.10	37	213	S	W												
Spp	S	So	Gr	%	Bd. Ft. per Acre			Total	Percent Net Board Foot Volume								Average Log				Logs Per /Acre
					Def%	Gross	Net		Log Scale Dia.				Log Length				Ln	Dia	Bd	CF/Lf	
DF	T	DM	3S	82	6.7	6,663	6,217	921	4-5	6-11	12-16	17+	12-20	21-30	31-35	36-99	40	8	88	0.84	70.5
DF	T	DM	4S	17	4.6	1,320	1,260	187	100				36	53		11	20	5	20	0.28	63.3
DF	T	DM	UT	1		25	25	4	100				100				13	5	10	0.20	2.5
DF Totals				31	6.3	8,007	7,501	1,111	17	83			6	9		85	30	7	55	0.67	136.2
DF	T	DM	3S	50	4.2	2,068	1,981	293							23	77	38	7	68	0.64	29.0
DF	T	DM	4S	43	2.3	1,713	1,674	248	89	11			20	23	9	48	27	5	27	0.35	61.2
DF	T	DM	UT	7		272	272	40	100				100				19	5	20	0.22	13.6
DF T Totals				16	3.1	4,053	3,927	582	45	55			16	10	16	59	29	6	38	0.45	103.8
WH	T	DM	3S	35	2.9	1,435	1,393	206								100	40	7	71	0.58	19.6
WH	T	DM	4S	65	4.3	2,678	2,562	379	67	33			7	10	11	72	33	5	36	0.32	70.4
WH T Totals				16	3.8	4,112	3,954	586	43	57			4	6	7	82	34	6	44	0.39	90.0
WH	T	DM	3S	74	4.0	2,218	2,129	315								100	40	8	94	0.77	22.7
WH	T	DM	4S	26	3.2	755	731	108	79	21			47	8		45	23	5	25	0.34	28.8
WH Totals				12	3.8	2,973	2,859	423	20	80			12	2		86	31	7	56	0.59	51.5
SS	T	DM	2S	10		427	427	63								100	40	12	218	1.86	2.0
SS	T	DM	3S	73	4.9	3,039	2,889	428								100	40	9	109	1.02	26.6
SS	T	DM	4S	16	2.9	618	600	89	87	13			35	56	9		22	5	22	0.31	26.8
SS	T	DM	UT	1		34	34	5	100				100				17	5	20	0.24	1.7
SS Totals				16	4.1	4,118	3,949	585	14	75	11		6	9	1	84	31	7	69	0.81	57.1
SS	T	DM	3S	49	2.2	755	739	109								100	40	9	106	0.90	6.9
SS	T	DM	4S	51		748	748	111	67	33			7	30	30	33	27	5	32	0.34	23.6
SS T Totals				6	1.1	1,503	1,487	220	34	66			4	15	15	66	30	6	49	0.51	30.6
RA	T	DM	4S	100	15.9	444	373	55	25	75			44	13		43	29	7	39	0.49	9.5
RA T Totals				2	15.9	444	373	55	25	75			44	13		43	29	7	39	0.49	9.5
Type Totals					4.6	25,210	24,052	3,562	27	71	2		9	8	5	78	31	6	50	0.56	478.6

TC TSTATS				STATISTICS						PAGE	1
				PROJECT	ELLENS				DATE	1/14/2016	
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt		
028	015	10	ELLENS	U3	148.10	37	213	S	W		
				TREES	ESTIMATED	PERCENT					
				PER PLOT	TOTAL	SAMPLE					
				PLOTS	TREES	TREES	TREES				
TOTAL		37	213	5.8							
CRUISE		24	123	5.1	48,338		.3				
DBH COUNT											
REFOREST											
COUNT		13	67	5.2							
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	
DOUG FIR	36	73.9	15.5	62	24.5	96.3	8,007	7,501	2,751	2,754	
DOUG FIR-T	19	84.6	11.5	47	18.1	61.3	4,053	3,927	1,346	1,342	
WHEMLOCK	12	28.8	14.0	61	8.3	30.9	2,973	2,859	927	928	
WHEMLOCK-T	25	77.4	10.9	52	15.2	50.0	4,112	3,954	1,201	1,200	
S SPRUCE	18	28.5	16.6	65	10.5	42.7	4,118	3,949	1,419	1,420	
S SPRUCE-T	6	23.6	11.7	48	5.2	17.7	1,503	1,487	463	463	
R ALDER-T	7	9.5	12.1	44	2.2	7.6	444	373	138	134	
<b>TOTAL</b>	<i>123</i>	<i>326.4</i>	<i>13.1</i>	<i>54</i>	<i>84.6</i>	<i>306.4</i>	<i>25,210</i>	<i>24,052</i>	<i>8,245</i>	<i>8,240</i>	
CONFIDENCE LIMITS OF THE SAMPLE											
68.1 TIMES OUT OF 100 THE VOLUME WILL BE WITHIN THE SAMPLE ERROR											
CL:	68.1 %	COEFF	TREES/ACRE			# OF PLOTS REQ.		INF. POP.			
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10		
DOUG FIR	70.6	11.6		65	74	82					
DOUG FIR-T	89.6	14.7		72	85	97					
WHEMLOCK	162.7	26.7		21	29	36					
WHEMLOCK-T	125.8	20.7		61	77	93					
S SPRUCE	130.9	21.5		22	29	35					
S SPRUCE-T	198.4	32.6		16	24	31					
R ALDER-T	345.2	56.7		4	9	15					
<b>TOTAL</b>				<i>326</i>	<i>326</i>	<i>326</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		
DOUG FIR	73.7	12.1		85	96	108					
DOUG FIR-T	86.4	14.2		53	61	70					
WHEMLOCK	163.7	26.9		23	31	39					
WHEMLOCK-T	118.6	19.5		40	50	60					
S SPRUCE	131.5	21.6		33	43	52					
S SPRUCE-T	193.0	31.7		12	18	23					
R ALDER-T	348.8	57.3		3	8	12					
<b>TOTAL</b>				<i>306</i>	<i>306</i>	<i>306</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		
DOUG FIR	74.1	12.2		6,588	7,501	8,415					
DOUG FIR-T	88.3	14.5		3,358	3,927	4,497					
WHEMLOCK	163.3	26.8		2,092	2,859	3,627					
WHEMLOCK-T	123.2	20.2		3,154	3,954	4,755					
S SPRUCE	128.7	21.1		3,115	3,949	4,784					
S SPRUCE-T	189.5	31.1		1,024	1,487	1,950					
R ALDER-T	352.1	57.8		157	373	589					
<b>TOTAL</b>				<i>24,052</i>	<i>24,052</i>	<i>24,052</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		

TC TSTATS				STATISTICS				PAGE	2	
				PROJECT	ELLENS			DATE	1/14/2016	
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt	
028	015	10	ELLENS	U3	148.10	37	213	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	
DOUG FIR				68	78	87				
DOUG FIR-T				55	64	73				
WHEMLOCK		71.6	11.8	68	93	117				
WHEMLOCK-T		101.2	16.6	63	79	95				
S SPRUCE		84.0	13.8	73	93	112				
S SPRUCE-T		97.5	16.0	58	84	110				
R ALDER-T		352.1	57.8	21	49	78				
<b>TOTAL</b>		<i>141.8</i>	<i>23.3</i>	78	78	78	802	409	201	

TC		TSTNDSUM											Stand Table Summary			
Project													ELLENS			
T028 R015 S10 TU2											T028 R015 S10 TU2					
Twp	Rge	Sec	Tract		Type	Acres	Plots	Sample Trees			Page:	1				
028	015	10	ELLENS		U3	148.10	37	213			Date:	1/14/2016				
													Time:	4:05:44PM		
S Spc	T	Sample		Av	Trees/ Acre	BA/ Acre	Logs Acre	Average Log		Net Tons/ Acre	Net Cu.Ft. Acre	Net Bd.Ft. Acre	Totals			
		DBH	Trees	FF 16'				Ht Tot	Net Cu.Ft.				Net Bd.Ft.	Tons	Cunits	MBF
DF		12	2	78	68	6.792	5.47	6.79	19.0	45.0	3.68	129	305	546	191	45
DF		13	2	83	78	5.888	5.47	11.78	12.7	40.0	4.25	150	471	630	222	70
DF		14	4	77	73	9.910	10.94	17.33	16.8	41.5	8.27	291	719	1,225	431	106
DF		15	7	79	76	14.500	17.69	26.65	18.2	48.1	13.77	484	1,283	2,039	717	190
DF		16	8	78	78	15.202	21.15	30.40	20.4	56.4	17.59	619	1,715	2,605	917	254
DF		17	9	79	81	15.542	24.61	31.08	24.1	67.1	21.34	748	2,086	3,161	1,108	309
DF		18	2	76	84	3.219	5.47	6.44	25.7	67.5	4.72	165	434	698	245	64
DF		19	2	76	82	2.868	5.47	5.74	29.2	85.1	4.78	167	488	708	248	72
DF		Totals	36	79	77	73.920	96.26	136.21	20.2	55.1	78.40	2,754	7,501	11,611	4,078	1,111
WH	T	9	4	84	55	18.878	8.01	18.88	8.4	32.4	5.08	159	612	753	235	91
WH	T	10	4	86	53	14.627	8.01	14.63	11.3	37.4	5.32	165	548	788	244	81
WH	T	11	7	84	66	21.492	14.01	21.49	15.5	49.7	10.70	334	1,067	1,584	495	158
WH	T	12	3	86	69	7.975	6.00	7.97	18.0	57.0	4.57	144	454	676	213	67
WH	T	13	4	84	74	8.769	8.01	17.54	13.0	41.3	7.29	228	724	1,079	337	107
WH	T	14	3	86	74	5.653	6.00	9.54	18.0	57.6	5.49	171	550	813	254	81
WH		Totals	25	85	63	77.393	50.04	90.05	13.3	43.9	38.44	1,200	3,954	5,693	1,778	586
SS		14	3	82	80	6.378	7.11	12.76	18.1	60.1	6.00	231	766	889	342	113
SS		15	1	77	77	1.932	2.37	3.86	19.5	55.0	1.96	75	213	290	112	31
SS		16	5	77	77	8.669	11.85	17.34	21.9	52.9	9.84	379	917	1,458	562	136
SS		17	1	77	81	1.540	2.37	3.08	25.3	65.0	2.04	78	200	301	116	30
SS		18	5	78	83	6.818	11.85	13.64	29.2	83.1	10.38	398	1,133	1,537	590	168
SS		19	1	77	88	1.257	2.37	2.51	32.3	85.0	2.09	81	214	310	120	32
SS		20	1	78	95	1.055	2.37	2.11	42.4	125.0	2.32	89	264	344	132	39
SS		22	1	78	88	.898	2.37	1.80	48.5	135.0	2.26	87	243	335	129	36
SS		Totals	18	78	81	28.547	42.68	57.09	24.9	69.2	36.90	1,420	3,949	5,465	2,103	585
DF	T	8	1	80	27	6.988	2.44	6.99	3.6	20.0	.72	25	140	107	38	21
DF	T	9	2	81	34	16.853	6.64	16.85	5.1	20.0	2.45	86	337	363	127	50
DF	T	10	1	80	61	5.968	3.32	5.97	6.9	30.0	1.17	41	179	174	61	27
DF	T	11	3	80	57	13.538	9.08	13.54	13.8	36.4	5.31	187	492	787	276	73
DF	T	12	2	79	63	8.396	6.64	8.40	18.0	40.0	4.41	151	336	653	224	50
DF	T	13	5	81	73	18.444	16.60	29.10	14.3	43.7	11.89	415	1,272	1,761	615	188
DF	T	14	3	80	69	9.060	9.96	12.17	19.8	49.9	6.85	240	607	1,015	356	90
DF	T	15	2	80	79	5.376	6.64	10.75	18.2	52.5	5.54	196	564	820	290	84
DF		Totals	19	80	57	84.624	61.33	103.76	12.9	37.9	38.35	1,342	3,927	5,679	1,987	582
WH		10	1	84	60	4.451	2.58	4.45	13.6	40.0	1.94	61	178	288	90	26
WH		13	3	84	78	8.131	7.73	16.26	14.5	48.3	7.52	236	786	1,114	349	116
WH		14	4	82	78	9.574	10.30	19.15	17.1	51.2	10.50	328	981	1,554	486	145
WH		15	1	86	78	2.215	2.58	4.43	18.0	70.0	2.55	80	310	378	118	46
WH		17	1	86	57	1.673	2.58	1.67	34.9	90.0	1.87	58	151	277	86	22
WH		18	1	80	80	1.474	2.58	2.95	29.1	80.0	2.74	86	236	406	127	35
WH		19	1	78	80	1.281	2.58	2.56	31.2	85.0	2.56	80	218	379	118	32
WH		Totals	12	83	74	28.798	30.90	51.47	18.0	55.6	29.68	928	2,859	4,395	1,374	423
SS	T	9	1	78	33	6.968	2.94	6.97	6.1	20.0	1.10	42	139	163	63	21
SS	T	10	1	78	54	5.619	2.94	5.62	11.2	40.0	1.64	63	225	243	94	33
SS	T	12	1	84	69	4.080	2.94	4.08	17.1	60.0	1.82	70	245	269	103	36
SS	T	14	2	83	80	5.317	5.89	10.63	18.1	62.7	4.99	192	666	740	284	99
SS	T	18	1	75	80	1.629	2.94	3.26	29.4	65.0	2.49	96	212	369	142	31
SS		Totals	6	80	58	23.614	17.66	30.56	15.2	48.7	12.05	463	1,487	1,784	686	220

TC		TSTNDSUM		Stand Table Summary													
Project														ELLENS			
T028 R015 S10 TU2										T028 R015 S10 TU2							
Twp	Rge	Sec	Tract	Type	Acres	Plots	Sample Trees	Page:	2		Date:	1/14/2016					
028	015	10	ELLENS	U3	148.10	37	213	Time:	4:05:44PM								
Spc	S T	Sample		Av	Trees/ Acre	BA/ Acre	Logs Acre	Average Log		Net Tons/ Acre	Net Cu.Ft. Acre	Net Bd.Ft. Acre	Totals				
		DBH	Trees	FF 16'				Ht Tot	Net Cu.Ft.				Net Bd.Ft.	Tons	Cunits	MBF	
RA	T	9	1	89	34	2.447	1.08	2.45	5.8	20.0	.39	14	49	58	21	7	
RA	T	12	2	81	60	2.664	2.16	2.66	15.4	44.9	1.13	41	120	167	61	18	
RA	T	13	3	84	56	3.485	3.24	3.49	17.9	43.3	1.83	62	151	271	92	22	
RA	T	15	1	80	60	.893	1.08	.89	18.0	60.0	.44	16	54	64	24	8	
RA		Totals		7	84	52	9.489	7.57	9.49	14.1	39.3	3.79	134	373	561	198	55
Totals		123	81	66	326.385	306.43	478.63	17.2	50.3	237.60	8240	24,052	35,188	12,204	3,562		

T	TSPCSTGR	Species, Sort Grade - Board Foot Volumes (Type)										Page	1											
												Date		1/14/2016										
												Time		4:09:33PM										
T028 R015 S10 TU3G												T028 R015 S10 TU3G												
Twp	Rge	Sec	Tract	Type	Acres	Plots	Sample Trees	CuFt	BdFt															
028	015	10	ELLENS	U3G	6.60	37	208	S	W															
Spp	S	So	Gr	% 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				
	T	DM	3S	73	6.2	8,563	8,034	53	100					5	95	40	8	83	0.79	96.6				
DF	T	DM	4S	24	3.4	2,795	2,701	18	94	6					28	37	5	30	23	5	23	0.32	116.3	
DF	T	DM	UT	3	254		254	2	100					100				18	5	18	0.22	14.0		
<b>DF T Totals</b>				47	5.4	11,613	10,989	73	26	74					9	9	5	77	30	6	48	0.58	226.9	
WH	T	DM	3S	49	3.5	3,452	3,330	22	100				100				40	8	82	0.67	40.7			
WH	T	DM	4S	51	4.1	3,568	3,421	23	69	31					14	9	9	67	31	5	34	0.33	101.4	
<b>WH T Totals</b>				29	3.8	7,020	6,751	45	35	65					7	5	5	83	33	6	47	0.44	142.1	
SS	T	DM	2S	8	460		460	3	100				100				40	12	218	1.86	2.1			
SS	T	DM	3S	67	4.4	3,734	3,571	24	100				100				40	9	107	0.98	33.4			
SS	T	DM	4S	24	1.5	1,277	1,257	8	76	24					22	41	20	17	24	5	26	0.32	48.2	
SS	T	DM	UT	1	37		37	0	100					100				17	5	20	0.24	1.8		
<b>SS T Totals</b>				23	3.3	5,508	5,325	35	19	73	9					6	10	5	80	30	7	62	0.71	85.5
SS		DM	3S	82	6.7	117	109	1	100				100				40	10	140	1.38	.8			
SS		DM	4S	18	23		23	0	100					100				28	5	30	0.34	.8		
<b>SS Totals</b>				1	5.6	140	133	1	18	82					18	82		34	8	85	0.95	1.6		
RA	T	DM	4S	100	15.9	444	373	2	25	75					44	13	43		29	7	39	0.49	9.5	
<b>RA T Totals</b>				2	15.9	444	373	2	25	75					44	13	43		29	7	39	0.49	9.5	
<b>Type Totals</b>					4.7	24,725	23,571	156	27	71	2					8	8	5	79	31	6	51	0.56	465.6

TC TSTATS				STATISTICS				PAGE	1	
				PROJECT	ELLENS			DATE	1/14/2016	
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt	
028	015	10	ELLENS	U3G	6.60	37	208	S	W	
		PLOTS	TREES	TREES PER PLOT	ESTIMATED TOTAL TREES	PERCENT SAMPLE TREES				
TOTAL		37	208	5.6						
CRUISE		24	123	5.1	2,088	5.9				
DBH COUNT REFOREST COUNT		13	67	5.2						
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-T	55	147.0	13.7	55	40.6	150.2	11,613	10,989	3,950	3,950
WHEMLOCK-T	37	109.1	11.7	54	23.7	80.9	7,020	6,751	2,101	2,100
S SPRUCE	1	.8	18.6	70	0.3	1.5	140	133	50	50
S SPRUCE-T	23	50.0	14.7	58	15.4	58.9	5,508	5,325	1,848	1,848
R ALDER-T	7	9.5	12.1	44	2.2	7.6	444	373	138	134
<b>TOTAL</b>	<i>123</i>	<i>316.3</i>	<i>13.2</i>	<i>55</i>	<i>82.4</i>	<i>299.1</i>	<i>24,725</i>	<i>23,571</i>	<i>8,087</i>	<i>8,082</i>
CONFIDENCE LIMITS OF THE SAMPLE										
68.1 TIMES OUT OF 100 THE VOLUME WILL BE WITHIN THE SAMPLE ERROR										
CL:	68.1 %	COEFF	TREES/ACRE			# OF PLOTS REQ.		INF. POP.		
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10	
DOUG FIR-T	66.5	10.9		131	147	163				
WHEMLOCK-T	113.6	18.7		89	109	129				
S SPRUCE	608.3	99.9		0	1	2				
S SPRUCE-T	129.2	21.2		39	50	61				
R ALDER-T	345.2	56.7		4	9	15				
<b>TOTAL</b>	<i>17.1</i>	<i>2.8</i>		<i>307</i>	<i>316</i>	<i>325</i>	<i>12</i>	<i>6</i>	<i>3</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	
DOUG FIR-T	66.5	10.9		134	150	167				
WHEMLOCK-T	105.9	17.4		67	81	95				
S SPRUCE	608.3	99.9		0	1	3				
S SPRUCE-T	126.0	20.7		47	59	71				
R ALDER-T	348.8	57.3		3	8	12				
<b>TOTAL</b>				<i>299</i>	<i>299</i>	<i>299</i>	<i>12</i>	<i>6</i>	<i>3</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	
DOUG FIR-T	67.0	11.0		9,779	10,989	12,198				
WHEMLOCK-T	108.1	17.8		5,552	6,751	7,950				
S SPRUCE	608.3	99.9		0	133	265				
S SPRUCE-T	125.1	20.6		4,231	5,325	6,420				
R ALDER-T	352.1	57.8		157	373	589				
<b>TOTAL</b>	<i>15.4</i>	<i>2.5</i>		<i>22,976</i>	<i>23,571</i>	<i>24,167</i>	<i>9</i>	<i>5</i>	<i>2</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	
DOUG FIR-T				65	73	81				
WHEMLOCK-T	70.0	11.5		69	83	98				
S SPRUCE	608.3	99.9		0	90	180				
S SPRUCE-T	70.4	11.6		72	90	109				
R ALDER-T	352.1	57.8		21	49	78				
<b>TOTAL</b>	<i>140.0</i>	<i>23.0</i>		<i>77</i>	<i>79</i>	<i>81</i>	<i>782</i>	<i>399</i>	<i>196</i>	

<b>T028 R015 S10 TU8</b>										<b>T028 R015 S10 TU8</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>					
028	015	10	ELLENS	U4	9.10	5	25	S	W					

Spp	T	So	Gr	%	Bd. Ft. per Acre			Total	Percent Net Board Foot Volume								Average Log				Logs Per /Acre		
									Log Scale Dia.				Log Length				Ln	Dia	Bd	CF/Lf			
					Def%	Gross	Net		Net MBF	4-5	6-11	12-16	17+	12-20	21-30	31-35	36-99	Ft	In	Ft		Lf	
WH	T	DM	3S	62	20.8	6,721	5,322	48	100				100				40	7	56	0.65	95.8		
WH	T	DM	4S	32		2,646	2,646	24	100					6	64		30	33	5	34	0.29	76.7	
WH	T	DM	UT	6		495	495	5	100					100				13	5	10	0.20	49.5	
<b>WH T Totals</b>				51	14.2	9,861	8,463	77	37	63					8	20		72	32	6	38	0.48	222.0
DF	T	DM	3S	87	24.5	6,136	4,633	42	100				100				40	7	61	0.80	75.4		
DF	T	DM	4S	10		483	483	4	100					100				16	5	20	0.24	24.2	
DF	T	DM	UT	3		152	152	1	100					100				17	5	20	0.24	7.6	
<b>DF T Totals</b>				32	22.2	6,771	5,269	48	12	88					12	88			33	7	49	0.72	107.2
SS	T	DM	3S	43	23.0	1,649	1,269	12	100				100				40	8	76	0.88	16.7		
SS	T	DM	4S	53	10.1	1,727	1,553	14	100					12		34	55	33	5	35	0.36	44.7	
SS	T	DM	UT	4		106	106	1	100					100				13	5	10	0.20	10.6	
<b>SS T Totals</b>				18	15.9	3,482	2,929	27	57	43					4	6	18	72	32	6	41	0.50	72.0
<b>Type Totals</b>					17.2	20,115	16,660	152	33	67					8	1	13	77	32	6	42	0.55	401.2

TC TSTATS				STATISTICS				PAGE	1	
				PROJECT	ELLENS			DATE	1/14/2016	
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt	
028	015	10	ELLENS	U4	9.10	5	25	S	W	
				TREES	ESTIMATED	PERCENT				
				PER PLOT	TOTAL	SAMPLE				
				PLOTS	TREES	TREES	TREES			
TOTAL		5	25	5.0						
CRUISE		5	25	5.0	2,690		.9			
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-T	12	164.9	12.1	53	37.6	130.7	9,861	8,463	3,352	3,353
DOUG FIR-T	9	75.4	15.4	58	24.9	98.0	6,771	5,269	2,531	2,538
S SPRUCE-T	4	55.3	12.0	51	12.6	43.6	3,482	2,929	1,156	1,157
<b>TOTAL</b>	<b>25</b>	<b>295.6</b>	<b>13.0</b>	<b>54</b>	<b>75.5</b>	<b>272.3</b>	<b>20,115</b>	<b>16,660</b>	<b>7,040</b>	<b>7,049</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>TREES/ACRE</b>				# OF PLOTS REQ.		INF. POP.	
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10	
WHEMLOCK-T	61.1	30.3		115	165	215				
DOUG FIR-T	99.4	49.4		38	75	113				
S SPRUCE-T	151.7	75.4		14	55	97				
<b>TOTAL</b>	<b>26.8</b>	<b>13.3</b>		<b>256</b>	<b>296</b>	<b>335</b>	<b>35</b>	<b>18</b>	<b>9</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	
WHEMLOCK-T	69.7	34.6		85	131	176				
DOUG FIR-T	106.9	53.1		46	98	150				
S SPRUCE-T	163.0	81.0		8	44	79				
<b>TOTAL</b>	<b>14.1</b>	<b>7.0</b>		<b>253</b>	<b>272</b>	<b>291</b>	<b>10</b>	<b>5</b>	<b>2</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	
WHEMLOCK-T	62.4	31.0		5,840	8,463	11,085				
DOUG FIR-T	98.6	49.0		2,686	5,269	7,851				
S SPRUCE-T	177.9	88.4		339	2,929	5,518				
<b>TOTAL</b>	<b>15.4</b>	<b>7.6</b>		<b>15,388</b>	<b>16,660</b>	<b>17,932</b>	<b>12</b>	<b>6</b>	<b>3</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	
WHEMLOCK-T	62.4	31.0		45	65	85				
DOUG FIR-T	98.6	49.0		27	54	80				
S SPRUCE-T	177.9	88.4		8	67	127				
<b>TOTAL</b>	<b>15.4</b>	<b>7.6</b>		<b>57</b>	<b>61</b>	<b>66</b>	<b>12</b>	<b>6</b>	<b>3</b>	

T	TSPCSTGR	Species, Sort Grade - Board Foot Volumes (Type)										Page	1												
Project: ELLENS												Date	1/14/2016												
												Time	4:13:22PM												
T028 R015 S10 TU7										T028 R015 S10 TU7															
Twp	Rge	Sec	Tract	Type	Acres	Plots	Sample Trees	CuFt	BdFt																
028	015	10	ELLENS	U5	61.00	31	168	S	W																
Spp	S	So	Gr	%	Bd. Ft. per Acre			Total	Percent Net Board Foot Volume								Average Log				Logs Per /Acre				
					Net BdFt	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						
SS		DM	2S	11	3.3	911	881	54	100				100				40	12	193	1.83	4.6				
SS		DM	3S	70	7.6	5,836	5,389	329	100				4 96				39	9	115	1.12	46.8				
SS		DM	4S	19	2.2	1,438	1,407	86	82	18					26	51	4	18	24	5	26	0.34	54.3		
<b>SS Totals</b>				32	6.2	8,185	7,677	468	15	74	11					5	9	3	82	31	7	73	0.86	105.7	
SS	T	DM	3S	43		1,232	1,232	75	100				100				40	7	70	0.63	17.7				
SS	T	DM	4S	57	5.0	1,677	1,592	97	53	47					9	91				33	5	39	0.41	40.8	
<b>SS T Totals</b>				12	2.9	2,909	2,824	172	30	70					5	95				35	6	48	0.49	58.5	
DF		DM	2S	16	3.9	793	762	47	100				100				40	11	163	1.37	4.7				
DF		DM	3S	67	13.5	3,714	3,214	196	100				100				40	8	80	0.87	40.0				
DF		DM	4S	16	5.8	793	747	46	100					41	59					20	5	19	0.28	38.4	
DF		DM	UT	1		29	29	2	100					100					14	5	10	0.20	2.9		
<b>DF Totals</b>				20	10.8	5,330	4,752	290	16	84					7	9	84				30	7	55	0.72	86.0
DF	T	DM	3S	46	18.4	1,315	1,074	66	100				23 77				38	8	69	0.72	15.6				
DF	T	DM	4S	48		1,095	1,095	67	37	63					4	33	63				31	5	39	0.41	28.0
DF	T	DM	UT	6		118	118	7	100					40	60					17	5	14	0.25	8.2	
<b>DF T Totals</b>				10	9.6	2,528	2,287	139	23	77					4	19	11	66	31	6	44	0.51	51.8		
WH	T	DM	3S	32	7.6	1,143	1,056	64	100				100				40	7	69	0.61	15.2				
WH	T	DM	4S	68		2,173	2,173	133	63	37					9	91				35	5	40	0.36	53.9	
<b>WH T Totals</b>				14	2.6	3,316	3,230	197	42	58					6	94				36	6	47	0.42	69.1	
WH		DM	2S	10	13.9	308	266	16	100				100				40	15	310	2.18	.9				
WH		DM	3S	51	5.8	1,373	1,293	79	100				15 85				38	8	86	0.72	15.1				
WH		DM	4S	39		989	989	60	49	51					13	8	79				32	5	38	0.41	25.9
<b>WH Totals</b>				11	4.6	2,671	2,548	155	19	71	10					5	3	8	84	34	7	61	0.58	41.8	
RA	T	DM	4S	100		369	369	22	36	64					100				38	6	51	0.32	7.3		
<b>RA T Totals</b>				2		369	369	22	36	64					100				38	6	51	0.32	7.3		
<b>Type Totals</b>					6.4	25,307	23,687	1,445	22	73	5					5	7	3	85	33	6	56	0.62	420.2	

