

Washington DNR Timber Sales Program

Updated information is being provided for **Shuwah Thin** timber sale documents as follows:

Documents amended:

Brief Description	DATE	Initials
Payment made to USFS on day of sale was removed. Added the requirement for Purchaser to install an 18"x26' cross drain, brush, spot rock and grade roads.	6/1/16	MH



TIMBER NOTICE OF SALE

SALE NAME: SHUWAH THIN

AGREEMENT NO: 30-092732

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

COUNTY: Clallam

SALE LOCATION: Sale located approximately 13 miles northeast of Forks, WA

PRODUCTS SOLD AND SALE AREA:

All timber as described in Schedule C, except trees described in Schedule B, bounded by timber sale boundary tags, pink flagging and carsonite stakes, the B-2110 Road, B-2110.2 Road, B-2110.4 Road, B-2110.05 Road and timber type change in Unit 1; bounded by timber sale boundary tags, B-2133 Road, Upper Shuwah 2 Road and timber type change in Unit 2; bounded by timber sale boundary tags in Units 3 and 4; bounded by timber sale boundary tags, and special management unit boundary tags in Unit 5; bounded by timber sale boundary tags in Unit 6; all trees within gaps as shown on the timber sale maps, bounded by special management unit boundary tags in all units; all timber bounded by right of way boundary tags except title of the timber does not pass to Purchaser unless roads are actually constructed.

In no instance shall downed red cedar be removed. All timber that has been on the ground for five years or more shall be left undisturbed and not yarded. Five years is defined by more than 1.5 inches of sap rot.

Located on part(s) of Sections 4 all in Township 29 North, Range 12 West, Sections 1, 2, 11 and 12 all in Township 29 North, Range 13 West, Sections 20 and 32 all in Township 30 North, Range 12 West, W.M., containing 319 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:

Table with columns: Species, Avg DBH, Ring Count, Total MBF, Total Tons, Price \$/Ton, and MBF by Grade (1P, 2P, 3P, SM, 1S, 2S, 3S, 4S, UT). Rows include Douglas fir, Spruce, Hemlock, Red alder, and Sale Total.

MINIMUM BID: \$7.90/ton (est. value \$101,000.00)

BID METHOD: Sealed Bids

PERFORMANCE SECURITY:

\$20,200.00

SALE TYPE: Tonnage Scale

EXPIRATION DATE: December 31, 2018

ALLOCATION: Export Restricted

BIDDABLE SPECIES: Douglas fir

BID DEPOSIT: \$10,100.00 or Bid Bond. Said deposit shall constitute an opening bid at the appraised price.

HARVEST METHOD: 100% Ground. Rubber tire skidders will be allowed only if skid trail and soil disturbance requirements can be met and a harvest plan has been submitted and approved by the Contract



TIMBER NOTICE OF SALE

Administrator. 30' Equipment Limitation Zones on all typed waters. As shown on the timber sale map in Units 2 and 3, there will be no operations (other than haul), from 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 for murrelet restrictions.

ROADS:

21.63 stations of optional construction. 90.67 stations of optional reconstruction. 490.75 stations of optional pre-haul maintenance. As shown on the timber sale map in Units 2 and 3, there will be no operations (other than haul), from 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 for murrelet restrictions. There will be no road construction allowed from October 15 to April 15 on any roads and no timber haul, rock haul, pre-haul maintenance, or reconstruction will not be permitted from October 15 to April 15 unless authorized in writing by the Contract Administrator on the B-2110 (Stations 25+39 - 56+06), B-2110.3 (Stations 0+00 - 4+85) and B-2110.4 (Stations (0+00 - 7+33)).

ACREAGE DETERMINATION

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

FEES:

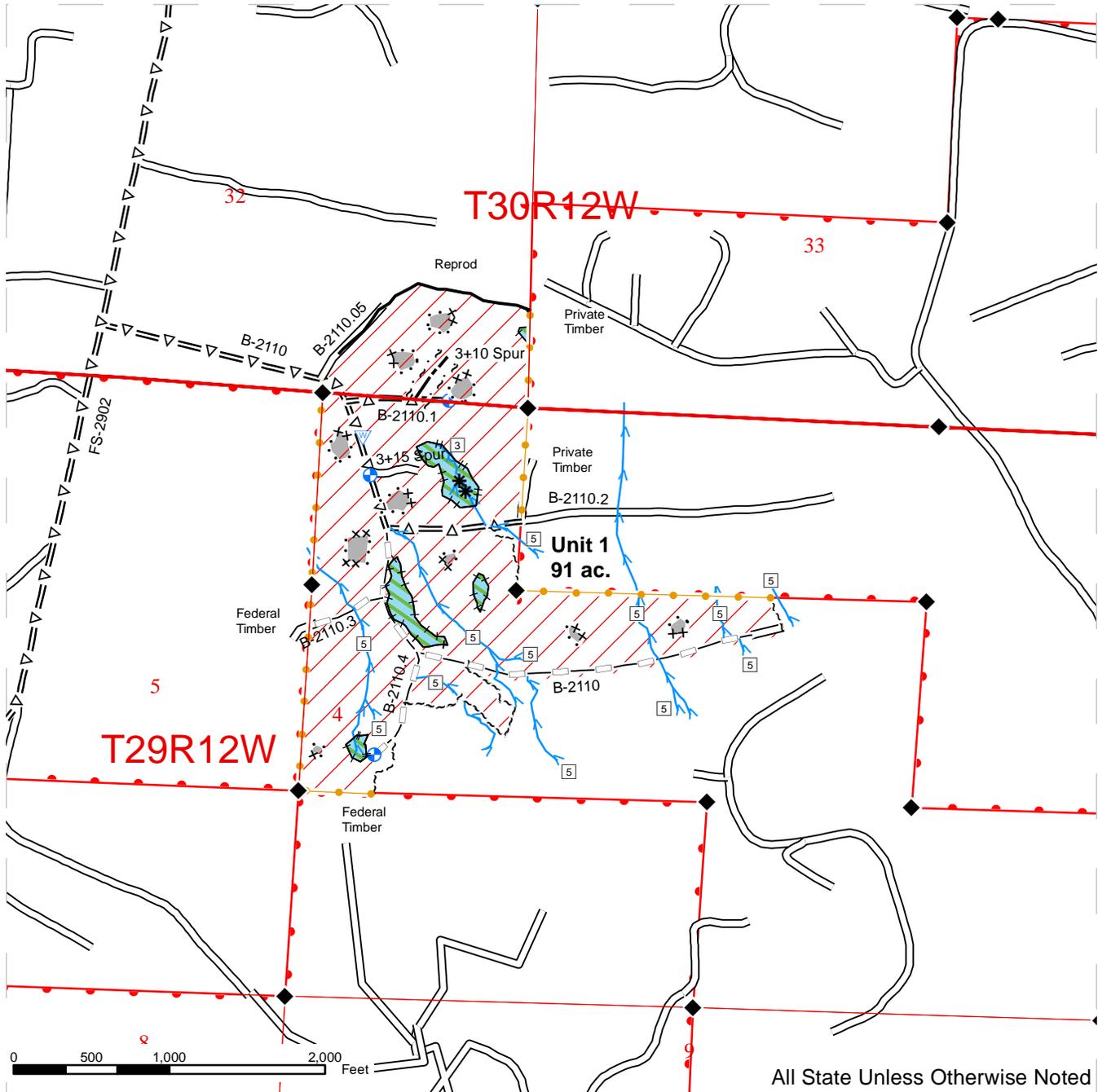
After all haul has been completed, the Purchaser will pay the USFS \$0.43/mbf for timber haul and \$0.35/cyd for rock haul based on actual removals. Purchaser will provide the DNR and the USFS documentation of actual volume removals. \$41,251.00 is due on day of sale. \$1.00 per ton is due upon removal. These are in addition to the bid price.

SPECIAL REMARKS: There is a locked gate on the Mary Clark Pit - contact the Olympic Region Dispatch Center at 360-374-2811 to obtain a AA-1 key. **Prior to timber haul, Purchaser shall install an 18 inch by 26 foot cross drain at station 6+60, brush, spot rock and grade the roads. Purchaser must notify the USFS before and after work is completed, or alternatively, take photos of the road before and after work is complete and send this documentation to the USFS.**

TIMBER SALE MAP

SALE NAME: SHUWAH THIN
AGREEMENT#: 30-092732
TOWNSHIP(S): T29R12W, T29R13W, T30R12W
TRUST(S): State Forest Transfer(1), Common School and Indemnity(3)

REGION: Olympic Region
COUNTY(S): CLALLAM
ELEVATION RGE: 449-885



All State Unless Otherwise Noted

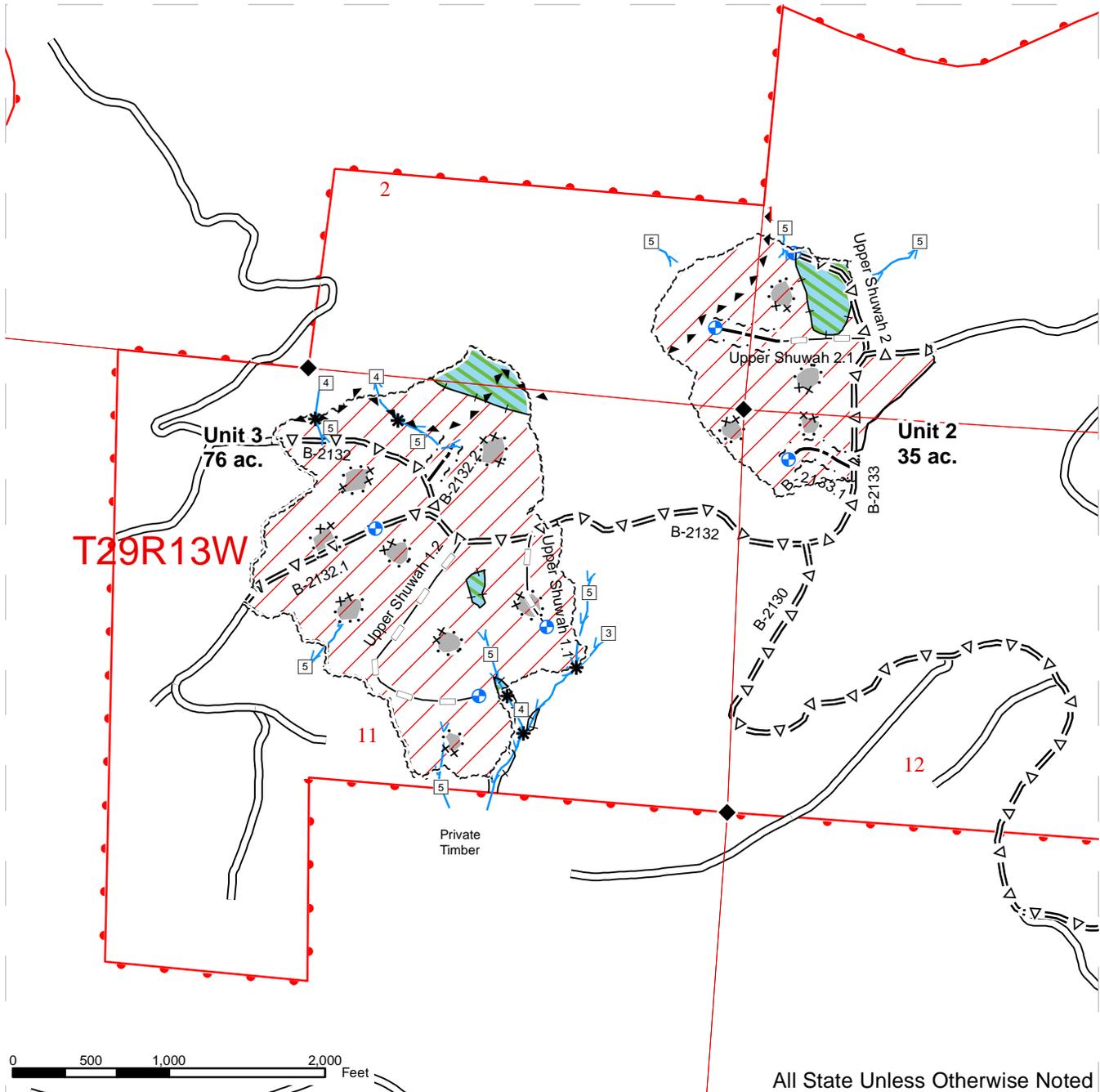
----- Timber Sale Boundary Tags	Skip	Stream Type
----- Right-Of-Way Tags	Gap	Waste Area
----- Carsonite Stakes/ Pink Flagging	Existing Road	Landing
----- Double Blue Paint Slash (Skip)	Optional Construction	DNR Managed Lands
----- Special Mgt Tags (Gap)	Optional Prehaul Maintenance	Public Land Survey Sections
----- Timber Type Change	Optional Reconstruction	Public Land Survey Townships
----- MM Timing Restrictions	Streams	Ground Based
	Stream Break	Monument Corner



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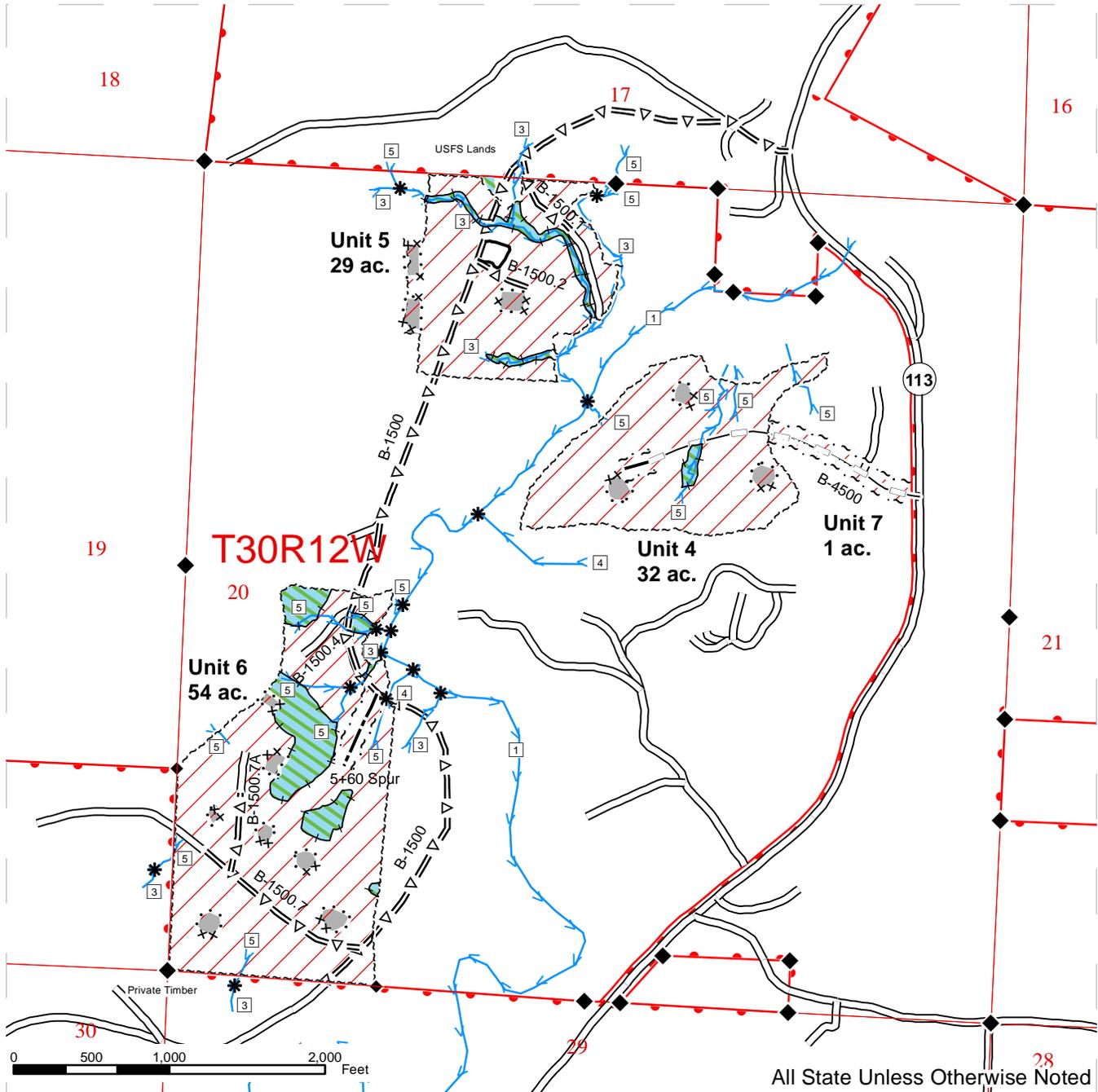
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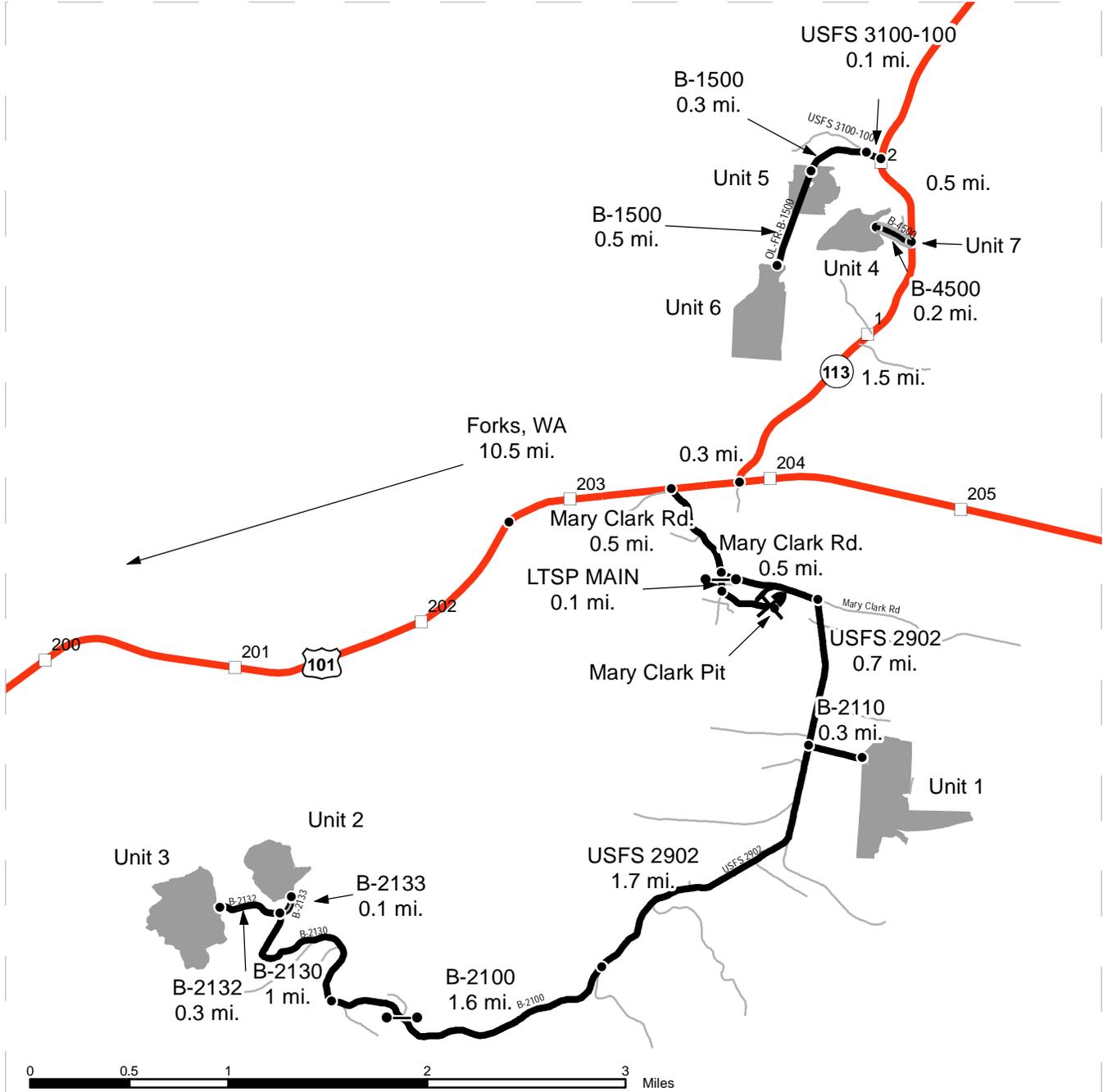
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DRIVING MAP