TC TSTATS				STATISTICS				PAGE	1	
				PROJECT	ELLENS			DATE	1/14/2016	
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt	
028	015	10	ELLENS	U5	61.00	31	168	S	W	
				TREES	ESTIMATED	PERCENT				
				PER PLOT	TOTAL	SAMPLE				
				PLOTS	TREES	TREES	TREES			
TOTAL		31	168	5.4						
CRUISE		19	92	4.8	17,190		.5			
DBH COUNT										
REFOREST										
COUNT		12	62	5.2						
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
S SPRUCE	24	57.8	16.7	62	21.5	87.8	8,185	7,677	2,850	2,851
S SPRUCE-T	13	47.1	12.0	56	10.7	36.9	2,909	2,824	997	997
DOUG FIR	20	44.7	16.1	63	15.8	63.2	5,330	4,752	1,867	1,868
DOUG FIR-T	7	36.2	12.7	55	8.9	31.6	2,528	2,287	822	822
WHEMLOCK	11	31.7	13.2	58	8.2	29.9	2,671	2,548	825	825
WHEMLOCK-T	14	57.1	11.4	57	12.0	40.4	3,316	3,230	1,053	1,053
R ALDER-T	3	7.3	9.9	55	1.2	3.9	369	369	87	87
<b>TOTAL</b>	<b>92</b>	<b>281.8</b>	<b>13.8</b>	<b>59</b>	<b>79.0</b>	<b>293.7</b>	<b>25,307</b>	<b>23,687</b>	<b>8,500</b>	<b>8,503</b>
CONFIDENCE LIMITS OF THE SAMPLE										
68.1 TIMES OUT OF 100 THE VOLUME WILL BE WITHIN THE SAMPLE ERROR										
CL: 68.1 %	COEFF	TREES/ACRE				# OF PLOTS REQ.		INF. POP.		
SD: 1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10		
S SPRUCE	90.3	16.2	48	58	67					
S SPRUCE-T	145.4	26.1	35	47	59					
DOUG FIR	99.3	17.8	37	45	53					
DOUG FIR-T	139.6	25.1	27	36	45					
WHEMLOCK	167.2	30.0	22	32	41					
WHEMLOCK-T	120.3	21.6	45	57	69					
R ALDER-T	388.3	69.7	2	7	12					
<b>TOTAL</b>			<b>282</b>	<b>282</b>	<b>282</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		
S SPRUCE	90.1	16.2	74	88	102					
S SPRUCE-T	144.6	25.9	27	37	46					
DOUG FIR	97.2	17.4	52	63	74					
DOUG FIR-T	139.0	24.9	24	32	40					
WHEMLOCK	168.7	30.3	21	30	39					
WHEMLOCK-T	125.3	22.5	31	40	49					
R ALDER-T	409.4	73.5	1	4	7					
<b>TOTAL</b>			<b>294</b>	<b>294</b>	<b>294</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		
S SPRUCE	88.8	15.9	6,453	7,677	8,900					
S SPRUCE-T	142.5	25.6	2,102	2,824	3,546					
DOUG FIR	101.0	18.1	3,891	4,752	5,613					
DOUG FIR-T	142.4	25.5	1,703	2,287	2,871					
WHEMLOCK	177.8	31.9	1,735	2,548	3,362					
WHEMLOCK-T	132.3	23.7	2,463	3,230	3,996					
R ALDER-T	402.2	72.2	103	369	635					
<b>TOTAL</b>	<b>6.4</b>	<b>1.2</b>	<b>23,413</b>	<b>23,687</b>	<b>23,960</b>	<b>2</b>	<b>1</b>	<b>0</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		

TC TSTATS				STATISTICS				PAGE	2	
				PROJECT	ELLENS			DATE	1/14/2016	
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt	
028	015	10	ELLENS	U5	61.00	31	168	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	
S SPRUCE				73	87	101				
S SPRUCE-T		65.7	11.8	57	77	96				
DOUG FIR		42.4	7.6	62	75	89				
DOUG FIR-T		38.5	6.9	54	72	91				
WHEMLOCK		143.3	25.7	58	85	113				
WHEMLOCK-T		98.1	17.6	61	80	99				
R ALDER-T		402.2	72.2	27	95	164				
<b>TOTAL</b>		154.3	27.7	80	81	82	951	485	238	

TC		TSTNDSUM		Stand Table Summary												
Project														ELLENS		
T028 R015 S10 TU7										T028 R015 S10 TU7						
Twp	Rge	Sec	Tract		Type	Acres	Plots	Sample Trees			Page:	1				
028	015	10	ELLENS		U5	61.00	31	168			Date:	1/14/2016				
											Time:	4:13:22PM				
S Spc	T	Sample		Av	Trees/ Acre	BA/ Acre	Logs Acre	Average Log		Net Tons/ Acre	Net Cu.Ft. Acre	Net Bd.Ft. Acre	Totals			
		DBH	Trees	FF 16'				Ht Tot	Net Cu.Ft.				Net Bd.Ft.	Tons	Cunits	MBF
SS		10	1	87	61	6.449	3.66	6.45	13.6	40.0	2.29	88	258	139	54	16
SS		14	4	81	73	14.116	14.64	24.76	17.5	52.7	11.23	432	1,306	685	264	80
SS		16	3	77	78	7.807	10.98	15.61	22.7	56.6	9.22	355	884	562	216	54
SS		17	1	78	77	2.322	3.66	4.64	25.0	70.0	3.02	116	325	184	71	20
SS		18	4	78	82	8.103	14.64	16.21	29.2	81.3	12.30	473	1,317	750	288	80
SS		19	4	80	82	7.717	14.64	15.43	31.8	83.6	12.74	491	1,290	777	300	79
SS		20	4	76	82	6.745	14.64	13.49	36.7	92.6	12.87	495	1,249	785	302	76
SS		21	2	77	92	3.103	7.32	6.21	42.9	115.1	6.95	267	715	424	163	44
SS		22	1	74	88	1.451	3.66	2.90	46.1	115.0	3.48	134	334	212	82	20
SS		Totals	24	79	77	57.813	87.82	105.70	27.0	72.6	74.10	2,851	7,677	4,520	1,739	468
DF		13	1	78	67	3.430	3.16	3.43	22.4	60.0	2.19	77	206	133	47	13
DF		14	3	79	74	8.794	9.48	17.59	15.3	33.3	7.61	269	586	464	164	36
DF		15	3	79	77	7.810	9.48	15.62	17.5	49.9	7.75	273	779	473	166	48
DF		16	5	79	78	11.216	15.81	22.43	20.8	53.7	13.25	466	1,205	808	284	73
DF		18	4	77	80	7.164	12.65	14.33	26.7	62.5	10.94	382	896	667	233	55
DF		19	3	79	87	4.768	9.48	9.54	31.2	81.4	8.48	298	776	517	182	47
DF		20	1	77	89	1.524	3.16	3.05	34.2	100.0	2.97	104	305	181	64	19
DF		Totals	20	79	78	44.706	63.23	85.98	21.7	55.3	53.20	1,868	4,752	3,245	1,140	290
WH	T	9	1	86	67	6.532	2.89	6.53	11.6	40.0	2.42	76	261	147	46	16
WH	T	11	6	82	68	27.324	17.31	27.32	15.5	46.4	13.56	424	1,268	827	259	77
WH	T	12	3	86	69	11.615	8.66	15.23	14.7	47.9	7.15	223	729	436	136	44
WH	T	13	3	85	72	9.211	8.66	15.19	15.9	48.0	7.74	241	730	472	147	45
WH	T	15	1	84	78	2.415	2.89	4.83	18.4	50.0	2.81	89	242	172	54	15
WH		Totals	14	84	69	57.097	40.40	69.11	15.2	46.7	33.69	1,053	3,230	2,055	643	197
SS	T	10	1	77	61	4.904	2.84	4.90	15.1	40.0	1.93	74	196	118	45	12
SS	T	11	5	80	67	21.377	14.19	21.38	16.9	48.4	9.39	361	1,034	573	220	63
SS	T	13	6	82	74	18.340	17.02	27.30	17.6	51.2	12.52	481	1,399	764	294	85
SS	T	15	1	77	74	2.441	2.84	4.88	16.5	40.0	2.09	80	195	127	49	12
SS		Totals	13	80	69	47.060	36.89	58.46	17.1	48.3	25.92	997	2,824	1,581	608	172
WH		11	3	82	65	11.975	8.14	11.97	16.3	46.6	6.26	195	558	382	119	34
WH		12	2	82	72	7.000	5.43	7.00	18.9	60.0	4.24	133	420	259	81	26
WH		13	1	86	75	2.814	2.71	5.63	14.6	55.0	2.64	82	309	161	50	19
WH		14	2	78	70	4.904	5.43	7.30	21.0	46.9	4.91	154	342	299	94	21
WH		15	1	88	76	2.212	2.71	4.42	17.9	65.0	2.53	79	288	154	48	18
WH		16	1	86	80	1.896	2.71	3.79	23.3	85.0	2.83	89	322	173	54	20
WH		24	1	86	89	.857	2.71	1.71	54.7	180.0	3.01	94	308	184	57	19
WH		Totals	11	83	71	31.657	29.86	41.84	19.7	60.9	26.42	825	2,548	1,611	504	155
DF	T	10	1	88	46	9.176	4.52	9.18	8.7	30.0	2.27	80	275	138	49	17
DF	T	12	2	77	71	11.421	9.03	11.42	20.9	60.0	6.82	239	685	416	146	42
DF	T	13	1	77	75	4.681	4.52	9.36	13.2	25.0	3.50	124	234	213	75	14
DF	T	14	1	84	74	4.348	4.52	8.70	13.3	40.0	3.30	116	348	201	71	21
DF	T	15	1	80	74	3.538	4.52	7.08	16.7	45.0	3.36	118	318	205	72	19
DF	T	17	1	80	87	3.042	4.52	6.08	23.9	70.0	4.18	145	426	255	89	26
DF		Totals	7	81	67	36.206	31.62	51.81	15.9	44.1	23.42	822	2,287	1,428	501	139
RA	T	8	1	89	60	3.353	1.29	3.35	8.7	40.0	.81	29	134	49	18	8
RA	T	11	2	90	73	3.910	2.58	3.91	14.8	60.0	1.60	58	235	97	35	14
RA		Totals	3	90	67	7.263	3.87	7.26	12.0	50.8	2.40	87	369	146	53	22

TC TSTNDSUM

**Stand Table Summary**

**Project ELLENS**

**T028 R015 S10 TU7**

**T028 R015 S10 TU7**

<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>Page:</b>	<b>2</b>
<b>028</b>	<b>015</b>	<b>10</b>	<b>ELLENS</b>	<b>U5</b>	<b>61.00</b>	<b>31</b>	<b>168</b>	<b>Date:</b>	<b>1/14/2016</b>
								<b>Time:</b>	<b>4:13:22PM</b>

S Spc	T	DBH	Sample Trees	FF 16'	Av Ht Tot	Trees/ Acre	BA/ Acre	Logs Acre	Average Log		Tons/ Acre	Net Cu.Ft. Acre	Net Bd.Ft. Acre	Totals		
									Net Cu.Ft.	Net Bd.Ft.				Tons	Cunits	MBF
Totals			92	81	72	281.802	293.69	420.17	20.2	56.4	239.13	8503	23,687	14,587	5,187	1,445

<b>T028 R015 S10 TU5G</b>										<b>T028 R015 S10 TU5G</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>					
028	015	10	ELLENS	USG	3.40	31	168	S	W					

Spp	S	So	Gr	%	Bd. Ft. per Acre			Total	Percent Net Board Foot Volume								Average Log				Logs Per /Acre					
									Net BdFt	Def%	Gross	Net	Net MBF	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
SS	T	DM	2S	7	3.3	839	811	3	100				100				40	12	193	1.83	4.2					
SS	T	DM	3S	62	6.0	6,839	6,428	22	100				3 97				40	8	100	0.96	64.1					
SS	T	DM	4S	31	3.9	3,316	3,187	11	64	36					16	21	2	61	28	5	32	0.38	98.5			
<b>SS T Totals</b>				44	5.2	10,994	10,426	35	20	73	8					5	6	2	86	33	7	63	0.69	166.8		
DF	T	DM	2S	12	3.9	881	847	3	100				100				40	11	163	1.37	5.2					
DF	T	DM	3S	62	14.4	5,150	4,406	15	100				4 96				40	8	78	0.84	56.6					
DF	T	DM	4S	24	3.0	1,733	1,682	6	68	32					22	46	32		24	5	26	0.34	64.4			
DF	T	DM	UT	2		124	124	0	100					56	44			16	5	13	0.24	9.6				
<b>DF T Totals</b>				30	10.5	7,888	7,059	24	18	82					6	12	3	79	30	6	52	0.66	135.8			
WH	T	DM	3S	45	7.4	2,854	2,643	9	90	10					8 92		39	8	84	0.71	31.3					
WH	T	DM	4S	55		3,141	3,141	11	58	42					10	3	87		34	5	40	0.38	79.3			
<b>WH T Totals</b>				24	3.5	5,995	5,784	20	32	64	5					6	1	3	89	35	6	52	0.48	110.6		
RA	T	DM	4S	100		369	369	1	36	64					100				38	6	51	0.32	7.3			
<b>RA T Totals</b>				2		369	369	1	36	64					100				38	6	51	0.32	7.3			
<b>Type Totals</b>					6.4	25,246	23,637	80	22	73	5					5	7	3	85	33	6	56	0.62	420.5		

TC TSTATS				STATISTICS				PAGE	1	
				PROJECT	ELLENS			DATE	1/14/2016	
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt	
028	015	10	ELLENS	U5G	3.40	31	168	S	W	
				TREES	ESTIMATED	PERCENT				
				PER PLOT	TOTAL	SAMPLE				
					TREES	TREES				
TOTAL		31	168	5.4						
CRUISE		19	92	4.8	961		9.6			
DBH COUNT										
REFOREST										
COUNT		12	62	5.2						
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
S SPRUCE-T	37	109.2	14.5	59	32.8	124.7	10,994	10,426	3,809	3,810
DOUG FIR-T	27	77.8	14.9	60	24.5	94.8	7,888	7,059	2,713	2,715
WHEMLOCK-T	25	88.4	12.1	57	20.2	70.3	5,995	5,784	1,880	1,880
R ALDER-T	3	7.3	9.9	55	1.2	3.9	369	369	87	87
<b>TOTAL</b>	<b>92</b>	<b>282.6</b>	<b>13.8</b>	<b>59</b>	<b>79.0</b>	<b>293.7</b>	<b>25,246</b>	<b>23,637</b>	<b>8,489</b>	<b>8,492</b>
CONFIDENCE LIMITS OF THE SAMPLE										
68.1 TIMES OUT OF 100 THE VOLUME WILL BE WITHIN THE SAMPLE ERROR										
CL:	68.1 %	COEFF	TREES/ACRE				# OF PLOTS REQ.		INF. POP.	
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10	
S SPRUCE-T	86.7	15.6		92	109	126				
DOUG FIR-T	90.3	16.2		65	78	90				
WHEMLOCK-T	121.6	21.8		69	88	108				
R ALDER-T	388.3	69.7		2	7	12				
<b>TOTAL</b>				<b>283</b>	<b>283</b>	<b>283</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	
S SPRUCE-T	84.5	15.2		106	125	144				
DOUG FIR-T	87.7	15.7		80	95	110				
WHEMLOCK-T	120.4	21.6		55	70	85				
R ALDER-T	409.4	73.5		1	4	7				
<b>TOTAL</b>				<b>294</b>	<b>294</b>	<b>294</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	
S SPRUCE-T	81.1	14.6		8,908	10,426	11,944				
DOUG FIR-T	92.5	16.6		5,888	7,059	8,230				
WHEMLOCK-T	125.3	22.5		4,483	5,784	7,084				
R ALDER-T	402.2	72.2		103	369	635				
<b>TOTAL</b>	<b>5.2</b>	<b>.9</b>		<b>23,418</b>	<b>23,637</b>	<b>23,856</b>	<b>1</b>	<b>1</b>	<b>0</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	
S SPRUCE-T				71	84	96				
DOUG FIR-T	17.6	3.2		62	74	87				
WHEMLOCK-T	91.1	16.3		64	82	101				
R ALDER-T	402.2	72.2		27	95	164				
<b>TOTAL</b>	<b>153.7</b>	<b>27.6</b>		<b>80</b>	<b>80</b>	<b>81</b>	<b>943</b>	<b>481</b>	<b>236</b>	

T	TSPCSTGR	Species, Sort Grade - Board Foot Volumes (Type)										Page	1								
												Date		1/14/2016							
												Time		4:16:08PM							
T028 R015 S10 TU6										T028 R015 S10 TU6											
Twp	Rge	Sec	Tract	Type	Acres	Plots	Sample Trees	CuFt	BdFt												
028	015	10	ELLENS	U6	79.90	19	108	S	W												
Spp	S	So	Gr	%	Bd. Ft. per Acre			Total	Percent Net Board Foot Volume								Average Log				Logs Per /Acre
					Net	Def%	Gross		Net	Log Scale Dia.				Log Length				Ln	Dia	Bd	
									4-5	6-11	12-16	17+	12-20	21-30	31-35	36-99	Ft	In	Ft		
DF	DM	2S		4	8.3	433	397	32								100	40	13	220	2.03	1.8
DF	DM	3S		77	9.3	7,936	7,201	575							23	77	38	8	91	0.94	79.5
DF	DM	4S		16	9.0	1,635	1,487	119	96	4			34	59	7		22	5	21	0.29	71.3
DF	DM	UT		3		241	241	19	100				48	52			21	5	24	0.25	10.0
<b>DF</b>	<b>Totals</b>			38	9.0	10,246	9,327	745	18	78	4		7	11	19	63	30	7	57	0.72	162.6
DF	T	DM	3S	63	11.2	3,525	3,132	250							37	63	37	7	59	0.60	53.2
DF	T	DM	4S	37	2.1	1,826	1,788	143	100				31	32		37	23	5	23	0.27	78.4
<b>DF</b>	<b>T</b>	<b>Totals</b>		20	8.1	5,351	4,920	393	36	64			11	12	24	53	29	6	37	0.44	131.6
WH	T	DM	3S	51	6.3	2,935	2,749	220							15	85	38	7	71	0.63	38.6
WH	T	DM	4S	49	5.1	2,771	2,628	210	100				24	20	36	21	26	5	27	0.25	96.4
<b>WH</b>	<b>T</b>	<b>Totals</b>		22	5.8	5,706	5,378	430	49	51			12	10	25	54	29	6	40	0.39	135.0
WH		DM	2S	10	60.0	854	342	27								100	40	12	80	1.48	4.3
WH		DM	3S	72	5.4	2,463	2,331	186								100	40	8	101	0.80	23.0
WH		DM	4S	18	10.7	621	555	44	77	23			18	82			20	5	20	0.32	27.2
<b>WH</b>	<b>Totals</b>			13	18.1	3,938	3,227	258	13	76	11		3	14		83	30	7	59	0.71	54.5
SS		DM	2S	50	21.3	752	592	47								100	40	13	189	2.31	3.1
SS		DM	3S	35	6.7	444	414	33								100	40	10	140	1.16	3.0
SS		DM	4S	15	.0	170	170	14	35	65						100	25	6	28	0.46	6.1
<b>SS</b>	<b>Totals</b>			5	13.9	1,366	1,176	94	5	45	50			14		86	33	9	96	1.25	12.2
RA	T	DM	4S	100	6.7	496	463	37	65	35						65	35	5	39	0.44	11.9
<b>RA</b>	<b>T</b>	<b>Totals</b>		2	6.7	496	463	37	65	35						65	35	5	39	0.44	11.9
<b>Type</b>	<b>Totals</b>				9.6	27,103	24,490	1,957	28	66	5		8	11	19	62	30	6	48	0.57	507.8

TC TSTATS				STATISTICS				PAGE	1	
				PROJECT	ELLENS		DATE	1/14/2016		
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt	
028	015	10	ELLENS	U6	79.90	19	108	S	W	
				TREES	ESTIMATED	PERCENT				
				PER PLOT	TOTAL	SAMPLE				
				PLOTS	TREES	TREES	TREES			
TOTAL		19	108	5.7						
CRUISE		11	58	5.3	24,906		.2			
DBH COUNT										
REFOREST										
COUNT		8	49	6.1						
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
DOUG FIR	22	81.3	16.3	64	29.1	117.5	10,246	9,327	3,455	3,455
DOUG FIR-T	15	88.8	11.9	53	19.9	68.8	5,351	4,920	1,670	1,669
WHEMLOCK	4	27.2	15.8	64	9.4	37.3	3,938	3,227	1,158	1,157
WHEMLOCK-T	10	96.4	10.7	51	18.4	60.2	5,706	5,378	1,542	1,548
S SPRUCE	3	6.1	20.8	67	3.1	14.3	1,366	1,176	496	497
R ALDER-T	4	11.9	11.4	43	2.5	8.4	496	463	179	180
<b>TOTAL</b>	<b>58</b>	<b>311.7</b>	<b>13.4</b>	<b>56</b>	<b>83.6</b>	<b>306.5</b>	<b>27,103</b>	<b>24,490</b>	<b>8,500</b>	<b>8,507</b>
CONFIDENCE LIMITS OF THE SAMPLE										
68.1 TIMES OUT OF 100 THE VOLUME WILL BE WITHIN THE SAMPLE ERROR										
CL:	68.1 %	COEFF	TREES/ACRE			# OF PLOTS REQ.		INF. POP.		
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10	
DOUG FIR	81.1	19.1		66	81	97				
DOUG FIR-T	96.9	22.8		69	89	109				
WHEMLOCK	158.8	37.4		17	27	37				
WHEMLOCK-T	101.7	24.0		73	96	120				
S SPRUCE	179.1	42.2		4	6	9				
R ALDER-T	435.9	102.7			12	24				
<b>TOTAL</b>	<b>29.2</b>	<b>6.9</b>		<b>290</b>	<b>312</b>	<b>333</b>	<b>36</b>	<b>18</b>	<b>9</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	
DOUG FIR	74.5	17.6		97	117	138				
DOUG FIR-T	86.9	20.5		55	69	83				
WHEMLOCK	154.5	36.4		24	37	51				
WHEMLOCK-T	99.5	23.5		46	60	74				
S SPRUCE	171.9	40.5		9	14	20				
R ALDER-T	435.9	102.7			8	17				
<b>TOTAL</b>	<b>15.0</b>	<b>3.5</b>		<b>296</b>	<b>306</b>	<b>317</b>	<b>9</b>	<b>5</b>	<b>2</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	
DOUG FIR	74.4	17.5		7,692	9,327	10,961				
DOUG FIR-T	88.7	20.9		3,891	4,920	5,948				
WHEMLOCK	156.0	36.8		2,041	3,227	4,413				
WHEMLOCK-T	100.5	23.7		4,105	5,378	6,651				
S SPRUCE	173.6	40.9		695	1,176	1,657				
R ALDER-T	435.9	102.7			463	939				
<b>TOTAL</b>	<b>19.7</b>	<b>4.6</b>		<b>23,356</b>	<b>24,490</b>	<b>25,624</b>	<b>16</b>	<b>8</b>	<b>4</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	
DOUG FIR				65	79	93				
DOUG FIR-T	57.9	13.6		57	72	86				
WHEMLOCK				55	87	118				
WHEMLOCK-T				68	89	111				

TC TSTATS				<b>STATISTICS</b>				PAGE	2	
				PROJECT		ELLENS		DATE	1/14/2016	
<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>028</b>	<b>015</b>	<b>10</b>	<b>ELLENS</b>	<b>U6</b>	79.90	19	108	S	W	
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	
S SPRUCE		118.8	28.0	48	82	116				
R ALDER-T		435.9	102.7		55	111				
<b>TOTAL</b>		<i>169.4</i>	<i>39.9</i>	<i>76</i>	<i>80</i>	<i>84</i>	<i>1,210</i>	<i>617</i>	<i>303</i>	

TC		Stand Table Summary														
TSTNDSUM		Project ELLENS														
T028 R015 S10 TU6											T028 R015 S10 TU6					
Twp	Rge	Sec	Tract	Type	Acres	Plots	Sample Trees	Page:	1							
028	015	10	ELLENS	U6	79.90	19	108	Date:	1/14/2016							
								Time:	4:16:07PM							
S Spc	T	Sample		Av		Trees/ Acre	BA/ Acre	Logs Acre	Average Log		Net Tons/ Acre	Net Cu.Ft. Acre	Net Bd.Ft. Acre	Totals		
		DBH	Trees	FF 16'	Ht Tot				Net Cu.Ft.	Net Bd.Ft.				Tons	Cunits	MBF
DF		13	1	77	70	5.794	5.34	11.59	11.1	35.0	3.67	129	406	294	103	32
DF		14	4	79	76	19.509	21.36	39.02	14.9	41.3	16.56	581	1,612	1,323	465	129
DF		15	3	78	79	12.664	16.02	25.33	18.2	53.3	13.12	460	1,350	1,048	368	108
DF		16	3	78	82	11.883	16.02	23.77	20.6	49.9	13.96	489	1,185	1,116	391	95
DF		17	3	79	82	10.414	16.02	20.83	23.1	68.3	13.70	480	1,422	1,095	384	114
DF		18	3	78	80	9.110	16.02	18.22	26.5	66.5	13.78	483	1,212	1,101	386	97
DF		19	2	79	86	5.341	10.68	10.68	30.9	82.5	9.37	330	881	749	263	70
DF		20	1	76	77	2.575	5.34	5.15	30.9	80.0	4.50	159	412	360	127	33
DF		21	1	76	85	2.199	5.34	4.40	38.2	90.0	4.79	168	396	382	134	32
DF		23	1	77	89	1.804	5.34	3.61	48.6	125.0	5.01	175	451	400	140	36
DF		Totals	22	78	80	81.294	117.50	162.59	21.3	57.4	98.48	3,455	9,327	7,869	2,761	745
WH	T	8	1	87	40	17.241	6.02	17.24	5.0	30.0	2.78	87	517	222	69	41
WH	T	9	3	84	58	40.629	18.05	40.63	9.7	36.5	12.46	395	1,483	996	316	118
WH	T	12	2	82	72	16.006	12.04	32.01	10.4	37.4	10.63	332	1,197	850	265	96
WH	T	13	1	86	73	6.631	6.02	13.26	13.3	40.0	5.65	176	530	451	141	42
WH	T	14	2	85	78	11.341	12.04	22.68	16.5	52.5	11.97	374	1,191	956	299	95
WH	T	16	1	79	78	4.593	6.02	9.19	19.9	50.0	5.84	183	459	467	146	37
WH		Totals	10	84	61	96.439	60.18	135.01	11.5	39.8	49.33	1,548	5,378	3,942	1,237	430
DF	T	9	1	79	46	9.720	4.59	9.72	8.0	30.0	2.24	78	292	179	62	23
DF	T	10	2	82	54	18.250	9.17	18.25	9.6	34.9	5.02	176	637	401	141	51
DF	T	11	1	82	67	7.625	4.59	7.63	13.6	40.0	2.96	104	305	237	83	24
DF	T	12	2	82	69	12.086	9.17	24.17	9.3	30.0	6.42	225	725	513	180	58
DF	T	13	4	79	71	20.071	18.34	29.80	15.5	41.8	13.24	461	1,246	1,058	368	100
DF	T	14	4	79	74	17.186	18.34	34.37	14.2	39.9	13.85	487	1,370	1,107	390	109
DF	T	15	1	80	75	3.838	4.59	7.68	17.9	45.0	3.87	138	345	309	110	28
DF		Totals	15	80	65	88.777	68.78	131.61	12.7	37.4	47.60	1,669	4,920	3,803	1,333	393
WH		13	1	81	73	9.801	9.31	19.60	13.2	40.0	8.28	259	784	662	207	63
WH		16	2	84	82	13.177	18.63	26.35	22.8	74.9	19.18	600	1,973	1,532	480	158
WH		20	1	86	78	4.269	9.31	8.54	34.9	55.0	9.58	298	470	766	238	38
WH		Totals	4	83	78	27.247	37.26	54.49	21.2	59.2	37.04	1,157	3,227	2,960	925	258
SS		17	1	82	81	2.960	4.78	5.92	27.0	80.0	4.16	160	474	333	128	38
SS		23	1	75	89	1.627	4.78	3.25	51.6	100.0	4.35	168	325	348	134	26
SS		24	1	74	84	1.508	4.78	3.02	56.0	125.0	4.39	169	377	351	135	30
SS		Totals	3	78	84	6.095	14.33	12.19	40.8	96.5	12.90	497	1,176	1,031	397	94
RA	T	11	2	80	46	6.499	4.21	6.50	13.1	30.0	2.31	85	195	185	68	16
RA	T	12	2	80	55	5.361	4.21	5.36	17.8	50.0	2.60	96	268	208	76	21
RA		Totals	4	80	50	11.860	8.42	11.86	15.2	39.0	4.92	180	463	393	144	37
Totals			58	81	69	311.712	306.46	507.75	16.8	48.2	250.27	8507	24,490	19,997	6,797	1,957

<b>T028 R015 S10 TU6G</b>										<b>T028 R015 S10 TU6G</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>					
028	015	10	ELLENS	U6G	3.40	19	108	S	W					

Spp	So	Gr	T	rt	ad	% 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	Dia	Bd	CF/ Lf	
											4-5	6-11	12-16	17+	12-20	21-30	31-35	36-99	Ft	In	Ft	Lf	
DF	T	DM	2S			7	8.7	1,153	1,053	4	64	36					100	40	11	168	1.64	6.3	
DF	T	DM	3S			67	10.0	10,607	9,548	32	100					30	70	37	8	74	0.77	128.8	
DF	T	DM	4S			24	5.0	3,603	3,421	12	99	1		33	43	3	21	22	5	22	0.27	159.0	
DF	T	DM	UT			2		228	228	1	100			48	52			21	5	24	0.25	9.4	
<b>DF T Totals</b>						58	8.6	15,590	14,250	48	25	72	3	9	11	21	59	29	6	47	0.58	303.4	
WH	T	DM	3S			59	11.9	5,873	5,177	18	95	5			9	91		39	8	80	0.72	65.0	
WH	T	DM	4S			41	5.9	3,669	3,454	12	97	3		23	27	31	18	25	5	26	0.26	131.9	
<b>WH T Totals</b>						35	9.5	9,541	8,631	29	39	58	3	9	11	18	62	29	6	44	0.46	196.9	
SS	T	DM	2S			50	21.3	752	592	2		100				100		40	13	189	2.31	3.1	
SS	T	DM	3S			35	6.7	444	414	1		100				100		40	10	140	1.16	3.0	
SS	T	DM	4S			15		170	170	1	35	65			100			25	6	28	0.46	6.1	
<b>SS T Totals</b>						5	13.9	1,366	1,176	4	5	45	50		14		86	33	9	96	1.25	12.2	
RA	T	DM	4S			100	6.7	496	463	2	65	35			65	35		35	5	39	0.44	11.9	
<b>RA T Totals</b>						2	6.7	496	463	2	65	35			65	35		35	5	39	0.44	11.9	
<b>Type Totals</b>							9.2	26,994	24,519	83	30	65	5	8	11	20	61	29	6	47	0.55	524.3	

TC TSTATS				STATISTICS				PAGE	1	
				PROJECT	ELLENS			DATE	1/14/2016	
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt	
028	015	10	ELLENS	U6G	3.40	19	108	S	W	
		PLOTS	TREES	TREES PER PLOT	ESTIMATED TOTAL TREES	PERCENT SAMPLE TREES				
TOTAL		19	108	5.7						
CRUISE		11	58	5.3	1,101	5.3				
DBH COUNT REFOREST COUNT		8	49	6.1						
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-T	37	174.1	14.0	58	49.8	186.3	15,590	14,250	5,101	5,101
WHEMLOCK-T	14	131.9	11.6	53	28.6	97.4	9,541	8,631	2,648	2,655
S SPRUCE-T	3	6.1	20.8	67	3.1	14.3	1,366	1,176	496	497
R ALDER-T	4	11.9	11.4	43	2.5	8.4	496	463	179	180
<b>TOTAL</b>	<b>58</b>	<b>323.9</b>	<b>13.2</b>	<b>56</b>	<b>84.4</b>	<b>306.5</b>	<b>26,994</b>	<b>24,519</b>	<b>8,424</b>	<b>8,433</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>TREES/ACRE</b>				# OF PLOTS REQ.		INF. POP.	
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10	
DOUG FIR-T	62.3	14.7		149	174	200				
WHEMLOCK-T	104.8	24.7		99	132	164				
S SPRUCE-T	179.1	42.2		4	6	9				
R ALDER-T	435.9	102.7			12	24				
<b>TOTAL</b>	<b>29.9</b>	<b>7.0</b>		<b>301</b>	<b>324</b>	<b>347</b>	<b>38</b>	<b>19</b>	<b>9</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-T	55.4	13.1		162	186	211				
WHEMLOCK-T	104.7	24.7		73	97	121				
S SPRUCE-T	171.9	40.5		9	14	20				
R ALDER-T	435.9	102.7			8	17				
<b>TOTAL</b>	<b>15.0</b>	<b>3.5</b>		<b>296</b>	<b>306</b>	<b>317</b>	<b>9</b>	<b>5</b>	<b>2</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-T	56.1	13.2		12,367	14,250	16,132				
WHEMLOCK-T	104.4	24.6		6,507	8,631	10,754				
S SPRUCE-T	173.6	40.9		695	1,176	1,657				
R ALDER-T	435.9	102.7			463	939				
<b>TOTAL</b>	<b>19.7</b>	<b>4.6</b>		<b>23,382</b>	<b>24,519</b>	<b>25,656</b>	<b>16</b>	<b>8</b>	<b>4</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-T				66	76	87				
WHEMLOCK-T				67	89	110				
S SPRUCE-T	118.8	28.0		48	82	116				
R ALDER-T	435.9	102.7			55	111				
<b>TOTAL</b>	<b>169.1</b>	<b>39.8</b>		<b>76</b>	<b>80</b>	<b>84</b>	<b>1,206</b>	<b>615</b>	<b>302</b>	

T TSPCSTGR	Species, Sort Grade - Board Foot Volumes (Type)										Page 1									
	Project: ELLENS										Date 1/14/2016									
											Time 4:17:59PM									
T028 R015 S10 TU5										T028 R015 S10 TU5										
Twp	Rge	Sec	Tract	Type	Acres	Plots	Sample Trees	CuFt	BdFt											
028	015	10	ELLENS	U7	130.40	29	166	S	W											
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
				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		
DF	DM	2S	30	6.2	3,450	3,236	422					100		7	93	38	12	195	1.81	16.6
DF	DM	3S	55	7.5	6,396	5,919	772				100			2	98	39	9	116	1.07	51.0
DF	DM	4S	13	5.9	1,439	1,354	177	77	23			7	63	23	7	27	5	28	0.36	49.0
DF	DM	UT	2		177	177	23	22	78			78	22			21	8	45	0.50	3.9
<b>DF</b>	<b>Totals</b>		37	6.8	11,463	10,686	1,393	10	60	30		2	11	4	83	33	8	89	0.94	120.5
DF	T	DM	3S	64	5.3	3,625	3,435				100				100	40	8	88	0.76	39.1
DF	T	DM	4S	36	1.3	1,940	1,915	250	89	11		36	15		48	25	5	26	0.28	73.1
<b>DF</b>	<b>T</b>	<b>Totals</b>	19	3.9	5,565	5,350	698	32	68			13	6		82	30	6	48	0.51	112.2
WH	T	DM	3S	71	5.6	4,603	4,347				100				100	40	8	89	0.70	48.7
WH	T	DM	4S	29	6.0	1,817	1,708	223	76	24		29	22		48	24	5	26	0.29	66.0
<b>WH</b>	<b>T</b>	<b>Totals</b>	21	5.7	6,420	6,055	790	21	79			8	6		85	31	6	53	0.52	114.7
WH		DM	3S	83	6.4	4,694	4,396				100				100	40	9	118	0.94	37.3
WH		DM	4S	17		877	877	114	100			15	77	8		22	5	24	0.31	37.3
<b>WH</b>	<b>Totals</b>		18	5.4	5,571	5,273	688	17	83			2	13	1	83	31	7	71	0.71	74.6
SS		DM	2S	35		267	267	35			100				100	40	16	400	2.84	.7
SS		DM	3S	57	6.5	449	420	55			100				100	40	10	144	1.45	2.9
SS		DM	4S	8	15.3	68	57	7	64	36			100			24	5	25	0.38	2.3
<b>SS</b>	<b>Totals</b>		3	5.0	784	744	97	5	59	36			8		92	34	9	127	1.35	5.8
SS	T	DM	3S	38		140	140	18			100				100	40	7	70	0.67	2.0
SS	T	DM	4S	62	.0	221	221	29	100			9			91	33	5	31	0.40	7.0
<b>SS</b>	<b>T</b>	<b>Totals</b>	1		362	362	47	61	39			6			94	34	5	40	0.47	9.0
RA	T	DM	3S	47	7.6	163	150	20			100				100	20	10	69	0.99	2.2
RA	T	DM	4S	53	16.4	198	166	22	59	41		41		59	29	7	37	0.40	4.5	
<b>RA</b>	<b>T</b>	<b>Totals</b>	1	12.4	361	316	41	31	69			69		31	26	8	47	0.54	6.7	
<b>Type Totals</b>				5.7	30,526	28,785	3,754	18	69	12		6	9	2	83	31	7	65	0.68	443.7

TC TSTATS				STATISTICS						PAGE	1
				PROJECT	ELLENS				DATE	1/14/2016	
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt		
028	015	10	ELLENS	U7	130.40	29	166	S	W		
				TREES	ESTIMATED	PERCENT					
				PER PLOT	TOTAL	SAMPLE					
				PLOTS	TREES	TREES	TREES				
TOTAL		29	166	5.7							
CRUISE		15	77	5.1	32,622		.2				
DBH COUNT											
REFOREST											
COUNT		14	85	6.1							
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	
DOUG FIR	30	59.3	19.0	71	26.7	116.4	11,463	10,686	3,797	3,799	
DOUG FIR-T	15	73.1	12.7	58	17.9	63.8	5,565	5,350	1,703	1,703	
WHEMLOCK	11	37.3	15.8	66	12.8	50.7	5,571	5,273	1,654	1,658	
WHEMLOCK-T	12	66.0	13.1	61	17.1	62.0	6,420	6,055	1,838	1,837	
S SPRUCE	3	2.9	21.7	71	1.6	7.5	784	744	266	266	
S SPRUCE-T	3	7.0	12.1	53	1.6	5.6	362	362	146	146	
R ALDER-T	3	4.5	13.0	56	1.1	4.1	361	316	95	95	
<b>TOTAL</b>	<b>77</b>	<b>250.2</b>	<b>15.1</b>	<b>63</b>	<b>79.9</b>	<b>310.2</b>	<b>30,526</b>	<b>28,785</b>	<b>9,498</b>	<b>9,502</b>	
CONFIDENCE LIMITS OF THE SAMPLE											
68.1 TIMES OUT OF 100 THE VOLUME WILL BE WITHIN THE SAMPLE ERROR											
CL:	68.1 %	COEFF	TREES/ACRE			# OF PLOTS REQ.		INF. POP.			
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10		
DOUG FIR	55.1	10.4		53	59	65					
DOUG FIR-T	85.2	16.1		61	73	85					
WHEMLOCK	135.5	25.6		28	37	47					
WHEMLOCK-T	91.6	17.3		55	66	77					
S SPRUCE	260.5	49.2		1	3	4					
S SPRUCE-T	409.4	77.3		2	7	12					
R ALDER-T	538.5	101.7			4	9					
<b>TOTAL</b>	<b>27.8</b>	<b>5.3</b>		<b>237</b>	<b>250</b>	<b>263</b>	<b>32</b>	<b>16</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		
DOUG FIR	52.6	9.9		105	116	128					
DOUG FIR-T	75.8	14.3		55	64	73					
WHEMLOCK	134.4	25.4		38	51	64					
WHEMLOCK-T	90.1	17.0		51	62	73					
S SPRUCE	254.4	48.0		4	8	11					
S SPRUCE-T	395.6	74.7		1	6	10					
R ALDER-T	538.5	101.7			4	8					
<b>TOTAL</b>	<b>19.6</b>	<b>3.7</b>		<b>299</b>	<b>310</b>	<b>322</b>	<b>16</b>	<b>8</b>	<b>4</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		
DOUG FIR	53.4	10.1		9,609	10,686	11,763					
DOUG FIR-T	80.4	15.2		4,537	5,350	6,162					
WHEMLOCK	139.1	26.3		3,888	5,273	6,658					
WHEMLOCK-T	90.1	17.0		5,025	6,055	7,084					
S SPRUCE	262.1	49.5		376	744	1,113					
S SPRUCE-T	376.5	71.1		105	362	619					
R ALDER-T	538.5	101.7			316	638					
<b>TOTAL</b>	<b>22.4</b>	<b>4.2</b>		<b>27,567</b>	<b>28,785</b>	<b>30,004</b>	<b>21</b>	<b>11</b>	<b>5</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		

TC TSTATS				STATISTICS				PAGE	2	
				PROJECT	ELLENS			DATE	1/14/2016	
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt	
028	015	10	ELLENS	U7	130.40	29	166	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	
DOUG FIR				83	92	101				
DOUG FIR-T				71	84	97				
WHEMLOCK		34.9	6.6	77	104	131				
WHEMLOCK-T				81	98	114				
S SPRUCE		223.5	42.2	50	99	148				
S SPRUCE-T		376.5	71.1	19	64	110				
R ALDER-T		538.5	101.7		76	154				
<b>TOTAL</b>		203.0	38.3	89	93	97	1,703	869	426	

TC		Stand Table Summary														
TSTNDSUM		Project ELLENS														
T028 R015 S10 TU5										T028 R015 S10 TU5						
Twp	Rge	Sec	Tract	Type	Acres	Plots	Sample Trees	Page:	1							
028	015	10	ELLENS	U7	130.40	29	166	Date:	1/14/2016							
								Time:	4:17:58PM							
S Spc	T	Sample		Av	Trees/ Acre	BA/ Acre	Logs Acre	Average Log		Net Tons/ Acre	Net Cu.Ft. Acre	Net Bd.Ft. Acre	Totals			
		DBH	Trees	FF 16'				Ht Tot	Net Cu.Ft.				Net Bd.Ft.	Tons	Cunits	MBF
DF		16	4	79	83	11.055	15.52	22.11	22.2	62.3	13.97	490	1,378	1,822	639	180
DF		17	2	77	84	5.041	7.76	10.08	23.6	72.5	6.82	238	731	889	311	95
DF		18	6	79	86	13.282	23.28	26.56	27.9	76.8	21.09	741	2,039	2,751	967	266
DF		19	6	78	86	11.765	23.28	25.50	28.9	84.5	20.95	737	2,155	2,731	962	281
DF		20	1	78	90	1.852	3.88	3.70	34.4	100.0	3.63	127	370	473	166	48
DF		21	3	80	91	5.062	11.64	10.12	38.6	108.3	11.15	391	1,097	1,455	510	143
DF		22	5	77	95	7.326	19.40	14.65	45.0	122.9	18.79	659	1,801	2,450	859	235
DF		23	2	78	99	2.678	7.76	5.36	50.7	135.0	7.76	272	723	1,012	354	94
DF		24	1	76	106	1.225	3.88	2.45	58.5	160.0	4.06	143	392	529	187	51
DF		Totals	30	78	88	59.287	116.41	120.54	31.5	88.6	108.22	3,799	10,686	14,112	4,954	1,393
WH	T	10	1	88	63	10.490	5.16	10.49	11.6	40.0	3.88	121	420	506	158	55
WH	T	12	2	87	70	13.265	10.33	19.73	13.8	50.2	8.71	272	990	1,136	355	129
WH	T	13	4	85	76	21.994	20.65	43.99	14.1	44.9	19.81	619	1,974	2,583	807	257
WH	T	14	1	85	77	4.830	5.16	9.66	16.5	50.0	5.10	159	483	665	208	63
WH	T	15	1	86	78	4.381	5.16	8.76	18.1	65.0	5.09	159	570	663	207	74
WH	T	16	3	82	81	11.056	15.49	22.11	22.9	73.2	16.23	506	1,619	2,117	660	211
WH		Totals	12	85	74	66.016	61.96	114.74	16.0	52.8	58.81	1,837	6,055	7,669	2,395	790
DF	T	9	2	88	58	20.433	8.51	20.43	6.5	29.4	3.80	133	601	496	174	78
DF	T	10	1	88	63	7.649	4.26	7.65	11.6	40.0	2.52	88	306	329	115	40
DF	T	12	1	81	66	5.900	4.26	5.90	15.9	40.0	2.68	94	236	349	123	31
DF	T	13	4	82	76	18.063	17.02	36.13	13.0	41.1	13.35	468	1,486	1,741	610	194
DF	T	15	3	82	83	10.511	12.77	21.02	18.4	59.7	11.03	387	1,254	1,438	505	164
DF	T	16	1	78	77	3.248	4.26	6.50	19.6	50.0	3.61	127	325	471	166	42
DF	T	18	3	78	85	7.309	12.77	14.62	27.7	78.1	11.53	405	1,142	1,504	528	149
DF		Totals	15	84	71	73.114	63.84	112.24	15.2	47.7	48.53	1,703	5,350	6,328	2,220	698
WH		13	1	82	73	5.078	4.61	10.16	13.3	35.0	4.29	135	355	559	176	46
WH		15	3	83	78	11.333	13.83	22.67	19.2	63.0	13.90	435	1,428	1,812	567	186
WH		16	4	84	83	12.801	18.43	25.60	23.7	81.3	19.39	607	2,082	2,529	792	271
WH		17	1	80	81	3.104	4.61	6.21	23.5	70.0	4.67	146	435	609	190	57
WH		18	1	82	88	2.551	4.61	5.10	32.3	95.0	5.23	165	485	683	215	63
WH		19	1	77	92	2.442	4.61	4.88	34.8	100.0	5.44	170	488	709	222	64
WH		Totals	11	82	81	37.309	50.69	74.62	22.2	70.7	52.92	1,658	5,273	6,901	2,161	688
SS		19	1	74	82	1.220	2.50	2.44	33.5	85.0	2.13	82	207	278	107	27
SS		21	1	76	82	1.031	2.50	2.06	40.6	95.0	2.18	84	196	284	109	26
SS		26	1	77	115	.669	2.50	1.34	75.1	255.0	2.61	100	341	341	131	44
SS		Totals	3	75	90	2.919	7.51	5.84	45.5	127.5	6.92	266	744	902	347	97
SS	T	12	2	83	61	5.034	3.76	5.03	17.1	40.0	2.24	86	201	292	112	26
SS	T	13	1	78	77	2.006	1.88	4.01	14.8	40.0	1.54	59	160	201	77	21
SS		Totals	3	82	66	7.040	5.63	9.05	16.1	40.0	3.78	146	362	493	190	47
RA	T	11	1	88	60	2.294	1.38	2.29	8.9	30.0	.56	21	69	74	27	9
RA	T	14	1	81	75	1.237	1.38	2.47	15.2	50.0	1.03	38	124	135	49	16
RA	T	16	1	79	78	.952	1.38	1.90	19.3	65.0	1.01	37	124	132	48	16
RA		Totals	3	84	68	4.482	4.14	6.67	14.2	47.4	2.61	95	316	340	124	41
Totals			77	83	77	250.167	310.18	443.71	21.4	64.9	281.80	9502	28,785	36,746	12,391	3,754

<b>T028 R015 S10 TU7G</b>										<b>T028 R015 S10 TU7G</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>					
028	015	10	ELLENS	U7G	6.10	29	166	S	W					

Spp	So	Gr	rt	ad	%	Bd. Ft. per Acre			Total	Percent Net Board Foot Volume								Average Log				Logs						
										Net	BdFt	Def%	Gross	Net	Net MBF	Log Scale Dia.				Log Length				Ln	Dia	Bd	CF/	
																4-5	6-11	12-16	17+	12-20	21-30		31-35					36-99
DF	T	DM	2S		22	6.6	3,876	3,620	22	8	92			7	93	38	12	192	1.78	18.9								
DF	T	DM	3S		56	6.6	9,700	9,062	55	100					2	98	40	9	103	0.93	87.7							
DF	T	DM	4S		20	3.4	3,312	3,201	20	83	17		24	36	10	30	26	5	27	0.32	119.4							
DF	T	DM	UT		2		183	183	1	22	78		78	22			21	8	45	0.50	4.1							
<b>DF</b>	<b>T</b>	<b>Totals</b>			56	5.9	17,071	16,066	98	17	62	21		6	9	3	83	32	7	70	0.75	230.1						
WH	T	DM	3S		77	6.0	9,355	8,795	54	100					100	40	9	102	0.81	85.9								
WH	T	DM	4S		23	3.9	2,656	2,552	16	85	15		24	42	3	31	23	5	25	0.30	102.3							
<b>WH</b>	<b>T</b>	<b>Totals</b>			39	5.5	12,011	11,347	69	19	81		5	9	1	84	31	7	60	0.60	188.2							
SS	T	DM	2S		36	2.3	396	387	2	40	60				100	40	13	260	2.19	1.5								
SS	T	DM	3S		35	4.2	394	378	2	100					100	40	8	95	0.92	4.0								
SS	T	DM	4S		29	2.8	317	308	2	94	6		8	16	76	31	5	30	0.40	10.2								
<b>SS</b>	<b>T</b>	<b>Totals</b>			4	3.1	1,108	1,073	7	27	51	22	2	5	93	34	7	69	0.75	15.7								
RA	T	DM	3S		47	7.6	163	150	1	100			100			20	10	69	0.99	2.2								
RA	T	DM	4S		53	16.4	198	166	1	59	41		41		59	29	7	37	0.40	4.5								
<b>RA</b>	<b>T</b>	<b>Totals</b>			1	12.4	361	316	2	31	69		69		31	26	8	47	0.54	6.7								
<b>Type</b>	<b>Totals</b>					5.7	30,551	28,803	176	18	69	12		6	9	2	83	31	7	65	0.69	440.6						

TC TSTATS				STATISTICS				PAGE	1	
				PROJECT	ELLENS		DATE	1/14/2016		
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt	
028	015	10	ELLENS	U7G	6.10	29	166	S	W	
		PLOTS	TREES	TREES PER PLOT	ESTIMATED TOTAL TREES	PERCENT SAMPLE TREES				
TOTAL		29	166	5.7						
CRUISE		15	77	5.1	1,510	5.1				
DBH COUNT REFOREST COUNT		14	85	6.1						
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-T	45	130.0	15.9	64	45.1	180.2	17,071	16,066	5,522
	WHEMLOCK-T	23	102.3	14.2	63	29.9	112.7	12,011	11,347	3,501
	S SPRUCE-T	6	10.8	15.0	58	3.4	13.1	1,108	1,073	403
	R ALDER-T	3	4.5	13.0	56	1.1	4.1	361	316	95
	<b>TOTAL</b>	<b>77</b>	<b>247.5</b>	<b>15.2</b>	<b>63</b>	<b>79.7</b>	<b>310.2</b>	<b>30,551</b>	<b>28,803</b>	<b>9,521</b>
CONFIDENCE LIMITS OF THE SAMPLE										
68.1 TIMES OUT OF 100 THE VOLUME WILL BE WITHIN THE SAMPLE ERROR										
CL:	68.1 %	COEFF	TREES/ACRE				# OF PLOTS REQ.		INF. POP.	
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10	
	DOUG FIR-T	58.1	11.0	116	130	144				
	WHEMLOCK-T	83.5	15.8	86	102	118				
	S SPRUCE-T	298.8	56.4	5	11	17				
	R ALDER-T	538.5	101.7		4	9				
	<b>TOTAL</b>	<b>27.0</b>	<b>5.1</b>	<b>235</b>	<b>248</b>	<b>260</b>	<b>30</b>	<b>15</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	
	DOUG FIR-T	49.2	9.3	164	180	197				
	WHEMLOCK-T	84.6	16.0	95	113	131				
	S SPRUCE-T	263.3	49.7	7	13	20				
	R ALDER-T	538.5	101.7		4	8				
	<b>TOTAL</b>	<b>19.6</b>	<b>3.7</b>	<b>299</b>	<b>310</b>	<b>322</b>	<b>16</b>	<b>8</b>	<b>4</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	
	DOUG FIR-T	50.3	9.5	14,541	16,066	17,591				
	WHEMLOCK-T	86.9	16.4	9,485	11,347	13,210				
	S SPRUCE-T	262.5	49.6	541	1,073	1,605				
	R ALDER-T	538.5	101.7		316	638				
	<b>TOTAL</b>	<b>22.3</b>	<b>4.2</b>	<b>27,588</b>	<b>28,803</b>	<b>30,017</b>	<b>21</b>	<b>11</b>	<b>5</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	
	DOUG FIR-T			81	89	98				
	WHEMLOCK-T			84	101	117				
	S SPRUCE-T	250.5	47.3	41	82	122				
	R ALDER-T	538.5	101.7		76	154				
	<b>TOTAL</b>	<b>203.1</b>	<b>38.3</b>	<b>89</b>	<b>93</b>	<b>97</b>	<b>1,705</b>	<b>870</b>	<b>426</b>	

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

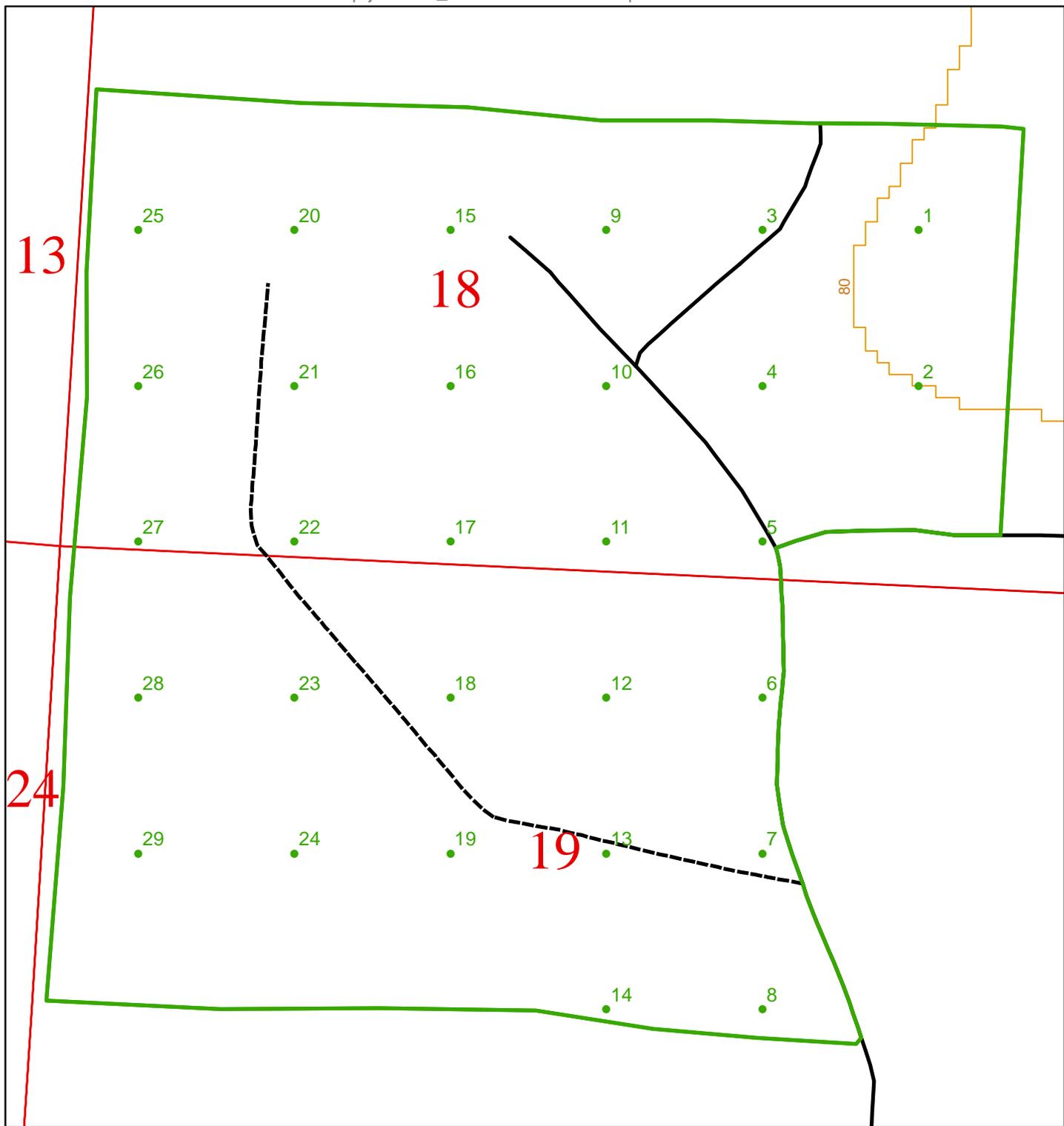
T028 R015 S10 TyU1	2.2
T028 R015 S10 TyU2	148.1
T028 R015 S16 TyU7	116.7

Project **ELLENS**  
Acres **569.70**

Page No **1**  
Date: **1/14/2016**  
Time **4:29:31PM**

Species	s T	Total	Total	Total	Net Cubic Ft/		CF/	Total CCF		Total MBF	
		Trees	Logs	Tons	Tree	Log	LF	Gross	Net	Gross	Net
DOUG FIR		34,999	67,789	47,356	47.50	24.52	0.79	16,616	16,624	4,912	4,497
WHEMLOCK	T	41,243	57,422	26,575	20.14	14.46	0.45	8,305	8,305	2,862	2,724
DOUG FIR	T	40,812	56,367	23,622	20.29	14.69	0.48	8,288	8,281	2,597	2,449
WHEMLOCK		16,659	31,101	21,315	40.01	21.43	0.68	6,661	6,665	2,218	2,064
S SPRUCE		10,435	20,234	14,702	54.20	27.95	0.89	5,654	5,656	1,617	1,525
S SPRUCE	T	10,068	12,993	5,518	21.09	16.34	0.51	2,122	2,123	639	616
R ALDER	T	4,156	4,455	1,739	15.13	14.12	0.45	632	629	212	191
WR CEDAR		56	56	68	51.57	51.57	1.39	29	29	5	4
WR CEDAR	T	34	69	32	39.70	19.85	0.74	14	14	3	3
<b>Totals</b>		158,463	250,485	140,927	30.50	19.29	0.62	48,322	48,326	15,065	14,073

Wood Type Species	Total	Total	Total	Net Cubic Ft/		CF/	Total CCF		Total MBF	
	Trees	Logs	Tons	Tree	Log	LF	Gross	Net	Gross	Net
C	154,307	246,031	139,188	30.91	19.39	0.62	47,690	47,697	14,853	13,882
H	4,156	4,455	1,739	15.13	14.12	0.45	632	629	212	191
<b>Totals</b>	158,463	250,485	140,927	30.50	19.29	0.62	48,322	48,326	15,065	14,073



**Cruiser Sample Point Locations**

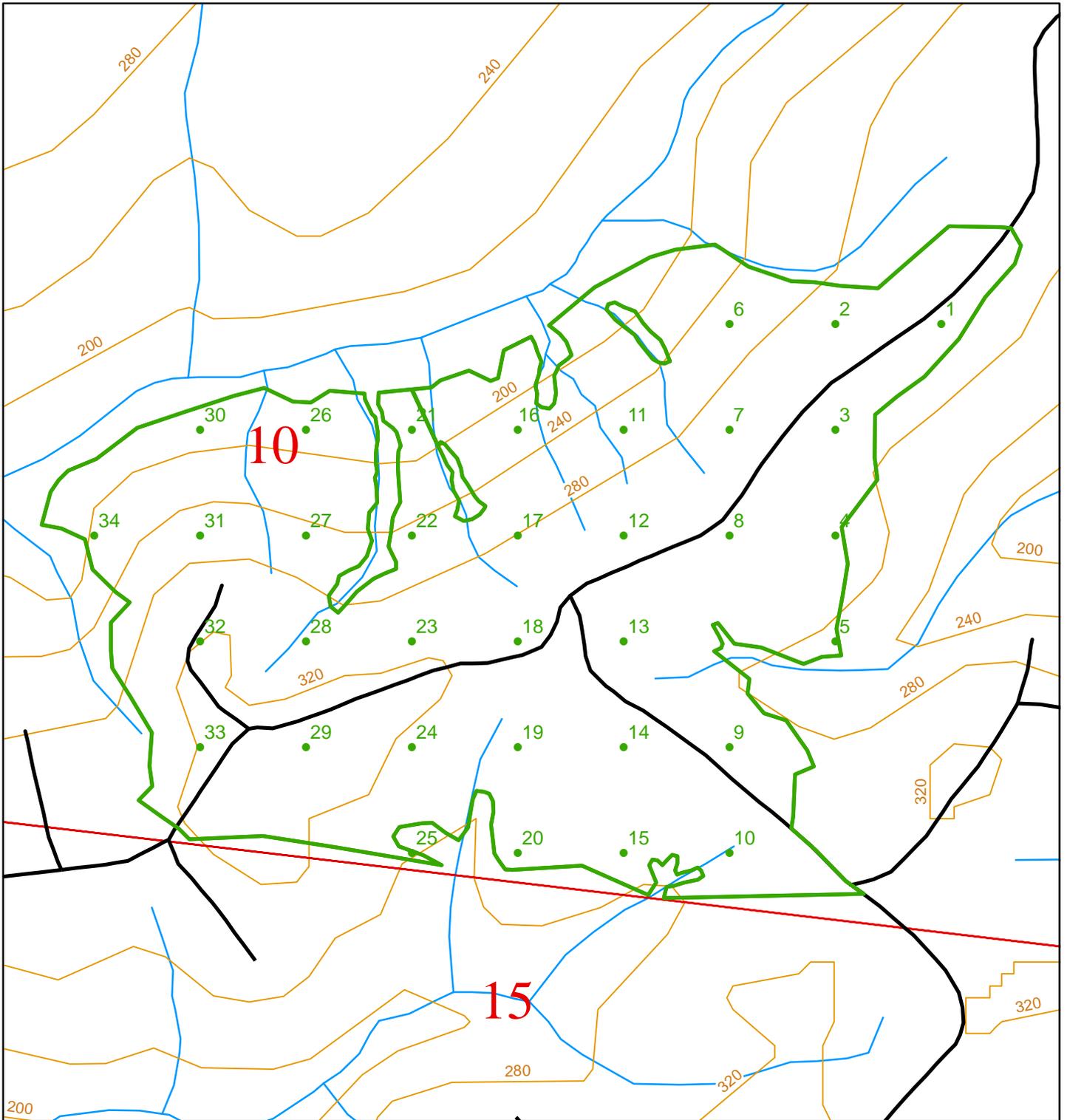
LAYER NAME:	unit3	Township:	T28R14W
POLY ID:	1	Total Sample Points:	29
Acres:	142	Spacing Between Points:	450
		Point Rotation Degrees:	0