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<ul style="list-style-type: none"> Timber Sale Unit Other Route Haul Route Highways Other Map Points Existing Rock Pit Distance Indicator <div style="position: absolute; top: -5px; left: 50%; transform: translate(-50%, -50%); font-size: 8px;">AA1</div> Gate (AA1 Key) 	<p>DRIVING DIRECTIONS:</p> <p>From Forks, WA, travel east on US 101 10.5 mi. to the Mary Clark Rd. Mary Clark Pit: Turn right onto the Mary Clark Rd. Drive 0.5 mi. Turn right onto the LTSP MAIN and drive 0.1 mi. The Mary Clark Pit access road will be on your left.</p> <p>Unit 1: Continue on Mary Clark Rd. past the LTSP Main for 0.5 mi. Turn right onto the USFS 2902 and drive 0.7 mi. Turn left on the B-2110 and drive 0.3 mi. to arrive at Unit 1.</p> <p>Unit 2: Continue past the B-2110 on the USFS 2902 for 1.7 mi. Turn right onto the B-2100 and drive 1.6 mi. to the B-2130. Drive 1 mi. on the B-2130 to the B-2132/ B-2133 junction. Turn right on the B-2133 and drive 0.1 mi. to arrive at Unit 2.</p> <p>Unit 3: From the B-2132/B-2133 junction, turn left on the B-2132 and drive 0.3 mi. to arrive at Unit 3.</p> <p>Unit 4/7: From the Mary Clark Rd., continue traveling east on US 101 for another 0.3 mi. Turn left onto SR 113 and drive 1.5 mi. Turn left onto the B-4500. You have arrived at Unit 7 (B-4500 Right-Of-Way). Drive 0.2 mi. on the B-4500 to arrive at Unit 4.</p> <p>Unit 5: From US 101, drive 2 mi. on SR 113 and turn left on the USFS 3100-100 and continue for 0.1 mi. onto the B-1500. Unit 5 is 0.3 mi on the B-1500.</p> <p>Unit 6: Travel another 0.5 mi. from Unit 5 on the B-1500 to arrive at unit 6.</p>
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**STATE OF WASHINGTON
DEPARTMENT OF NATURAL RESOURCES**

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

Export Restricted Tonnage Scale AGREEMENT NO. 30-092732

SALE NAME: SHUWAH THIN

**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 C, except trees described in Schedule B, bounded by timber sale boundary tags, pink flagging and carsonite stakes, the B-2110 Road, B-2110.2 Road, B-2110.4 Road, B-2110.05 Road and timber type change in Unit 1; bounded by timber sale boundary tags, B-2133 Road, Upper Shuwah 2 Road and timber type change in Unit 2; bounded by timber sale boundary tags in Units 3 and 4; bounded by timber sale boundary tags, and special management unit boundary tags in Unit 5; bounded by timber sale boundary tags in Unit 6; all trees within gaps as shown on the timber sale maps, bounded by special management unit boundary tags in all units; all timber bounded by right of way boundary tags except title of the timber does not pass to Purchaser unless roads are actually constructed.

In no instance shall downed red cedar be removed. All timber that has been on the ground for five years or more shall be left undisturbed and not yarded. Five years is defined by more than 1.5 inches of sap rot., located on approximately 319 acres on part(s) of Section 4 in Township 29 North, Range 12 West, Sections 1, 2, 11, and 12 all in Township 29 North, Range 13 West, Sections 20, and 32 all in Township 30 North, Range 12 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	LEAVE TREE SELECTION CRITERIA
C	CUT TREE SELECTION CRITERIA
D	UNIT TARGET TABLE

G-030 Contract Term

Purchaser shall remove the forest products conveyed and complete all work required by this contract prior to December 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; Mary Clark Pit, FS 2902, B-2100, B-2110, B-2110.2, B-2130, B-2132, B-2132.1, B-2133, B-4500, and all spurs associated with the timber sale. 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 Mary Clark Pit Road, FS-2902, B-2110, B-2110.2, B-2100, B-2130, and the B-2132 Roads, unless authority is granted in writing by the Contract Administrator.

G-380 Road Easement and Road Use Permit Requirements

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

Easement #E-609 with Milwaukee Land Company, dated January 10, 1969.

Easement #438531 with ITT Rayonier Incorporated, dated October 25, 1974.

Easement #49 with the Forest Service, Department of Agriculture, dated September 23, 1968.

Road Use Permit with United States Forest Service.

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 \$41,251.00 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 \$20,200.00. 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 24 hours 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-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-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-018 Temporary Stream Crossings

A temporary stream crossing is required to access in portions of Units 1, 3 and 4.

Purchaser shall comply with the following during the yarding operation:

- a. Adhere to the approved Hydraulic Permit Application (HPA) or Forest Practice Application (FPA) with approved hydraulic project work, if required, amend a current FPA or obtain a new FPA prior to commencing any new stream crossing construction.
- b. Location of the temporary stream crossing must be approved by the Contract Administrator.
- c. A temporary stream crossing shall not exceed 20 feet in width, including rub trees.
- d. Purchaser shall suspend operations during periods of wet weather when a high potential for sediment delivery into typed waters may occur.

- e. Temporary stream crossings shall be removed at the time of completion of yarding as 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-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-060 Skid Trail Locations

Locations of skid trails must be marked by Purchaser and approved by the Contract Administrator prior to the felling of timber.

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 Ground methods (rubber tire skidders not allowed unless skid trail and soil disturbance requirements can be met and harvest plan has been submitted and approved by the Contract Administrator) unless authority to use other equipment is granted in writing by the State.

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. While felling timber, two warning signs must be posted on the B-2110, B-2110.2, B-2133, B-2132, B-2132.1 and the B-4500 Roads.
3. Yarding equipment shall not cross live streams without an HPA/FPHP.
4. 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 in Units 2 and 3, there will be no operations (other than haul), from 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 for 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	50	1000	50	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 2/16/2016 are hereby made a part of this contract.

C-050 Purchaser Road Maintenance and Repair

Purchaser shall perform work at their own expense on B-2100, B-2110, B-2110.1, B-2110.2, B-2110.3, B-2110.4, B-2130, B-2132, B-2132.1, B-2132.2, B-2133.1, B-4500 and all spurs associated with the sale. 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 FS-2902, Mary Clark Pit Road, other roads used and not covered in C-050. 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 typed waters 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 30' of any typed waters unless authority is granted in writing by the Contract Administrator.

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: Interest = $r \times LD \times N$.

Where:

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

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 sale area.

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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

The 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.

Schedule B
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 D).
- 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 D).
- 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 D), 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 D).

Schedule C
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 20 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 D).
 - 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; or unless designated by the Contract Administrator for snag recruitment.
 - c. Those trees which are not defined as leave trees.
 - d. Those trees in areas shown as gaps on the timber sale maps.

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.

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Schedule D
UNIT TARGET TABLE

Unit	Acres	Approximate Stems/acre	Approximate Spacing	Basal Area	RD
1	99	135	19' x 19'	190	50
2	40	150	17' x 17'	170	45
3	84	150	17' x 17'	170	45
4	33	110	21' x 21'	160	40
5	32	160	17' x 17'	170	45
6	64	145	17' x 17'	140	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)

Cruise Narrative

Sale Name: Shuwah VDT	Region: Olympic
Agreement #: 30-	District: Coast
Lead Cruiser: Jason Michaud	Completion Date: 12/10/2015
Other Cruisers:	

Unit acreage specifications:

Unit #	Cruised Acres	Cruised acres agree with sale acres? Y/N	If acres do not agree explain why.
1	87.4	Y	
1 gaps	4	Y	
2	32.8	Y	
2 gaps	2.5	Y	
3	71.7	Y	
3 gaps	4.1	Y	
4	30.7	Y	
4 gaps	1.5	Y	
5	27.3	Y	
5 gaps	1.6	Y	
6	51.5	Y	
6 gaps	3.1	Y	
ROW	.9	Y	
Total	319.1	Y	

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'	325X325	1:1	39
2	VP	54.45, 40	4.5', 16'	300X300	1:1	19
3	VP	54.45, 40	4.5', 16'	325X325	1:1	32
4	VP	54.45, 40	4.5', 16'	300X300	1:1	16
5	VP	54.45, 40	4.5', 16'	300X300	1:1	13
6	VP	54.45, 40	4.5', 16'	350X350	1:1	20
All Gaps	VP	Plots From Units	4.5', 16'	N/A	Cruise	N/A
ROW	VP	ITS	4.5', 16'	N/a	1:10	N/A

Sale/Cruise Description:

Minor species cruise intensity	Minor species sampled using same cruise plots.				
Minimum cruise spec:	40% of Form Factor at 16 ft. D.O.B or 5 inch top or merchantable top				
Average ring count:	DF =	4	WH =	5	SS =
Leave/take tree description:	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.				
Other conditions:	Exterior boundaries are marked with white tags and pink flashers				

Sort Description:	<p>HA– 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>HB – 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>R – 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:

Shuwah VDT is a 31-38 year old variable density harvest located on the B-2130 and B-1500 road systems. Unit 1 is the largest unit of the sale. This unit consists of mostly Douglas-fir and Sitka spruce. The only minor species present is alder. The average bole height in this unit is 59 feet. Major defect includes bear damage in the spruce and spike knots and forked tops in the fir. Units 2, 3 and 4 have the same major species and defect as unit 1 but are denser at around 300 trees per acre and smaller with an average bole height of 53. Units 5 and 6 are the ones located on the B-1500. These units have the most trees but the average bole height is only 48 feet. The major defect for these units is forked tops and spike knots in the fir.

Grants: 03

Prepared By: Jason Michaud

Forester / Timber Cruiser

TC		PSPCSTGR		Species, Sort Grade - Board Foot Volumes (Project)																	
T029 R012 S04 Ty00U1 THRU TT30 R012 S20 TyU6G				Project: SHUTHIN												Page 1					
				Acres 319.10												Date 1/12/2016		Time 4:19:24PM			
S Spp	So T	Gr rt	ad	% Net BdFt	Bd. Ft. per Acre			Total Net MBF	Percent of Net Board Foot Volume								Average Log				Logs Per /Acre
					Def%	Gross	Net		Log Scale Dia.				Log Length				Ln Ft	Dia In	Bd Ft	CF/ Lf	
									4-5	6-11	12-16	17+	12-20	21-30	31-35	36-99					
RA	T	D	4S	100	4.5	226	216	69	91	9			8	48	38	6	29	5	30	0.30	7.1
RA Totals				1	4.5	226	216	69	91	9			8	48	38	6	29	5	30	0.30	7.1
RA		D	4S	100		76	76	24	51	49				72		28	30	5	37	0.34	2.0
RA Totals				0		76	76	24	51	49				72		28	30	5	37	0.34	2.0
SS		D	2S	22	8.2	1,166	1,071	342			100		3			97	38	14	246	2.14	4.4
SS		D	3S	62	8.1	3,290	3,023	965	1	99					3	97	40	8	98	1.02	31.0
SS		D	4S	15	6.3	797	747	238	85	15			36	27	6	31	23	5	23	0.38	31.9
SS		D	UT	1		27	27	9	100				100				7	5	8	0.23	3.6
SS Totals				25	7.8	5,281	4,868	1,553	14	64	22		7	4	3	86	31	7	69	0.88	70.9
SS	T	D	2S	6	18.7	173	141	45			100		1			99	40	13	189	1.88	.7
SS	T	D	3S	33	5.1	790	749	239		100					1	99	40	8	89	0.80	8.4
SS	T	D	4S	59	2.1	1,334	1,306	417	86	14			17	52	12	19	26	5	28	0.34	47.4
SS	T	D	UT	2		37	37	12	100				100				13	5	14	0.23	2.6
SS Totals				12	4.3	2,334	2,233	713	52	42	6		12	30	8	51	27	6	38	0.46	59.1
WH	T	D	3S	39	6.0	726	683	218		100						100	40	7	74	0.61	9.2
WH	T	D	4S	58	4.4	1,052	1,005	321	66	34			15	14	12	59	30	5	33	0.32	30.1
WH	T	D	UT	3		39	39	13	100				100				10	5	10	0.17	3.9
WH Totals				9	5.0	1,818	1,727	551	41	59			11	8	7	74	30	6	40	0.40	43.2
WH		D	3S	75	5.2	1,303	1,236	394		100						100	40	8	85	0.73	14.5
WH		D	4S	23	11.8	432	381	122	72	28			29	22	22	28	24	5	25	0.33	15.3
WH		D	UT	2		28	28	9	100				100				10	5	10	0.18	2.8
WH Totals				9	6.7	1,764	1,645	525	18	82			8	5	5	82	30	6	50	0.57	32.6
DF		D	2S	1	15.1	106	90	29			100					100	40	13	224	2.00	.4
DF		D	3S	68	9.4	4,103	3,716	1,186		100			1		2	97	40	8	78	0.76	47.5
DF		D	4S	28	10.2	1,711	1,536	490	73	27			29	13	3	56	25	5	26	0.39	58.6
DF		D	UT	3	5.7	150	141	45	70	30			53			47	16	5	17	0.32	8.3
DF Totals				28	9.7	6,070	5,483	1,750	22	76	2		10	4	2	85	30	6	48	0.59	114.9
DF	T	D	2S		15.1	5	4	1			100					100	40	13	224	2.00	.0
DF	T	D	3S	34	8.6	1,160	1,060	338		100			0		0	99	40	7	71	0.65	14.9
DF	T	D	4S	64	7.7	2,148	1,982	632	81	19			9	22	16	52	31	5	32	0.36	61.6
DF	T	D	UT	2	.8	62	61	20	96	4			93			7	15	5	16	0.24	3.8
DF Totals				16	7.9	3,374	3,107	991	53	47	0		8	14	10	68	32	6	39	0.42	80.2
Totals					7.6	20,941	19,355	6,176	31	62	7		9	10	5	76	30	6	47	0.56	410.1

DF Take- 991mbf
 WH Take- 551mbf
 SS Take- 713mbf
 RA Take- 69mbf
 total-- 2,324mbf

TC PSTATS		PROJECT STATISTICS								PAGE	1
		PROJECT				SHUTHIN				DATE	1/12/2016
TWP	RGE	SC	TRACT	TYPE		ACRES	PLOTS	TREES	CuFt	BdFt	
029	012	04	SHUTHIN	00U1	THR	319.10	280	1,386	S	W	
T30	012	20	SHUTHIN	U6G							
		PLOTS	TREES	TREES PER PLOT	ESTIMATED TOTAL TREES	PERCENT SAMPLE TREES					
TOTAL		280	1386	4.9							
CRUISE		172	828	4.8	90,364	.9					
DBH COUNT		14	60	4.3	3,132	1.9					
REFOREST COUNT		94	472	5.0							
BLANKS											
100 %											
STAND SUMMARY											
SAMPLE TREES		TREES /ACRE	AVG DBH	BOLE LEN	REL DEN	BASAL AREA	GROSS BF/AC	NET BF/AC	GROSS CF/AC	NET CF/AC	
DOUG FIR		126	71.8	14.2	57	21.0	79.2	6,070	5,483	2,072	
DOUG FIR-T		273	69.6	11.3	49	14.4	48.4	3,374	3,107	1,078	
S SPRUCE		113	40.9	16.6	59	15.1	61.6	5,281	4,868	1,899	
S SPRUCE-T		224	48.9	11.0	48	9.8	32.4	2,334	2,233	751	
WHEMLOCK		29	19.1	13.8	57	5.3	19.8	1,764	1,645	553	
WHEMLOCK-T		95	33.6	10.9	52	6.6	21.7	1,818	1,727	524	
R ALDER		4	2.0	10.2	44	0.4	1.1	76	76	21	
R ALDER-T		26	7.1	9.4	40	1.1	3.4	226	216	61	
TOTAL		890	293.0	12.9	53	74.4	267.7	20,941	19,355	6,959	
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		164.7	9.8	65	72	79					
DOUG FIR-T		172.8	10.3	62	70	77					
S SPRUCE		188.0	11.2	36	41	45					
S SPRUCE-T		253.2	15.1	42	49	56					
WHEMLOCK		335.6	20.0	15	19	23					
WHEMLOCK-T		255.7	15.3	28	34	39					
R ALDER		887.2	53.0	1	2	3					
R ALDER-T		557.2	33.3	5	7	10					
TOTAL		102.7	6.1	275	293	311	421	215	105		
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		157.6	9.4	72	79	87					
DOUG FIR-T		161.6	9.6	44	48	53					
S SPRUCE		184.3	11.0	55	62	68					
S SPRUCE-T		208.7	12.5	28	32	36					
WHEMLOCK		329.9	19.7	16	20	24					
WHEMLOCK-T		236.0	14.1	19	22	25					
R ALDER		834.6	49.8	1	1	2					
R ALDER-T		568.1	33.9	2	3	5					
TOTAL		96.3	5.7	252	268	283	370	189	93		
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		157.3	9.4	4,968	5,483	5,998					
DOUG FIR-T		162.9	9.7	2,805	3,107	3,409					
S SPRUCE		196.7	11.7	4,297	4,868	5,440					
S SPRUCE-T		220.5	13.2	1,939	2,233	2,527					
WHEMLOCK		340.4	20.3	1,311	1,645	1,980					
WHEMLOCK-T		248.1	14.8	1,471	1,727	1,983					
R ALDER		853.8	51.0	37	76	114					