Scale 1:4,900

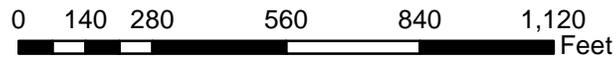
**Legend**

- Sample Points
- Unit
- Public Land Survey Sections
- Contours 40-foot



**Cruiser Sample Point Locations**

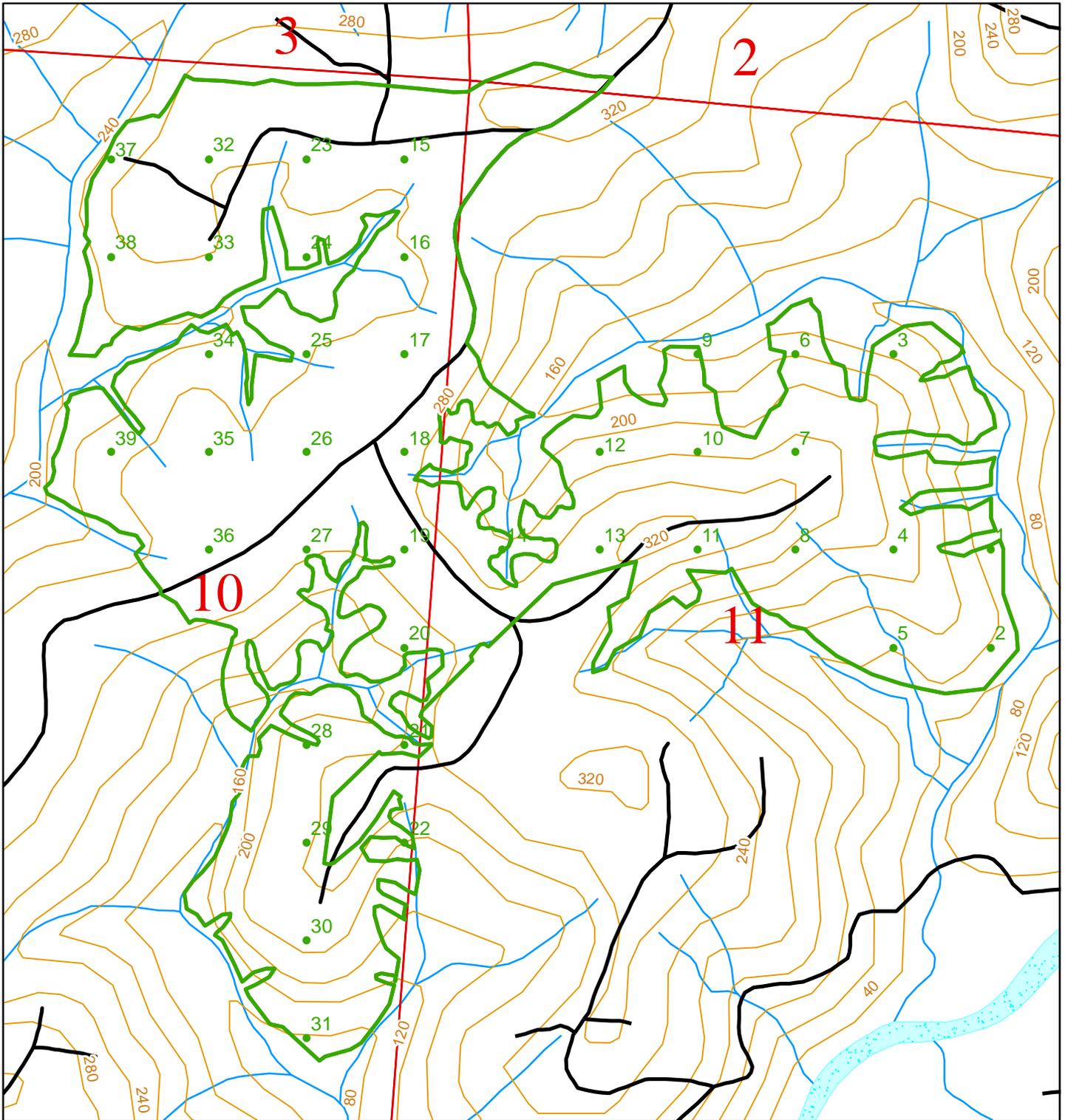
LAYER NAME:	unit4	Township:	T28R15W
POLY ID:	1	Total Sample Points:	34
Acres:	69	Spacing Between Points:	300
		Point Rotation Degrees:	0



Scale 1:4,800

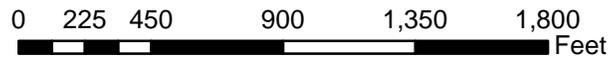
**Legend**

- Sample Points
- Unit
- Public Land Survey Sections
- Contours 40-foot



**Cruiser Sample Point Locations**

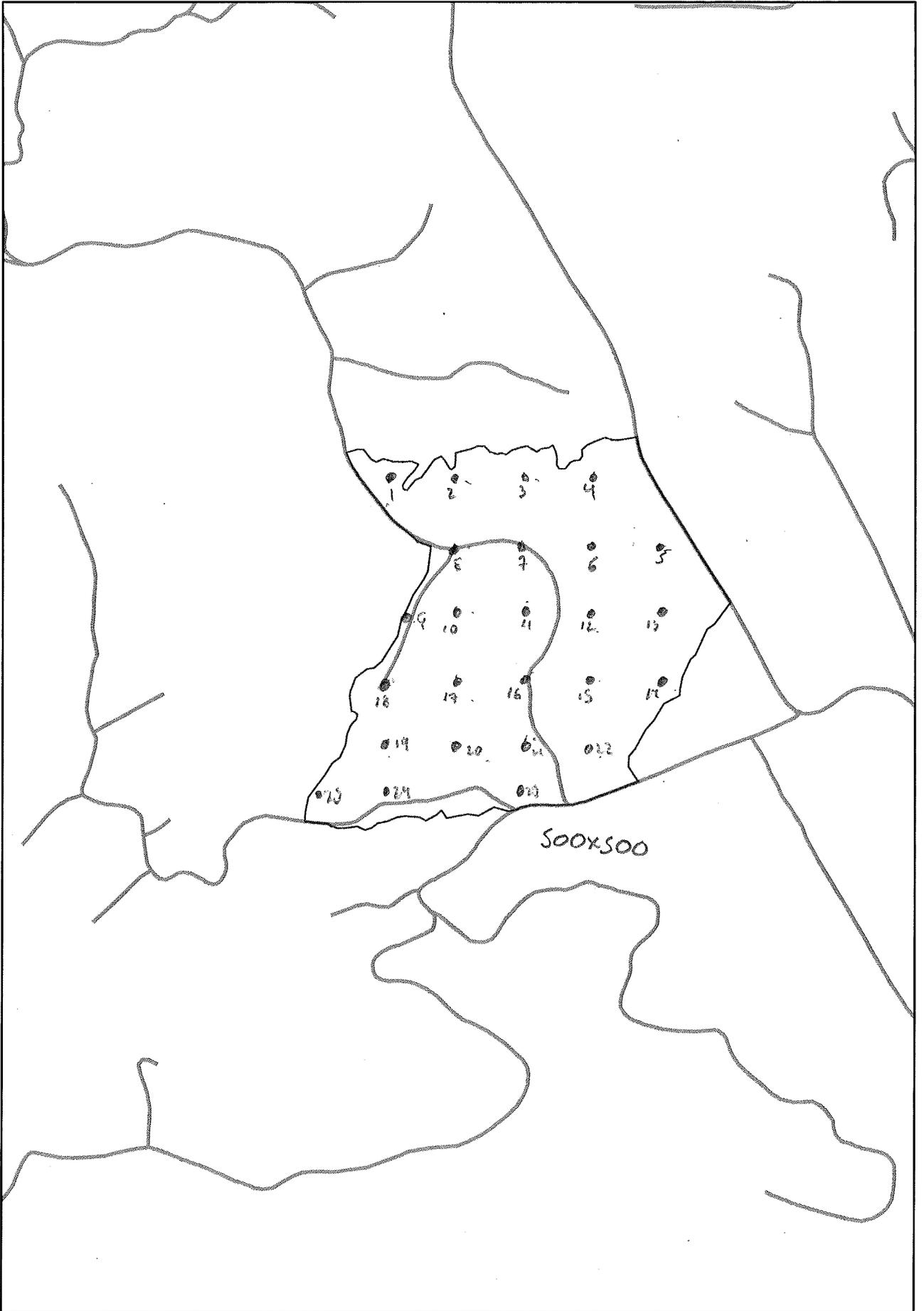
LAYER NAME:	unit2	Township:	T28R15W
POLY ID:	1	Total Sample Points:	39
Acres:	180	Spacing Between Points:	450
		Point Rotation Degrees:	0

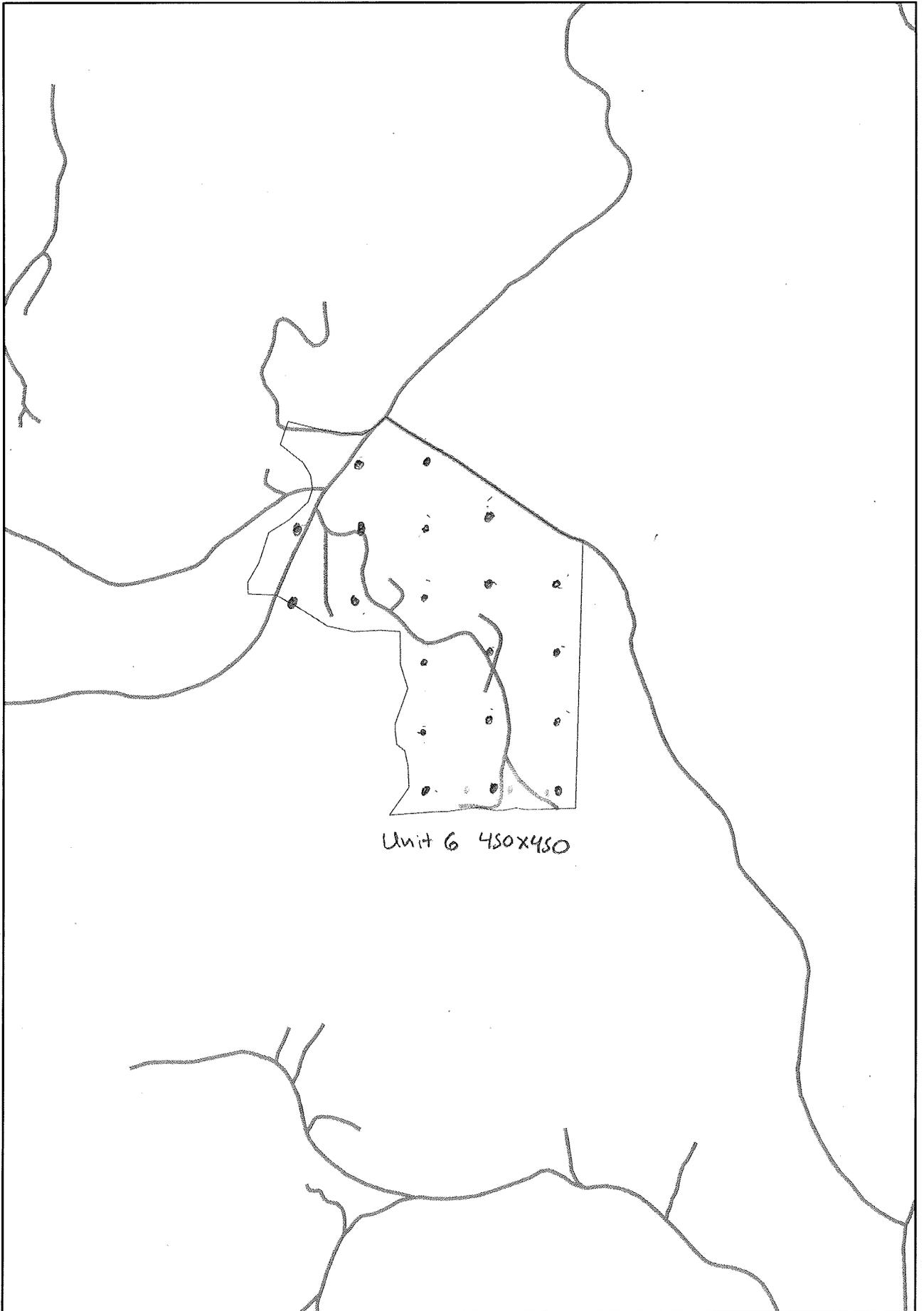


Scale 1:7,800

**Legend**

- Sample Points
- Unit
- Public Land Survey Sections
- Contours 40-foot





Unit 6 450x450



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

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

FPA/N No: 2614087  
 Effective Date: 3/23/2016  
 Expiration Date: 3/23/2019  
 Shut Down Zone: 649N  
 EARR Tax Credit:  Eligible [ ] Non-eligible  
 Reference: DNR - Ellen Creek VDT

**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  4 years  5 years

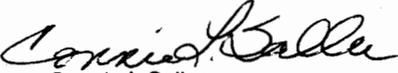
**Conditions on Approval / Reasons for Disapproval**

FYI: Unit 6- Forest practice activities located within 0.25 miles of an occupied marbled murrelet site are subject to disturbance avoidance timing restrictions per WACs 222-24-030, 222-30-050, 222-30-060, 222-30-065, 222-30-070, and 222-30-100.

Issued By: Levi Puksta Region: Olympic

Title: Forest Practice Forester Date: 3/23/2016

Copies to:  Landowner, Timber Owner and Operator.

Issued in person:  Landowner [ ] Timber Owner [ ] Operator By:   
 Connie L Sallee

**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.eho.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  
Olympic Region  
411 Tillicum Lane  
Forks, WA 98331

**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.

**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 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 _____, WA,
(date) <span style="float: right;">(post office location)</span>
postage paid, a true and accurate copy of this document. Notice of Decision FPA # <u>2614087</u>
_____ (Printed name) <span style="float: right;">_____ (Signature)</span>

STATE OF WASHINGTON  
DEPARTMENT OF NATURAL RESOURCES

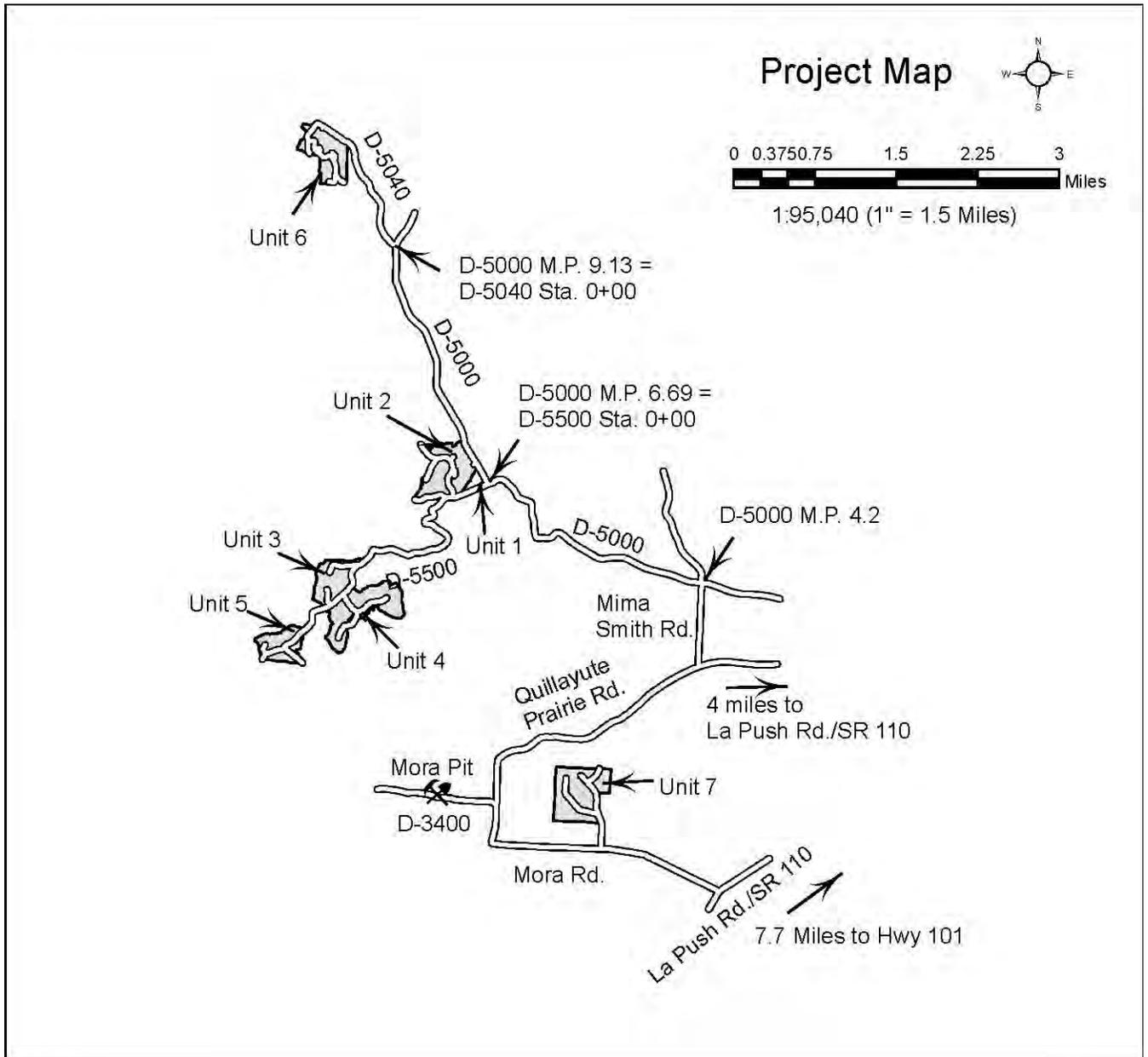
ELLEN CREEK VDT TIMBER SALE ROAD PLAN  
CLALLAM COUNTY  
COAST DISTRICT

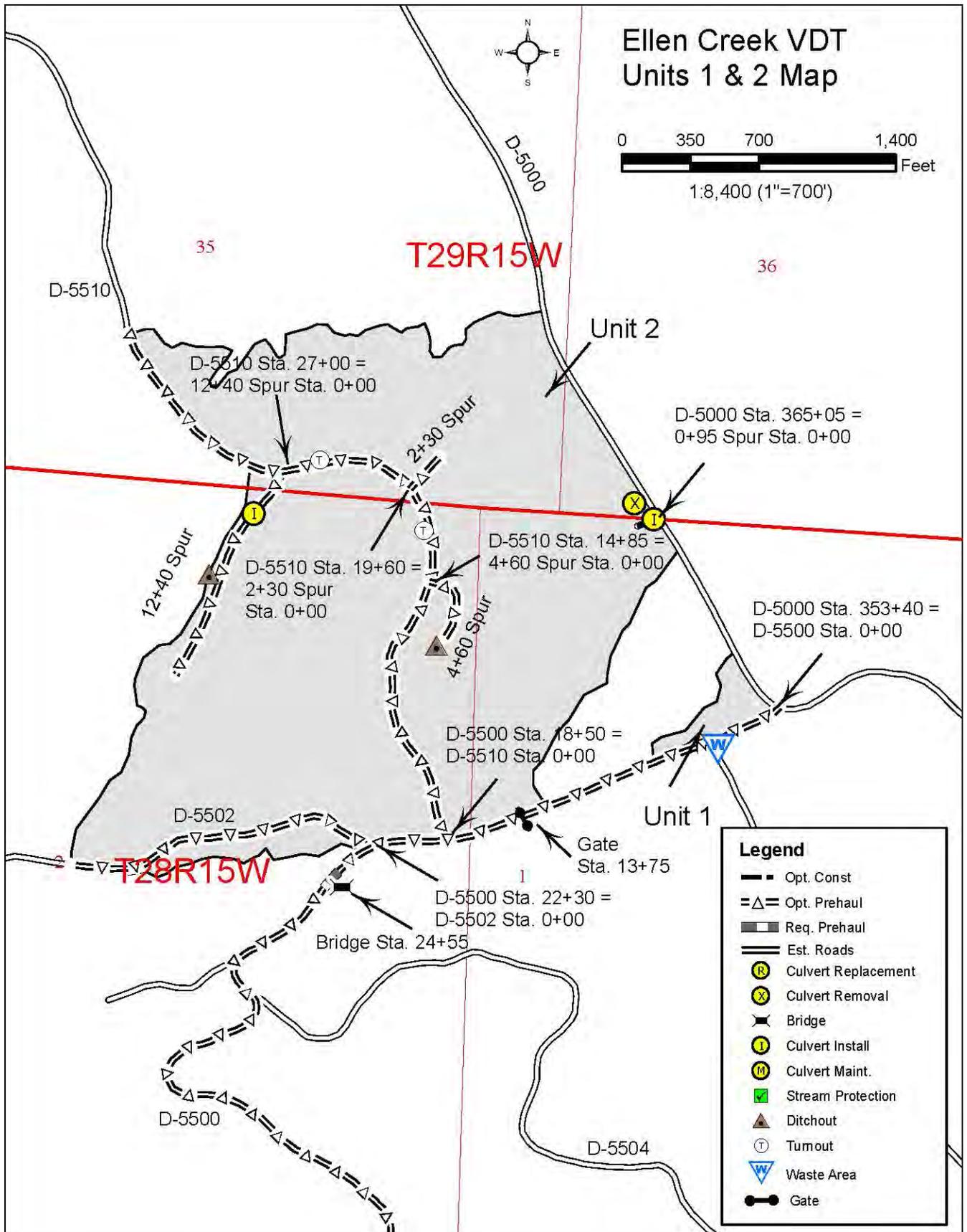
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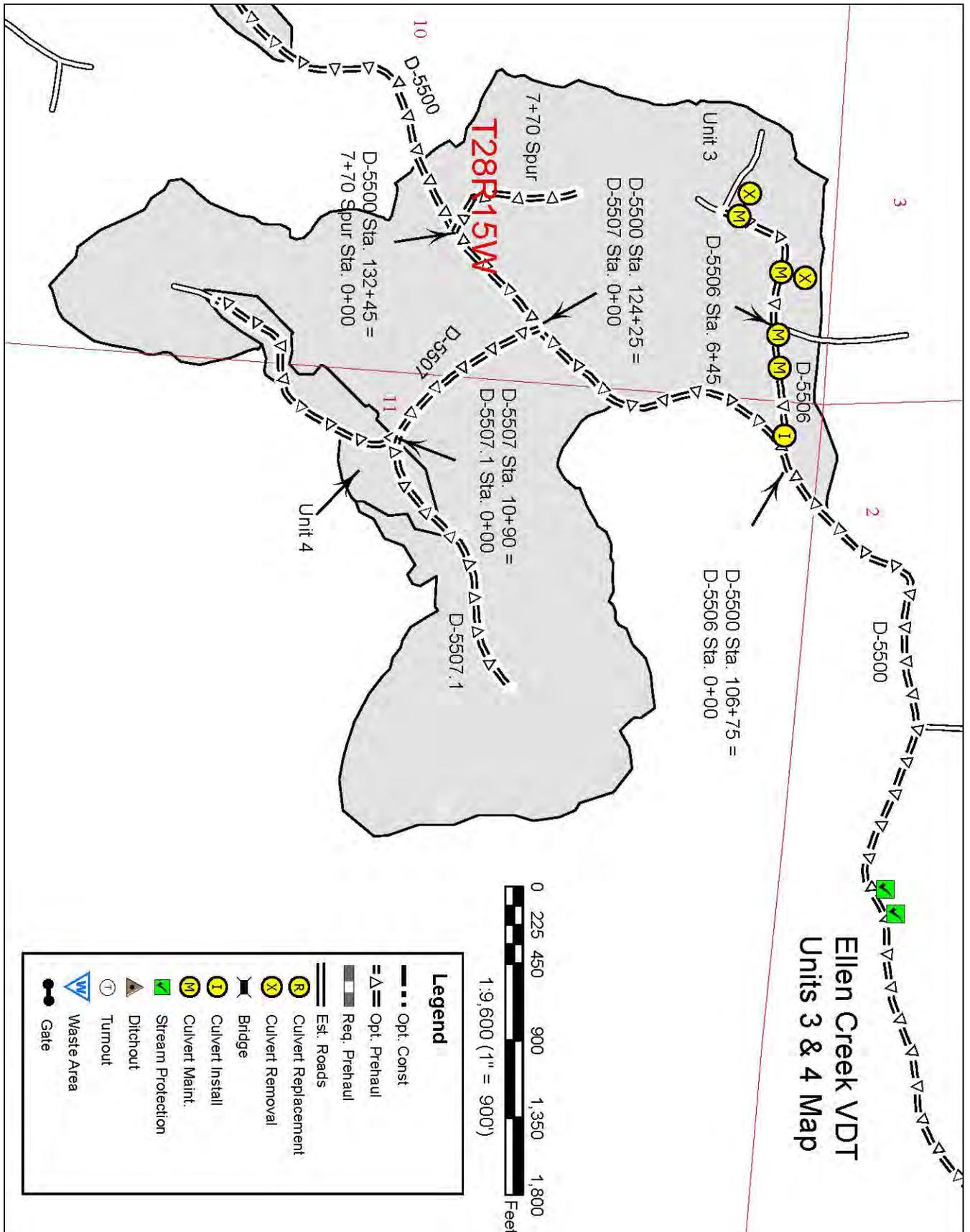
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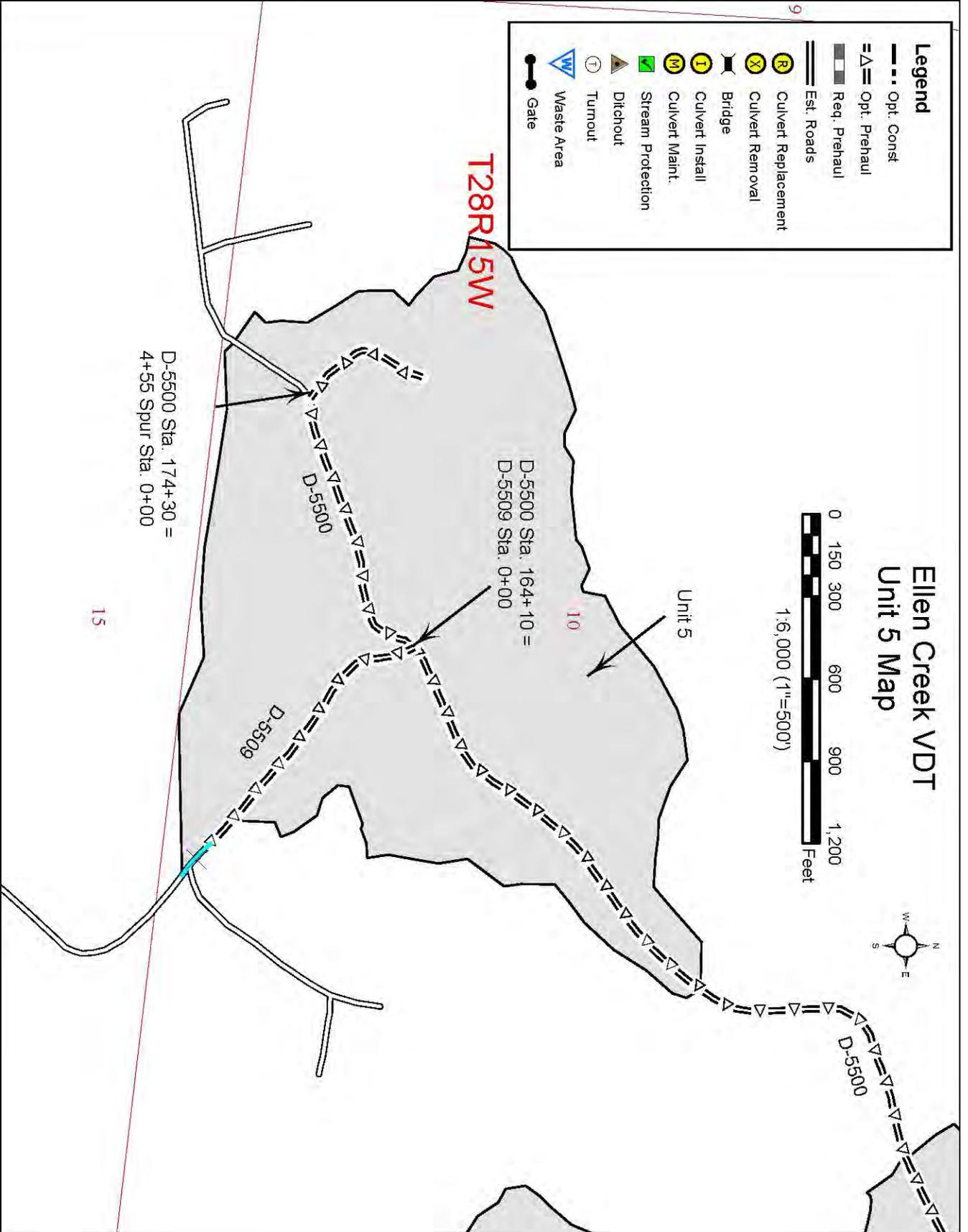
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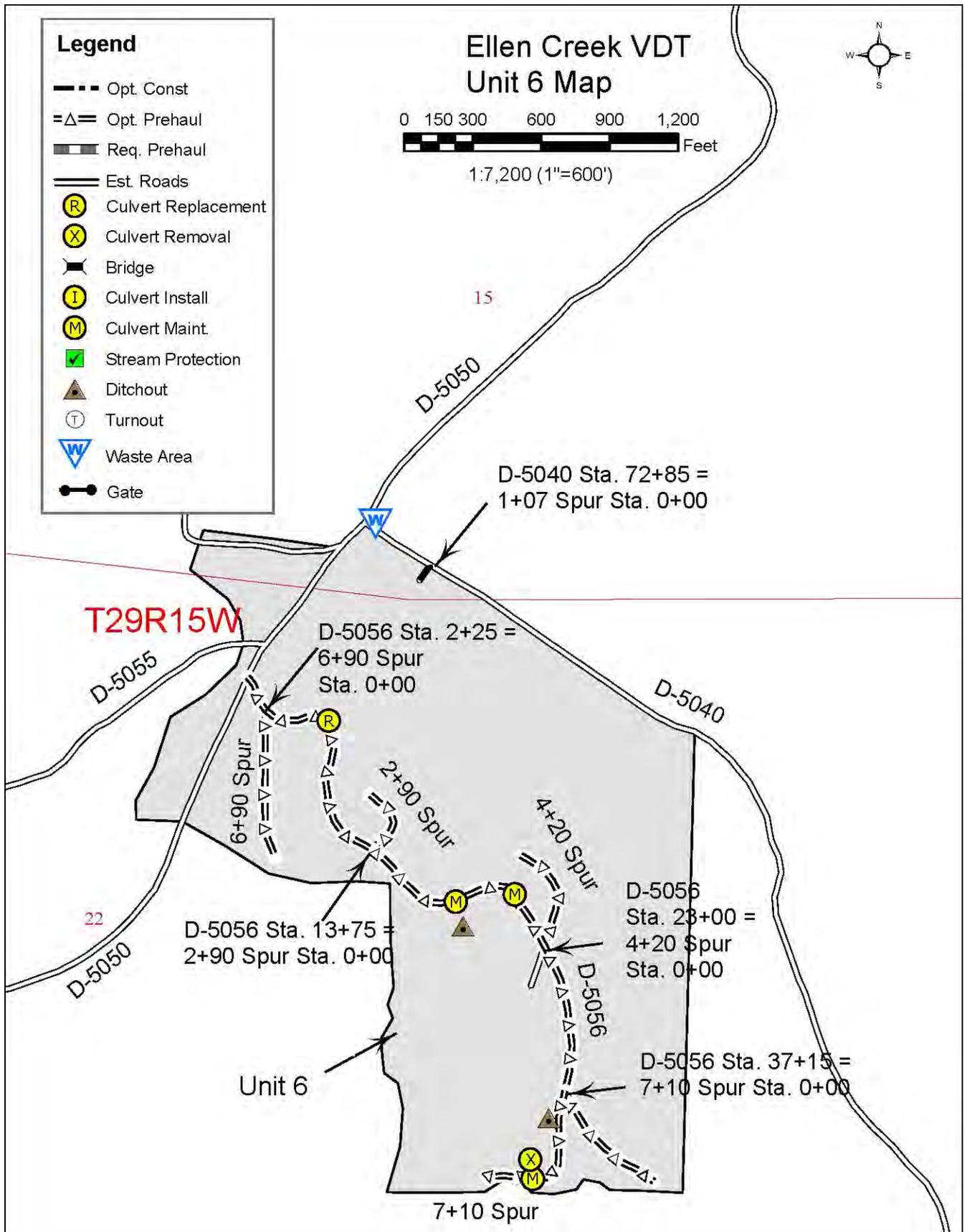
DRAWN & COMPILED BY: GREGORY ELLIS

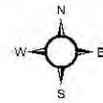




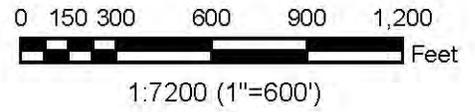








# Ellen Creek VDT Unit 7 Map



T28R15W

13

18

D-3100

D-3130

D-3100 Sta. 33+80 =  
D-3130 Sta. 0+00

D-3120

D-3100 Sta. 27+15

T28R14W

D-3100 Sta. 17+85 =  
D-3110 Sta. 0+00

D-3110

19

Unit 7

D-3100

Mora Rd.

### Legend

- Opt. Const
- Opt. Prehaul
- Req. Prehaul
- Est. Roads
- Culvert Replacement
- Culvert Removal
- Bridge
- Culvert Install
- Culvert Maint.
- Stream Protection
- Ditchout
- Turnout
- Waste Area
- Gate

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>
D-5500	24+30 – 25+30	Pre-haul Maintenance

**0-3 OPTIONAL ROADS**

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

<u>Road</u>	<u>Stations</u>	<u>Type</u>
D-3100	0+00 – 39+90	Pre-haul Maintenance
D-3110	0+00 – 21+90	Pre-haul Maintenance
D-3130	0+00 – 6+25	Pre-haul Maintenance
0+95 Spur	0+00 – 0+95	Construction
1+07 Spur	0+00 – 1+07	Construction
D-5056	0+00 – 42+85	Pre-haul Maintenance
2+90 Spur	0+00 – 2+90	Pre-haul Maintenance
4+20 Spur	0+00 – 4+20	Pre-haul Maintenance
6+90 Spur	0+00 – 6+90	Pre-haul Maintenance
7+10 Spur	0+00 – 7+10	Pre-haul Maintenance
D-5500	0+00 – 174+30 (excluding 24+30 – 25+30)	Pre-haul Maintenance
4+55 Spur	0+00 – 4+55	Pre-haul Maintenance
7+70 Spur	0+00 – 7+70	Pre-haul Maintenance
D-5502	0+00 – 16+20	Pre-haul Maintenance
D-5506	0+00 – 15+95	Pre-haul Maintenance
D-5507	0+00 – 21+25	Pre-haul Maintenance
D- 5507.1	0+00 – 16+55	Pre-haul Maintenance
D-5509	0+00 – 12+05	Pre-haul Maintenance
D-5510	0+00 – 38+60	Pre-haul Maintenance
2+30 Spur	0+00 – 2+30	Pre-haul Maintenance
4+60 Spur	0+00 – 4+60	Pre-haul Maintenance
12+40 Spur	0+00 – 12+40	Pre-haul Maintenance

**0-4 CONSTRUCTION**

This project includes, but is not limited to the following construction requirements:

<u>Road</u>	<u>Stations</u>	<u>Requirements</u>
0+95 Spur	0+00 – 0+95	See Below
1+70 Spur	0+00 – 1+07	See Below

Construction includes, but is not limited to:

Clearing, grubbing, right-of-way debris disposal, excavation and/or embankment to subgrade, end hauling material for construction, compacting road surfaces, constructing ditchlines, constructing ditchouts, constructing turnouts and turnarounds, curve widening, acquisition and installation of drainage structures, application of rock, spreading grass seed and hay.

**0-6 PRE-HAUL MAINTENANCE**

This project includes, but is not limited to the following prehaul maintenance requirements:

<u>Road</u>	<u>Stations</u>	<u>Requirements</u>
D-3100	0+00 – 27+15	Grade, shape and compact existing running surface as directed by contract administrator.
D-3100	27+15 – 39+90	Remove all vegetative material with a minimum loss of rock and dispose of in accordance with Clause 4-38, grade, shape and compact existing running surface, and apply rock as per Rock list.
D-3110	0+00 – 21+90	Remove all vegetative material with a minimum loss of rock and dispose of in accordance with Clause 4-38, grade, shape and compact existing running surface, and apply rock as per Rock list.
D-3130	0+00 – 6+25	Remove all vegetative material with a minimum loss of rock and dispose of in accordance with Clause 4-38, grade, shape and compact existing running surface.
D-5056	0+00 – 42+85	Grade, shape and compact existing running surface as directed by contract administrator, clean culverts and clean/construct ditchouts.
2+90 Spur	0+00 – 2+90	Remove all vegetative material with a minimum loss of rock and dispose of in accordance with Clause 4-38, grade, shape and compact existing running surface, and apply rock as per Rock list.
4+20 Spur	0+00 – 4+20	Remove all vegetative material with a minimum loss of rock and dispose of in accordance with Clause 4-38, grade, shape and compact existing running surface, and apply rock as per Rock list.
6+90 Spur	0+00 – 6+90	Remove all vegetative material with a minimum loss of rock and dispose of in accordance with Clause 4-38, grade, shape and compact existing running surface, and apply rock as per Rock list.
7+10 Spur	0+00 – 7+10	Remove all vegetative material with a minimum loss of rock and dispose of in

		accordance with Clause 4-38, grade, shape and compact existing running surface, apply rock as per Rock list, clean culverts, clean/construct ditch lines in accordance with Clause 2-7 and Ditchout.
D-5500	0+00 – 164+10	Grade, shape and compact existing running surface as directed by contract administrator, apply rock as per Rock list and perform bridge maintenance in accordance with Clause 7-30 and Clause 7-34.
D-5500	164+10 – 174+30	Remove all vegetative material with a minimum loss of rock and dispose of in accordance with Clause 4-38, grade, shape and compact existing running surface, and apply rock as per Rock list.
4+55 Spur	0+00 – 4+55	Remove all vegetative material with a minimum loss of rock and dispose of in accordance with Clause 4-38, grade, shape and compact existing running surface, and apply rock as per Rock list.
7+70 Spur	0+00 – 7+70	Remove all vegetative material with a minimum loss of rock and dispose of in accordance with Clause 4-38, grade, shape and compact existing running surface, and apply rock as per Rock list.
D-5502	0+00 – 16+20	Grade, shape and compact existing running surface as directed by contract administrator and apply rock as per Rock list.
D-5506	0+00 – 15+95	Remove all vegetative material with a minimum loss of rock and dispose of in accordance with Clause 4-38, grade, shape and compact existing running surface, apply rock as per Rock list, clean culverts, and install culvert per culvert list.
D-5507	0+00 – 21+25	Grade, shape and compact existing running surface as directed by contract administrator and apply rock as per Rock list.
D- 5507.1	0+00 – 16+55	Remove all vegetative material with a minimum loss of rock and dispose of in accordance with Clause 4-38, grade, shape and compact existing running surface, and apply rock as per Rock list.
D-5509	0+00 – 12+05	Grade, shape and compact existing running surface as directed by contract administrator and apply rock as per Rock list.
D-5510	0+00 – 38+60	Grade, shape and compact existing running surface as directed by contract administrator, apply rock as per Rock list and add turnouts.

2+30 Spur	0+00 – 2+30	Remove all vegetative material with a minimum loss of rock and dispose of in accordance with Clause 4-38, grade, shape and compact existing running surface, and apply rock as per Rock list.
4+60 Spur	0+00 – 4+60	Remove all vegetative material with a minimum loss of rock and dispose of in accordance with Clause 4-38, grade, shape and compact existing running surface, apply rock as per Rock list, clean/construct ditch lines in accordance with Clause 2-7 and clean/construct ditchouts.
12+40 Spur	0+00 – 12+40	Remove all vegetative material with a minimum loss of rock and dispose of in accordance with Clause 4-38, grade, shape and compact existing running surface, apply rock as per Rock list, install culvert per culvert list, clean/construct ditch lines in accordance with Clause 2-7 and clean/construct ditchouts.

Maintenance includes, but is not limited to:

Brushing right-of-way, right-of-way debris disposal, cleaning ditches, constructing ditches, installing additional culverts, widening road segments, constructing headwalls, cleaning culvert inlets and outlets, cross drain culvert replacement, installing erosion control materials and sediment removal structures, spot rocking, grading and shaping existing road surface and turnouts, constructing additional turnouts, compaction of road surface, application of rock, acquisition and application of grass seed and hay.

**0-7 POST-HAUL MAINTENANCE**

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

**0-9 DEACTIVATION**

This project includes, but is not limited to deactivation listed in Clause 9-20 Road Deactivation.

**0-13 STRUCTURES**

The Purchaser shall acquire and install all structures. Requirements for these structures are listed in Section 7 Structures.

**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 shall be submitted, in writing, to the Contract Administrator for consideration. The State must approve the submitted plans before road work begins.

**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**

Unless controlled by construction stakes or design data (plan, profile, and cross-sections), road work shall be performed in accordance with the dimensions shown on the Typical Section Sheet and the specifications within this Road Plan.

**1-6 ORDER OF PRECEDENCE**

Any conflict or inconsistency in this Road Plan shall be resolved by giving the documents precedence in the following order:

1. Addenda.
2. Designs or Plans. On designs and plans, figured dimensions shall take precedence over scaled dimensions.
3. Road Plan Clauses.
4. Typical Section Sheet.
5. Standard Lists.
6. 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**

The Purchaser is responsible for the repair or replacement of all materials, roadway infrastructure, and road components damaged during roadwork or operation activities. Repairs and replacements shall be directed by the Contract Administrator. Repairs to structural materials will be made according to the manufacturer's recommendation, and shall not begin without written approval from the Contract Administrator.

**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.

**1-10 WSDOT STANDARD SPECIFICATION REFERENCE**

References in this road plan to "WSDOT Standard Specifications" mean the Washington State Department of Transportation's Standard Specifications for Road, Bridge, and Municipal Construction 2012 (M41-10).

**1-11 FP-HP REQUIREMENTS**

The following work is subject to requirements under a Forest Practice Hydraulics Project Approval issued by the State of Washington.

<u>Road</u>	<u>Stations</u>	<u>Work Type</u>
D-5500	24+55 – 25+05	Bridge Maintenance
D-5056	5+32 – 6+32	Culvert Replacement

**1-12 SURVEY MONUMENTS**

At no time during construction, reconstruction, or maintenance shall survey monuments, witness trees, or bearing trees be disturbed or damaged. If damaged or disturbed, Purchaser shall hire a licensed land surveyor to repair, replace, and/or reset them.

**1-14 NON-SALE ASSOCIATED CLOSURE**

Culvert and fill replacement work is currently scheduled to take place on the D-5000 sometime during the hydraulic seasons of 2016 through 2018, which will result in the road being closed for up to 2 weeks at a time. State shall give at least 2 weeks notice to Purchaser before closure begins.

SUBSECTION ROAD MARKING

**1-15 ROAD MARKING**

Road work must be in accordance with the State’s marked location. All road work is marked as follows:

- Orange ribbon and paint for construction centerlines.
- Construction stakes for everything else.

**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.

SUBSECTION TIMING

**1-20 COMPLETE BY DATE**

Purchaser shall complete pre-haul road work before the start of timber haul.

**1-21 HAUL APPROVAL**

The Purchaser shall not use roads under this Road Plan without written approval from the Contract Administrator.

**1-22 WORK NOTIFICATIONS**

On all roads, the Purchaser shall notify the Contract Administrator a minimum of 3 calendar days before work begins.

**1-23 ROAD WORK PHASE APPROVAL**

Written approval by Contract Administrator needs to be given at these phases of road work:

- Subgrade approval
- Drainage installation
- Subgrade compaction
- Rock application
- Rock compaction

**SUBSECTION RESTRICTIONS**

**1-27 TIMING RESTRICTION FOR MARBLED MURRELET**

On the following road(s), any road work, right-of-way timber falling and yarding, rock pit operations, or operation of heavy equipment is not permitted from one hour before official sunrise to two hours after official sunrise, and from one hour before official sunset to one hour after official sunset from April 1 through September 23. This restriction does not apply to the hauling of timber, rock, or equipment.

<u>Road</u>	<u>Stations</u>
1+07 Spur	0+00 – 1+07

**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 shall suspend road work or hauling of right-of-way timber, forest products, or rock under the following conditions:

- 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, the Purchaser will be required to cease operations, or perform corrective maintenance or repairs, subject to specifications within this Road Plan. Before and during any suspension, the Purchaser shall protect the work from damage or deterioration.

**1-32 BRIDGE AND ASPHALT SURFACE RESTRICTION**

The use of metal tracked equipment is not allowed on wood plank or concrete decked bridges or asphalt surfaces at any time. If Purchaser must run equipment on wood plank or concrete deck bridges or asphalt surfaces, then rubber tired equipment or other methods, as approved in writing by Contract Administrator, shall be used.

If tracked equipment is used on wood plank or concrete decked bridges or asphalt surfaces, Purchaser shall immediately cease all road work and hauling operations. Any dirt, rock, or other material tracked or spilled on wood plank or concrete decked bridges or asphalt surfaces shall be removed immediately. Any damage to the surface(s) shall be repaired at the Purchaser's expense as directed by the Contract Administrator.

**1-33 SNOW PLOWING RESTRICTION**

On all roads, snow plowing shall be permitted only after the execution of a Snow Plowing Agreement, which is available from the Contract Administrator upon request. Purchaser shall request a Snow Plowing Agreement each time plowing occurs. If damage occurs while plowing, further permission to plow may be revoked by the Contract Administrator.

SUBSECTION OTHER INFRASTRUCTURE

**1-40 ROAD APPROACHES TO COUNTY ROADS AND STATE HIGHWAYS**

At existing road approaches to county roads and state highways, any mud, dirt, rock or other material tracked or spilled on the asphalt surface shall be removed immediately by the Purchaser.

If additional damage to the surface, signs, guardrails, etc. occurs then the damage shall be repaired, at the Purchaser's expense, as directed by the Contract Administrator when authorized by the county or WSDOT.

The following county roads and state highways are affected by this sale:

<u>Road Name</u>
Mora Road

**1-41 REQUIREMENTS FOR PAVED ROAD APPROACHES**

Purchaser shall build up approaches to allow a smooth grade transition between the D-3100 and Mora road. The top of the D-3100 road surfacing must be kept level with the surface of the Mora road at all times. The surface of the D-3100 approach must slope up from the edge of the Mora road at the rate of no more than 2%, unless otherwise directed 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), a grader shall be used to shape the existing surface.

<u>Road</u>	<u>Stations</u>	<u>Requirements</u>
D-3100	0+00 – 27+15	Grade, shape, compact and remove shoulder vegetation as required by contract administrator.
D-3100	27+15 – 39+90	Grade, shape, compact and remove shoulder vegetation.
D-3110	0+00 – 21+90	Grade, shape, compact and remove shoulder vegetation.
D-3130	0+00 – 6+25	Grade, shape, compact and remove shoulder vegetation.
D-5056	0+00 – 42+85	Grade, shape, compact and remove shoulder vegetation as required by contract administrator.
2+90 Spur	0+00 – 2+90	Grade, shape, compact and remove shoulder vegetation.
4+20 Spur	0+00 – 4+20	Grade, shape, compact and remove shoulder vegetation.
6+90 Spur	0+00 – 6+90	Grade, shape, compact and remove shoulder vegetation.
7+10 Spur	0+00 – 7+10	Grade, shape, compact and remove shoulder vegetation.
D-5500	0+00 – 164+10	Grade, shape, compact and remove shoulder vegetation as required by contract administrator.
D-5500	164+10 – 174+30	Grade, shape, compact and remove shoulder vegetation.
4+55 Spur	0+00 – 4+55	Grade, shape, compact and remove shoulder vegetation.
7+70 Spur	0+00 – 7+70	Grade, shape, compact and remove shoulder vegetation.
D-5502	0+00 – 16+20	Grade, shape, compact and remove shoulder vegetation as required by contract administrator.
D-5506	0+00 – 15+95	Grade, shape, compact and remove shoulder vegetation.
D-5507	0+00 – 21+25	Grade, shape, compact and remove shoulder vegetation as required by contract administrator.
D- 5507.1	0+00 – 16+55	Grade, shape, compact and remove shoulder vegetation.
D-5509	0+00 – 12+05	Grade, shape, compact and remove shoulder vegetation as required by contract administrator.
D-5510	0+00 – 38+60	Grade, shape, compact and remove shoulder vegetation as required by contract administrator.
2+30 Spur	0+00 – 2+30	Grade, shape, compact and remove shoulder vegetation.
4+60 Spur	0+00 – 4+60	Grade, shape, compact and remove shoulder vegetation.
12+40 Spur	0+00 – 12+40	Grade, shape, compact and remove shoulder vegetation.

**2-6 CLEANING CULVERTS**

On the following road(s), all inlets and outlets of culverts shall be cleaned before the start of timber haul and shall be subject to the written approval of the Contract Administrator.

<u>Road</u>	<u>Stations</u>
D-5506	4+44, 6+42, 10+16 and 15+00
D-5056	17+25 and 20+10
7+10 Spur	4+10

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

On the following road(s), Purchaser shall clean and/or construct the ditches, headwalls, and catch basins. Work shall be completed before the start of timber haul and shall be done in accordance with the Typical Section Sheet. Pulling ditch material across the road or mixing in with the road surface will not be allowed. Ditchlines, headwalls, and catch basins shall not encroach into the existing road.

<u>Road</u>	<u>Stations</u>	<u>Left or Right</u>	<u>Comments</u>
7+10 Spur	1+00 – 5+50	Right	Ditching
4+60 Spur	0+00 – 4+60	Right	Ditching
12+40 Spur	0+00 – 6+75	Right	Ditching

**2-9 REMOVING VEGETATIVE MATERIAL**

On the following road(s), Purchaser shall remove all vegetative material, dirt, mud, and other debris on the existing road surface with a minimum loss of rock. Material removed shall be disposed of in accordance with Clause 4-36 through Clause 4-38. Excavator buckets, log loaders and similar equipment shall be used for removing vegetative material unless authorized by the Contract Administrator.

<u>Road</u>	<u>Stations</u>
D-3100	27+15 – 39+90
D-3110	0+00 – 21+90
D-3130	0+00 - 6+25
2+90 Spur	0+00 – 2+90
4+20 Spur	0+00 – 4+20
6+90 Spur	0+00 – 6+90
7+10 Spur	0+00 – 7+10
D-5500	164+10 – 174+30
4+55 Spur	0+00 – 4+55
7+70 Spur	0+00 – 7+70
D-5506	0+00 – 15+95
D-5507.1	0+00 – 16+55
2+30 Spur	0+00 – 2+30
4+60 Spur	0+00 – 4+60
12+40 Spur	0+00 – 12+40

## SUBSECTION CLEARING

### **3-5 CLEARING**

Purchaser shall fall all vegetative material larger than 5 inches DBH or over 15 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.

### **3-7 RIGHT-OF-WAY DECKING**

Deck all merchantable right-of-way timber. Decks shall be parallel to the road centerline and placed within the cleared right-of-way. Decks shall be free of dirt, limbs and other right-of-way debris, and removable by standard log loading equipment.

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

Right-of-way timber shall not be decked 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.

## SUBSECTION GRUBBING

### **3-10 GRUBBING**

Remove all stumps between the grubbing limits specified on the Typical Section Sheet. Those stumps outside the grubbing limits but with undercut roots shall also be removed. Stump removal shall be accomplished using a hydraulic mounted excavator unless authorized, in writing, by the Contract Administrator. Grubbing shall be completed before starting excavation and embankment.

### **3-12 STUMP PLACEMENT**

Grubbed stumps shall be placed outside of the clearing limits, as directed by the Contract Administrator and in compliance with all other clauses in this road plan. Stumps shall be positioned upright with root wads in contact with the forest floor and on stable locations.

## SUBSECTION ORGANIC DEBRIS

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

Organic debris is defined as all vegetative material not eligible for removal by Contract Clauses 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 grubbing Typical Section Sheet.

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

All disposal of organic debris, shall be completed before the application of rock.

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

Organic debris shall not be deposited in the following areas:

- Within 5 feet of a cross drain culvert.
- Within 50 feet of a live stream, or wetland.
- On road subgrades road prism excavation and embankment slopes.
- On slopes greater than 45%.
- Within the operational area for cable landings where debris may shift or roll.
- On locations where brush will fall into the ditch or onto the road surface.
- Against standing timber.

### **3-24 BURYING ORGANIC DEBRIS RESTRICTED**

Organic debris shall not be buried unless otherwise stated in this Road Plan.

### **3-25 SCATTERING ORGANIC DEBRIS**

Organic debris shall be scattered outside of the grubbing limits in accordance with Clause 3-23 unless otherwise detailed in this Road Plan and as directed by the Contract Administrator.

## **SECTION 4 – EXCAVATION**

### **4-1 EXCAVATOR CONSTRUCTION**

All roads shall be constructed, reconstructed, and maintained using a track mounted hydraulic excavator unless stated otherwise within this Road Plan, or permission to do otherwise is granted in writing by the Contract Administrator.

### **4-2 PIONEERING**

Pioneering shall not extend past construction that will be completed during the current construction season. Pioneering shall not extend more than 1000 feet beyond completed construction unless approved in writing by the Contract Administrator. In addition, the following actions shall be taken as pioneering progresses:

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

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

The following road grade and alignment standards shall be followed:

- Grade and alignment shall have smooth continuity, without abrupt changes in direction.
- Maximum grade shall not exceed 18 percent favorable and 16 percent adverse.
- Minimum curve radius is 60 feet at centerline.
- Sag vertical curves shall not have a grade change greater than 5% in 100 feet.
- Crest vertical curves shall not have a grade change greater than 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. The following standards for switchbacks shall be followed:

- Adverse grades on switchbacks shall not exceed 10%.
- Favorable grades through switchbacks shall not exceed 12%.
- Transition grades entering and leaving switchbacks shall not exceed a 5% grade change.
- Transition grades required to meet switchback grade limitations shall be constructed on the tangents preceding and departing from the switchbacks.

**4-5 CUT SLOPE RATIO**

Unless construction staked or designed excavation slopes shall be constructed no steeper than shown on the following table:

<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
Common Earth (56% to 70% side slopes)	¾:1	133
Common Earth (on slopes over 70%)	½:1	200
Fractured or loose rock	½:1	200
Hardpan or solid rock	¼:1	400

**4-6 EMBANKMENT SLOPE RATIO**

Unless construction staked or designed embankment slopes shall be constructed no steeper than shown on the following table:

<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**

Excavation and embankment slopes shall be constructed 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.

Embankment widening shall be applied equally to both sides of the road to achieve the required width.

**4-12 FULL BENCH CONSTRUCTION**

On the following roads, where side slopes exceed 45%, Purchaser shall use full bench construction for the entire subgrade width.

SUBSECTION INTERSECTIONS, TURNOUTS AND TURNAROUNDS

**4-21 TURNOUTS**

Turnouts shall be intervisible with maximum of 1,000 feet between turnouts unless shown otherwise on drawings. Locations shall be adjusted to fit the final subgrade alignment and sight distances. Turnout locations shall be subject to written approval by the Contract Administrator.

**4-22 TURNAROUNDS**

Turnarounds shall be no larger than 50 feet long and 30 feet wide. Locations shall be subject to written approval by the Contract Administrator.

SUBSECTION DITCH CONSTRUCTION

**4-25 DITCH CONSTRUCTION AND RECONSTRUCTION**

The Purchaser shall construct ditches into the subgrade as specified on the Typical Section Sheet. Excavated slopes shall be consistent with Clause 4-5 Cut Slope Ratio. Ditches shall be constructed concurrently with construction of the subgrade.

**4-27 DITCH WORK – MATERIAL USE PROHIBITED**

On all roads, pulling ditch material across the road or mixing in with the road surface will not be allowed. Excavated material shall be disposed of as specified in Clause 4-36 through Clause 4-38.

**4-28 DITCH DRAINAGE**

Ditches must drain to cross-drain culverts or ditchouts.

**4-29 DITCHOUTS**

Ditchouts shall be constructed at locations shown on the list below, and as needed to fit as built conditions. Ditchouts shall be constructed in a manner that diverts ditch water onto the forest floor and shall have excavation backslopes no steeper than a 1:1 ratio. L or R denotes ditchout left or ditchout right heading in.

<u>Road</u>	<u>Stations</u>	<u>Left or Right</u>
D-5056	17+25 (approx. 15')	Right
7+10 Spur	1+00 (approx. 15')	Right
4+60 Spur	4+60 (approx. 45')	Right
12+40 Spur	6+75 (approx. 20')	Right

## SUBSECTION WASTE MATERIAL (DIRT)

### 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 45% if the waste material is compacted and free of organic debris. On side slopes greater than 45%, 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

Waste material shall be deposited in the listed designated areas. The amount of material to be contained in a waste area shall be at the discretion of the Contract Administrator.

Note: All amount values are estimated bank yards.

<u>Waste Area Location</u>	<u>Waste Generated From Road</u>	<u>Waste Generated at Stations</u>	<u>Estimated Volume</u>
D-5500 (Sta. 3+70)	D-5500	24+30 – 25+30	80 CY
D-5050 (Sta. 107+20)	D-5056	5+50 – 6+15	1020 CY

### 4-38 PROHIBITED WASTE DISPOSAL AREAS

Waste material shall not be deposited in the following areas:

- Within 5 feet of a cross drain culvert.
- Within 50 feet of a live stream or wetland.
- Within a riparian management zone.
- On side slopes steeper than 45%.
- In locations that interfere with the construction of the road prism.
- In locations that impede drainage.
- Within the operational area for cable landings.
- Against standing timber.