TC PSTATS		PROJECT STATISTICS							PAGE	2	
		PROJECT		SHUTHIN					DATE	1/12/2016	
TWP	RGE	SC	TRACT	TYPE		ACRES	PLOTS	TREES	CuFt	BdFt	
029	012	04	SHUTHIN	00U1	THR	319.10	280	1,386	S	W	
T30	012	20	SHUTHIN	U6G							
CL	68.1	COEFF		NET BF/ACRE			# OF PLOTS REQ.		INF. POP.		
SD:	1.00	VAR.	S.E.%	LOW	AVG	HIGH	5	7	10		
R ALDER-T		567.1	33.9	143	216	289					
TOTAL		102.6	6.1	18,170	19,355	20,541	420	214	105		
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		97.8	5.8	63	69	76					
DOUG FIR-T		124.4	7.4	58	64	70					
S SPRUCE		144.8	8.6	70	79	88					
S SPRUCE-T		176.9	10.6	60	69	78					
WHEMLOCK		262.1	15.6	66	83	100					
WHEMLOCK-T		198.4	11.8	68	80	91					
R ALDER		853.8	51.0	32	66	99					
R ALDER-T		567.1	33.9	41	63	84					
TOTAL		101.9	6.1	68	72	77	415	212	104		

T TSPCSTGR		Species, Sort Grade - Board Foot Volumes (Type)										Page	1									
Project: SHUTHIN												Date	1/12/2016									
												Time	4:31:07PM									
T029 R012 S04 T00U1										T029 R012 S04 T00U1												
Twp	Rge	Sec	Tract	Type	Acres	Plots	Sample Trees	CuFt	BdFt													
029	012	04	SHUTHIN	00U1	87.40	39	216	S	W													
S Sp	So T	Gr rt	ad	%	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	Lf											
SS	DM	2S		41	8.4	4,033	3,696	323	100				3	97				38	14	250	2.19	14.8
SS	DM	3S		48	8.9	4,741	4,321	378	100				3 97				40	9	106	1.05	40.6	
SS	DM	4S		10	9.4	1,066	966	84	64	36	27 54 9 10				23	5	25	0.41	38.5			
SS	DM	UT		1	13		13	1	100				100				11	5	10	0.29	1.3	
SS Totals				36	8.7	9,853	8,995	786	7	52	41	4	6	2	88	32	8	95	1.07	95.2		
SS	T	DM	2S	11	23.1	423	325	28	100				100				40	13	170	1.80	1.9	
SS	T	DM	3S	51	5.1	1,590	1,508	132	100				100				40	8	90	0.74	16.7	
SS	T	DM	4S	36	3.9	1,101	1,058	93	56	44	28 42 14 16				25	5	28	0.37	37.4			
SS	T	DM	UT	2	57		57	5	100				100				9	5	10	0.17	5.7	
SS T Totals				12	7.0	3,171	2,949	258	22	67	11	12	15	5	68	28	6	48	0.57	61.8		
DF	DM	2S		6	15.1	386	327	29	100				100				40	13	224	2.00	1.5	
DF	DM	3S		68	13.2	3,793	3,293	288	100				100				40	8	84	0.79	39.3	
DF	DM	4S		24	14.2	1,344	1,153	101	84	16	25 23 3 49				26	5	25	0.35	46.4			
DF	DM	UT		2	92		92	8	100				100				10	5	10	0.19	9.2	
DF Totals				19	13.3	5,615	4,866	425	22	71	7	8	5	1	86	30	6	50	0.61	96.5		
DF	T	DM	3S	50	9.3	1,287	1,166	102	100				100				40	8	80	0.71	14.5	
DF	T	DM	4S	48	6.8	1,175	1,096	96	69	31	14 8 19 58				31	5	33	0.39	33.5			
DF	T	DM	UT	2	39		39	3	100				100				10	5	10	0.18	3.9	
DF T Totals				9	8.0	2,501	2,301	201	34	66	9	4	9	78	32	6	44	0.50	51.9			
WH	T	DM	3S	53	8.3	1,694	1,552	136	100				100				40	8	78	0.64	20.0	
WH	T	DM	4S	43	1.4	1,270	1,252	109	63	37	29 6 65				26	5	31	0.29	40.6			
WH	T	DM	UT	4	112		112	10	100				100				10	5	10	0.17	11.2	
WH T Totals				12	5.2	3,076	2,917	255	31	69	16	3	81		27	6	41	0.42	71.8			
WH	DM	3S		77	7.2	2,395	2,221	194	100				100				40	9	104	0.84	21.3	
WH	DM	4S		21	6.7	649	606	53	71	29	21 50 29				23	5	25	0.31	24.2			
WH	DM	UT		2	29		29	3	100				100				10	5	10	0.17	2.9	
WH Totals				11	7.1	3,073	2,856	250	16	84	6	11	84		30	7	59	0.62	48.4			
RA	T	DM	4S	100	12.5	284	249	22	100				26 56 18				33	5	33	0.33	7.6	
RA T Totals				1	12.5	284	249	22	100				26 56 18				33	5	33	0.33	7.6	
RA	DM	4S		100	149		149	13	61	39	100				27 5 33 0.28				4.5			
RA Totals				1	149		149	13	61	39	100				27 5 33 0.28				4.5			
Type Totals					8.8	27,721	25,282	2,210	19	64	17	8	8	3	82	30	7	58	0.66	437.7		

TC TSTATS				STATISTICS				PAGE	1	
				PROJECT	SHUTHIN			DATE	1/12/2016	
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt	
029	012	04	SHUTHIN	00U1	87.40	39	216	S	W	
				TREES	ESTIMATED	PERCENT				
				PER PLOT	TOTAL	SAMPLE				
				PLOTS	TREES	TREES	TREES			
TOTAL				39	216	5.5				
CRUISE				25	136	5.4	23,326	.6		
DBH COUNT										
REFOREST										
COUNT				14	75	5.4				
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	37	49.7	19.0	66	22.4	97.7	9,853	8,995	3,282	3,283
S SPRUCE-T	16	41.6	12.6	55	10.2	36.3	3,171	2,949	991	990
DOUG FIR	30	56.1	14.6	60	17.1	65.6	5,615	4,866	1,804	1,803
DOUG FIR-T	18	38.9	12.6	57	9.5	33.5	2,501	2,301	824	825
WHEMLOCK	15	24.2	14.9	64	7.6	29.3	3,073	2,856	895	894
WHEMLOCK-T	14	44.2	11.3	59	9.1	30.7	3,076	2,917	840	839
R ALDER	2	4.5	9.2	45	0.7	2.1	149	149	35	35
R ALDER-T	4	7.6	9.9	46	1.3	4.1	284	249	83	83
TOTAL	<i>136</i>	<i>266.9</i>	<i>14.3</i>	<i>59</i>	<i>79.0</i>	<i>299.3</i>	<i>27,721</i>	<i>25,282</i>	<i>8,754</i>	<i>8,752</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		
S SPRUCE	94.5	15.1	42	50	57					
S SPRUCE-T	166.0	26.6	31	42	53					
DOUG FIR	135.6	21.7	44	56	68					
DOUG FIR-T	168.1	26.9	28	39	49					
WHEMLOCK	195.0	31.2	17	24	32					
WHEMLOCK-T	143.7	23.0	34	44	54					
R ALDER	462.0	73.9	1	4	8					
R ALDER-T	436.2	69.8	2	8	13					
TOTAL	<i>32.3</i>	<i>5.2</i>	<i>253</i>	<i>267</i>	<i>281</i>	<i>42</i>	<i>21</i>	<i>10</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		
S SPRUCE	85.0	13.6	84	98	111					
S SPRUCE-T	143.3	22.9	28	36	45					
DOUG FIR	123.6	19.8	53	66	79					
DOUG FIR-T	165.1	26.4	25	34	42					
WHEMLOCK	189.8	30.4	20	29	38					
WHEMLOCK-T	133.6	21.4	24	31	37					
R ALDER	435.7	69.7	1	2	3					
R ALDER-T	435.7	69.7	1	4	7					
TOTAL	<i>20.6</i>	<i>3.3</i>	<i>289</i>	<i>299</i>	<i>309</i>	<i>17</i>	<i>9</i>	<i>4</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		
S SPRUCE	86.5	13.8	7,750	8,995	10,240					
S SPRUCE-T	151.3	24.2	2,235	2,949	3,663					
DOUG FIR	123.4	19.7	3,906	4,866	5,827					
DOUG FIR-T	170.8	27.3	1,672	2,301	2,929					
WHEMLOCK	189.3	30.3	1,991	2,856	3,721					
WHEMLOCK-T	137.1	21.9	2,277	2,917	3,557					
R ALDER	445.8	71.3	43	149	256					

TC TSTATS				STATISTICS				PAGE	2	
				PROJECT	SHUTHIN			DATE	1/12/2016	
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt	
029	012	04	SHUTHIN	00U1	87.40	39	216	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		439.0	70.2	74	249	423				
TOTAL		<i>30.1</i>	<i>4.8</i>	<i>24,064</i>	<i>25,282</i>	<i>26,499</i>	<i>36</i>	<i>18</i>	<i>9</i>	
CL:	68.1 %	COEFF		V-BAR/ACRE			# OF PLOTS REQ.		INF. POP.	
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10	
S SPRUCE				79	92	105				
S SPRUCE-T		110.6	17.7	62	81	101				
DOUG FIR		75.0	12.0	60	74	89				
DOUG FIR-T		153.6	24.6	50	69	87				
WHEMLOCK		163.5	26.2	68	97	127				
WHEMLOCK-T		102.6	16.4	74	95	116				
R ALDER		445.8	71.3	21	73	125				
R ALDER-T		439.0	70.2	18	61	103				
TOTAL		<i>135.8</i>	<i>21.7</i>	<i>80</i>	<i>84</i>	<i>89</i>	<i>736</i>	<i>375</i>	<i>184</i>	

TC		TSTNDSUM											Stand Table Summary				
Project													SHUTHIN				
T029 R012 S04 T00U1											T029 R012 S04 T00U1						
Twp	Rge	Sec	Tract		Type	Acres	Plots	Sample Trees			Page:	2					
029	012	04	SHUTHIN		00U1	87.40	39	216			Date:	1/12/2016					
											Time:	4:31:07PM					
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	
WH		16	3	84	80	4.327	5.86	8.65	21.6	74.9	6.00	187	648	525	163	57	
WH		18	4	81	75	4.603	7.82	9.21	25.1	68.5	7.42	231	631	649	202	55	
WH		Totals		15	84	78	24.214	29.32	48.43	18.5	59.0	28.64	894	2,856	2,503	781	250
DF	T	8	1	80	55	4.837	1.86	4.84	5.0	20.0	.67	24	97	58	21	8	
DF	T	10	1	79	54	3.156	1.86	3.16	11.6	30.0	1.04	37	95	91	32	8	
DF	T	11	3	80	66	8.529	5.58	11.30	11.7	32.4	3.78	132	366	330	116	32	
DF	T	12	3	80	66	6.957	5.58	9.21	14.6	37.6	3.83	134	346	335	117	30	
DF	T	13	2	85	68	3.918	3.72	3.92	21.7	60.0	2.42	85	235	212	74	21	
DF	T	14	3	82	69	5.303	5.58	7.00	20.3	52.6	4.04	142	368	353	124	32	
DF	T	15	1	82	69	1.623	1.86	3.25	14.5	40.0	1.34	47	130	117	41	11	
DF	T	16	1	81	85	1.285	1.86	2.57	22.1	65.0	1.61	57	167	141	50	15	
DF	T	17	2	84	80	2.433	3.72	4.87	21.6	67.5	3.00	105	328	262	92	29	
DF	T	20	1	81	93	.888	1.86	1.78	34.8	95.0	1.76	62	169	154	54	15	
DF		Totals		18	81	67	38.930	33.51	51.88	15.9	44.3	23.50	825	2,301	2,054	721	201
RA	T	9	1	85	44	2.174	1.03	2.17	8.7	30.0	.52	19	65	45	16	6	
RA	T	10	2	84	52	4.002	2.05	4.00	10.8	34.8	1.19	43	139	104	38	12	
RA	T	11	1	83	49	1.473	1.03	1.47	14.3	30.0	.58	21	44	51	18	4	
RA		Totals		4	84	49	7.649	4.10	7.65	10.9	32.5	2.29	83	249	200	73	22
RA		8	1	84	47	3.013	1.03	3.01	5.2	30.0	.43	16	90	38	14	8	
RA		11	1	83	49	1.473	1.03	1.47	12.8	40.0	.52	19	59	45	17	5	
RA		Totals		2	84	48	4.486	2.05	4.49	7.7	33.3	0.95	35	149	83	30	13
Totals				136	82	71	266.882	299.35	439.08	19.9	57.6	244.77	8752	25,282	21,393	7,649	2,210

TC		Stand Table Summary														
TSTNDSUM		Project SHUTHIN														
T029 R012 S04 T00U1											T029 R012 S04 T00U1					
Twp	Rge	Sec	Tract		Type	Acres	Plots	Sample Trees			Page:	1				
029	012	04	SHUTHIN		00U1	87.40	39	216			Date:	1/12/2016				
											Time:	4:31:07PM				
S Spc	T	Sample		Av	Trees/ Acre	BA/ Acre	Logs Acre	Average Log		Net Cu.Ft.	Net Cu.Ft.	Net Bd.Ft.	Totals			
		DBH	Trees	FF 16'				Ht Tot	Net Cu.Ft.				Net Bd.Ft.	Tons/ Acre	Tons	Cunits
SS		13	1	81	62	2.779	2.64	2.78	22.4	60.0	1.62	62	167	141	54	15
SS		14	1	85	86	2.402	2.64	4.80	18.7	70.0	2.34	90	336	204	79	29
SS		15	2	83	79	4.335	5.28	8.67	19.8	57.7	4.45	171	500	389	150	44
SS		16	4	80	78	7.718	10.57	15.44	21.8	59.9	8.73	336	925	763	293	81
SS		17	2	81	78	3.495	5.28	6.99	23.0	62.5	4.19	161	437	366	140	38
SS		18	2	79	82	2.909	5.28	5.82	29.1	80.0	4.41	169	465	385	148	41
SS		19	8	80	78	10.684	21.13	21.37	30.7	85.0	17.03	655	1,816	1,489	573	159
SS		20	2	77	79	2.460	5.28	4.92	34.9	86.5	4.46	172	426	390	150	37
SS		21	1	71	74	1.141	2.64	2.28	37.4	80.0	2.22	85	183	194	75	16
SS		23	7	76	94	6.477	18.49	12.95	53.4	144.2	17.97	692	1,868	1,570	605	163
SS		24	2	80	96	1.675	5.28	3.35	59.2	175.2	5.15	198	587	450	173	51
SS		25	1	77	107	.757	2.64	1.51	67.8	210.0	2.67	103	318	233	90	28
SS		26	3	75	93	2.195	7.92	4.39	67.1	168.6	7.66	295	740	669	258	65
SS		27	1	75	89	.650	2.64	1.30	72.3	175.0	2.44	94	227	213	82	20
SS		Totals	37	79	82	49.676	97.73	96.57	34.0	93.1	85.34	3,283	8,995	7,459	2,869	786
DF		10	3	87	69	11.343	6.56	15.05	9.9	37.5	4.24	149	565	371	130	49
DF		11	2	86	70	6.635	4.37	9.83	10.8	36.7	3.03	106	361	265	93	32
DF		12	2	83	72	5.631	4.37	8.61	13.3	40.4	3.26	114	348	285	100	30
DF		13	1	87	89	2.267	2.19	4.53	14.4	50.0	1.86	65	227	162	57	20
DF		14	2	79	67	4.276	4.37	6.48	16.8	40.0	3.13	109	259	273	95	23
DF		15	2	82	70	3.520	4.37	7.04	16.1	42.7	3.22	113	301	281	99	26
DF		16	4	81	78	6.248	8.75	12.50	20.4	51.0	7.27	255	638	635	223	56
DF		17	4	82	74	5.736	8.75	11.47	20.7	53.7	6.78	238	616	593	208	54
DF		18	4	79	74	4.996	8.75	9.99	24.7	58.7	7.07	247	587	618	216	51
DF		20	4	80	78	4.022	8.75	8.04	32.6	71.3	7.44	262	573	650	229	50
DF		23	1	81	89	.758	2.19	1.52	46.1	120.0	2.00	70	182	174	61	16
DF		24	1	80	93	.702	2.19	1.40	52.7	150.0	2.11	74	211	185	65	18
DF		Totals	30	83	73	56.134	65.62	96.47	18.7	50.4	51.41	1,803	4,866	4,493	1,576	425
SS	T	9	2	77	46	9.724	4.54	9.72	6.6	25.1	1.68	64	244	146	56	21
SS	T	10	2	80	45	8.081	4.54	8.08	8.6	30.0	1.79	69	242	156	61	21
SS	T	12	3	84	73	8.821	6.81	17.64	11.0	36.8	5.06	195	648	443	170	57
SS	T	13	2	83	63	4.775	4.54	7.20	16.6	46.8	3.15	120	337	275	105	29
SS	T	15	2	85	85	3.651	4.54	7.30	20.4	67.6	3.87	149	493	338	130	43
SS	T	16	2	83	86	3.316	4.54	6.63	24.0	75.7	4.15	159	502	362	139	44
SS	T	18	1	74	57	1.343	2.27	1.34	45.0	60.0	1.56	60	81	136	53	7
SS	T	21	2	79	97	1.915	4.54	3.83	45.2	104.8	4.52	173	402	395	151	35
SS		Totals	16	81	63	41.626	36.30	61.75	16.0	47.8	25.76	990	2,949	2,252	865	258
WH	T	7	1	85	40	7.760	2.19	7.76	3.0	20.0	.75	23	155	66	21	14
WH	T	10	4	84	77	16.387	8.78	24.05	9.4	36.8	7.21	225	885	630	197	77
WH	T	11	1	90	80	3.580	2.19	7.16	8.6	35.0	1.97	61	251	172	54	22
WH	T	13	4	85	78	9.382	8.78	18.76	14.5	47.5	8.73	272	892	763	238	78
WH	T	14	1	81	75	1.967	2.19	3.93	17.9	50.0	2.23	71	197	195	62	17
WH	T	15	2	85	73	3.578	4.39	7.16	16.9	47.6	3.88	121	340	339	105	30
WH	T	16	1	82	80	1.514	2.19	3.03	21.7	65.0	2.10	66	197	184	57	17
WH		Totals	14	85	70	44.167	30.72	71.85	11.7	40.6	26.88	839	2,917	2,349	733	255
WH		11	1	86	73	2.909	1.95	5.82	9.4	35.0	1.75	55	204	153	48	18
WH		13	1	86	86	2.026	1.95	4.05	15.6	50.0	2.03	63	203	177	55	18
WH		14	2	85	75	3.847	3.91	7.69	14.6	55.0	3.61	113	423	315	99	37
WH		15	4	83	82	6.502	7.82	13.00	18.8	57.5	7.83	245	748	684	214	65

T029 R012 S04 TU1G										T029 R012 S04 TU1G				
Twp	Rge	Sec	Tract	Type	Acres	Plots	Sample Trees	CuFt	BdFt					
029	012	04	SHUTHIN	U1G	4.00	39	216	S	W					

S Sp	So T	Gr rt	Gr ad	% Net BdFt	Bd. Ft. per Acre			Total Net MBF	Percent Net Board Foot Volume								Average Log				Logs Per /Acre					
									Log Scale Dia.				Log Length				Ln	Dia	Bd	CF/						
									4-5	6-11	12-16	17+	12-20	21-30	31-35	36-99	Ft	In	Ft	Lf						
SS	T	DM	2S	33	10.0	4,332	3,901	16	100				3				97	38	14	240	2.14	16.3				
SS	T	DM	3S	49	7.8	6,312	5,818	23	100				2				98	40	8	101	0.95	57.5				
SS	T	DM	4S	18	6.4	2,248	2,104	8	60	40			27				47	12	13	24	5	27	0.39	78.6		
SS T Totals				48	8.3	12,892	11,823	47	11	56	33		6				8	3	83	32	7	78	0.88	152.3		
DF	T	DM	2S	4	15.1	364	309	1	100				100				40				13	224	2.00	1.4		
DF	T	DM	3S	63	12.1	5,009	4,403	18	100				100				40				8	83	0.77	53.2		
DF	T	DM	4S	33	10.4	2,573	2,304	9	76	24			19				15	12	54	28	5	28	0.37	81.0		
DF T Totals				28	11.7	7,945	7,017	28	25	71	4		6				5	4	85	33	6	52	0.58	135.6		
WH	T	DM	3S	67	7.7	4,134	3,817	15	100				100				40				8	92	0.75	41.5		
WH	T	DM	4S	33	3.3	1,885	1,823	7	66	34			26				22	52			25	5	29	0.30	63.9	
WH T Totals				23	6.3	6,019	5,640	23	21	79			9				7	84			31	6	54	0.53	105.4	
RA	T	DM	4S	100	8.2	434	398	2	85	15			54				35	11	31				5	33	0.31	12.1
RA T Totals				2	8.2	434	398	2	85	15			54				35	11	31				5	33	0.31	12.1
Type Totals					8.8	27,290	24,878	100	18	65	17		6				8	3	83	32	7	61	0.67	405.5		

TC TSTATS				STATISTICS						PAGE	1
				PROJECT	SHUTHIN				DATE	1/12/2016	
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt		
029	012	04	SHUTHIN	UIG	4.00	39	216	S	W		
				TREES	ESTIMATED	PERCENT					
				PER PLOT	TOTAL	SAMPLE					
					TREES	TREES					
TOTAL		39	216	5.5							
CRUISE		25	136	5.4	1,078		12.6				
DBH COUNT											
REFOREST											
COUNT		14	75	5.4							
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	53	94.0	16.2	60	33.3	134.0	12,892	11,823	4,233	4,233	
DOUG FIR-T	48	96.2	13.7	59	26.7	99.1	7,945	7,017	2,593	2,593	
WHEMLOCK-T	29	67.3	12.8	61	16.8	60.0	6,019	5,640	1,717	1,715	
R ALDER-T	6	12.1	9.6	46	2.0	6.2	434	398	118	118	
TOTAL	<i>136</i>	<i>269.6</i>	<i>14.3</i>	<i>59</i>	<i>79.2</i>	<i>299.3</i>	<i>27,290</i>	<i>24,878</i>	<i>8,662</i>	<i>8,659</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		
S SPRUCE-T	111.1	17.8		77	94	111					
DOUG FIR-T	117.0	18.7		78	96	114					
WHEMLOCK-T	145.9	23.3		52	67	83					
R ALDER-T	441.3	70.6		4	12	21					
TOTAL	<i>30.7</i>	<i>4.9</i>		<i>256</i>	<i>270</i>	<i>283</i>	<i>38</i>	<i>19</i>	<i>9</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		
S SPRUCE-T	90.3	14.4		115	134	153					
DOUG FIR-T	113.3	18.1		81	99	117					
WHEMLOCK-T	142.3	22.8		46	60	74					
R ALDER-T	435.7	69.7		2	6	10					
TOTAL	<i>20.6</i>	<i>3.3</i>		<i>289</i>	<i>299</i>	<i>309</i>	<i>17</i>	<i>9</i>	<i>4</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		
S SPRUCE-T	93.3	14.9		10,059	11,823	13,587					
DOUG FIR-T	109.8	17.6		5,784	7,017	8,249					
WHEMLOCK-T	141.8	22.7		4,360	5,640	6,920					
R ALDER-T	441.2	70.6		117	398	679					
TOTAL	<i>30.7</i>	<i>4.9</i>		<i>23,657</i>	<i>24,878</i>	<i>26,099</i>	<i>38</i>	<i>19</i>	<i>9</i>		
CL:	68.1 %	COEFF	V-BAR/ACRE				# OF PLOTS REQ.		INF. POP.		
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10		
S SPRUCE-T	22.1	3.5		75	88	101					
DOUG FIR-T	75.0	12.0		58	71	83					
WHEMLOCK-T	118.6	19.0		73	94	115					
R ALDER-T	441.2	70.6		19	65	110					
TOTAL	<i>135.7</i>	<i>21.7</i>		<i>79</i>	<i>83</i>	<i>87</i>	<i>735</i>	<i>375</i>	<i>184</i>		

T TSPCSTGR	Species, Sort Grade - Board Foot Volumes (Type)										Page 1														
	Project: SHUTHIN										Date 1/12/2016														
											Time 4:36:39PM														
T029 R013 S01 T00U2										T029 R013 S01 T00U2															
Twp	Rge	Sec	Tract	Type	Acres	Plots	Sample Trees	CuFt	BdFt																
029	013	01	SHUTHIN	00U2	32.80	19	88	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	3S	74	7.4	6,996	6,480	213	100								40	8	79	0.70	82.5					
DF	DM	4S	23	13.8	2,291	1,975	65	87	13					50	21	30		20	5	20	0.30	97.4			
DF	DM	UT	3		220	220	7	100				100				12	5	13	0.21	16.7					
DF	Totals		47	8.8	9,508	8,675	285	22	78					14	5	3	78	28	6	44	0.54	196.6			
DF	T	DM	3S	38		1,326	1,326	43	100				100				40	7	76	0.56	17.5				
DF	T	DM	4S	60	15.0	2,400	2,040	67	73	27					8	25	67		30	5	29	0.32	70.4		
DF	T	DM	UT	2		59	59	2	100				100				10	5	10	0.20	5.9				
DF	T	Totals	18	9.5	3,784	3,425	112	45	55					7	15	79		31	6	37	0.37	93.8			
SS		DM	3S	81	8.0	2,987	2,748	90	100				9				91	39	8	90	1.00	30.6			
SS		DM	4S	16	7.8	603	556	18	93	7					61	39		21	5	20	0.37	27.6			
SS		DM	UT	3		78	78	3	100				100				15	5	20	0.24	3.9				
SS	Totals		18	7.8	3,669	3,383	111	18	82					12	7		81	30	7	54	0.77	62.1			
SS	T	DM	4S	100	8.2	1,057	970	32	73	27					73	27					16	5	18	0.30	52.9
SS	T	Totals	5	8.2	1,057	970	32	73	27					73	27					16	5	18	0.30	52.9	
WH	T	DM	3S	38		545	545	18	100				100				40	7	65	0.58	8.4				
WH	T	DM	4S	62	13.2	992	861	28	37	63					5	32		63	32	5	35	0.35	24.6		
WH	T	Totals	8	8.5	1,537	1,406	46	22	78					3	19		78	34	6	43	0.42	33.0			
WH		DM	3S	87		592	592	19	100				100				40	7	70	0.59	8.5				
WH		DM	4S	6		43	43	1	100				100				12	5	10	0.20	4.3				
WH		DM	UT	7		42	42	1	100				100				12	5	10	0.20	4.2				
WH	Totals		4		677	677	22	12	88					12	88		26	6	40	0.50	16.9				
Type	Totals			8.4	20,233	18,537	608	28	72					14	6	4	75	28	6	41	0.51	455.3			

TC TSTATS				STATISTICS				PAGE	1	
				PROJECT	SHUTHIN			DATE	1/12/2016	
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt	
029	013	01	SHUTHIN	00U2	32.80	19	88	S	W	
				TREES	ESTIMATED	PERCENT				
				PER PLOT	TOTAL	SAMPLE				
				PLOTS	TREES	TREES	TREES			
TOTAL				19	88	4.6				
CRUISE				10	47	4.7	9,607	.5		
DBH COUNT										
REFOREST										
COUNT				9	41	4.6				
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	19	107.8	13.8	57	30.1	111.8	9,508	8,675	2,944	2,943
DOUG FIR-T	9	76.3	10.8	48	14.8	48.7	3,784	3,425	1,073	1,073
S SPRUCE	10	36.0	15.7	56	12.3	48.7	3,669	3,383	1,419	1,421
S SPRUCE-T	2	35.5	8.6	50	4.9	14.3	1,057	970	260	260
WHEMLOCK	2	8.5	13.6	57	2.3	8.6	677	677	222	222
WHEMLOCK-T	5	28.7	11.3	50	6.0	20.1	1,537	1,406	473	472
TOTAL	47	292.9	12.6	53	71.1	252.2	20,233	18,537	6,390	6,390
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	56.8	13.4		93	108	122				
DOUG FIR-T	95.7	22.5		59	76	94				
S SPRUCE	84.0	19.8		29	36	43				
S SPRUCE-T	286.1	67.4		12	35	59				
WHEMLOCK	317.6	74.8		2	8	15				
WHEMLOCK-T	181.7	42.8		16	29	41				
TOTAL	38.6	9.1		266	293	320	63	32	16	
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	12.4		98	112	126				
DOUG FIR-T	90.5	21.3		38	49	59				
S SPRUCE	82.4	19.4		39	49	58				
S SPRUCE-T	278.7	65.7		5	14	24				
WHEMLOCK	317.6	74.8		2	9	15				
WHEMLOCK-T	185.7	43.7		11	20	29				
TOTAL	24.1	5.7		238	252	267	25	13	6	
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	52.2	12.3		7,608	8,675	9,742				
DOUG FIR-T	95.2	22.4		2,657	3,425	4,193				
S SPRUCE	80.0	18.8		2,745	3,383	4,021				
S SPRUCE-T	279.0	65.7		332	970	1,608				
WHEMLOCK	317.6	74.8		170	677	1,183				
WHEMLOCK-T	193.2	45.5		766	1,406	2,047				
TOTAL	25.1	5.9		17,439	18,537	19,634	27	14	7	
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	27.2	6.4		55	70	86				
S SPRUCE				56	69	83				
S SPRUCE-T	75.3	17.7		23	68	112				

TC TSTATS				STATISTICS				PAGE	2	
				PROJECT	SHUTHIN			DATE	1/12/2016	
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt	
029	013	01	SHUTHIN	00U2	32.80	19	88	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	
WHEMLOCK		280.3	66.0	20	79	138				
WHEMLOCK-T		144.8	34.1	38	70	102				
TOTAL		<i>169.9</i>	<i>40.0</i>	<i>69</i>	<i>74</i>	<i>78</i>	<i>1,218</i>	<i>622</i>	<i>305</i>	

TC		TSTNDSUM											Stand Table Summary			
Project														SHUTHIN		
T029 R013 S01 T00U2											T029 R013 S01 T00U2					
Twp	Rge	Sec	Tract		Type	Acres	Plots	Sample Trees			Page:	1				
029	013	01	SHUTHIN		00U2	32.80	19	88			Date:	1/12/2016				
											Time:	4:36:39PM				
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
DF		10	1	80	39	10.785	5.88	10.79	8.0	30.0	2.31	86	324	76	28	11
DF		11	1	87	63	8.299	5.88	8.30	13.6	40.0	3.23	113	332	106	37	11
DF		12	1	85	81	7.129	5.88	14.26	12.1	45.0	4.93	173	642	162	57	21
DF		13	2	83	69	12.867	11.76	25.73	11.1	30.1	8.24	287	775	270	94	25
DF		14	4	84	74	22.595	23.53	45.19	14.2	43.6	18.39	643	1,970	603	211	65
DF		15	6	83	74	29.309	35.29	58.62	16.7	48.2	27.88	978	2,826	914	321	93
DF		16	4	81	73	16.861	23.53	33.72	19.7	53.6	18.92	663	1,806	621	218	59
DF		Totals	19	83	69	107.845	111.77	196.61	15.0	44.1	83.90	2,943	8,675	2,752	965	285
DF	T	9	2	79	41	25.145	10.83	25.15	6.2	20.0	4.44	156	503	146	51	16
DF	T	10	2	89	62	18.905	10.83	18.91	12.9	44.6	6.85	243	842	225	80	28
DF	T	11	1	86	61	8.509	5.41	8.51	13.6	40.0	3.31	116	340	108	38	11
DF	T	12	1	85	82	6.560	5.41	13.12	12.2	40.0	4.58	161	525	150	53	17
DF	T	13	2	81	65	12.124	10.83	18.00	13.8	36.5	7.15	248	657	234	81	22
DF	T	14	1	87	77	5.064	5.41	10.13	14.8	55.0	4.26	150	557	140	49	18
DF		Totals	9	84	58	76.307	48.72	93.80	11.4	36.5	30.58	1,073	3,425	1,003	352	112
SS		13	1	77	61	5.452	4.87	5.45	21.2	40.0	3.00	115	218	98	38	7
SS		14	2	82	70	9.183	9.74	13.87	20.3	53.2	7.32	281	739	240	92	24
SS		15	1	77	62	3.918	4.87	7.84	15.8	40.0	3.22	124	313	105	41	10
SS		16	1	77	72	3.578	4.87	7.16	21.3	45.0	3.92	153	322	129	50	11
SS		17	2	78	74	6.182	9.74	12.36	24.9	57.6	8.01	308	713	263	101	23
SS		18	2	80	71	5.704	9.74	11.41	25.3	62.6	7.49	288	714	246	94	23
SS		21	1	77	77	2.025	4.87	4.05	37.3	90.0	3.93	151	365	129	50	12
SS		Totals	10	79	69	36.043	48.72	62.14	22.9	54.4	36.88	1,421	3,383	1,210	466	111
WH	T	9	1	88	50	9.082	4.01	9.08	7.8	30.0	2.26	71	272	74	23	9
WH	T	10	1	87	69	6.934	4.01	6.93	14.8	60.0	3.29	103	416	108	34	14
WH	T	13	3	82	64	12.733	12.04	16.95	17.6	42.3	9.60	299	718	315	98	24
WH		Totals	5	85	61	28.748	20.06	32.97	14.3	42.7	15.15	472	1,406	497	155	46
SS	T	7	1	78	50	26.808	7.16	26.81	3.6	20.0	2.53	97	536	83	32	18
SS	T	12	1	80	62	8.683	7.16	26.05	6.2	16.7	4.22	162	434	138	53	14
SS		Totals	2	78	53	35.490	14.33	52.86	4.9	18.4	6.75	260	970	221	85	32
WH		14	2	85	69	8.460	8.60	16.92	13.1	40.0	7.09	222	677	233	73	22
WH		Totals	2	85	69	8.460	8.60	16.92	13.1	40.0	7.09	222	677	233	73	22
Totals			47	82	64	292.894	252.19	455.30	14.0	40.7	180.36	6390	18,537	5,916	2,096	608

T029 R013 S01 TU2G										T029 R013 S01 TU2G				
Twp	Rge	Sec	Tract	Type	Acres	Plots	Sample Trees	CuFt	BdFt					
029	013	01	SHUTHIN	U2G	2.50	19	88	S	W					

Spp	So	Gr	T	rt	ad	%	Bd. Ft. per Acre						Percent Net Board Foot Volume								Average Log				Logs Per /Acre	
							Def%		Gross		Net		Total 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					
DF	T	DM		3S		65	6.1	8,221	7,718		19	100				4 96				40	8	78	0.68	98.9		
DF	T	DM		4S		35	14.4	4,774	4,084		10	80	20					28	23	49		25	5	24	0.31	169.5
DF T Totals						65	9.2	12,995	11,802		30	28	72					10	8	2	80	30	6	44	0.49	268.4
SS	T	DM		3S		69	8.0	3,222	2,964		7	100				9 91				39	8	90	1.00	33.0		
SS	T	DM		4S		31	8.0	1,426	1,312		3	82	18					68	15	18		18	5	19	0.34	68.6
SS T Totals						24	8.0	4,647	4,276		11	25	75					21	4	6	69	25	6	42	0.67	101.6
WH	T	DM		3S		54	1,120		1,120		3	100				100				40	7	67	0.59	16.6		
WH	T	DM		4S		46	12.7	1,053	919		2	39	61					9	30 61		29	5	32	0.34	29.1	
WH T Totals						11	6.1	2,173	2,040		5	18	82					4	14 82		33	6	45	0.45	45.8	
Type Totals							8.6	19,815	18,117		45	26	74					12	6	5	78	29	6	44	0.52	415.7

TC TSTATS				STATISTICS				PAGE	1	
				PROJECT	SHUTHIN			DATE	1/12/2016	
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt	
029	013	01	SHUTHIN	U2G	2.50	19	88	S	W	
				TREES	ESTIMATED	PERCENT				
				PER PLOT	TOTAL	SAMPLE				
				PLOTS	TREES	TREES	TREES			
TOTAL		19	88	4.6						
CRUISE		10	47	4.7	720		6.5			
DBH COUNT										
REFOREST										
COUNT		9	41	4.6						
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-T	28	185.9	12.6	53	45.2	160.5	12,995	11,802	3,953	3,952
S SPRUCE-T	12	64.9	13.3	54	17.3	63.0	4,647	4,276	1,705	1,707
WHEMLOCK-T	7	37.4	11.9	52	8.3	28.7	2,173	2,040	685	683
TOTAL	47	288.2	12.7	53	70.9	252.2	19,815	18,117	6,342	6,343
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	62.1	14.6		159	186	213				
S SPRUCE-T	122.8	28.9		46	65	84				
WHEMLOCK-T	172.6	40.7		22	37	53				
TOTAL	30.9	7.3		267	288	309	40	21	10	
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	55.9	13.2		139	160	182				
S SPRUCE-T	108.7	25.6		47	63	79				
WHEMLOCK-T	193.8	45.7		16	29	42				
TOTAL	24.1	5.7		238	252	267	25	13	6	
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	55.7	13.1		10,252	11,802	13,352				
S SPRUCE-T	106.4	25.1		3,203	4,276	5,348				
WHEMLOCK-T	200.5	47.2		1,076	2,040	3,003				
TOTAL	24.9	5.9		17,054	18,117	19,181	26	13	7	
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				64	74	83				
S SPRUCE-T				51	68	85				
WHEMLOCK-T	173.7	40.9		38	71	105				
TOTAL	169.6	40.0		68	72	76	1,213	619	303	