### 4-39 WASTE AREA COMPACTION

Excavated material may be deposited adjacent to the road prism on side slopes up to 45% if the waste material is compacted and free of debris. On side slopes of 45% or more, all excavation shall be end hauled or pushed to designated waste areas. All waste material shall be compacted. The minimum acceptable compaction is achieved by placing embankments in 2 foot or shallower lifts and routing excavation equipment over the entire width of the lifts, with the exception of side hill embankments too narrow to accommodate excavation equipment which may be placed by end-dumping or sidecasting until sufficiently wide to support the equipment.

## SUBSECTION BORROW

### 4-46 COMMON BORROW

Common borrow shall consist of soil, and/or aggregate that is non-plastic and shall contain no more than 5% clay, organic debris, or trash by volume. The material is considered non-plastic if the fines (passes the U.S. #40 sieve) in the sample cannot be rolled between the hand and a smooth surface into a thread at any moisture content.

### 4-47 NATIVE MATERIAL

Native material shall be excavated material free of organic debris, trash, and rocks greater than 12" in any dimension.

### 4-49 BORROW SOURCE

Borrow may be obtained from the listed borrow source(s). Development of the borrow source shall be in accordance with Borrow Source Detail.

<u>Source</u>	<u>Location</u>	<u>Yards</u>
Mora Pit	D-3400	4720

## SUBSECTION SHAPING

### 4-55 ROAD SHAPING

The road subgrade and surface shall be shaped as shown on the Typical Section Sheet. The subgrade and surface shape shall ensure runoff in an even, un-concentrated manner, and shall be uniform, firm, and rut-free.

### 4-56 DRY WEATHER SHAPING

At any time of year, the Contract Administrator may require the application of water to facilitate shaping activities. The method of water application is subject to written approval by the Contract Administrator.

## SUBSECTION COMPACTION

### 4-60 FILL COMPACTION

Purchaser shall compact all embankment and waste material in accordance with the Compaction List by routing equipment over the entire width of each lift. A plate compactor must be used for areas specifically requiring keyed embankment construction, and embankment segments too narrow to accommodate equipment.

### 4-61 SUBGRADE COMPACTION

Purchaser shall compact constructed and reconstructed subgrades in accordance with the Compaction List by routing equipment over the entire width, except ditch. Purchaser shall obtain written approval from the Contract Administrator for subgrade compaction before placement of rock.

**4-62 DRY WEATHER COMPACTION**

At any time of the year, the Contract Administrator may require the application of water to facilitate compaction activities. The method of water application is subject to written approval by the Contract Administrator.

**4-63 EXISTING SURFACE COMPACTION**

Purchaser shall compact maintained road surfaces in accordance with the Compaction List by routing equipment over the entire width.

**4-64 WASTE MATERIAL COMPACTION**

All waste material shall be compacted by running equipment over it or bucket tamping.

**4-65 CULVERT BACKFILL COMPACTION**

Culvert backfills shall be accomplished by using a jumping jack compactor, performing at least 2 passes per lift, in lifts not to exceed 8 inches.

**4-66 COMPACTION BY METHOD**

Compaction shall consist of three complete passes over the entire width of each lift with a vibratory drum roller weighing a minimum of 6,000 pounds at a maximum operating speed of 3 mph. For embankment segments too narrow to accommodate a drum roller, a plate compactor shall be used.

SECTION 5 – DRAINAGE

**5-3 PUNCHEON PLACEMENT**

On the following road(s), puncheon can be utilized in the construction of the subgrade with the approval of the Contract Administrator. Puncheon shall consist of logs of at least 4 inches in diameter and shall be at least 17 feet long.

<u>Road</u>	<u>Stations</u>
D-5000 0+95 Spur	0+00 – 0+95
D-5040 1+07 Spur	0+00 – 1+07

SUBSECTION CULVERTS

**5-5 CULVERTS**

Culverts shall be installed as part of this contract. Culverts shall be installed concurrently with subgrade work and shall be installed before subgrade compaction and rock application. Culvert locations and the minimum requirements for culvert length and diameter are designated on the Culvert List. Culvert, downspout, and flume lengths shall be adjusted to fit as-built conditions and shall not terminate directly on unprotected soil. Culverts shall be new and meet the material specifications in Clauses 10-15 through 10-23.

**5-6 USED CULVERT MATERIAL**

The Purchaser may install used culverts on the following roads. All other roads shall have new culverts installed.

<u>Road</u>	<u>Stations</u>
0+95 Spur	0+05

**5-11 UNUSED MATERIALS STATE PROPERTY**

On required roads, any materials listed on the Culvert List and Rock List that are not installed shall become the property of the State. Purchaser shall stockpile materials as directed by the Contract Administrator.

SUBSECTION CULVERT INSTALLATION

**5-15 CULVERT INSTALLATION**

Installation shall be in accordance with the Typical Cross Drain Culvert Installation Detail, Typical Type Ns Np Culvert Installation Detail, 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”. Corrugated Polyethylene pipe shall be installed in a manner consistent with the manufacturer’s recommendations.

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

Installation of culverts 30 inches in diameter and over shall be subject to written approval by the District Engineer or their designee before backfilling.

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

Cross drains on road grades in excess of 3% shall 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. Where the cross drain is at the low point in the road, culverts shall not be skewed. Cross drain culverts shall 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 shall be installed with a depth of cover of not less than 18 inches of compacted depth over the top of the culvert at the shallowest point. Stream crossing culverts shall be installed with a depth of cover specified in the Engineer’s design, Type Ns Np Typical Detail Sheet, or to the minimum depth recommended by the culvert manufacturer for the type of cover material over the pipe, whichever is greater.

SUBSECTION ENERGY DISSIPATERS

**5-20 ENERGY DISSIPATERS**

Energy dissipaters shall be installed to prevent erosion and are subject to approval by the Contract Administrator. Rock shall weigh at least 10 pounds and be placed by zero-drop-height method. Energy dissipater shall extend a minimum of ¾ foot to each side of the culvert at the outlet and a minimum of 2 feet beyond the outlet.

SUBSECTION CATCH BASINS, HEADWALLS, AND ARMORING

**5-25 CATCH BASINS**

Catch basins shall be constructed to resist erosion. Approximate dimensions are 1-2 feet deep, 1-2 feet wide, and 2-4 feet long.

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

Headwalls shall be constructed in accordance with the Typical Cross Drain Culvert Installation Detail at all cross drain culverts that specify the placement of rock. Rock used for headwalls shall consist of oversize or quarry spall material. Rock shall be placed on shoulders, slopes, and around culvert inlets and outlets. Rock shall not restrict the flow of water into culvert inlets or catch basins. No end dumping of rock is allowed.

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

At the following culvert(s), rip rap shall be set in place immediately following construction of the embankment. Rock shall be placed on shoulders, slopes, and around culvert inlets and outlets as designated on the Typical Type Ns Np Culvert Installation Detail as directed by the Contract Administrator. Rock shall not restrict the flow of water into culvert inlets or catch basins. Rock shall be set in place by machine. Placement shall be by zero-drop-height method only. No placement by end dumping or dropping of rock shall be allowed.

<u>Road</u>	<u>Stations</u>	<u>Rock Type</u>
D-5056	5+82	Light Loose Rip Rap

SUBSECTION SURFACE DRAINAGE

**5-30 DRIVABLE WATERBAR CONSTRUCTION**

Purchaser shall construct drivable waterbars in accordance with the DRIVABLE WATERBAR DETAIL and as marked in the field. Drivable waterbars must be installed concurrently with construction of the subgrade and must be maintained in an operable condition.

## SECTION 6 – ROCK AND SURFACING

### SUBSECTION ROCK SOURCE

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

Rock used in accordance with the quantities on the Rock List may be obtained from the following source(s) on state land at no charge to the Purchaser. Use of material from any other source must have prior written approval from the Contract Administrator. If other operators are using, or desire to use, the rock source(s), a joint operating plan shall be developed. All parties shall follow this plan. The Purchaser shall notify the Contract Administrator a minimum of 5 calendar days before starting any operations in the listed locations.

<u>Source</u>	<u>Location</u>	<u>Rock Type</u>
Mora Pit	T28 R15W Sec 23 & 24	Common Borrow

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

Rock used in accordance with the quantities on the Rock List may be obtained from the following existing stockpile(s) on state land at no charge to the Purchaser. Purchaser shall remove no more than 10 cubic yards of Light Loose Rip Rap rock from Loop Pit.

<u>Source</u>	<u>Location</u>	<u>Quantity (yd<sup>3</sup>)</u>
Loop Pit	T28 R15W Sec 23 & 24	10 yd <sup>3</sup>

#### 6-5 ROCK FROM COMMERCIAL SOURCE

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

### SUBSECTION ROCK SOURCE DEVELOPMENT

#### 6-10 ROCK SOURCE DEVELOPMENT PLAN BY STATE

All rock source development and use shall be in accordance with a written Rock Source Development and Reclamation Plan prepared by the State and included in this Road Plan. Rock source operations shall be conducted as directed by the Contract Administrator and in accordance with the plan. Upon completion of operations, the rock source shall be left in the condition specified in the Rock Source Development and Reclamation Plan, and approved in writing by the Contract Administrator. The Purchaser shall notify the Contract Administrator a minimum of 5 calendar days before starting any operations in the rock source.

## 6-12 ROCK SOURCE SPECIFICATIONS

Rock sources shall be in accordance with the following unless otherwise specified in Rock Source Development and reclamation plan:

- Pit walls shall not be undermined or over-steepened. The maximum slope of the walls shall 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 shall be maintained in a condition to minimize the possibility of the walls sliding or failing.
- The width of pit benches shall be a minimum of 1.5 times the maximum length of the largest machine used.
- The surface of pit floors and benches shall be uniform and free-draining at a minimum 2% outslope gradient.
- All operations shall 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.
- Block all vehicle access to the top of the pit faces.

## SUBSECTION ROCK GRADATIONS

### 6-50 LIGHT LOOSE RIP RAP

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

<u>At Least/Not More Than</u>	<u>Weight Range</u>	<u>Size Range</u>
20% / 90%	300 lbs. to 1 ton	12"- 36"

Onsite materials may be used meeting these requirements.

### 6-52 OVERSIZE

% Passing 8" square sieve	100%
% Passing 4" square sieve	0%

Rock shall not contain more than 5 percent vegetative debris or trash. All percentages are by weight. Onsite materials may be used meeting these requirements.

#### SUBSECTION ROCK MEASUREMENT

##### **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 Rock List are estimated truck 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.

#### SUBSECTION ROCK APPLICATION

##### **6-70 APPROVAL BEFORE ROCK APPLICATION**

Subgrade drainage installation including grading and compaction, shall be completed and approved in writing by the Contract Administrator, before rock application.

##### **6-71 ROCK APPLICATION**

Rock shall be applied in accordance with the specifications and quantities shown on the Rock List. Rock shall be spread, shaped, and compacted full-width concurrent with rock hauling operations. Rock shall be compacted in accordance with Compaction List, in lifts not to exceed 6 inches.

##### **6-72 ROCK APPLICATION AFTER HAULING**

On the following road(s), upon completion of all hauling operations, Purchaser shall apply Common Borrow in accordance with the quantities shown on the Rock List.

<u>Road</u>	<u>Stations</u>	<u>Amount</u>
D-5040	0+00 – 76+00	50 yd <sup>3</sup>
D-5056	0+00 – 42+85	100 yd <sup>3</sup>
D-5500	0+00 – 174+30	100 yd <sup>3</sup>
D-5510	0+00 – 38+60	50 yd <sup>3</sup>

##### **6-73 ROCK FOR WIDENED PORTIONS**

Turnarounds, turnouts, and areas with curve widening shall have rock applied to the same depth and specifications as the traveled way.

##### **6-78 ROCK FOR SPOT PATCHING**

Rock for spot patching shall be applied before any grading is done and before any rock lifts are applied. Once applied, spot patches shall be graded into the existing running surface.

SECTION 7 – STRUCTURES

SUBSECTION STREAM CROSSING STRUCTURES GENERAL

**7-5 STRUCTURE DEBRIS**

The Purchaser shall ensure that debris from the installation or removal of structures does not enter any stream. Components removed from the existing structures(s) shall be placed at designated site(s), as directed in writing by the Contract Administrator. The Purchaser is responsible for maintaining a clean jobsite, with all materials stored away from any high water mark or other area presenting a risk of the materials entering a stream. Debris entering any stream shall be removed immediately and placed in the site(s) designated for stockpiling or disposal. The Purchaser is responsible for retrieving all material carried downstream from the jobsite by the stream current.

**7-6 STREAM CROSSING INSTALLATION**

Installation of stream crossing structures shall be in accordance with the manufacturer's requirements, and as directed by the District Engineer or their designee.

SUBSECTION BRIDGE MAINTENANCE

**7-30 BRIDGE MAINTENANCE**

On the following road(s), bridge maintenance, as listed below, is required as part of this contract and shall be completed before any road or harvest work is done on Units 3, 4 and 5. All old bridge material excluding line may be placed in the waste area. All waste lines shall be removed from state land by the Purchaser before the termination of the contract.

<u>Road</u>	<u>Station</u>	<u>Requirements</u>	<u>Detail Sheet</u>
D-5500	24+55 – 25+05	Retie Bridge/add shear rails/add needle beam	Typical Bridge Retie/Needle Beam Detail

**7-34 WOOD SHEAR RAIL REPAIR AND NEEDLE BEAM INSTALLATION**

The new shear rails shall be constructed of 1-2 logs per side with a small end diameter of at least 12". Total shear rail height shall be a minimum of 18". Needle Beam shall be constructed with 1 log with a small end diameter of at least 12". Logs for the shear rail repair and needle beam installation shall come for the harvest units.

## SUBSECTION LARGE CULVERTS

### 7-55 LARGE CULVERT INSTALLATION

On the following road(s), Purchaser shall install large culverts as specified below. The installation of the culvert shall follow the appropriate detail sheet. Culvert designs shall meet or exceed the following specifications:

<u>Road</u>	D-5056
<u>Station</u>	5+82
<u>Type</u>	Steel
<u>Material and Coating Type*</u>	Galvanized
<u>Span (in.)</u>	48
<u>Rise (in.)</u>	48
<u>Length (ft.)</u>	76
<u>Depth of Cover Material (ft.)</u>	1.5 min
<u>Corrugations</u>	3" X 1" or 5" x 1
<u>Gauge</u>	12
<u>Detail Sheet</u>	See 5+82 Detail Sheet

\* See Clause 10-15 Corrugated Steel Culvert or Clause 10-18 Corrugated Steel Structural Plate

### 7-56 STEEL PIPE, PIPE ARCH, AND STRUCTURAL PLATE INSTALLATION

Steel pipe, pipe arches, and structural plate culverts shall be installed according to the National Corrugated Pipe Association Installation Manual, and are subject to the inspection and approval of the Contract Administrator before placement and backfill. The latest edition of the NCSPA Installation Manual can be found at [www.ncspa.org](http://www.ncspa.org).

### 7-57 CULVERT SHAPE CONTROL

Purchaser shall monitor the culvert shape during backfill and compaction. Special attention shall be paid to maintaining the structure's rise dimensions, concentricity and smooth, uniform curvature. If compaction methods are resulting in peaking and/or deflection of the culvert, Purchaser shall, in consultation with the District Engineer or their designee, modify their compaction method to achieve the appropriate end-result. The National Corrugated Steel Pipe Association "Installation Manual for Corrugated Steel Pipe, Pipe Arches, and Structural Plate" includes guidance on how to monitor culvert shape control and recommends corrective actions to take when shape control problems arise.

SUBSECTION GATES AND FENCES

**7-75 GATE MAINTENANCE**

On the following road(s), gate maintenance as listed is required. All old gate material shall be removed from state land by the Purchaser before the termination of the contract.

<u>Road</u>	<u>Station</u>	<u>Requirements</u>
D-3400	0+30	Gate shall be painted with 2 coats of Safety Yellow color using high gloss alkyd enamel paint. Prior to painting, surfaces shall be prepared, by cleaning, sanding and removing all loose rust and paint. All surfaces shall be dry at the time of painting.
D-5500	13+75	Gate shall be painted with 2 coats Safety Yellow color using high gloss alkyd enamel paint. Prior to painting, surfaces shall be prepared, by cleaning, sanding and removing all loose rust and paint. All surfaces shall be dry at the time of painting.

SECTION 8 – EROSION CONTROL

**8-1 SEDIMENT CONTROL STRUCTURES**

On the following road(s), sediment control shall be accomplished as listed below.

<u>Road</u>	<u>Stations</u>	<u>Left or Right</u>	<u>Comments</u>
D-5500	75+35	Right	Silt Fence
D-5500	75+85	Right	Silt Fence

**8-2 PROTECTION FOR EXPOSED SOIL**

Purchaser shall furnish and evenly spread a 3-inch layer of straw to all exposed soils at stream culvert installations. Soils shall not be allowed to sit exposed during any rain event.

SUBSECTION REVEGETATION

**8-15 REVEGETATION**

Purchaser shall grass seed and hay mulch all exposed soils including, but not limited to, stream culverts, waste areas, sidecast pull back areas, stream crossing removals, bridge installations, and other areas directed by the Contract Administrator. Revegetation of exposed soils shall be accomplished by manual dispersal of grass seed unless otherwise detailed in this Road Plan. Other methods of revegetation must be approved in writing by the Contract Administrator.

**8-16 REVEGETATION SUPPLY**

All seed, mulch, hay, matting, etc. will be provided by the Purchaser.

**8-17 REVEGETATION TIMING**

Purchaser shall perform revegetation during the first available opportunity. Soils shall not be allowed to sit exposed for longer than one month without receiving revegetation treatment unless otherwise approved in writing by the Contract Administrator. Soils shall not be allowed to sit exposed during any rain event.

**8-18 PROTECTION FOR SEED**

Purchaser shall provide a protective cover over the revegetated area. The protective cover may consist of, but not be limited to, such items as dispersed hay mulch 3” thick or jute matting.

**8-19 ASSURANCE FOR SEEDED AREA**

The Purchaser shall be responsible to ensure a uniform and dense crop of grass. The Purchaser shall reapply the seed and/or mulch in areas that have been damaged through any cause, before approval from the Contract Administrator. The Purchaser shall restore eroded or disturbed areas, clean up and properly dispose of eroded materials, and reapply the seed and/or mulch at no additional cost to the state.

SUBSECTION SEED, FERTILIZER, AND MULCH

**8-25 GRASS SEED**

Purchaser shall evenly spread the seed mixture listed below on all exposed at a rate of 60 pounds per acre of exposed soil. Grass seed shall meet the following specifications:

1. Weed seed shall not exceed 0.5% by weight.
2. All seed species shall have a minimum 90% germination rate, unless otherwise specified.
3. Seed shall be furnished in standard containers the show the following information:
  - a) Common name of seed
  - b) Net weight
  - c) Percentage of purity
  - d) Percentage of germination
  - e) Percentage of weed seed and inert material
4. Seed must conform to the following mixture unless a comparable mix is approved in writing by the Contract Administrator.

<u>Kind and Variety of Seed in Mixture</u>	<u>% by Weight</u>	<u>Minimum % germination</u>
Perennial Rye	40	90
Red Fescue	40	90
Highland Bent	10	85
White Clover	10	90

## SECTION 9 – POST-HAUL ROAD WORK

### SUBSECTION STRUCTURES

#### 9-3 REMOVAL OF CULVERT MATERIAL FROM STATE LAND

Culvert material removed from roads becomes the property of the Purchaser and must be removed from state land.

### SUBSECTION POST-HAUL MAINTENANCE

#### 9-5 POST-HAUL MAINTENANCE

Post-haul maintenance shall be performed in accordance with the Forest Access Road Maintenance Specifications and as specified below.

<u>Road</u>	<u>Stations</u>	<u>Additional Requirements</u>
All	All	Clean culverts, clean ditches, grade road shape and compact as directed by the Contract Administrator
D-5040	0+00 – 76+00	Apply post haul rock as per Clause 6-72.
D-5056	0+00 – 42+85	Apply post haul rock as per Clause 6-72.
D-5500	0+00 – 174+30	Apply post haul rock as per Clause 6-72.
D-5510	0+00 – 38+60	Apply post haul rock as per Clause 6-72.

### SUBSECTION POST-HAUL LANDING MAINTENANCE

#### 9-10 LANDING DRAINAGE

On all roads, Purchaser shall provide for drainage of the landing surface as approved in writing by the Contract Administrator.

#### 9-11 LANDING EMBANKMENT

On all roads, landing embankments shall be sloped to original construction specifications.

## SUBSECTION DEACTIVATION AND ABANDONMENT

### 9-20 ROAD DEACTIVATION

The following road(s) shall be deactivated by the Purchaser before the termination of this contract.

<u>Road</u>	<u>Stations</u>	<u>Type</u>
D-5000 0+95 Spur	0+00 – 0+95	Light Deactivation
D-5056 7+10 Spur	0+00 – 7+10	Light Deactivation
D-5506	6+45 – 15+95	Light Deactivation

### 9-22 LIGHT DEACTIVATION

Deactivation shall consist of:

1. Removing all culverts. Resulting back slopes shall be 1:1 or shallower. Material removed shall be placed on the roadbed and compacted, with slopes of 2:1 or shallower. Culverts removed shall become the property of the Purchaser and removed from State land.
2. Construct non-drivable water bars as directed by the Contract Administrator. On grades in excess of 3%, non-drivable water bars shall be skewed 30 degrees from the perpendicular of the road centerline.
3. Restore all ditchouts to drain water.
4. Repair or construct ditchlines.
5. Remove any berms, except as directed.
6. Restoration of natural stream channels across road prism, as directed by the Contract Administrator.
7. Removing all fill material as approved by the Contract Administrator.
8. All material from fill removals, culvert removals, and bridge removals shall be placed on roadbed and compacted, except that material listed in Clause 4-37.
9. Purchaser shall furnish and apply grass seed to all areas of exposed soil, including but not limited to: water bars, waste piles, and culvert removal sites. Grass seed shall be applied at a rate of 60 pounds per acre.
10. Block road to vehicular traffic using logs, slash, and stumps, as directed by the Contract Administrator.

## SECTION 10 MATERIALS

### SUBSECTION GEOTEXTILES

#### 10-2 GEOTEXTILE FOR SEPARATION

Geotextiles shall meet the following minimum requirements for strength and property qualities, and shall be designed by the manufacturer to be used for separation. Material shall be free of defects, cuts, and tears.

	<u>ASTM Test</u>	<u>Requirements</u>
Type	--	Non-woven
Apparent opening size	D 4751	No. 30 max
Water permittivity	D 4491	0.02 sec <sup>-1</sup>
Grab tensile strength	D 4632	160 lb
Grab tensile elongation	D 4632	>= 50%
Puncture strength	D 6241	310 lb
Tear strength	D 4533	50 lb
Ultraviolet stability	D 4355	50% retained after 500 hours of exposure

#### 10-6 GEOTEXTILE FOR TEMPORARY SILT FENCE

Geotextiles shall meet the following minimum requirements for strength and property qualities, and shall be designed by the manufacturer to be used for filtration. Woven slit-film geotextiles will not be allowed. Material shall be free of defects, cuts, and tears.

	<u>ASTM Test</u>	<u>Requirements</u>
Type	--	Unsupported between posts
Apparent opening size	D 4751	No. 30 max., No. 100 min.
Water permittivity	D 4491	0.02 sec <sup>-1</sup>
Grab tensile strength	D 4632	180 lb in machine direction, 100lb in cross-machine direction
Grab tensile elongation	D 4632	30% max. at 180 lb or more
Ultraviolet stability	D 4355	70% retained after 500 hours of exposure

### SUBSECTION CULVERTS

#### 10-15 CORRUGATED STEEL CULVERT

Metallic coated steel culverts shall meet AASHTO M-36 (ASTM A-760) specifications. Culverts shall be aluminized (aluminum type 2 coated meeting AASHTO M-274).

#### 10-17 CORRUGATED PLASTIC CULVERT

Polyethylene culverts shall meet AASHTO M-294 specifications. Culverts shall be Type S – double walled with a corrugated exterior and smooth interior.

**10-21 METAL BAND**

Metal coupling and end bands shall meet the AASHTO specification designated for the culvert and shall have matching corrugations. On culverts 24 inches and smaller, bands shall have a minimum width of 12 inches. On culverts over 24 inches, bands shall have a minimum width of 24 inches.

**10-22 PLASTIC BAND**

Plastic coupling and end bands shall meet the AASHTO specification designated for the culvert. Only fittings supplied or recommended by the culvert manufacturer shall be used. Couplings shall be split coupling band. Split coupling bands shall have a minimum of four corrugations, two on each side of the pipe joint.

**10-23 RUBBER CULVERT GASKETS**

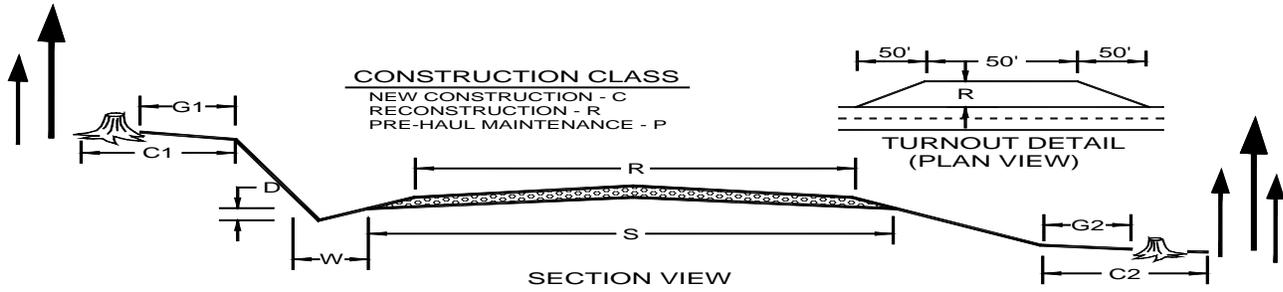
Rubber gaskets must be continuous closed cell, synthetic expanded rubber gaskets conforming to the requirements of ASTM D 1056. Rubber gaskets must be used with all corrugated metal pipe coupling bands.