T	TSPCSTGR	Species, Sort Grade - Board Foot Volumes (Type)										Page	1									
												Date		1/12/2016								
												Time		4:40:30PM								
T029 R013 S11 T00U3										T029 R013 S11 T00U3												
Twp	Rge	Sec	Tract	Type	Acres	Plots	Sample Trees	CuFt	BdFt													
029	013	11	SHUTHIN	00U3	71.70	32	155	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		
								4-5	6-11	12-16	17+	12-20	21-30	31-35	36-99	Ft	In	Ft				
DF	DM	3S		60	7.1	3,456	3,210								100	40	8	79	0.82	40.8		
DF	DM	4S		34	10.8	1,966	1,753		54	46			17	5	78	29	5	32	0.48	55.1		
DF	DM	UT		6	11.0	346	308		38	62			38		62	18	5	20	0.40	15.6		
DF	Totals			32	8.6	5,768	5,270		20	80			8	2	90	32	6	47	0.63	111.4		
DF	T	DM	3S	13	11.1	316	281								100	40	8	80	0.71	3.5		
DF	T	DM	4S	87	11.6	2,083	1,842		65	35			16	13	40	30	31	5	35	0.37	53.2	
DF	T	Totals		13	11.5	2,399	2,123		56	44			14	11	35	39	32	6	37	0.40	56.7	
SS	DM	3S		72	8.2	2,756	2,529								100	40	8	84	0.95	30.1		
SS	DM	4S		26		917	917		66	100			23	18	59	27	5	27	0.40	34.4		
SS	DM	UT		2		56	56		4	100			100			6	5	6	0.24	9.5		
SS	Totals			21	6.1	3,728	3,501		28	72			8	5	88	30	6	47	0.69	74.0		
SS	T	DM	4S	100		2,102	2,102		151	100					67	16	18				69.8	
SS	T	Totals		13		2,102	2,102		151	100					67	16	18	29	5	30	0.32	69.8
WH	DM	3S		88	2.2	1,771	1,732								100	40	7	71	0.71	24.4		
WH	DM	4S		8	18.4	187	152		11	100			100			17	5	16	0.24	9.3		
WH	DM	UT		4	.0	71	71		5	100			100			9	5	10	0.18	7.1		
WH	Totals			12	3.6	2,029	1,955		140	11	89		11		89	29	6	48	0.62	40.8		
WH	T	DM	3S	29		487	487		35	100					100	40	7	65	0.51	7.5		
WH	T	DM	4S	68	8.4	1,233	1,129		81	66	34		13	35	52	31	5	33	0.36	34.2		
WH	T	DM	UT	3		37	37		3	100			100			10	5	10	0.20	3.7		
WH	T	Totals		10	5.9	1,757	1,653		119	47	53		11	24	65	30	6	36	0.38	45.5		
Type Totals					6.6	17,783	16,605		1,191	38	62		8	14	6	71	30	6	42	0.53	398.1	

TC TSTATS				STATISTICS				PAGE	1	
				PROJECT	SHUTHIN		DATE	1/12/2016		
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt	
029	013	11	SHUTHIN	00U3	71.70	32	155	S	W	
				TREES	ESTIMATED	PERCENT				
				PER PLOT	TOTAL	SAMPLE				
				PLOTS	TREES	TREES	TREES			
TOTAL		32	155	4.8						
CRUISE		18	79	4.4	22,426		.4			
DBH COUNT										
REFOREST										
COUNT		14	74	5.3						
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	24	74.6	14.6	54	22.7	86.8	5,768	5,270	2,209	2,213
DOUG FIR-T	8	53.2	10.8	50	10.3	34.0	2,399	2,123	712	714
S SPRUCE	21	49.1	14.5	53	14.8	56.2	3,728	3,501	1,519	1,521
S SPRUCE-T	11	69.8	9.5	46	11.1	34.0	2,102	2,102	655	655
WHEMLOCK	7	24.4	14.3	55	7.2	27.2	2,029	1,955	743	742
WHEMLOCK-T	8	41.7	10.6	46	7.8	25.5	1,757	1,653	532	532
TOTAL	79	312.8	12.4	50	74.8	263.7	17,783	16,605	6,371	6,377
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	88.7	15.7		63	75	86				
DOUG FIR-T	117.4	20.7		42	53	64				
S SPRUCE	119.0	21.0		39	49	59				
S SPRUCE-T	173.3	30.6		48	70	91				
WHEMLOCK	178.8	31.6		17	24	32				
WHEMLOCK-T	144.4	25.5		31	42	52				
TOTAL	40.4	7.1		290	313	335	65	33	16	
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	82.6	14.6		74	87	99				
DOUG FIR-T	120.2	21.2		27	34	41				
S SPRUCE	103.0	18.2		46	56	66				
S SPRUCE-T	156.1	27.6		25	34	43				
WHEMLOCK	176.0	31.1		19	27	36				
WHEMLOCK-T	132.6	23.4		20	26	31				
TOTAL	26.3	4.6		252	264	276	28	14	7	
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	81.9	14.5		4,508	5,270	6,033				
DOUG FIR-T	123.4	21.8		1,660	2,123	2,585				
S SPRUCE	107.1	18.9		2,839	3,501	4,164				
S SPRUCE-T	164.1	29.0		1,493	2,102	2,711				
WHEMLOCK	175.6	31.0		1,349	1,955	2,562				
WHEMLOCK-T	134.2	23.7		1,261	1,653	2,045				
TOTAL	30.0	5.3		15,724	16,605	17,485	36	18	9	
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				52	61	70				
DOUG FIR-T	18.9	3.3		49	62	76				
S SPRUCE	64.8	11.4		51	62	74				
S SPRUCE-T	120.6	21.3		44	62	80				

TC TSTATS				STATISTICS				PAGE	2	
				PROJECT		SHUTHIN		DATE	1/12/2016	
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt	
029	013	11	SHUTHIN	00U3	71.70	32	155	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	
WHEMLOCK		61.0	10.8	50	72	94				
WHEMLOCK-T		87.9	15.5	49	65	80				
TOTAL		<i>181.7</i>	<i>32.1</i>	<i>60</i>	<i>63</i>	<i>66</i>	<i>1,318</i>	<i>673</i>	<i>330</i>	

TC		Stand Table Summary														
TSTNDSUM		Project SHUTHIN														
T029 R013 S11 T00U3											T029 R013 S11 T00U3					
Twp	Rge	Sec	Tract	Type	Acres	Plots	Sample Trees	Page:	1							
029	013	11	SHUTHIN	00U3	71.70	32	155	Date:	1/12/2016							
								Time:	4:40:30PM							
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	3	80	59	13.852	10.85	13.85	17.4	40.0	6.86	241	554	492	173	40
DF		13	2	82	62	7.915	7.23	7.92	21.0	50.0	4.72	166	396	339	119	28
DF		14	6	81	65	20.369	21.69	30.24	17.5	45.8	15.09	531	1,386	1,082	380	99
DF		15	4	78	68	11.599	14.46	20.33	18.4	32.8	10.64	375	668	763	269	48
DF		16	4	81	71	10.401	14.46	18.08	21.1	51.5	10.86	381	931	779	274	67
DF		17	2	82	70	4.536	7.23	9.07	21.9	57.2	5.63	199	519	404	143	37
DF		18	2	80	79	4.188	7.23	8.38	26.0	69.8	6.22	218	585	446	156	42
DF		19	1	75	74	1.780	3.62	3.56	28.8	65.0	2.93	103	231	210	74	17
DF		Totals	24	80	66	74.641	86.78	111.42	19.9	47.3	62.97	2,213	5,270	4,515	1,587	378
SS		10	1	78	52	5.432	2.67	5.43	10.2	30.0	1.44	56	163	104	40	12
SS		11	1	79	64	3.979	2.67	7.96	8.0	20.0	1.65	63	159	118	45	11
SS		12	2	80	63	6.925	5.35	6.93	18.4	40.0	3.32	128	277	238	92	20
SS		13	1	81	68	2.771	2.67	5.54	14.3	40.0	2.06	79	222	147	57	16
SS		14	3	78	61	7.412	8.02	7.41	27.4	56.1	5.27	203	416	378	145	30
SS		15	2	81	70	4.446	5.35	8.89	17.5	47.5	4.01	155	422	287	111	30
SS		16	5	81	71	9.705	13.37	17.45	22.0	57.8	9.99	384	1,009	717	276	72
SS		17	1	74	69	1.696	2.67	3.39	22.7	45.0	2.01	77	153	144	55	11
SS		18	1	74	68	1.480	2.67	2.96	27.1	45.0	2.07	80	133	148	57	10
SS		19	3	78	64	4.207	8.02	7.00	32.2	58.0	5.86	225	406	420	162	29
SS		22	1	78	61	1.013	2.67	1.01	69.0	140.0	1.81	70	142	130	50	10
SS		Totals	21	79	64	49.067	56.15	73.97	20.6	47.3	39.49	1,521	3,501	2,832	1,090	251
DF	T	8	1	80	61	12.187	4.25	12.19	6.3	20.0	2.19	77	244	157	55	17
DF	T	10	2	78	58	15.332	8.51	15.33	12.0	35.3	5.14	183	541	369	132	39
DF	T	11	2	82	60	13.628	8.51	13.63	13.8	45.3	5.36	188	617	385	135	44
DF	T	13	1	79	59	4.687	4.25	4.69	21.0	30.0	2.83	98	141	203	71	10
DF	T	14	1	79	61	3.814	4.25	3.81	13.7	60.0	1.49	52	229	107	38	16
DF	T	15	1	83	77	3.513	4.25	7.03	16.4	50.0	3.28	115	351	235	82	25
DF		Totals	8	80	61	53.161	34.03	56.67	12.6	37.5	20.29	714	2,123	1,455	512	152
SS	T	8	2	77	52	16.879	6.19	16.88	5.9	24.9	2.61	100	420	187	72	30
SS	T	9	3	78	51	22.681	9.28	22.68	7.4	30.0	4.36	168	680	313	120	49
SS	T	10	3	80	52	17.020	9.28	17.02	11.5	33.3	5.07	195	566	364	140	41
SS	T	11	1	81	45	5.145	3.09	5.14	10.6	30.0	1.41	54	154	101	39	11
SS	T	12	2	77	50	8.100	6.19	8.10	17.0	34.7	3.59	138	281	257	99	20
SS		Totals	11	78	51	69.826	34.03	69.83	9.4	30.1	17.04	655	2,102	1,222	470	151
WH		13	2	82	63	8.187	7.78	12.34	15.3	43.2	6.04	189	533	433	135	38
WH		14	2	81	68	7.352	7.78	10.79	20.4	50.0	7.09	220	540	508	158	39
WH		16	3	81	70	8.828	11.67	17.66	18.9	50.0	10.65	333	883	764	239	63
WH		Totals	7	81	67	24.367	27.22	40.79	18.2	47.9	23.78	742	1,955	1,705	532	140
WH	T	8	1	86	49	10.399	3.19	10.40	5.0	20.0	1.68	52	208	120	38	15
WH	T	10	1	85	42	6.091	3.19	6.09	8.4	30.0	1.63	51	183	117	37	13
WH	T	11	2	85	50	9.678	6.38	9.68	11.9	34.8	3.68	115	337	264	82	24
WH	T	12	2	84	59	8.061	6.38	8.06	19.0	49.8	4.91	153	401	352	110	29
WH	T	13	2	86	64	7.487	6.38	11.23	14.2	46.7	5.12	160	524	367	115	38
WH		Totals	8	85	53	41.716	25.52	45.46	11.7	36.4	17.02	532	1,653	1,220	381	119
Totals			79	80	60	312.778	263.74	398.14	16.0	41.7	180.59	6377	16,605	12,948	4,572	1,191

T029 R013 S11 TU3G										T029 R013 S11 TU3G				
Twp	Rge	Sec	Tract	Type	Acres	Plots	Sample Trees	CuFt	BdFt					
029	013	11	SHUTHIN	U3G	4.10	32	155	S	W					

S Spp	So T	Gr rt	Gr ad	% Net BdFt	Bd. Ft. per Acre			Total Net MBF	Percent Net Board Foot Volume								Average Log				Logs Per /Acre		
									Log Scale Dia.				Log Length				Ln	Dia	Bd	CF/ Lf			
									4-5	6-11	12-16	17+	12-20	21-30	31-35	36-99	Ft	In	Ft	Lf			
DF	T	DM	3S	49	7.3	3,924	3,635	15	100				100				40	8	80	0.81	45.7		
DF	T	DM	4S	48	11.1	3,936	3,500	14	59	41					18	9	19	55	29	5	32	0.43	108.2
DF	T	DM	UT	3	16.7	238	199	1	100				100				40	6	50	0.55	4.0		
DF T Totals				45	9.4	8,098	7,334	30	28	72					8	4	9	79	33	6	46	0.57	157.8
SS	T	DM	3S	48	8.2	2,905	2,666	11	100				100				40	8	84	0.95	31.7		
SS	T	DM	4S	52		2,865	2,865	12	100				7	50	10	32	29	5	29	0.35	98.3		
SS T Totals				34	4.1	5,770	5,531	23	52	48					4	26	5	65	31	6	43	0.53	130.0
WH	T	DM	3S	60	1.7	2,138	2,103	9	100				100				40	7	69	0.66	30.3		
WH	T	DM	4S	40	9.5	1,528	1,382	6	69	31					22	31	47		28	5	30	0.34	46.2
WH T Totals				21	4.9	3,666	3,485	14	27	73					9	12	79		33	6	46	0.49	76.5
Type Totals					6.8	17,534	16,349	67	36	64					7	13	6	74	32	6	45	0.54	364.2

TC TSTATS				STATISTICS				PAGE	1	
				PROJECT	SHUTHIN			DATE	1/12/2016	
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt	
029	013	11	SHUTHIN	U3G	4.10	32	155	S	W	
				TREES	ESTIMATED	PERCENT				
				PER PLOT	TOTAL	SAMPLE				
				PLOTS	TREES	TREES	TREES			
TOTAL		32	155	4.8						
CRUISE		18	79	4.4	1,265		6.2			
DBH COUNT										
REFOREST										
COUNT		14	74	5.3						
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-T	32	125.1	13.3	53	33.1	120.8	8,098	7,334	2,923	2,929
S SPRUCE-T	32	115.3	12.0	49	26.1	90.2	5,770	5,531	2,180	2,182
WHEMLOCK-T	15	68.0	11.9	49	15.3	52.7	3,666	3,485	1,239	1,238
TOTAL	79	308.4	12.5	51	74.5	263.7	17,534	16,349	6,342	6,349
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	77.9	13.8		108	125	142				
S SPRUCE-T	143.6	25.4		86	115	145				
WHEMLOCK-T	125.6	22.2		53	68	83				
TOTAL	41.4	7.3		286	308	331	68	35	17	
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	73.1	12.9		105	121	136				
S SPRUCE-T	111.2	19.6		72	90	108				
WHEMLOCK-T	121.5	21.5		41	53	64				
TOTAL	26.3	4.6		252	264	276	28	14	7	
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	73.2	12.9		6,385	7,334	8,283				
S SPRUCE-T	118.8	21.0		4,371	5,531	6,691				
WHEMLOCK-T	122.3	21.6		2,732	3,485	4,237				
TOTAL	30.0	5.3		15,482	16,349	17,217	36	18	9	
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				53	61	69				
S SPRUCE-T	80.4	14.2		48	61	74				
WHEMLOCK-T	22.9	4.0		52	66	80				
TOTAL	181.4	32.0		59	62	65	1,314	670	329	

T030 R012 S20 T00U4										T030 R012 S20 T00U4				
Twp	Rge	Sec	Tract	Type	Acres	Plots	Sample Trees	CuFt	BdFt					
030	012	20	SHUTHIN	00U4	30.70	16	76	S	W					

Spp	S T	So rt	Gr ad	% Net BdFt	Bd. Ft. per Acre			Total Net MBF	Percent Net Board Foot Volume								Average Log				Logs Per /Acre		
									Log Scale Dia.				Log Length				Ln	Dia	Bd	CF/			
									4-5	6-11	12-16	17+	12-20	21-30	31-35	36-99	Ft	In	Ft	Lf			
SS		DM	2S	7	5.0	640	608	19	100				100				40	12	190	1.48	3.2		
SS		DM	3S	81	9.3	7,186	6,514	200	3	97				100				40	9	101	1.02	64.6	
SS		DM	4S	11	14.4	1,069	916	28	90	10				88	12				17	5	15	0.31	60.2
SS		DM	UT	1		35	35	1	100				100				6	5	5	0.14	7.6		
SS	Totals			43	9.6	8,930	8,072	248	13	80	8		10	1		88	28	7	60	0.83	135.6		
SS	T	DM	3S	38	1.8	1,537	1,510	46	100				100				40	8	81	0.74	18.7		
SS	T	DM	4S	62	1.1	2,486	2,459	75	100				14	41	16	29	27	5	28	0.35	88.4		
SS	T	Totals		21	1.3	4,022	3,968	122	62	38		9	25	10	56	30	5	37	0.44	107.1			
DF		DM	3S	68	14.7	3,508	2,992	92	100				100				40	8	89	0.87	33.5		
DF		DM	4S	32	3.8	1,422	1,367	42	44	56				50	50				20	5	25	0.38	55.0
DF	Totals			23	11.6	4,929	4,359	134	14	86		16	84		28	7	49	0.65	88.5				
DF	T	DM	3S	71	14.1	1,822	1,566	48	100				100				40	7	56	0.59	27.8		
DF	T	DM	4S	29		633	633	19	100				37	63				21	5	21	0.31	30.1	
DF	T	Totals		12	10.4	2,454	2,198	67	29	71		11	89		30	6	38	0.49	57.9				
Type	Totals				8.5	20,335	18,598	571	25	71	3		11	6	2	81	29	6	48	0.63	389.1		

TC TSTATS				STATISTICS				PAGE	1	
				PROJECT	SHUTHIN			DATE	1/12/2016	
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt	
030	012	20	SHUTHIN	00U4	30.70	16	76	S	W	
				TREES	ESTIMATED	PERCENT				
				PER PLOT	TOTAL	SAMPLE				
				TREES	TREES	TREES				
TOTAL		16	76	4.8						
CRUISE		9	45	5.0	4,505		1.0			
DBH COUNT		7	30	4.3	2,986		1.0			
REFOREST										
COUNT										
BLANKS										
100 %										
STAND SUMMARY										
	SAMPLE	TREES	AVG	BOLE	REL	BASAL	GROSS	NET	GROSS	NET
	TREES	/ACRE	DBH	LEN	DEN	AREA	BF/AC	BF/AC	CF/AC	CF/AC
S SPRUCE	30	67.8	16.6	60	25.0	102.1	8,930	8,072	3,153	3,155
S SPRUCE-T	19	94.1	11.2	44	19.3	64.7	4,022	3,968	1,407	1,407
DOUG FIR	17	44.2	15.5	64	14.7	57.9	4,929	4,359	1,591	1,587
DOUG FIR-T	10	37.8	12.8	57	9.5	34.0	2,454	2,198	849	852
TOTAL	76	244.0	13.9	54	69.3	258.6	20,335	18,598	6,999	7,000
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	67.1	17.3	56	68	80					
S SPRUCE-T	81.9	21.1	74	94	114					
DOUG FIR	75.1	19.4	36	44	53					
DOUG FIR-T	132.7	34.2	25	38	51					
TOTAL	29.0	7.5	226	244	262	36	18	9		
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	67.1	17.3	84	102	120					
S SPRUCE-T	63.2	16.3	54	65	75					
DOUG FIR	80.4	20.7	46	58	70					
DOUG FIR-T	129.0	33.3	23	34	45					
TOTAL	19.6	5.1	246	259	272	16	8	4		
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	70.6	18.2	6,603	8,072	9,542					
S SPRUCE-T	70.4	18.2	3,247	3,968	4,689					
DOUG FIR	78.7	20.3	3,474	4,359	5,245					
DOUG FIR-T	129.3	33.3	1,465	2,198	2,931					
TOTAL	23.9	6.2	17,452	18,598	19,744	24	12	6		
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	70.6	18.2	65	79	93					
S SPRUCE-T	70.4	18.2	50	61	73					
DOUG FIR	78.7	20.3	60	75	91					
DOUG FIR-T	129.3	33.3	43	65	86					
TOTAL	23.9	6.2	67	72	76	24	12	6		

TC		Stand Table Summary														
TSTNDSUM		Project SHUTHIN														
T030 R012 S20 T00U4											T030 R012 S20 T00U4					
Twp	Rge	Sec	Tract	Type	Acres	Plots	Sample Trees	Page:	1							
030	012	20	SHUTHIN	00U4	30.70	16	76	Date:	1/12/2016							
								Time:	4:43:22PM							
Spc	S 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
SS		12	1	78	64	4.124	3.40	8.25	10.6	20.0	2.27	87	165	70	27	5
SS		13	1	79	68	3.475	3.40	6.95	14.3	40.0	2.58	99	278	79	30	9
SS		14	1	77	76	3.373	3.40	6.75	14.8	40.0	2.59	100	270	80	31	8
SS		15	6	83	71	16.263	20.42	32.53	19.5	53.1	16.50	635	1,729	507	195	53
SS		16	4	82	74	9.512	13.61	19.02	21.4	58.8	10.59	407	1,118	325	125	34
SS		17	4	79	73	8.424	13.61	16.85	25.5	65.6	11.19	430	1,106	343	132	34
SS		18	6	79	75	11.499	20.42	23.00	27.6	65.7	16.46	634	1,511	505	195	46
SS		19	2	81	76	3.283	6.81	6.57	33.8	92.2	5.77	222	606	177	68	19
SS		20	5	79	75	7.852	17.02	15.70	34.4	82.2	14.01	540	1,291	430	166	40
SS		Totals	30	80	73	67.804	102.09	135.61	23.3	59.5	81.97	3,155	8,072	2,516	969	248
DF		12	1	81	70	4.124	3.40	8.25	10.5	35.0	2.46	86	289	76	27	9
DF		13	1	80	74	3.581	3.40	7.16	12.7	40.0	2.59	91	286	80	28	9
DF		14	4	84	76	12.251	13.61	24.50	15.0	47.6	10.55	368	1,166	324	113	36
DF		15	3	80	73	8.031	10.21	16.06	17.5	45.0	7.99	280	723	245	86	22
DF		16	2	83	73	4.756	6.81	9.51	18.8	42.4	5.06	179	403	155	55	12
DF		17	3	80	74	6.303	10.21	12.61	22.7	60.0	8.24	287	756	253	88	23
DF		18	1	80	78	1.905	3.40	3.81	24.7	60.0	2.70	94	229	83	29	7
DF		19	1	79	81	1.747	3.40	3.49	28.5	70.0	2.85	100	245	88	31	8
DF		20	1	80	86	1.544	3.40	3.09	32.9	85.0	2.89	102	263	89	31	8
DF		Totals	17	81	75	44.242	57.85	88.48	17.9	49.3	45.34	1,587	4,359	1,392	487	134
SS	T	8	2	81	33	18.970	6.81	18.97	4.9	24.2	2.42	93	458	74	29	14
SS	T	9	2	82	50	14.689	6.81	14.69	8.9	30.0	3.41	131	441	105	40	14
SS	T	10	1	77	52	6.497	3.40	6.50	10.9	30.0	1.84	71	195	57	22	6
SS	T	11	3	81	52	14.912	10.21	14.91	12.7	36.9	4.94	190	551	152	58	17
SS	T	12	3	78	44	13.023	10.21	13.02	13.8	30.0	4.68	180	391	144	55	12
SS	T	13	3	80	65	11.144	10.21	14.95	17.0	40.0	6.59	253	598	202	78	18
SS	T	14	3	82	69	9.323	10.21	15.80	18.6	52.9	7.64	294	835	235	90	26
SS	T	15	2	80	70	5.549	6.81	8.25	23.5	60.5	5.04	194	499	155	60	15
SS		Totals	19	80	51	94.107	64.66	107.09	13.1	37.1	36.57	1,407	3,968	1,123	432	122
DF	T	11	2	85	68	10.424	6.81	15.40	10.8	33.5	4.76	166	516	146	51	16
DF	T	12	2	81	66	8.488	6.81	8.49	17.6	49.3	4.27	150	418	131	46	13
DF	T	13	2	83	63	7.232	6.81	10.66	16.3	43.9	4.92	173	468	151	53	14
DF	T	14	2	81	71	6.190	6.81	12.38	14.7	37.5	5.14	182	465	158	56	14
DF	T	15	2	79	73	5.514	6.81	11.03	16.3	30.0	5.11	180	331	157	55	10
DF		Totals	10	82	68	37.848	34.03	57.95	14.7	37.9	24.19	852	2,198	743	261	67
Totals			76	81	64	244.001	258.64	389.13	18.0	47.8	188.07	7000	18,598	5,774	2,149	571

T030 R012 S20 TU4G	T030 R012 S20 TU4G
Twp 030 Rge 012 Sec 20 Tract SHUTHIN Type U4G Acres 1.50 Plots 16 Sample Trees 76 CuFt S BdFt W	

Spp	So	Gr	T	rt	ad	%	Percent Net Board Foot Volume											Average Log				Logs Per /Acre	
							Bd. Ft. per Acre			Total Net MBF	Log Scale Dia.				Log Length				Ln Ft	Dia In	Bd Ft		CF/Lf
							Def%	Gross	Net		4-5	6-11	12-16	17+	12-20	21-30	31-35	36-99					
SS	T	DM	2S			5	5.0	640	608	1	100				100				40	12	190	1.48	3.2
SS	T	DM	3S			67	7.9	8,804	8,105	12	100				100				40	8	98	0.97	82.7
SS	T	DM	4S			28	5.1	3,538	3,357	5	97	3			35	37	12	17	23	5	22	0.34	149.2
SS T Totals						65	7.0	12,982	12,070	18	27	68	5		10	10	3	77	29	6	51	0.66	235.1
DF	T	DM	3S			71	14.5	5,491	4,692	7	100				100				40	7	72	0.73	64.9
DF	T	DM	4S			29	2.8	1,905	1,850	3	58	42			50			50	19	5	22	0.34	82.5
DF T Totals						35	11.5	7,395	6,543	10	16	84			14			86	28	6	44	0.58	147.4
Type Totals							8.7	20,377	18,613	28	23	73	3		11	7	2	80	29	6	49	0.63	382.5

TC TSTATS				STATISTICS				PAGE	1	
				PROJECT	SHUTHIN			DATE	1/12/2016	
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt	
030	012	20	SHUTHIN	U4G	1.50	16	76	S	W	
				TREES	ESTIMATED	PERCENT				
				PER PLOT	TOTAL	SAMPLE				
				PLOTS	TREES	TREES	TREES			
TOTAL		16	76	4.8						
CRUISE		9	45	5.0	220		20.4			
DBH COUNT		7	30	4.3	146		20.6			
REFOREST										
COUNT										
BLANKS										
100 %										
STAND SUMMARY										
	SAMPLE	TREES	AVG	BOLE	REL	BASAL	GROSS	NET	GROSS	NET
	TREES	/ACRE	DBH	LEN	DEN	AREA	BF/AC	BF/AC	CF/AC	CF/AC
S SPRUCE-T	49	161.9	13.7	50	45.0	166.8	12,982	12,070	4,542	4,544
DOUG FIR-T	27	82.1	14.3	59	24.3	91.9	7,395	6,543	2,436	2,435
TOTAL	76	244.0	13.9	53	69.3	258.6	20,377	18,613	6,978	6,979
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	49.6	12.8		141	162	183				
DOUG FIR-T	74.2	19.2		66	82	98				
TOTAL	29.0	7.5		226	244	262	36	18	9	
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	49.8	12.9		145	167	188				
DOUG FIR-T	67.5	17.4		76	92	108				
TOTAL	19.6	5.1		246	259	272	16	8	4	
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	53.7	13.9		10,398	12,070	13,743				
DOUG FIR-T	70.0	18.1		5,361	6,543	7,724				
TOTAL	23.1	6.0		17,503	18,613	19,723	23	12	6	
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	53.7	13.9		62	72	82				
DOUG FIR-T	70.0	18.1		58	71	84				
TOTAL	23.1	6.0		68	72	76	23	12	6	

T TSPCSTGR	Species, Sort Grade - Board Foot Volumes (Type)										Page 1											
	Project: SHUTHIN										Date 1/12/2016											
											Time 4:46:42PM											
TT30 R012 S20 TU5										TT30 R012 S20 TU5												
Twp	Rge	Sec	Tract	Type	Acres	Plots	Sample Trees	CuFt	BdFt													
T30	012	20	SHUTHIN	U5	27.30	13	66	S	W													
S So Gr T rt ad	%	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	3S		77	8.0	6,490	5,973		163	100						6	94	39	7	74	0.73	80.8
DF	DM	4S		23		1,759	1,759		48	100				36	12		52	25	5	26	0.31	68.9
DF	Totals			43	6.3	8,249	7,732		211	23	77			8	3	5	84	33	6	52	0.58	149.7
DF	T	DM	3S	9		425	425		12	100							100	40	6	60	0.49	7.1
DF	T	DM	4S	91	4.9	4,312	4,101		112	100				46	21	33		32	5	33	0.32	123.6
DF	T	Totals		25	4.5	4,737	4,526		124	91	9			42	19	39		32	5	35	0.33	130.6
SS	DM	3S		59	3.9	2,090	2,009		55	100							100	40	9	106	1.19	18.9
SS	DM	4S		41		1,350	1,350		37	100				18	9	21	51	30	5	30	0.40	45.5
SS	Totals			18	2.4	3,440	3,359		92	40	60			7	4	8	80	33	6	52	0.68	64.4
SS	T	DM	4S	100		870	870		24	84	16			16	56	28		27	6	30	0.38	29.3
SS	T	Totals		5		870	870		24	84	16			16	56	28		27	6	30	0.38	29.3
WH	T	DM	4S	100		625	625		17	100				46	54			30	5	35	0.27	18.0
WH	T	Totals		3		625	625		17	100				46	54			30	5	35	0.27	18.0
WH	DM	4S		100		284	284		8	100						100		34	5	40	0.35	7.1
WH	Totals			2		284	284		8	100						100		34	5	40	0.35	7.1
RA	T	DM	4S	100		601	601		16	70	30			30	35	35		28	6	32	0.31	18.5
RA	T	Totals		3		601	601		16	70	30			30	35	35		28	6	32	0.31	18.5
RA	DM	4S		100		160	160		4	100						100		30	5	30	0.34	5.3
RA	Totals			1		160	160		4	100						100		30	5	30	0.34	5.3
Type Totals					4.3	18,966	18,156		496	52	48			7	18	13	62	32	6	43	0.48	423.0

TC TSTATS				STATISTICS				PAGE	1	
				PROJECT	SHUTHIN			DATE	1/12/2016	
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt	
T30	012	20	SHUTHIN	U5	27.30	13	66	S	W	
				TREES	ESTIMATED	PERCENT				
				PER PLOT	TOTAL	SAMPLE				
				PLOTS	TREES	TREES	TREES			
TOTAL		13	66	5.1						
CRUISE		10	46	4.6	9,780		.5			
DBH COUNT										
REFOREST										
COUNT		3	15	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
DOUG FIR	15	103.8	13.9	57	29.2	108.9	8,249	7,732	2,852	2,855
DOUG FIR-T	12	130.6	10.0	45	22.5	71.2	4,737	4,526	1,394	1,399
S SPRUCE	8	45.5	14.2	52	13.3	50.3	3,440	3,359	1,438	1,438
S SPRUCE-T	4	29.3	10.2	43	5.2	16.8	870	870	296	296
WHEMLOCK	1	7.1	10.4	41	1.3	4.2	284	284	82	85
WHEMLOCK-T	2	18.0	9.2	39	2.8	8.4	625	625	144	143
R ALDER	1	5.3	10.3	37	1.0	3.1	160	160	54	54
R ALDER-T	3	18.5	9.6	42	3.0	9.2	601	601	157	157
TOTAL	46	358.2	11.8	49	79.2	272.0	18,966	18,156	6,416	6,426
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	46.7	13.5		90	104	118				
DOUG FIR-T	80.4	23.2		100	131	161				
S SPRUCE	107.3	30.9		31	46	60				
S SPRUCE-T	279.9	80.7		6	29	53				
WHEMLOCK	360.6	103.9			7	14				
WHEMLOCK-T	244.5	70.5		5	18	31				
R ALDER	360.6	103.9			5	11				
R ALDER-T	252.8	72.9		5	19	32				
TOTAL				358	358	358				
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	40.8	11.8		96	109	122				
DOUG FIR-T	78.9	22.7		55	71	87				
S SPRUCE	128.7	37.1		32	50	69				
S SPRUCE-T	277.8	80.1		3	17	30				
WHEMLOCK	360.6	103.9			4	9				
WHEMLOCK-T	244.1	70.4		2	8	14				
R ALDER	360.6	103.9			3	6				
R ALDER-T	259.6	74.8		2	9	16				
TOTAL				272	272	272				
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	47.5	13.7		6,673	7,732	8,791				
DOUG FIR-T	78.6	22.7		3,500	4,526	5,552				
S SPRUCE	143.8	41.4		1,967	3,359	4,751				
S SPRUCE-T	302.6	87.2		111	870	1,630				
WHEMLOCK	360.6	103.9			284	579				
WHEMLOCK-T	245.3	70.7		183	625	1,066				
R ALDER	360.6	103.9			160	325				

TC TSTATS				STATISTICS				PAGE	2	
				PROJECT	SHUTHIN			DATE	1/12/2016	
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt	
T30	012	20	SHUTHIN	U5	27.30	13	66	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		257.1	74.1	156	601	1,047				
TOTAL		15.8	4.6	17,327	18,156	18,985	11	6	3	
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				61	71	81				
DOUG FIR-T		52.7	15.2	49	64	78				
S SPRUCE		121.7	35.1	39	67	95				
S SPRUCE-T		302.6	87.2	7	52	97				
WHEMLOCK		360.6	103.9		68	138				
WHEMLOCK-T		245.3	70.7	22	75	127				
R ALDER		360.6	103.9		52	106				
R ALDER-T		257.1	74.1	17	65	113				
TOTAL		110.7	31.9	64	67	70	529	270	132	

TC		TSTNDSUM		Stand Table Summary													
Project SHUTHIN																	
TT30 R012 S20 TU5										TT30 R012 S20 TU5							
Twp	Rge	Sec	Tract	Type	Acres	Plots	Sample Trees			Page:	1						
T30	012	20	SHUTHIN	U5	27.30	13	66			Date:	1/12/2016						
										Time:	4:46:42PM						
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		11	2	80	62	23.050	14.52	23.05	14.4	40.0	9.46	332	922	258	91	25	
DF		13	3	80	69	23.526	21.78	31.65	16.9	49.7	15.25	535	1,574	416	146	43	
DF		14	1	77	66	6.990	7.26	6.99	25.0	50.0	5.04	175	349	138	48	10	
DF		15	4	79	73	24.173	29.04	35.85	21.3	53.5	21.70	763	1,918	592	208	52	
DF		16	5	79	79	26.090	36.30	52.18	20.1	56.9	29.82	1,050	2,969	814	287	81	
DF		Totals		15	79	71	103.828	108.90	149.72	19.1	51.6	81.27	2,855	7,732	2,219	779	211
DF	T	9	3	79	54	41.342	17.80	41.34	7.5	33.1	8.82	309	1,369	241	84	37	
DF	T	10	5	79	50	56.555	29.67	56.56	9.2	31.8	14.85	521	1,799	405	142	49	
DF	T	11	2	79	61	17.847	11.87	17.85	16.0	34.8	7.99	286	621	218	78	17	
DF	T	12	2	80	66	14.889	11.87	14.89	19.0	49.5	8.06	283	737	220	77	20	
DF		Totals		12	79	54	130.633	71.20	130.63	10.7	34.6	39.72	1,399	4,526	1,084	382	124
SS		11	2	78	54	18.370	12.57	18.37	15.5	34.9	7.42	285	641	203	78	18	
SS		12	1	76	57	8.273	6.28	8.27	18.0	40.0	3.87	149	331	106	41	9	
SS		16	2	75	75	8.725	12.57	17.45	22.3	52.5	10.13	390	916	277	106	25	
SS		18	2	75	78	7.277	12.57	14.55	28.0	67.4	10.60	408	981	289	111	27	
SS		20	1	73	81	2.880	6.28	5.76	35.8	85.0	5.36	206	490	146	56	13	
SS		Totals		8	76	64	45.525	50.26	64.41	22.3	52.2	37.38	1,438	3,359	1,020	392	92
SS	T	9	1	78	46	8.879	4.19	8.88	8.1	30.0	1.87	72	266	51	20	7	
SS	T	10	2	78	53	14.339	8.38	14.34	8.2	25.0	3.04	117	359	83	32	10	
SS	T	11	1	78	57	6.122	4.19	6.12	17.5	40.0	2.79	107	245	76	29	7	
SS		Totals		4	78	52	29.340	16.75	29.34	10.1	29.7	7.70	296	870	210	81	24
WH	T	9	1	85	36	9.481	4.19	9.48	6.1	30.0	1.84	58	284	50	16	8	
WH	T	10	1	81	56	8.509	4.19	8.51	10.0	40.0	2.75	85	340	75	23	9	
WH		Totals		2	83	45	17.990	8.38	17.99	7.9	34.7	4.60	143	625	125	39	17
RA	T	9	2	85	47	13.929	6.15	13.93	7.9	30.0	3.04	110	418	83	30	11	
RA	T	11	1	81	60	4.579	3.08	4.58	10.1	40.0	1.27	46	183	35	13	5	
RA		Totals		3	84	50	18.508	9.23	18.51	8.5	32.5	4.31	157	601	118	43	16
WH		10	1	86	48	7.100	4.19	7.10	12.0	40.0	2.63	85	284	72	23	8	
WH		Totals		1	86	48	7.100	4.19	7.10	12.0	40.0	2.63	85	284	72	23	8
RA		10	1	80	43	5.318	3.08	5.32	10.2	30.0	1.50	54	160	41	15	4	
RA		Totals		1	80	43	5.318	3.08	5.32	10.2	30.0	1.50	54	160	41	15	4
Totals				46	79	59	358.242	271.99	423.02	15.2	42.9	179.10	6426	18,156	4,889	1,754	496

TT30 R012 S20 TU5G										TT30 R012 S20 TU5G				
Twp	Rge	Sec	Tract	Type	Acres	Plots	Sample Trees	CuFt	BdFt					
T30	012	20	SHUTHIN	USG	1.60	13	66	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 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	3S	48	7.4	6,441	5,965	10	100				6 94				39	7	73	0.70	82.2		
DF	T	DM	4S	52	3.7	6,464	6,226	10	100				9 37 16 38				30	5	31	0.32	202.2		
DF	T	Totals		68	5.5	12,904	12,192	20	51	49					5	19	11	65	33	6	43	0.45	284.4
SS	T	DM	3S	43	3.9	1,858	1,786	3	100				100				40	9	106	1.19	16.8		
SS	T	DM	4S	57		2,360	2,360	4	92	8					17	32	11	40	28	5	30	0.39	79.6
SS	T	Totals		23	1.7	4,219	4,146	7	52	48					10	18	6	66	30	6	43	0.57	96.4
WH	T	DM	4S	100		909	909	1	100				31 69				31	5	36	0.29	25.1		
WH	T	Totals		5		909	909	1	100				31 69				31	5	36	0.29	25.1		
RA	T	DM	4S	100		761	761	1	76	24					24	48	27		28	6	32	0.32	23.8
RA	T	Totals		4		761	761	1	76	24					24	48	27		28	6	32	0.32	23.8
Type Totals					4.2	18,792	18,007	29	55	45					7	21	13	59	32	6	42	0.46	429.7