**10-24 GAGE AND CORRUGATION**

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

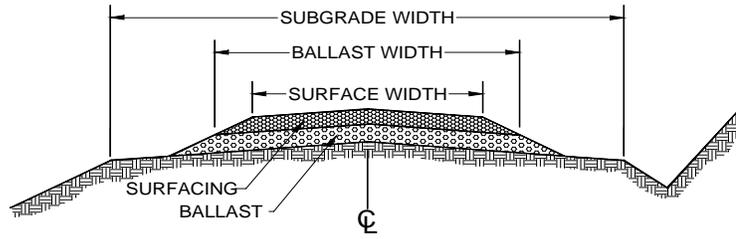
<u>Diameter</u>	<u>Gage</u>	<u>Corrugation</u>
18"	16 (0.064")	2 2/3" X 1/2"
24" to 42"	14 (0.079")	2 2/3" X 1/2"
48" to 54"	12	3" X 1" or 5" x 1
60" +	10	5" X 1"

## TYPICAL SECTION SHEET



ROAD NAME	START STATION	END STATION	CONSTRUCTION CLASS	SUBGRADE WIDTH (S)	ROAD WIDTH (R)	CROWN AT CL (in)	DITCH WIDTH (W)	DITCH DEPTH (D)	GRUBBING CUT BANK (G1)	GRUBBING FILL TOE (G2)	ROAD CUT CLEARING (C1)	ROAD FILL CLEARING (C2)
D-3100	0+00	39+90	P		12'	3"	3'	1'				
D-3110	0+00	21+90	P		12'	3"	3'	1'				
D-3130	0+00	6+25	P		12'	3"	3'	1'				
0+95 Spur	0+00	0+95	C	17'	12'	3"	3'	1'	5'	5'	10'	5'
D-5500	0+00	174+30	P		12'	3"	3'	1'				
4+55 Spur	0+00	4+55	P		12'	3"	3'	1'				
7+70 Spur	0+00	7+70	P		12'	3"	3'	1'				
D-5502	0+00	16+20	P		12'	3"	3'	1'				
D-5506	0+00	15+95	P		12'	3"	3'	1'				
D-5507	0+00	21+25	P		12'	3"	3'	1'				
D-5507.1	0+00	16+55	P		12'	3"	3'	1'				
D-5509	0+00	12+05	P		12'	3"	3'	1'				
D-5510	0+00	38+60	P		12'	3"	3'	1'				
2+30 Spur	0+00	2+30	P		12'	3"	3'	1'				
4+60 Spur	0+00	4+60	P		12'	3"	3'	1'				
12+40 Spur	0+00	12+40	P		12'	3"	3'	1'				
1+07 Spur	0+00	1+07	C	17'	12'	3"	3'	1'	5'	5'	10'	5'
D-5056	0+00	42+85	P		12'	3"	3'	1'				
2+90 Spur	0+00	2+90	P		12'	3"	3'	1'				
4+20 Spur	0+00	4+20	P		12'	3"	3'	1'				
6+90 Spur	0+00	6+90	P		12'	3"	3'	1'				
7+10 Spur	0+00	7+10	P		12'	3"	3'	1'				

# ROCK LIST SHEET

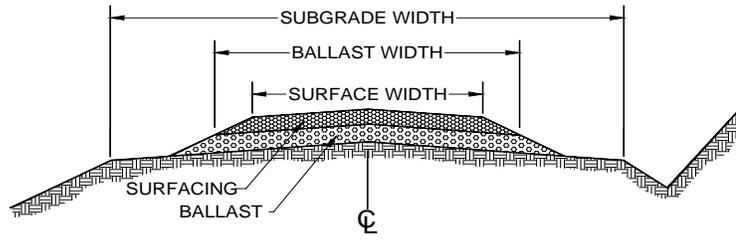


SECTION VIEW

1. Rock quantities, subtotals and totals are "truck measure" estimates. Rock shall be applied to at least the depths listed.
2. All depths are compacted depths.
3. Rock slopes shall be 1½ (H) : 1 (V).
4. All rock sources are subject to approval by the Contract Administrator.
5. Pitrun is defined as pitrun or ballast per Line 6. Crushed is defined as any crushed rock from ¼" minus to 4" minus per Line 6. Oversize is defined as oversize, quarry spalls, light loose rip rap, or heavy loose rip rap per Line 6.
6. Rock sources = 1: Mora Pit, 2: Loop Pit 1 ¼" minus, 3: Loop pit Light Loose Rip Rap/oversized

ROAD NAME	START STATION	END STATION	SUBGRADE WIDTH (ft)	Pitrun SOURCE	Pitrun WIDTH (ft)	Pitrun DEPTH (in)	Pitrun Quantity(yd³/sta)	Pitrun SUBTOTAL(yd³)	Crushed SOURCE	Crushed WIDTH (ft)	Crushed DEPTH (in)	Crushed Quantity(yd³/sta)	Crushed Subtotal(yd³)	Oversize/ Rip rap Source	Oversize/Rip Rap Quantity(yd³)
<b>D-3100</b>															
Misc.	33+80	39+90		1				50							
<b>D-3110</b>															
Misc.	0+00	21+90		1				100							
<b>0+95 Spur</b>															
Lift	0+00	0+95	17	1	12	18	110	110							
Culvert	0+20			1				20							
<b>D-5040</b>															
Post Haul	0+00	76+00		1				50							
<b>1+07 Spur</b>															
Lift	0+00	1+07	17	1	12	18	110	120							
<b>D-5056</b>															
Post Haul	0+00	42+85		1				100							
Culvert	5+82			1				900						3	10
<b>2+90 Spur</b>															
Misc.	0+00	2+90		1				20							
<b>4+20 Spur</b>															
Misc.	0+00	4+20		1				50							
<b>Sub Totals:</b>								1520							10

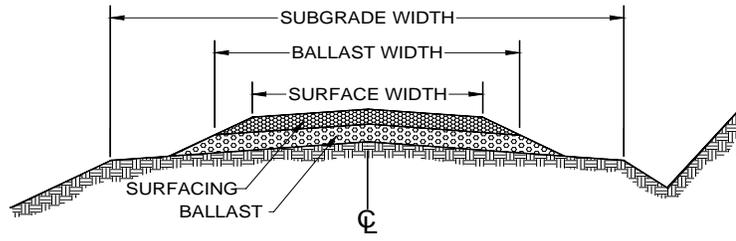
## ROCK LIST SHEET CONTINUED



1. Rock quantities, subtotals and totals are "truck measure" estimates. Rock shall be applied to at least the depths listed.
2. All depths are compacted depths.
3. Rock slopes shall be 1½ (H) : 1 (V).
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6. Rock sources = 1: Mora Pit, 2: Loop Pit 1 ¼" minus, 3: Loop pit Light Loose Rip Rap/oversized

ROAD NAME	START STATION	END STATION	SUBGRADE WIDTH (ft)	Pitrun SOURCE	Pitrun WIDTH (ft)	Pitrun DEPTH (in)	Pitrun Quantity(yd <sup>3</sup> /sta)	Pitrun SUBTOTAL(yd <sup>3</sup> )	Crushed SOURCE	Crushed WIDTH (ft)	Crushed DEPTH (in)	Crushed Quantity(yd <sup>3</sup> /sta)	Crushed Subtotal(yd <sup>3</sup> )	Oversize/ Rip rap Source	Oversize/Rip Rap Quantity(yd <sup>3</sup> )
<b>6+90 Spur</b>															
Lift	0+00	3+50		1	12	6	35	130							
<b>7+10 Spur</b>															
Misc.	0+00	7+10		1				100							
<b>D-5500</b>															
Bridge Work	24+55	25+05		1				80							
Misc.	124+25	164+10		1				100							
Lift	164+10	174+30		1	12	6	35	360							
Post Haul	0+00	174+30		1				100							
<b>4+55 Spur</b>															
Lift	0+00	4+55		1	12	6	35	160							
<b>7+70 Spur</b>															
Lift	0+00	7+70		1	12	6	35	270							
Misc.	0+00	7+70		1				50							
<b>D-5502</b>															
Lift	0+00	2+00		1	12	12	70	140							
<b>Sub Totals:</b>								1490							

## ROCK LIST SHEET CONTINUED

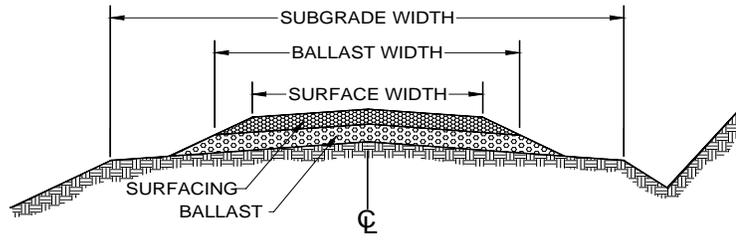


SECTION VIEW

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ROAD NAME	START STATION	END STATION	SUBGRADE WIDTH (ft)	Pitrun SOURCE	Pitrun WIDTH (ft)	Pitrun DEPTH (in)	Pitrun Quantity(yd <sup>3</sup> /sta)	Pitrun SUBTOTAL(yd <sup>3</sup> )	Crushed SOURCE	Crushed WIDTH (ft)	Crushed DEPTH (in)	Crushed Quantity(yd <sup>3</sup> /sta)	Crushed Subtotal(yd <sup>3</sup> )	Oversize/ Rip rap Source	Oversize/Rip Rap Quantity(yd <sup>3</sup> )
<b>D-5506</b>															
Misc.	0+00	15+95		1				50							
Culvert	0+20							20							
<b>D-5507</b>															
Misc.	10+90	21+25		1				100							
<b>D-5507.1</b>															
Lift	0+00	16+55		1	12	6	35	580							
<b>D-5509</b>															
Misc.	0+00	12+05		1				50							
<b>D-5510</b>															
Misc.	0+00	38+60		1				150							
Turnout	17+50			1				20							
Turnout	24+95			1				20							
Post Haul	0+00	38+60		1				50							
<b>2+30 Spur</b>															
Misc.	0+00	2+30		1				50							
<b>4+60 Spur</b>															
Lift	0+00	1+00		1	12	12	70	70							
Misc.	1+00	4+60		1				90							
<b>Sub Totals:</b>								1250							

## ROCK LIST SHEET CONTINUED



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6. Rock sources = 1: Mora Pit, 2: Loop Pit 1 ¼" minus, 3: Loop pit Light Loose Rip Rap/oversized

ROAD NAME	START STATION	END STATION	SUBGRADE WIDTH (ft)	Pitrun SOURCE	Pitrun WIDTH (ft)	Pitrun DEPTH (in)	Pitrun Quantity(yd <sup>3</sup> /sta)	Pitrun SUBTOTAL(yd <sup>3</sup> )	Crushed SOURCE	Crushed WIDTH (ft)	Crushed DEPTH (in)	Crushed Quantity(yd <sup>3</sup> /sta)	Crushed Subtotal(yd <sup>3</sup> )	Oversize/ Rip rap Source	Oversize/Rip Rap Quantity(yd <sup>3</sup> )
<b>12+40 Spur</b>															
Lift	0+00	12+40		1	12	6	35	440							
Culvert	3+00							20							
Sub Totals:								460							
Totals:								4720							10

### CULVERT LIST

ROAD NAME	STATION	CULVERT DIAMETER (in)	CULVERT LENGTH (ft)	FLUME LENGTH (ft)		RIP RAP - INLET (cy)	RIP RAP - OUTLET (cy)	BACKFILL MATERIAL	NOTES
D-5000 0+95 Spur	0+05	18	40					PR	New Culvert/Remove Culvert during Deactivation
D-5056	5+82	48	76			5	5	PR	Culvert Replacement
D-5056	17+25								Clean Outlet
D-5056	20+10								Clean Outlet
D-5056 7+10 Spur	4+10								Clean Inlet
D-5506	0+20	18	36					PR	New Culvert
D-5506	4+44								Clean Inlet
D-5506	6+42								Clean Inlet and Outlet
D-5506	10+16								Clean Inlet and Outlet/Remove Culvert during Deactivation
D-5506	15+00								Clean Inlet/Remove Culvert during Deactivation
D-5510 12+40 Spur	3+00	18	30					PR	New Culvert

## COMPACTION LIST

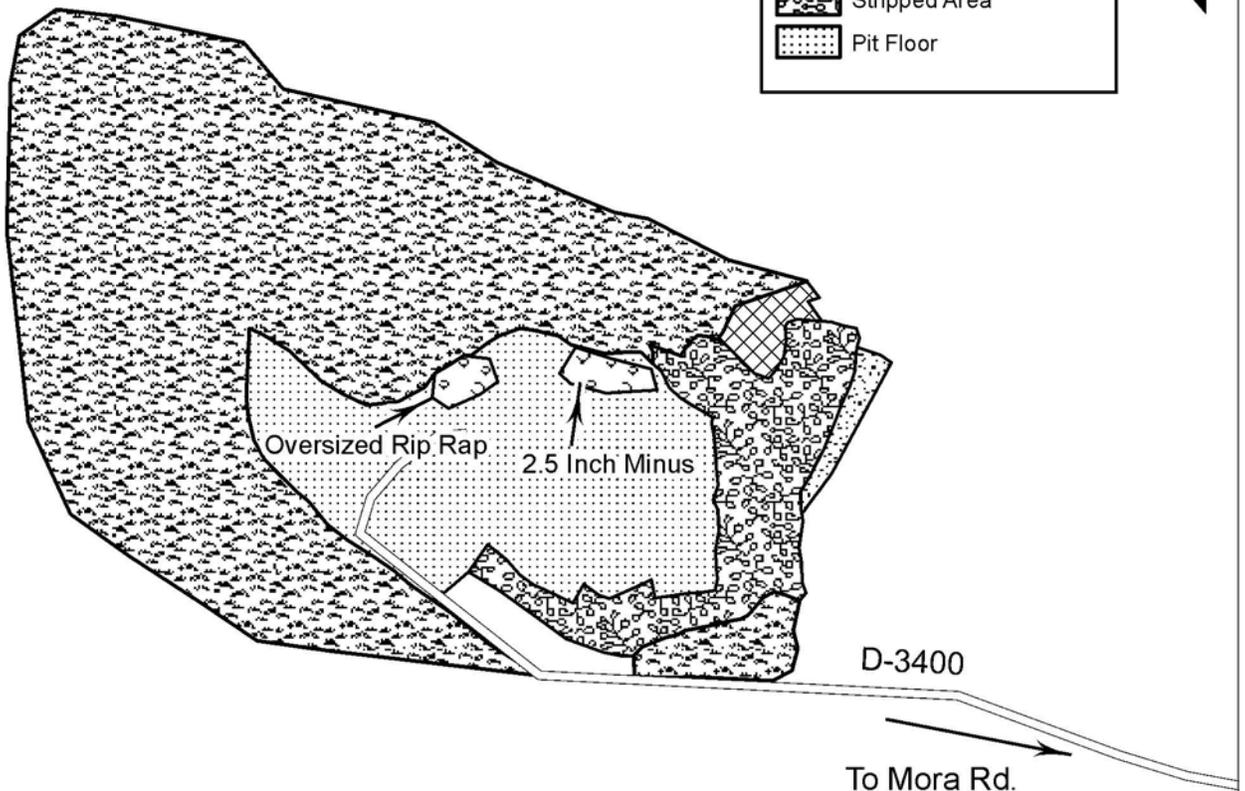
Road	Stations	Type	Max Depth Per Lift (inches)	Equipment Type	Minimum Equipment Weight (lbs)	Minimum Number of Passes	Maximum Operating Speed (mph)
Pre-haul	All	Culvert Backfill	8"	Jumping Jack		3	
Pre-haul	All	Rock Lifts	6"	Vibratory Smooth Drum	6,000	3	3
Construction	All	Subgrade (Except Puncheon)	6"	Vibratory Smooth Drum	6,000	2	3
Construction	All	Rock Placement	6"	Vibratory Smooth Drum	6,000	2	3
Post-haul Maintenance D-5500, D-5040, D-5056, D-5510	All	Rock Placement	6"	Vibratory Smooth Drum	6,000	2	3

# Mora Pit Plan

## Sec. 23 & 24, T28N, R15W

Not To Scale

Legend	
	Approach Road
	Overburden
	Reclaimed
	Stockpiles
	Cleared but not Stripped
	Stripped Area
	Pit Floor

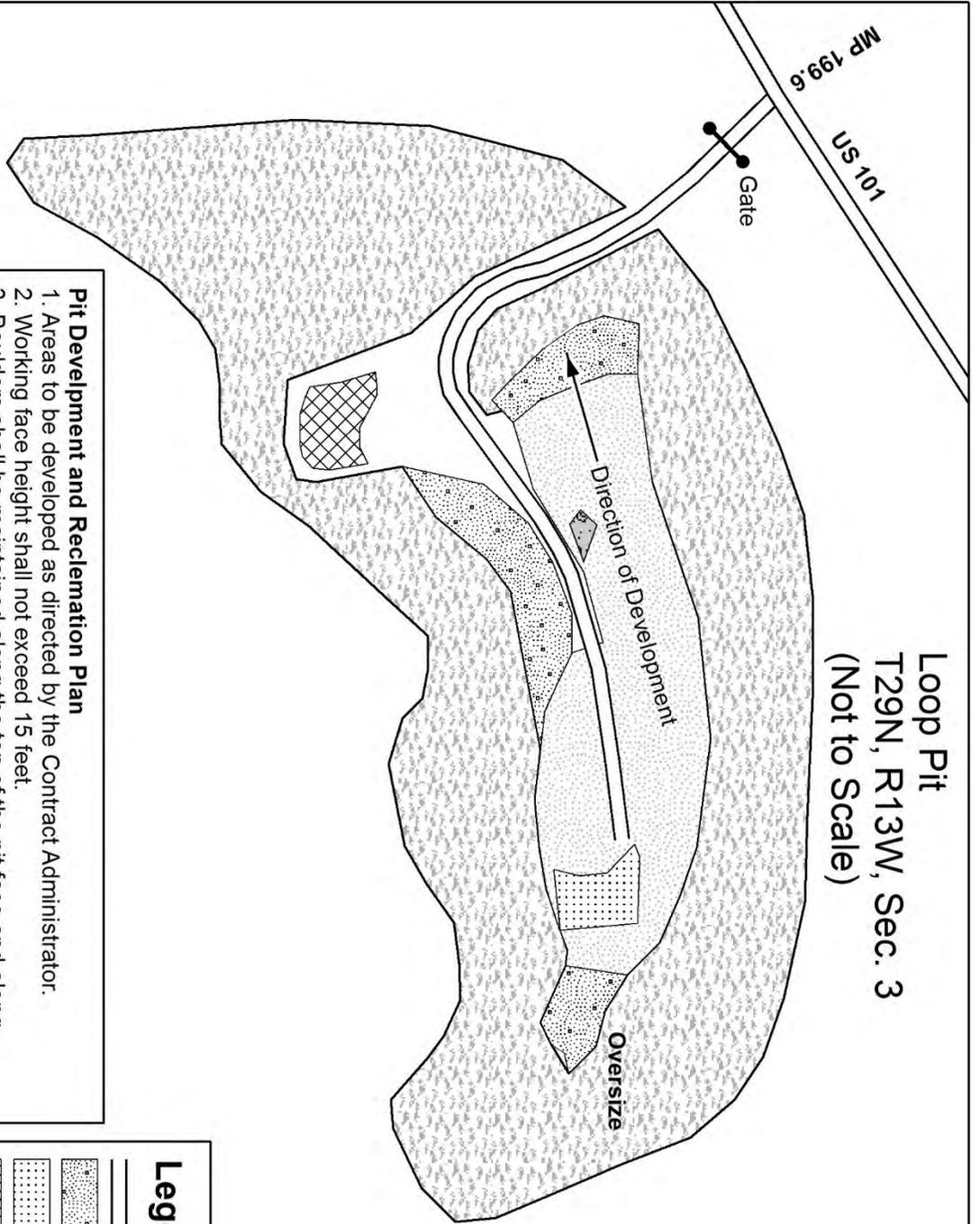


### Pit Development Plan

1. Areas to be developed as directed by the Contract Administrator.
2. Working face height shall not exceed 15 feet.
3. Waste material and oversize material shall be placed as directed by the Contract Administrator. Segregate soil & wood.
4. Pit face shall not be mined to within 15' of any unstripped area.

Ellis, 1/2016

**Loop Pit**  
**T29N, R13W, Sec. 3**  
**(Not to Scale)**



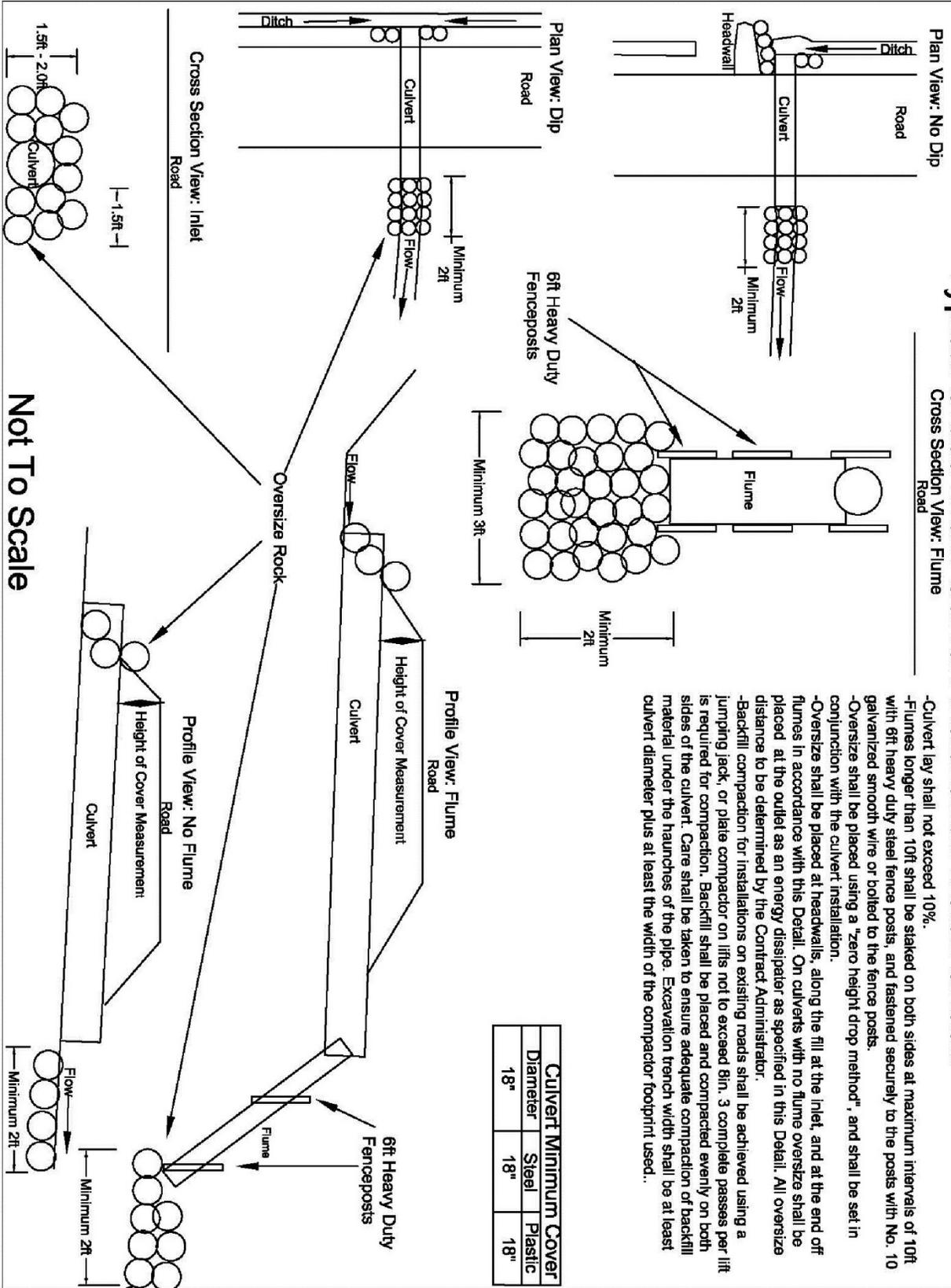
Map Drawn by  
 Matthew Wolford  
 Updated 11/19/15

- Pit Development and Reclamation Plan**
1. Areas to be developed as directed by the Contract Administrator.
  2. Working face height shall not exceed 15 feet.
  3. Boulders shall be maintained along the top of the pit face and along the haul road in the pit at all times as directed by the Contract Administrator.
  4. Suitable drainage shall be maintained at all times.
  5. Rock pit operations, or operation of heavy equipment is not permitted from one hour before official sunrise to two hours after official sunrise, and from one hour before official sunset to one hour after official sunset from April 1 through September 23.

**Legend**

	Access Roads
	Stripped Area
	1 1/2" Minus Crushed
	2 1/4" Minus Crushed
	Rip Rap Piles
	Pit Floor
	Overburden

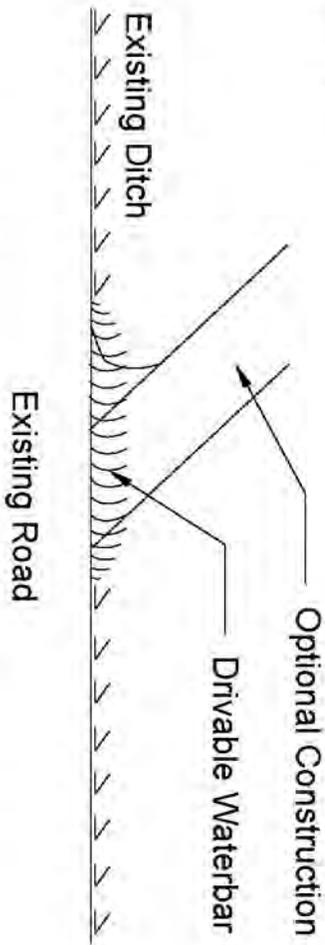
# Typical Cross Drain Culvert Installation Detail Sheet.



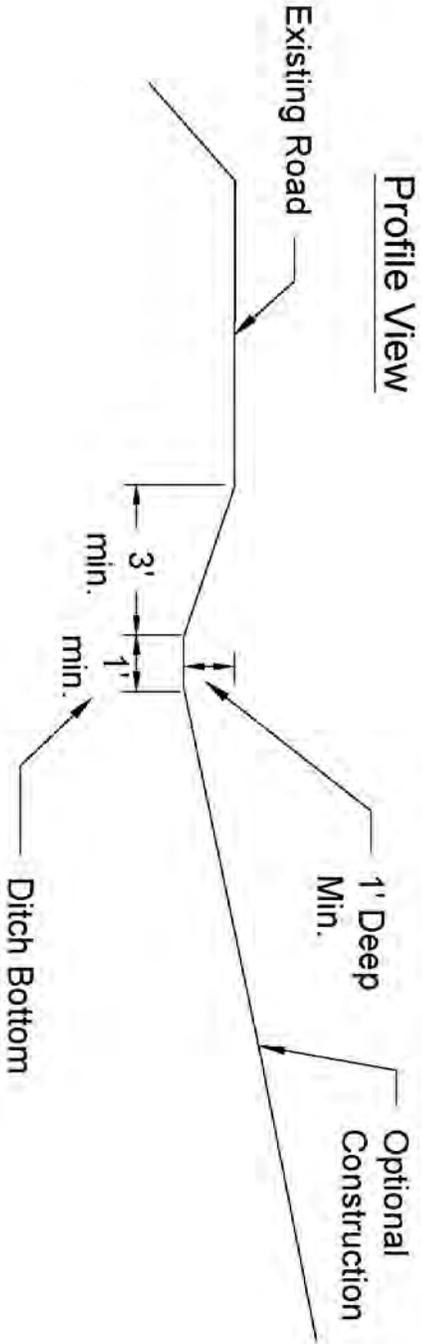
- Culvert lay shall not exceed 10%.
- Fumes longer than 10ft shall be staked on both sides at maximum intervals of 10ft with 6ft heavy duty steel fence posts, and fastened securely to the posts with No. 10 galvanized smooth wire or bolted to the fence posts.
- Oversize shall be placed using a "zero height drop method", and shall be set in conjunction with the culvert installation.
- Oversize shall be placed at headwalls, along the fill at the inlet, and at the end of fumes in accordance with this Detail. On culverts with no fume oversize shall be placed at the outlet as an energy dissipater as specified in this Detail. All oversize distance to be determined by the Contract Administrator.
- Backfill compaction for installations on existing roads shall be achieved using a jumping jack, or plate compactor on lifts not to exceed 8in. 3 complete passes per lift is required for compaction. Backfill shall be placed and compacted evenly on both sides of the culvert. Care shall be taken to ensure adequate compaction of backfill material under the haunches of the pipe. Excavation trench width shall be at least culvert diameter plus at least the width of the compactor footprint used.

# Drivable Waterbar Detail 1

## Plan View

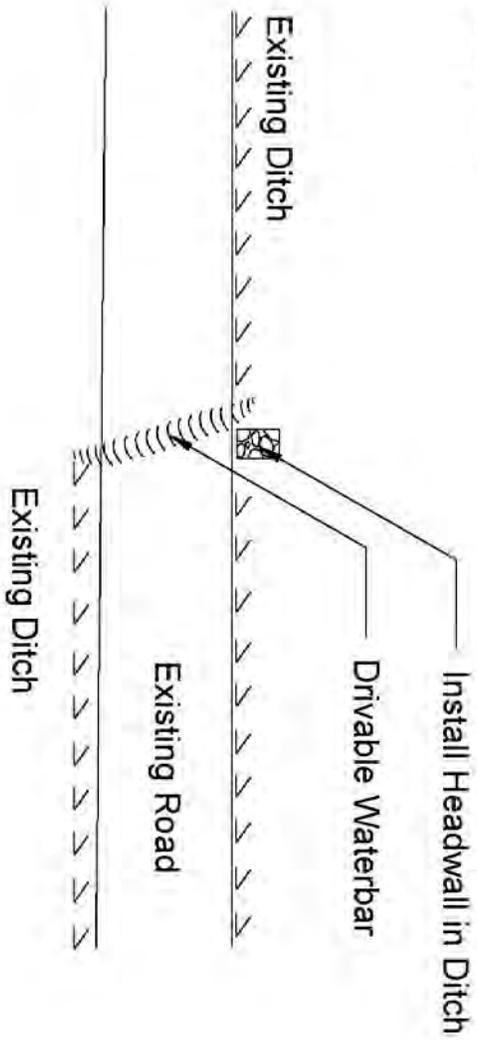


## Profile View

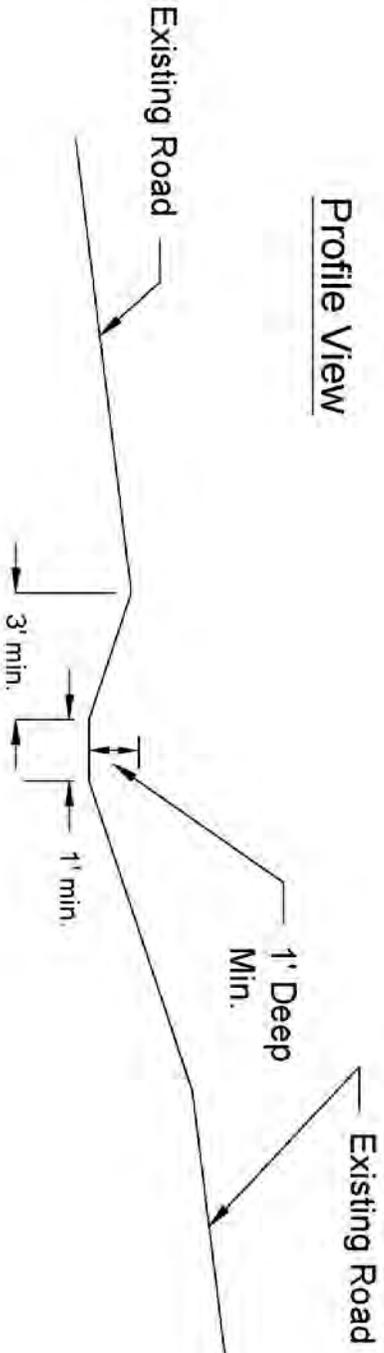


# Drivable Waterbar Detail 2

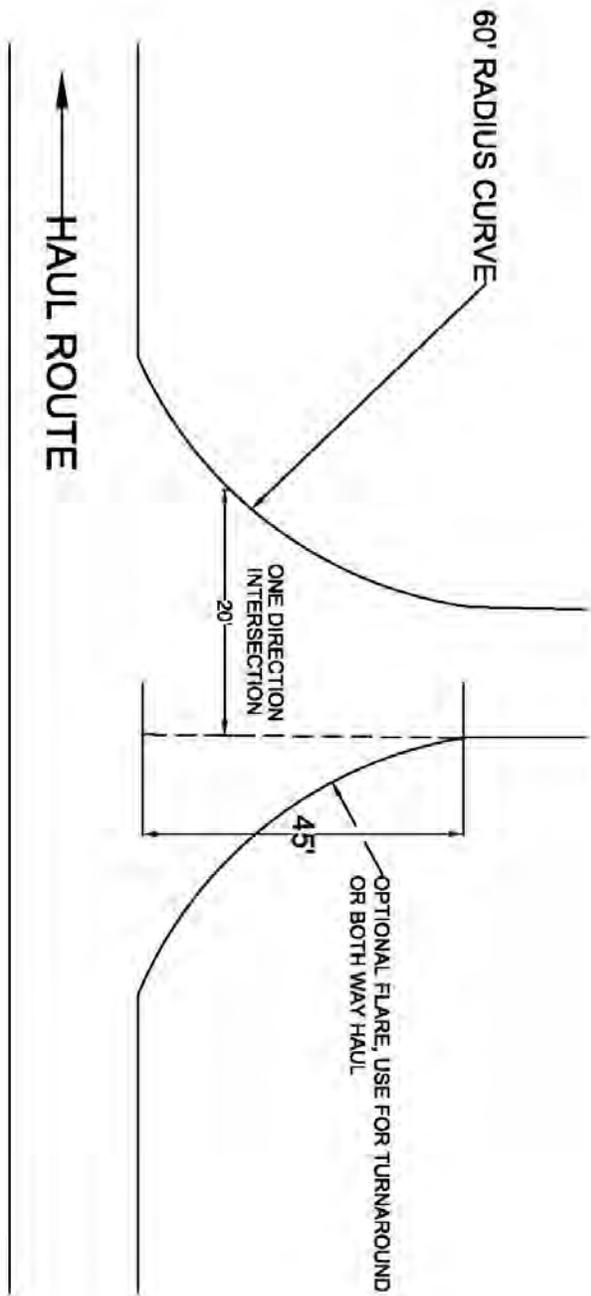
Plan View



Profile View

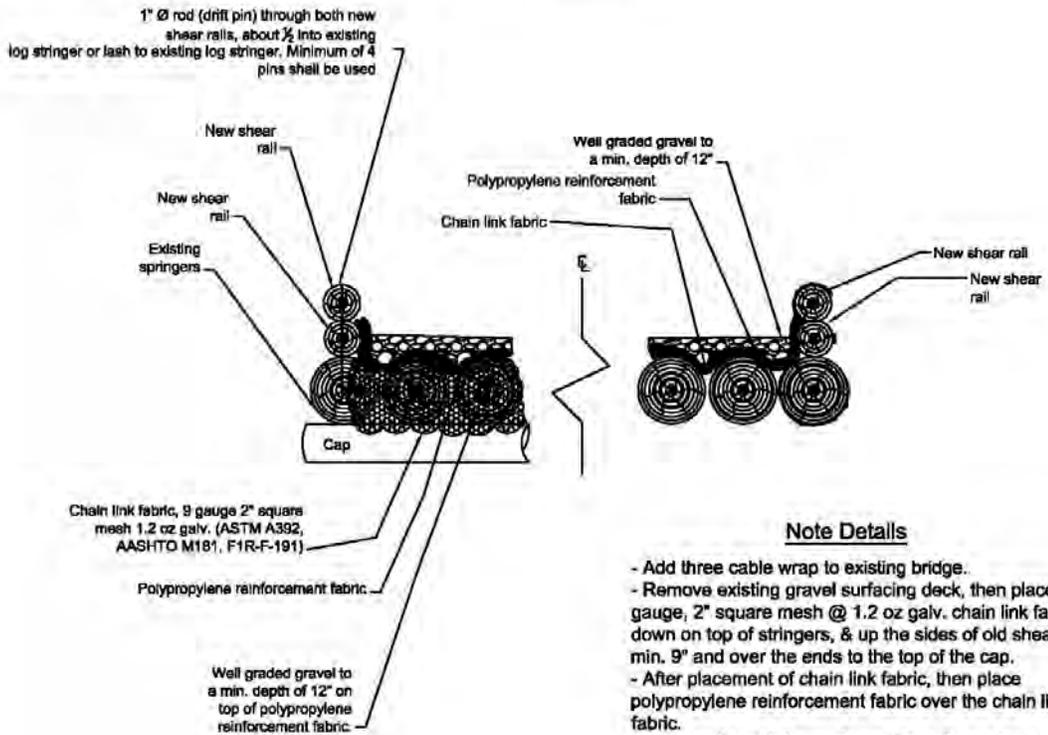


# TYPICAL INTERSECTION



NOT TO SCALE

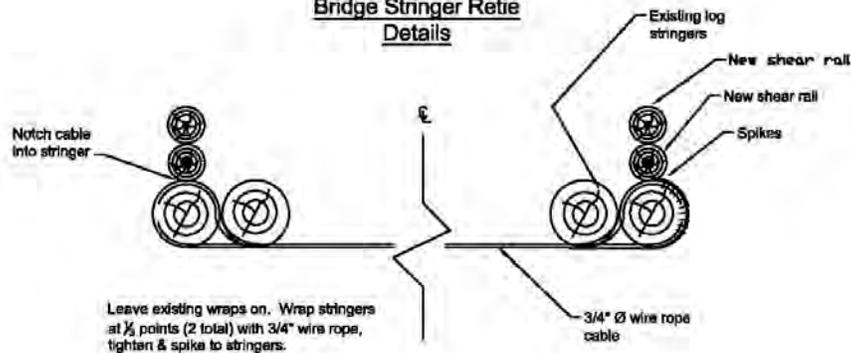
## Bridge Resurfacing & Shear Rail Details