TC TSTATS				STATISTICS				PAGE	1	
				PROJECT	SHUTHIN			DATE	1/12/2016	
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt	
T30	012	20	SHUTHIN	U5G	1.60	13	66	S	W	
				TREES	ESTIMATED	PERCENT				
				PER PLOT	TOTAL	SAMPLE				
					TREES	TREES				
TOTAL		13	66	5.1						
CRUISE		10	46	4.6	593		7.8			
DBH COUNT										
REFOREST										
COUNT		3	15	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
DOUG FIR-T	27	242.3	11.7	50	52.7	180.1	12,904	12,192	4,187	4,195
S SPRUCE-T	12	79.6	12.4	48	19.0	67.0	4,219	4,146	1,673	1,673
WHEMLOCK-T	3	25.1	9.6	40	4.1	12.6	909	909	226	228
R ALDER-T	4	23.8	9.7	41	3.9	12.3	761	761	211	211
TOTAL	46	370.8	11.6	48	79.9	272.0	18,792	18,007	6,296	6,307
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	54.9	15.8		204	242	281				
S SPRUCE-T	127.1	36.6		50	80	109				
WHEMLOCK-T	258.6	74.5		6	25	44				
R ALDER-T	203.2	58.6		10	24	38				
TOTAL				371	371	371				
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	41.6	12.0		158	180	202				
S SPRUCE-T	115.6	33.3		45	67	89				
WHEMLOCK-T	259.6	74.8		3	13	22				
R ALDER-T	204.9	59.1		5	12	20				
TOTAL				272	272	272				
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	45.4	13.1		10,597	12,192	13,786				
S SPRUCE-T	126.6	36.5		2,633	4,146	5,660				
WHEMLOCK-T	253.0	72.9		246	909	1,572				
R ALDER-T	208.4	60.1		304	761	1,217				
TOTAL	16.2	4.7		17,168	18,007	18,846	11	6	3	
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				59	68	77				
S SPRUCE-T	112.9	32.5		39	62	84				
WHEMLOCK-T	253.0	72.9		20	72	125				
R ALDER-T	208.4	60.1		25	62	99				
TOTAL	109.1	31.4		63	66	69	514	262	129	

T TSPCSTGR		Species, Sort Grade - Board Foot Volumes (Type)										Page 1									
		Project: SHUTHIN										Date 1/12/2016									
												Time 4:49:45PM									
TT30 R012 S20 TU6										TT30 R012 S20 TU6											
Twp	Rge	Sec	Tract	Type	Acres	Plots	Sample Trees	CuFt	BdFt												
T30	012	20	SHUTHIN	U6	51.50	20	88	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	3S	63	7.1	4,188	3,892						6			94	38	7	70	0.71	55.6
DF		DM	4S	34	9.9	2,345	2,113		77	23			21	13	10	56	26	5	28	0.41	76.1
DF		DM	UT	3		150	150		8	100						100	38	5	40	0.34	3.7
DF	Totals			41	7.9	6,682	6,155		29	71			11	5	3	81	32	6	45	0.55	135.5
DF	T	DM	3S	15	8.8	614	560		29	100						100	40	6	59	0.57	9.5
DF	T	DM	4S	78	3.5	2,894	2,792		144	89	11			25		75	33	5	35	0.38	80.3
DF	T	DM	UT	7		238	238		12	100			100				19	5	20	0.24	11.9
DF	T Totals			24	4.2	3,746	3,590		185	76	24		7	19		74	32	5	35	0.39	101.7
WH		DM	3S	53	6.0	1,168	1,098		57	100						100	40	7	75	0.58	14.7
WH		DM	4S	47	17.0	1,140	946		49	61	39		23		38	39	27	5	28	0.38	34.0
WH	Totals			13	11.5	2,308	2,044		105	28	72		11		18	72	31	6	42	0.46	48.7
WH	T	DM	4S	100		1,188	1,188		61	74	26				26	74	37	5	40	0.34	29.7
WH	T Totals			8		1,188	1,188		61	74	26				26	74	37	5	40	0.34	29.7
SS		DM	3S	92	2.6	1,209	1,178		61	100					16	84	39	8	88	0.98	13.3
SS		DM	4S	8	15.9	117	98		5	100			100				16	5	15	0.27	6.7
SS	Totals			8	3.7	1,326	1,276		66	8	92		8		14	78	31	7	64	0.86	20.0
SS	T	DM	4S	58		173	173		9	100						100	26	5	30	0.29	5.8
SS	T	DM	UT	42		123	123		6	100			100				17	5	20	0.29	6.2
SS	T Totals			2		296	296		15	100			42	58			21	5	25	0.29	11.9
RA	T	DM	4S	100		503	503		26	100				73	27		26	5	27	0.26	18.6
RA	T Totals			3		503	503		26	100				73	27		26	5	27	0.26	18.6
RA		DM	4S	100		130	130		7	100						100	40	6	60	0.49	2.2
RA	Totals			1		130	130		7	100						100	40	6	60	0.49	2.2
Type Totals					6.2	16,179	15,183		782	45	55		9	10	8	73	32	6	41	0.47	368.4

TC TSTATS				STATISTICS						PAGE	1
				PROJECT	SHUTHIN				DATE	1/12/2016	
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt		
T30	012	20	SHUTHIN	U6	51.50	20	88	S	W		
				TREES	ESTIMATED	PERCENT					
				PER PLOT	TOTAL	SAMPLE					
				PLOTS	TREES	TREES	TREES				
TOTAL		20	88	4.4							
CRUISE		13	57	4.4	15,802		.4				
DBH COUNT											
REFOREST											
COUNT		7	31	4.4							
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	21	95.3	13.5	54	25.9	95.3	6,682	6,155	2,369	2,375	
DOUG FIR-T	14	101.7	10.6	43	19.2	62.6	3,746	3,590	1,288	1,292	
WHEMLOCK	4	34.0	12.1	52	7.8	27.2	2,308	2,044	689	686	
WHEMLOCK-T	4	29.7	10.0	49	5.2	16.3	1,188	1,188	367	368	
S SPRUCE	7	13.3	16.2	56	4.7	19.1	1,326	1,276	537	536	
S SPRUCE-T	2	11.9	9.1	27	1.8	5.4	296	296	74	74	
R ALDER	1	2.2	13.0	47	0.6	2.0	130	130	43	43	
R ALDER-T	4	18.6	8.9	34	2.7	8.0	503	503	129	128	
TOTAL	57	306.8	11.9	48	68.5	236.0	16,179	15,183	5,495	5,501	
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	75.4	17.3		79	95	112					
DOUG FIR-T	86.6	19.8		82	102	122					
WHEMLOCK	176.0	40.3		20	34	48					
WHEMLOCK-T	237.1	54.4		14	30	46					
S SPRUCE	262.1	60.1		5	13	21					
S SPRUCE-T	308.0	70.6		4	12	20					
R ALDER	447.2	102.5			2	4					
R ALDER-T	206.7	47.4		10	19	27					
TOTAL	30.7	7.0		285	307	328	40	20	10		
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	73.9	16.9		79	95	111					
DOUG FIR-T	85.9	19.7		50	63	75					
WHEMLOCK	177.7	40.7		16	27	38					
WHEMLOCK-T	219.0	50.2		8	16	25					
S SPRUCE	266.7	61.1		7	19	31					
S SPRUCE-T	307.8	70.6		2	5	9					
R ALDER	447.2	102.5			2	4					
R ALDER-T	205.2	47.0		4	8	12					
TOTAL	22.0	5.1		224	236	248	20	10	5		
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	75.4	17.3		5,090	6,155	7,219					
DOUG FIR-T	87.0	20.0		2,874	3,590	4,306					
WHEMLOCK	187.2	42.9		1,167	2,044	2,921					
WHEMLOCK-T	224.2	51.4		578	1,188	1,799					
S SPRUCE	269.6	61.8		487	1,276	2,065					
S SPRUCE-T	312.6	71.7		84	296	509					
R ALDER	447.2	102.5			130	264					

TC TSTATS				STATISTICS				PAGE	2	
				PROJECT	SHUTHIN			DATE	1/12/2016	
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt	
T30	012	20	SHUTHIN	U6	51.50	20	88	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		206.2	47.3	265	503	740				
TOTAL		25.3	5.8	14,300	15,183	16,065	27	14	7	
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				53	65	76				
DOUG FIR-T		3.6	.8	46	57	69				
WHEMLOCK		74.5	17.1	43	75	107				
WHEMLOCK-T		163.9	37.6	35	73	110				
S SPRUCE		269.6	61.8	26	67	108				
S SPRUCE-T		312.6	71.7	15	54	93				
R ALDER		447.2	102.5		65	132				
R ALDER-T		206.2	47.3	33	63	93				
TOTAL		127.2	29.2	61	64	68	680	347	170	

TC		Stand Table Summary														
TSTNDSUM		Project SHUTHIN														
TT30 R012 S20 TU6											TT30 R012 S20 TU6					
Twp	Rge	Sec	Tract	Type	Acres	Plots	Sample Trees			Page:	1					
T30	012	20	SHUTHIN	U6	51.50	20	88			Date:	1/12/2016					
											Time:	4:49:45PM				
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		11	2	77	50	14.678	9.08	14.68	12.4	34.9	5.07	182	512	261	93	26
DF		12	1	78	66	5.499	4.54	5.50	18.4	40.0	2.89	101	220	149	52	11
DF		13	6	79	63	30.496	27.23	30.50	20.2	53.2	17.65	617	1,623	909	318	84
DF		14	3	80	71	13.189	13.61	21.88	15.7	38.5	9.73	342	841	501	176	43
DF		15	6	80	75	22.414	27.23	44.83	16.4	44.9	20.92	736	2,014	1,077	379	104
DF		16	2	76	77	6.422	9.08	12.84	20.5	44.9	7.49	263	576	386	135	30
DF		18	1	76	81	2.626	4.54	5.25	25.3	70.0	3.78	133	368	195	68	19
DF		Totals	21	79	67	95.323	95.29	135.48	17.5	45.4	67.52	2,375	6,155	3,477	1,223	317
DF	T	8	1	80	30	11.904	4.47	11.90	4.6	20.0	1.56	55	238	81	28	12
DF	T	9	2	79	39	21.474	8.95	21.47	5.7	20.0	3.48	122	429	179	63	22
DF	T	10	3	80	55	25.138	13.42	25.14	11.1	36.5	7.90	278	917	407	143	47
DF	T	11	1	80	63	6.422	4.47	6.42	16.0	40.0	2.92	103	257	150	53	13
DF	T	12	4	80	61	22.719	17.89	22.72	17.9	42.4	11.54	408	963	594	210	50
DF	T	13	2	79	62	9.933	8.95	9.93	21.8	50.1	6.16	216	497	317	111	26
DF	T	14	1	78	70	4.125	4.47	4.12	26.7	70.0	3.14	110	289	162	57	15
DF		Totals	14	80	52	101.715	62.62	101.71	12.7	35.3	36.70	1,292	3,590	1,890	665	185
WH		10	1	85	47	11.994	6.81	11.99	11.2	30.0	4.32	135	360	222	69	19
WH		13	3	85	71	22.055	20.42	36.73	15.0	45.9	17.72	551	1,684	912	284	87
WH		Totals	4	85	62	34.050	27.23	48.72	14.1	41.9	22.04	686	2,044	1,135	353	105
SS		14	2	78	65	5.106	5.45	5.11	27.5	64.7	3.65	140	330	188	72	17
SS		16	1	75	73	1.856	2.72	3.71	23.1	50.0	2.23	86	186	115	44	10
SS		17	1	76	68	1.748	2.72	3.50	22.6	50.0	2.06	79	175	106	41	9
SS		18	3	76	73	4.622	8.17	7.72	29.9	75.9	6.02	231	586	310	119	30
SS		Totals	7	77	69	13.332	19.06	20.03	26.8	63.7	13.95	536	1,276	719	276	66
WH	T	9	1	86	54	10.363	4.08	10.36	7.8	30.0	2.58	80	311	133	41	16
WH	T	10	1	86	59	8.296	4.08	8.30	11.0	40.0	2.92	91	332	150	47	17
WH	T	11	1	79	63	5.969	4.08	5.97	16.0	40.0	3.04	96	239	157	49	12
WH	T	12	1	86	63	5.114	4.08	5.11	19.6	60.0	3.21	100	307	165	52	16
WH		Totals	4	85	59	29.742	16.34	29.74	12.4	40.0	11.75	368	1,188	605	189	61
RA	T	8	1	89	30	5.453	2.00	5.45	5.0	20.0	.76	27	109	39	14	6
RA	T	9	2	85	44	9.054	4.00	9.05	7.7	30.0	1.91	69	272	98	36	14
RA	T	10	1	81	40	4.063	2.00	4.06	7.8	30.0	.87	32	122	45	16	6
RA		Totals	4	85	39	18.571	8.00	18.57	6.9	27.1	3.54	128	503	183	66	26
SS	T	9	2	77	31	11.934	5.45	11.93	6.2	24.8	1.92	74	296	99	38	15
SS		Totals	2	77	31	11.934	5.45	11.93	6.2	24.8	1.92	74	296	99	38	15
RA		13	1	90	56	2.170	2.00	2.17	19.6	60.0	1.17	43	130	60	22	7
RA		Totals	1	90	56	2.170	2.00	2.17	19.6	60.0	1.17	43	130	60	22	7
Totals			57	81	57	306.836	235.97	368.36	14.9	41.2	158.59	5501	15,183	8,167	2,833	782

TC TSTATS				STATISTICS				PAGE	1	
				PROJECT	SHUTHIN			DATE	1/12/2016	
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt	
T30	012	20	SHUTHIN	U6G	3.10	20	88	S	W	
		PLOTS	TREES	TREES PER PLOT	ESTIMATED TOTAL TREES	PERCENT SAMPLE TREES				
TOTAL		20	88	4.4						
CRUISE		13	57	4.4	962	5.9				
DBH COUNT REFOREST COUNT		7	31	4.4						
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	35	197.4	12.1	49	45.4	157.9	10,464	9,782	3,663	3,672
WHEMLOCK-T	8	66.9	10.9	50	13.2	43.6	3,431	3,220	1,040	1,039
S SPRUCE-T	9	25.3	13.3	43	6.7	24.5	1,622	1,573	610	610
R ALDER-T	5	20.7	9.4	35	3.3	10.0	633	633	172	171
TOTAL	57	310.3	11.8	48	68.7	236.0	16,150	15,208	5,485	5,492
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	70.6	16.2		165	197	229				
WHEMLOCK-T	188.3	43.2		38	67	96				
S SPRUCE-T	249.8	57.3		11	25	40				
R ALDER-T	210.0	48.1		11	21	31				
TOTAL	30.3	6.9		289	310	332	39	20	10	
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	69.8	16.0		133	158	183				
WHEMLOCK-T	184.1	42.2		25	44	62				
S SPRUCE-T	254.7	58.4		10	25	39				
R ALDER-T	220.0	50.4		5	10	15				
TOTAL	22.0	5.1		224	236	248	20	10	5	
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	70.2	16.1		8,209	9,782	11,356				
WHEMLOCK-T	192.4	44.1		1,799	3,220	4,640				
S SPRUCE-T	262.5	60.2		626	1,573	2,519				
R ALDER-T	224.6	51.5		307	633	959				
TOTAL	25.1	5.8		14,331	15,208	16,084	27	14	7	
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				52	62	72				
WHEMLOCK-T	111.2	25.5		41	74	107				
S SPRUCE-T	262.5	60.2		26	64	103				
R ALDER-T	224.6	51.5		31	63	96				
TOTAL	126.9	29.1		61	64	68	677	346	169	

T030 R012 S20 T0ROW	T030 R012 S20 T0ROW
Twp 030 Rge 012 Sec 20 Tract SHUTHIN Type 0ROW Acres .90 Plots 2 Sample Trees 8 CuFt S BdFt W	

S Spp	So T	Gr rt	Gr ad	% Net BdFt	Bd. Ft. per Acre			Total Net MBF	Percent Net Board Foot Volume								Average Log				Logs Per /Acre		
									Log Scale Dia.				Log Length				Ln	Dia	Bd	CF/			
									4-5	6-11	12-16	17+	12-20	21-30	31-35	36-99	Ft	In	Ft	Lf			
DF	T	DM	3S	56		1,556	1,556	1	100				100				40	7	70	0.71	22.2		
DF	T	DM	4S	44	26.7	1,667	1,222	1	64	36					9	27	27	36	29	6	27	0.52	44.4
DF T Totals				66	13.8	3,222	2,778	3	28	72					4	12	12	72	33	6	42	0.60	66.7
SS	T	DM	3S	53		778	778	1	100				100				40	7	70	1.02	11.1		
SS	T	DM	4S	47	25.0	889	667	1	100				50 50				38	5	30	0.67	22.2		
SS T Totals				34	13.3	1,667	1,444	1	46	54					23	77			38	6	43	0.79	33.3
Type Totals					13.6	4,889	4,222	4	34	66					3	8	16	74	34	6	42	0.67	100.0

TC TSTATS				STATISTICS				PAGE	1	
				PROJECT	SHUTHIN			DATE	1/12/2016	
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt	
030	012	20	SHUTHIN	OROW	0.90	2	8	S	W	
				TREES	ESTIMATED	PERCENT				
				PER PLOT	TOTAL	SAMPLE				
				TREES	TREES	TREES				
TOTAL		2	8	4.0						
CRUISE		2	8	4.0	80		10.0			
DBH COUNT										
REFOREST										
COUNT										
BLANKS										
100 %										
STAND SUMMARY										
	SAMPLE	TREES	AVG	BOLE	REL	BASAL	GROSS	NET	GROSS	NET
	TREES	/ACRE	DBH	LEN	DEN	AREA	BF/AC	BF/AC	CF/AC	CF/AC
DOUG FIR-T	5	55.6	13.9	60	15.8	58.9	3,222	2,778	1,295	1,298
S SPRUCE-T	3	33.3	15.4	55	11.0	43.1	1,667	1,444	1,012	1,008
TOTAL	8	88.9	14.5	58	26.8	102.0	4,889	4,222	2,307	2,305
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	141.4	132.4			56	129				
S SPRUCE-T	47.1	44.1		19	33	48				
TOTAL	70.7	66.2		30	89	148	351	179	88	
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	141.4	132.4			59	137				
S SPRUCE-T	29.1	27.3		31	43	55				
TOTAL	69.4	65.0		36	102	168	338	172	84	
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	141.4	132.4			2,778	6,456				
S SPRUCE-T	10.9	10.2		1,297	1,444	1,592				
TOTAL	96.8	90.6		397	4,222	8,048	657	335	164	
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	141.4	132.4			47	110				
S SPRUCE-T	16.0	15.0		30	34	37				
TOTAL	93.0	87.1		4	41	79	607	310	152	