### Note Details

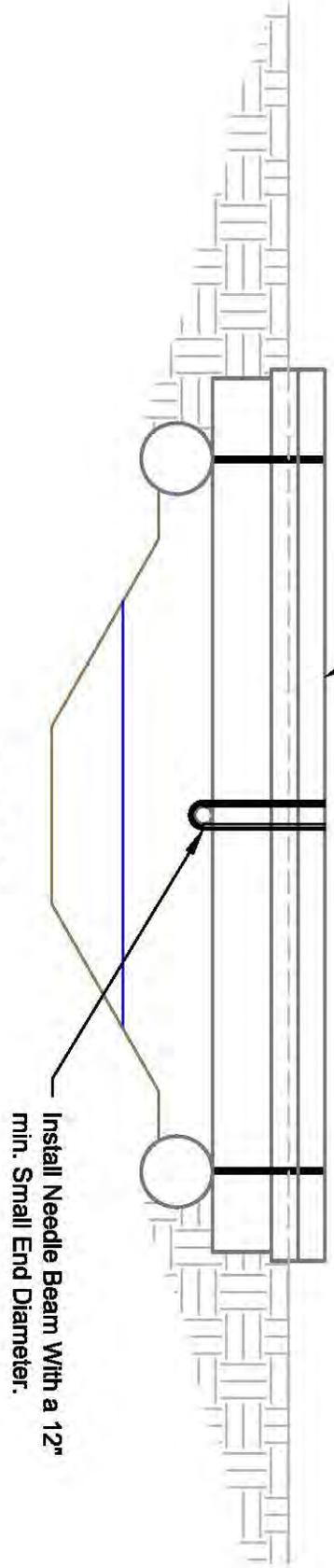
- Add three cable wrap to existing bridge.
- Remove existing gravel surfacing deck, then place 9 gauge, 2" square mesh @ 1.2 oz galv. chain link fabric down on top of stringers, & up the sides of old shears by min. 9" and over the ends to the top of the cap.
- After placement of chain link fabric, then place polypropylene reinforcement fabric over the chain link fabric.
- Place well graded gravel over the polypropylene reinforcement fabric to a min. depth of 12". Finished surface elevation shall equal existing surface elevation.
- Existing pit run surfacing may be salvaged and reused once the stringers have been retied.
- A new shear rails shall be added to each side of the existing bridge. Rail logs shall be taken from the sale area.
- Rail logs shall be selected and placed so that at least 18" are free and above the top of the gravel surfacing.

## Bridge Stringer Retie Details



# Needle Beam Detail

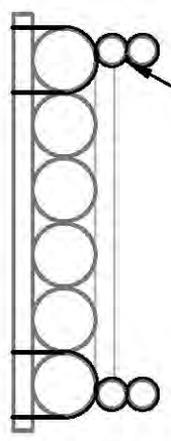
Install New Shear Rail Logs With a 12" min. Small End Diameter and 50' Long. Top of Shear Rail Logs shall be 18" Above Gravel Surfacing.



Road Profile

Install Needle Beam With a 12" min. Small End Diameter.

Wrap Needle Beam to Outside Stringers and Shear Rails



Needle Beam Section

## **BRIDGE RE-TIE AND REPAIR PROVISIONS**

### **TIMING LIMITATIONS:**

In-stream work below the ordinary high water line of Type 1-3 STREAMS SHALL ONLY OCCUR BETWEEN July 1<sup>st</sup> through September 30<sup>th</sup>. General fish stream work provisions shall apply.

### **WORK PROVISIONS OUTSIDE OHWL:**

1. For all work to be conducted outside the ordinary high water line for the inspection/removal/replacement of log stringer structures, steel bridge structures and associated gravel and wood decking material and bridge abutment structures provided, all work is conducted outside the ordinary high water line (OHWL) with no impacts to the stream channel or banks.
2. Abutment and sill replacement shall only be accomplished when the activity does not result in disturbance to the stream channel.
3. No riparian trees shall be damaged or removed as a result of these activities.
4. All waste material such as construction debris, bridge surfacing, silt, dirt or overburden resulting from these activities shall be prevented from entering waters of the state by disposing this material in appropriate upland locations.
5. Riprap or other containment structures shall only be installed to confine road fill material and shall not modify or disturb the stream channel.
6. Bridge wheel guards and curbs shall be repaired and maintained to prevent this material from falling off the bridge and into the stream.
7. Where aggregate or earth type material is used for the running surface, a semi-permeable fabric shall be placed on the top surface of the log stringers and below the material surfacing to contain fine sediments.

### **EQUIPMENT LIMITATIONS:**

8. Equipment used for a project shall be clean and free of external petroleum-based products while working around or over a channel. Equipment shall be checked daily for leaks and any necessary repairs shall be completed prior to commencing work activities near the channel.
9. Equipment shall not enter or operate within the ordinary high water line.
10. Equipment shall only operate from the existing road prism or bridge deck.

### **WATER QUALITY PROVISIONS:**

11. Best Management Practices in the DNR Forest Practice Roads Board Manual shall be implemented during all phases of the project to ensure that silt, road and bridge surface gravel and sediment-laden water do not enter waters of the state. If sediment delivery occurs to the stream as the result of bridge repair activities, operations shall cease and the source of sedimentation shall be controlled. When the sedimentation source has been eliminated, the bridge repair activities may resume.
12. Gravel surfacing material on the bridges shall be carefully removed to the maximum extent practicable using equipment, hand methods or a combination of both before conducting any log stringer removal and/or replacement.

13. No petroleum products, hydraulic fluid, fresh cement, grout, chemicals, or any toxic or deleterious materials are allowed to enter or leach into waters of the state as a result of these activities.

14. All disturbed or exposed areas resulting from this project with the potential to deliver fine sediment to any stream, pond, or wetland shall be protected from erosion using straw blankets hydro-mulch, vegetation or other means immediately upon completion of the project.

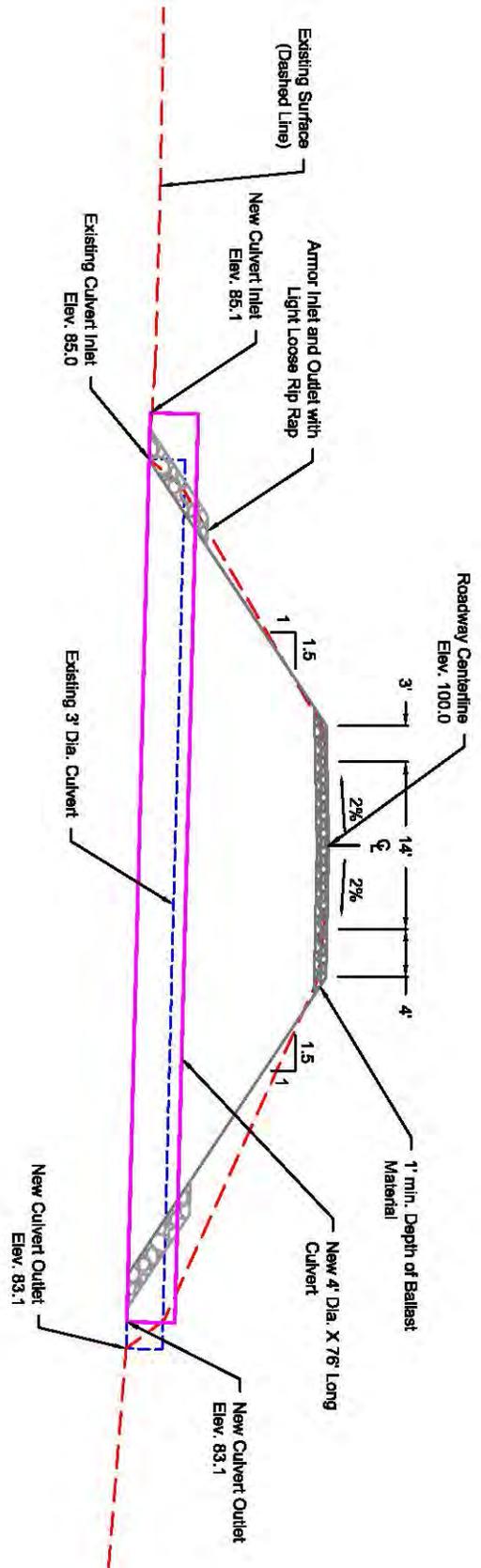
**SITUATION RESPONSE AND CONTACTS:**

If at any time, as a result of project activities, the following conditions are observed, immediate notification shall be made to the appropriate person or agency listed below:

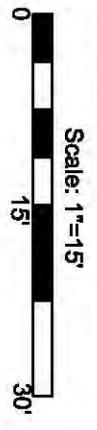
- Water quality, sedimentation delivery, notify DNR Forest Practices Forester
- Fish are observed in distress or a fish kill occurs, notify WDFW Area Habitat Biologist.
- Equipment leaks, or spills of oil, fuel or chemicals, the spiller is responsible for notifying:

Dept. of Ecology-Southwest Region, (360) 407-6300;  
National Response Center, 1-800-424-8802; and  
Washington Emergency Management Division, 1-800-258-5990.

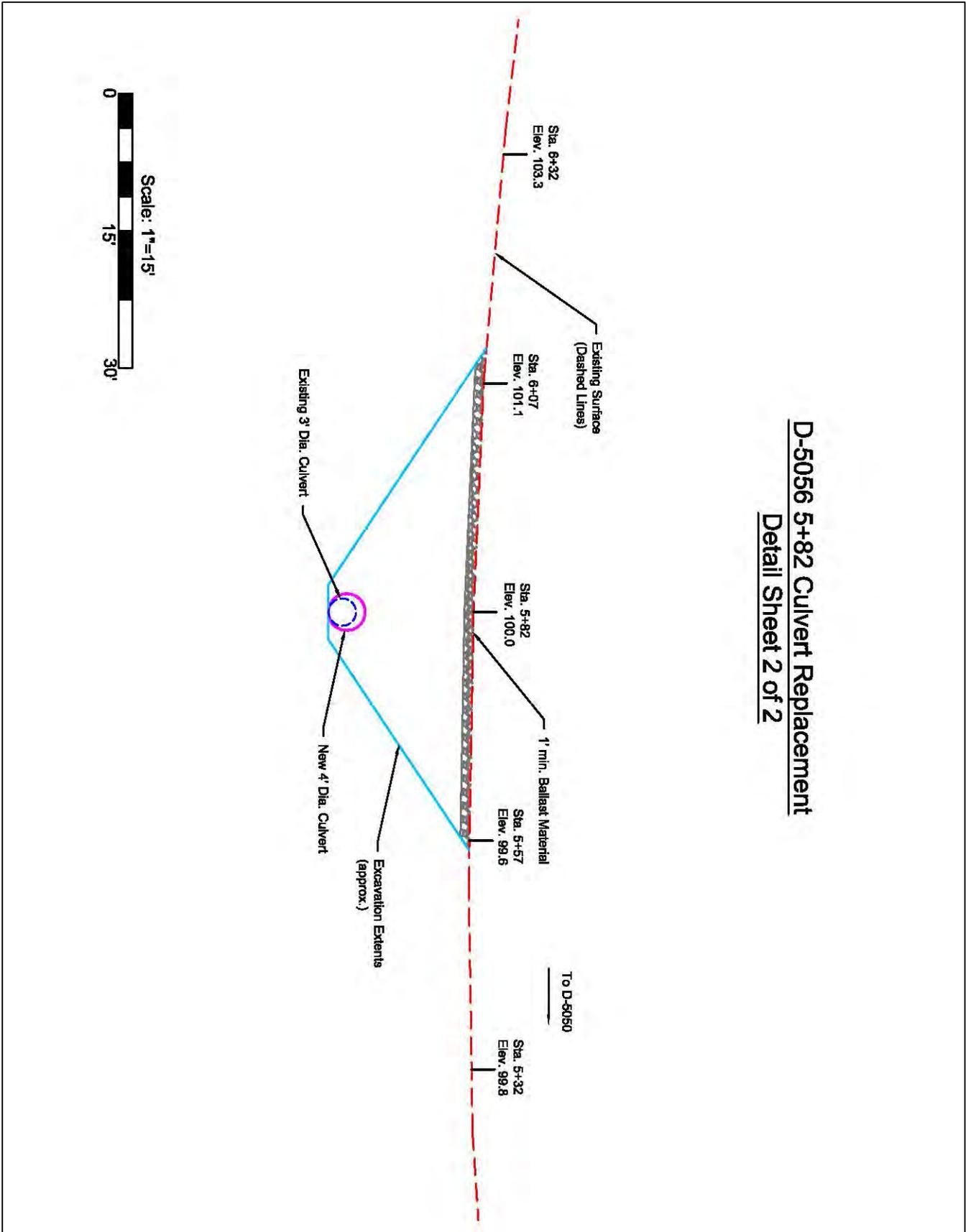
# D-5056 5+82 Culvert Replacement Detail Sheet 1 of 2



Notes:  
 Culvert Located N 48.009985° W 124.822412°  
 Average Channel Width 2.9'  
 T29R15W Section 22



# D-5056 5+82 Culvert Replacement Detail Sheet 2 of 2



DEPARTMENT OF NATURAL RESOURCES

FORM 9-87Rev. (1-08)

SUMMARY - Road Development Costs

SALE NAME: Ellen's Creek VDT CONTRACT#: 30-093511 REGION: Olympic

LEGAL DESCRIPTION: 0

DISTRICT: Coast

ROAD NAME:	0-95	1-107	D-3100	D-3110	D-3130	D-5056	2-90	4-20	6+90	7-10	D-5500	TOTAL:	SHEET #2
ROAD TYPE:	Construction	Construction	Prehaul	Prehaul	Prehaul	Prehaul	Prehaul	Prehaul	Prehaul	Prehaul	Prehaul		
NUMBER OF STATIONS:	1	1	40	22	6	43	3	4	7	7	174	308.32	228.15
SIDE SLOPE:	10%	10%	0%	0%	0%	0%	0%	0%	0%	0%	0%		
CLEARING AND GRUBBING:	\$120	\$135	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$256	\$0
ROAD BRUSHING:	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
EXCAVATION AND FILL:	\$161	\$181	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$342	\$0
ROAD GRADING:	\$0	\$0	\$10	\$20	\$0	\$59	\$7	\$10	\$23	\$20	\$111	\$257	\$416
DITCH CLEANING/CONSTRUCTION:	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$176	\$0	\$176	\$443
ROCK TOTALS (CAL YRS.):													
Ballast:	4719	4720	\$1,630	\$1,921	\$419	\$855	\$0	\$14,770	\$336	\$849	\$2,152	\$11,726	\$8,954
Surface:	0	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Oversize:	0	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
CULVERTS AND FLOODS:	\$880	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$880	\$1,452
STRUCTURES:	\$0	\$0	\$0	\$0	\$0	\$21,103	\$0	\$0	\$0	\$0	\$0	\$8,128	\$29,229
MISC. EXPENSES:	\$6	\$6	\$451	\$1,605	\$0	\$353	\$316	\$313	\$521	\$576	\$865	\$4,913	\$5,714
OVERHEAD:	\$308	\$247	\$70	\$198	\$0	\$2,903	\$45	\$94	\$216	\$200	\$1,444	\$5,724	\$3,350
TOTAL COSTS:	\$31,005	\$2,491	\$950	\$2,678	\$0	\$39,187	\$608	\$1,266	\$2,911	\$2,697	\$19,500	\$75,389	\$45,221
COST PER STATION:	\$3,268	\$2,328	\$24	\$122	\$0	\$915	\$208	\$301	\$422	\$380	\$112	\$245	\$0.00
MOBILIZATION:			\$7,690										
ROAD DEACTIVATION AND ABANDONMENT COSTS:			\$2,438										
PR Work:			\$0										

NOTE: This appraisal has no allowance for profit and risk  
 Sheet 1 of 2  
 to be furnished by: Greg Ellis

TOTAL (All Records) = \$130,647  
 SALE VOLUME MBF = 5,983  
 TOTAL COST PER MBF = \$21.84  
 TOTAL COST PER STATION = \$243.53  
 Compiled by: Greg Ellis Date: 1/19/2015

Ellen's Creek road cost.xlsx

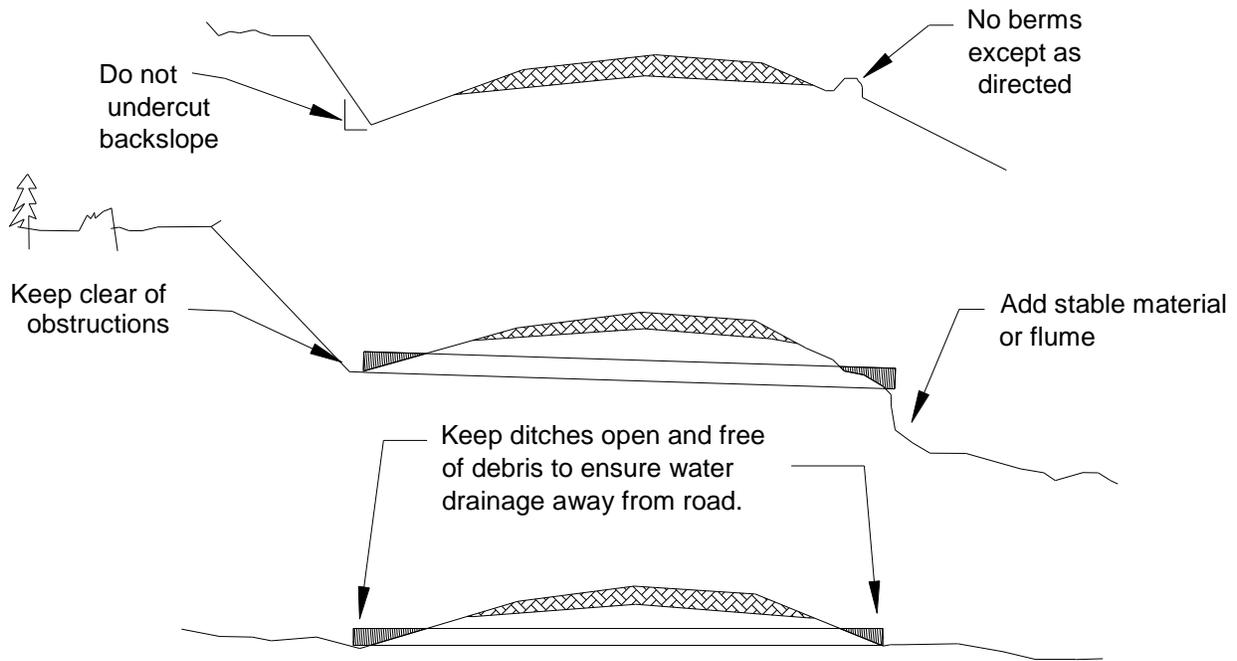
SUNMARY - Road Development Costs  
 REGION: Olympic  
 DISTRICT: Coast

SALE NAME: Ellen's Creek VDRONTTRACT# 30-093511  
 LEGAL DESCRIPTION: 0

ROAD NAME:	4+55	7+70	D-5502	D-5506	D-5507	D-5507.1	D-5509	D-5510	2+30	4+60	12+40	D-5040	0	0	0	0	0
ROAD TYPE:	Prehaul	Prehaul	Prehaul	Prehaul	Prehaul	Prehaul	Prehaul	Prehaul	Prehaul	Prehaul	Prehaul	Prehaul	0	0	0	0	0
NUMBER OF STATIONS:	5	8	16	16	21	17	12	39	2	5	12	76	0.00	0.00	0.00	0.00	0.00
SIDE SLOPE:	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
CLEARING AND GRUBBING:	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
ROAD BRUSHING:	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
EXCAVATION AND FILL:	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
ROAD GRADING:	\$29	\$62	\$13	\$10	\$20	\$107	\$10	\$39	\$10	\$26	\$81	\$10	\$0	\$0	\$0	\$0	\$0
DITCH CLEANING/CONSTRUCTION:	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$179	\$263	\$0	\$0	\$0	\$0	\$0	\$0
ROCK TOTALS (COL. Y85):	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Balblast:	\$2,508	\$4,761	\$1,536	\$1,015	\$1,487	\$8,727	\$777	\$3,139	\$638	\$2,030	\$5,975	\$1,254	\$0	\$0	\$0	\$0	\$0
Surface:	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Oversize:	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
CULVERTS AND FLUMES:	\$0	\$0	\$0	\$792	\$0	\$0	\$0	\$0	\$0	\$0	\$660	\$0	\$0	\$0	\$0	\$0	\$0
STRUCTURES:	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
MISC. EXPENSES:	\$356	\$626	\$12	\$1,809	\$18	\$1,296	\$9	\$35	\$176	\$377	\$992	\$9	\$0	\$0	\$0	\$0	\$0
OVERHEAD:	\$731	\$436	\$125	\$290	\$122	\$810	\$64	\$257	\$66	\$209	\$638	\$102	\$0	\$0	\$0	\$0	\$0
TOTAL COSTS:	\$3,125	\$5,884	\$1,685	\$3,916	\$1,646	\$10,941	\$859	\$3,470	\$889	\$2,822	\$8,610	\$1,374	\$0	\$0	\$0	\$0	\$0
COST PER STATION:	\$687	\$764	\$104	\$246	\$77	\$661	\$71	\$90	\$387	\$613	\$694	\$18	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00

**Debris**

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



## HCP CHECKLIST

(Used to identify which HCP strategies are actually applied to this proposed management activity, i.e. those that affect the activity.)

Name of Proposed Activity Ellen Creek VDT Agreement # 30-093511 FPA# \_\_\_\_\_ Planning Unit OESF

Location (provide for activities other than timber sales) T 28 N R 14 (W; W.M.) Sec 18, 19  
 T 28 N R 15 (W; W.M.) Sec 1, 2, 10, 11, 23  
 T 29 N R 15 (W; W.M.) Sec 15, 22, 35, 36

HCP strategy or component	Criteria for strategy application	Applicable planning units	Yes	No
<b>Riparian conservation</b>				
Potentially unstable slopes	Area of proposed activity includes potentially unstable landforms or proposal is modified to avoid potentially unstable landforms	W O	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Rain-on-snow	Proposed activity is in the rain-on-snow zone of a subbasin where greater than 2/3 of DNR managed land must remain hydrologically mature	W	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Roads – General	Road construction or maintenance activities are proposed	W O	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Roads – In RMZ	Proposed road or recreation trail construction in an RMZ	W O	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Roads – In WMZ	Proposed road or recreation trail construction in a WMZ	W O	<input type="checkbox"/>	<input checked="" type="checkbox"/>
RMZ – Managed	Proposed activity includes riparian forest restoration (RMZ thinning, riparian hardwood conversion, or riparian individual conifer release)	W O	<input checked="" type="checkbox"/>	<input type="checkbox"/>
RMZ – Unmanaged	Proposed activity is adjacent to an unmanaged RMZ	W O	<input type="checkbox"/>	<input checked="" type="checkbox"/>
WMZ – Managed	Proposed activity includes WMZ thinning	W O	<input checked="" type="checkbox"/>	<input type="checkbox"/>
WMZ – Unmanaged	Proposed activity is adjacent to an unmanaged WMZ	W O	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<b>Northern spotted owl conservation</b>				
Northern spotted owl	Proposed activity is in a NRF or dispersal/DFC management area or a timing restriction area; or adjacent to a 300-acre nest patch core area or a 200-acre buffer area	W O E	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<b>Marbled murrelet conservation</b>				
Marbled murrelet	Different thresholds and strategies apply depending on Planning Unit	W O	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<b>Uncommon Habitats, Federally listed species and unlisted species conservation</b>				
Large, structurally unique trees	Proposed final harvest activity retains 2 upland large structurally unique trees, 3 additional upland green trees, and 3 snags, if available (if snags are unavailable, replace with upland green trees), for each acre of final harvest	W O	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Balds	Proposed activity is on or adjacent to a bald	W O	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Caves	Proposed activity is adjacent to a cave buffer	W O	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Cliffs	Proposed activity is on or adjacent to cliffs greater than 25 feet tall at an elevation of less than 5000 feet or cliffs greater than 150 feet tall	W O	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Mineral springs	Proposed activity is within 200 feet of a mineral spring	W O	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Oak woodlands	Proposed activity is in or adjacent to oak woodlands	W O	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Talus	Proposed activity area is within or adjacent to non-forested or forested talus fields or a buffer or requires road construction or rock mining through forested or non-forested talus	W O	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Bats	Area of proposed activity includes myotis bats communal roosts or maternity colonies	W	<input type="checkbox"/>	<input checked="" type="checkbox"/>
California wolverine	Proposed activity is within 0.5 miles of an active California wolverine den site located in a spotted owl NRF management area	W	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Common loon	Proposed activity is within 500 feet of a common loon nest	W	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Gray wolf	Proposed activity is within 8 miles of a class 1 gray wolf observation that occurred in the past 5 years	W O E	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Harlequin duck	Proposed activity is within 165 feet of a harlequin duck nest	W	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Northern goshawk	Proposed activity is within 0.55 miles of a northern goshawk nest site located in a NRF management area	W	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Oregon silverspot butterfly	Proposed activity is within 0.25 miles of an Oregon silverspot butterfly occurrence	W O	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Pacific fisher	Proposed activity is within 0.5 miles of an active Pacific fisher den site located in a northern spotted owl NRF management area	W	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Pileated woodpecker	Area of proposed activity includes known pileated woodpecker nesting sites	W	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Vaux's swift	Area of proposed activity includes Vaux's swift night roosts	W	<input type="checkbox"/>	<input checked="" type="checkbox"/>

W=Westside HCP Planning Units

O=OESF

E=Eastside HCP Planning Units

**SIGNATURES**

Proponent: Mike Potter



Title: Forester 2

Date: 1/20/2016

Approved by: \_\_\_\_\_

Title: \_\_\_\_\_

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

This checklist is required for the following activities: 1) Timber harvest activities 2) Construction or expansion of footprint of a road, rock pit, recreation site, communication site, leasing site (for example: antenna, wind turbine, etc.), or right-of-way. Checklist must be filed with the timber sale packet or sent to [implementation.monitoring@dnr.wa.gov](mailto:implementation.monitoring@dnr.wa.gov) Revised 12/2013