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

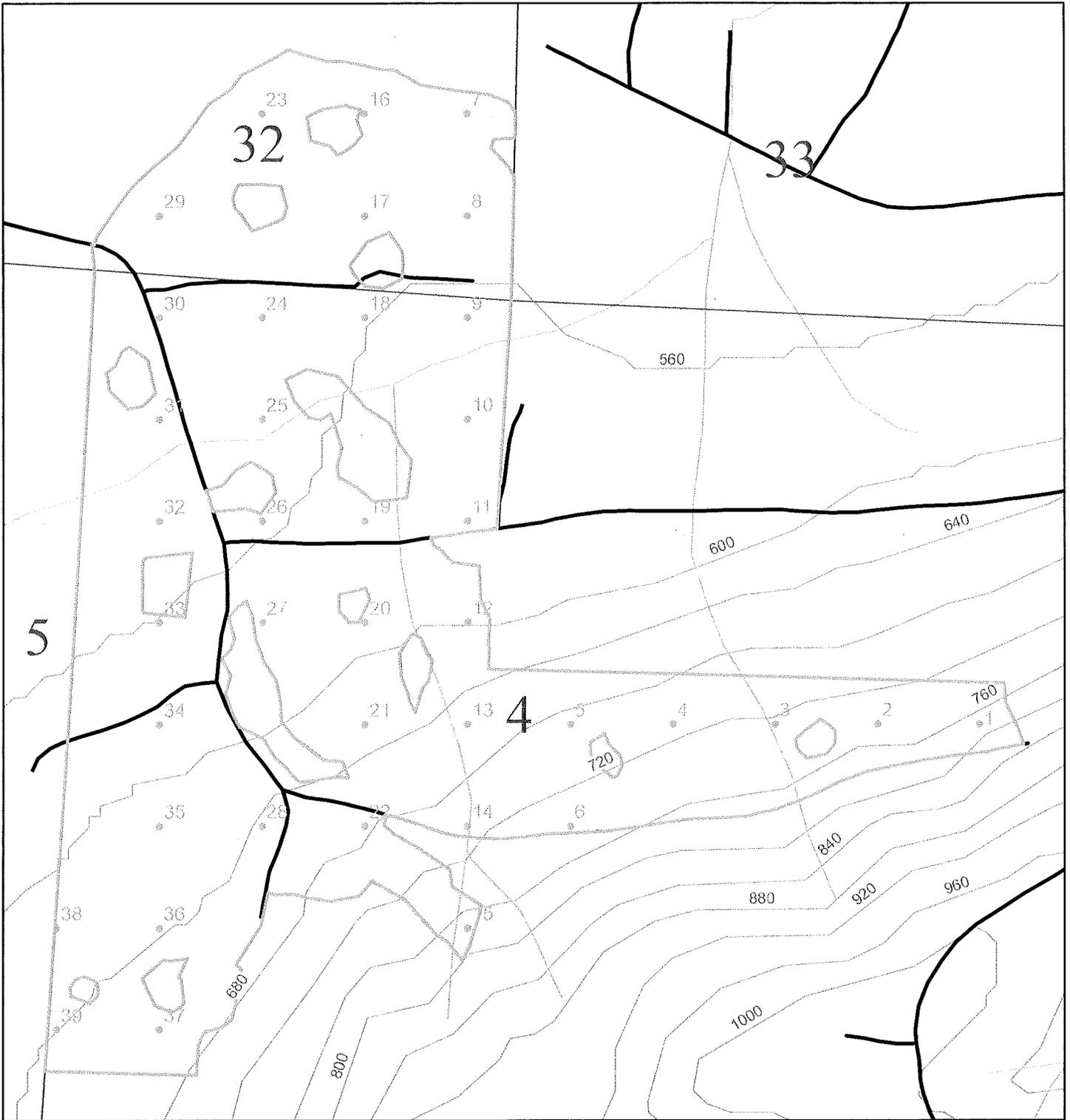
T029 R012 S04 Ty00U1	87.4
T029 R012 S04 TyU1G	4.0
TT30 R012 S20 TyU6G	3.1

Project **SHUTHIN**
Acres **319.10**

Page No **1**
Date: **1/12/2016**
Time **4:53:11PM**

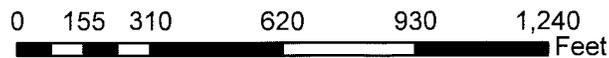
Species	s T	Total	Total	Total	Net Cubic Ft/		CF/	Total CCF		Total MBF	
		Trees	Logs	Tons	Tree	Log	LF	Gross	Net	Gross	Net
DOUG FIR		22,897	36,650	18,848	28.90	18.05	0.59	6,613	6,617	1,937	1,750
S SPRUCE		13,053	22,736	15,755	46.45	26.67	0.87	6,060	6,063	1,685	1,553
DOUG FIR	T	22,219	25,661	9,800	15.51	13.43	0.43	3,439	3,446	1,077	991
S SPRUCE	T	15,603	18,878	6,230	15.35	12.69	0.47	2,396	2,395	745	713
WHEMLOCK	T	10,706	13,776	5,348	15.60	12.12	0.40	1,671	1,670	580	551
WHEMLOCK		6,088	10,415	5,647	28.95	16.92	0.58	1,765	1,762	563	525
R ALDER	T	2,281	2,281	537	8.55	8.55	0.30	195	195	72	69
R ALDER		649	649	185	10.35	10.35	0.35	67	67	24	24
Totals		93,496	131,046	62,350	23.76	16.95	0.56	22,206	22,216	6,682	6,176

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	90,566	128,116	61,628	24.24	17.14	0.57	21,944	21,953	6,586	6,083
H	2,930	2,930	722	8.95	8.95	0.31	263	262	96	93
Totals	93,496	131,046	62,350	23.76	16.95	0.56	22,206	22,216	6,682	6,176



shuwah thin

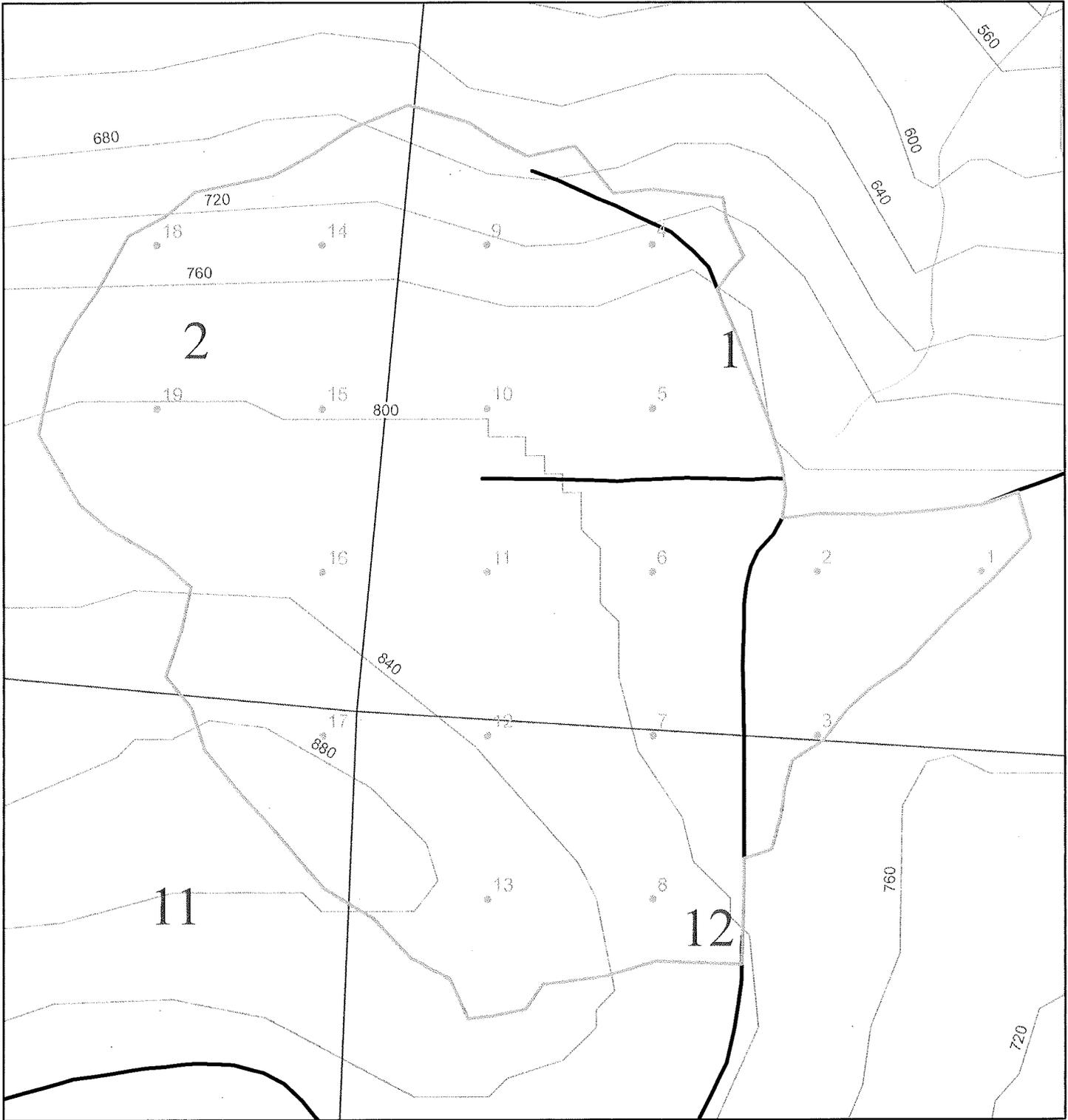
LAYER NAME:	unit_1	Township: T29R12W, T30R12W
POLY ID:	1	Total Sample Points: 39
Acres:	91	Spacing Between Points: 325
		Point Rotation Degrees: 0



Scale 1:5,400

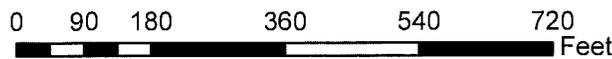
Legend

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



shuwah thin

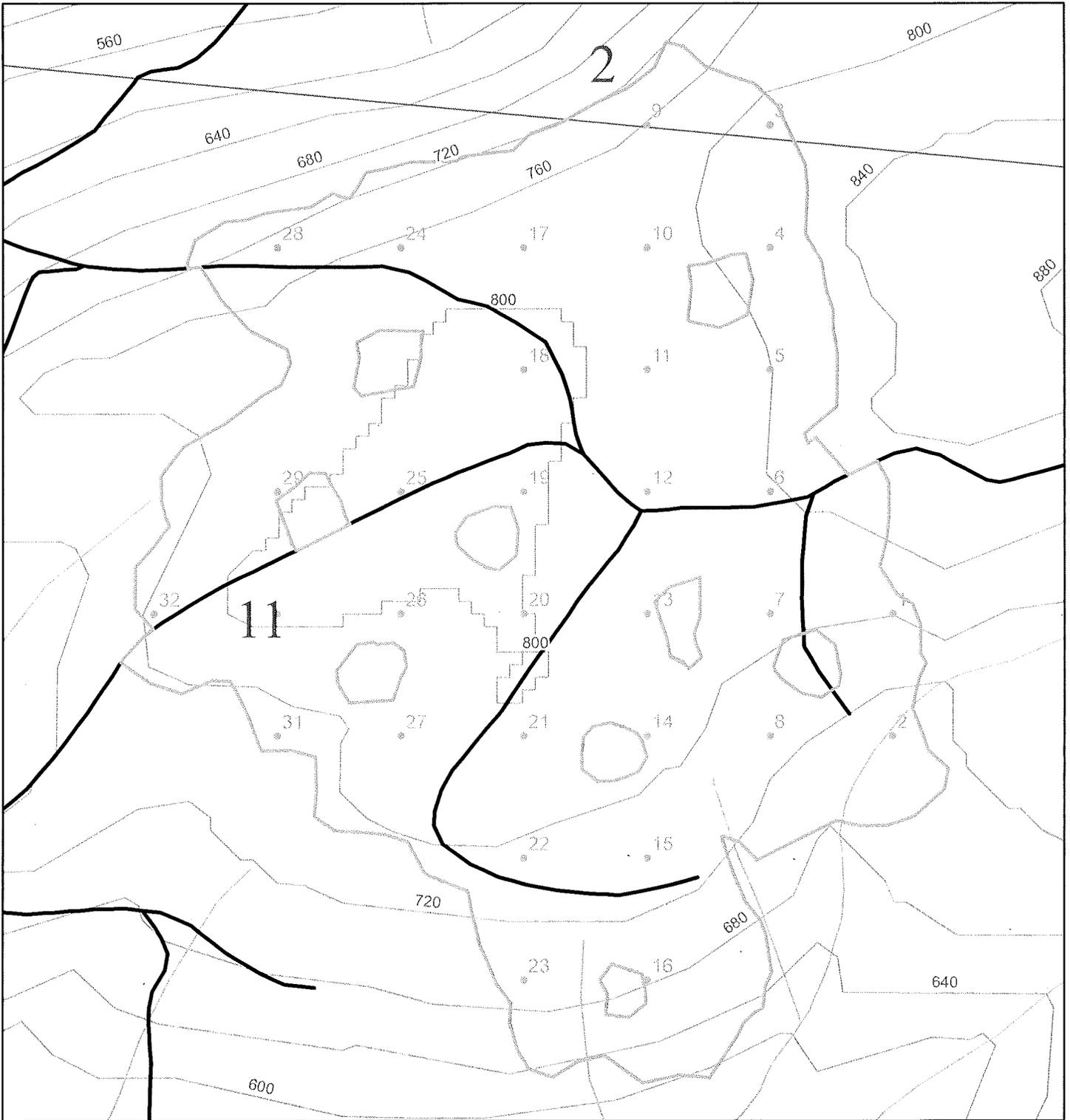
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POLY ID:	1	Total Sample Points:	19
Acres:	40	Spacing Between Points:	300
		Point Rotation Degrees:	0



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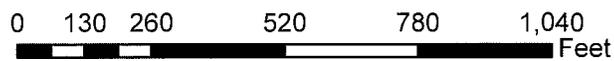
Legend

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



Cruiser Sample Point Locations

LAYER NAME:	unit_3	Township:	T29R13W
POLY ID:	1	Total Sample Points:	32
Acres:	79	Spacing Between Points:	325
		Point Rotation Degrees:	0



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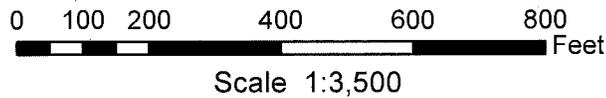
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-  Sample Points
-  Unit
-  Public Land Survey Sections
-  Contours 40-foot



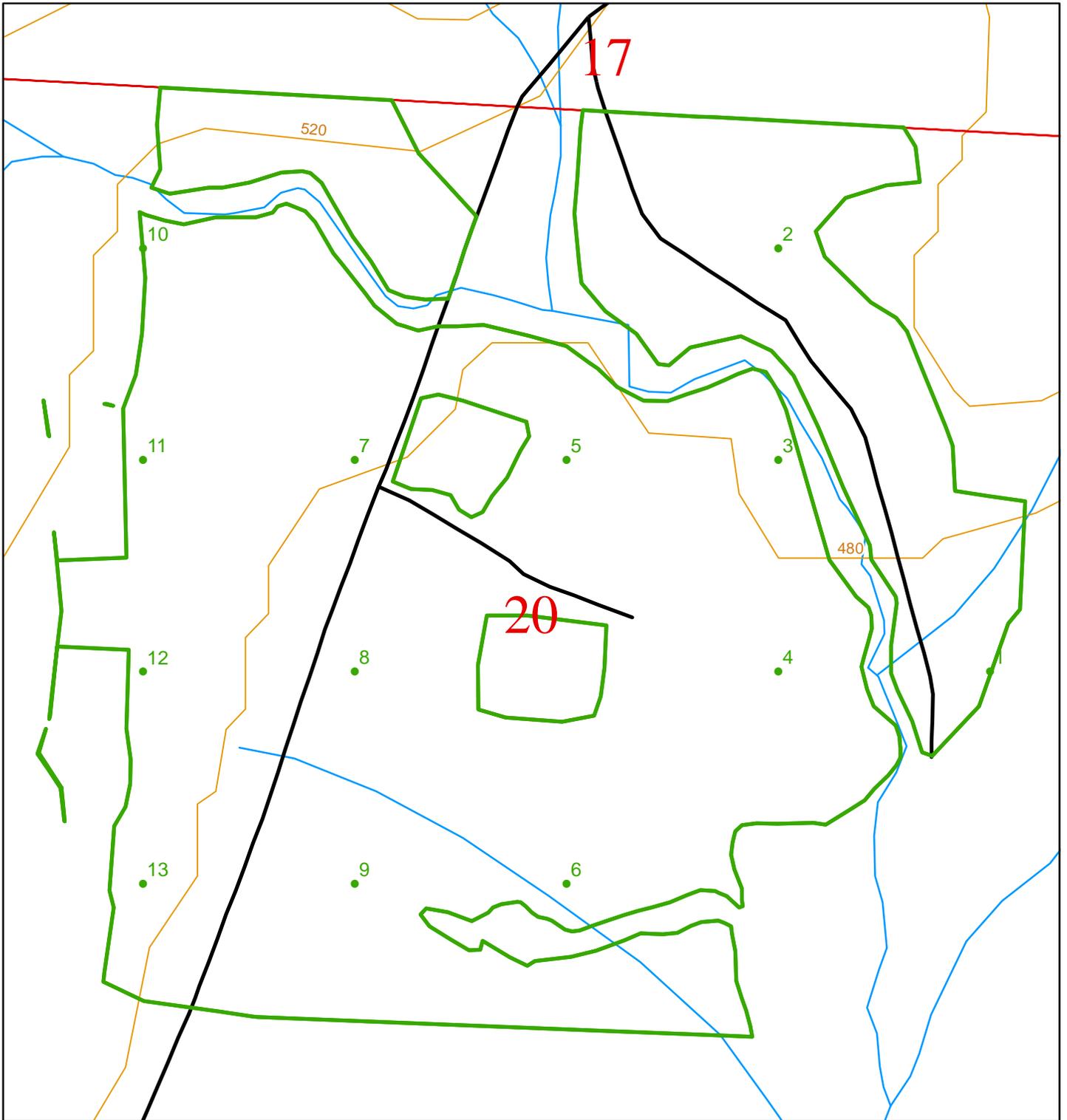
shuwah thin

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Acres:	31	Spacing Between Points:	300
		Point Rotation Degrees:	0



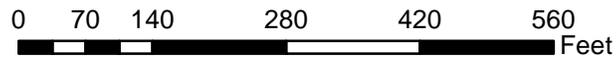
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-  Sample Points
-  Unit
-  Public Land Survey Sections
-  Contours 40-foot



Cruiser Sample Point Locations

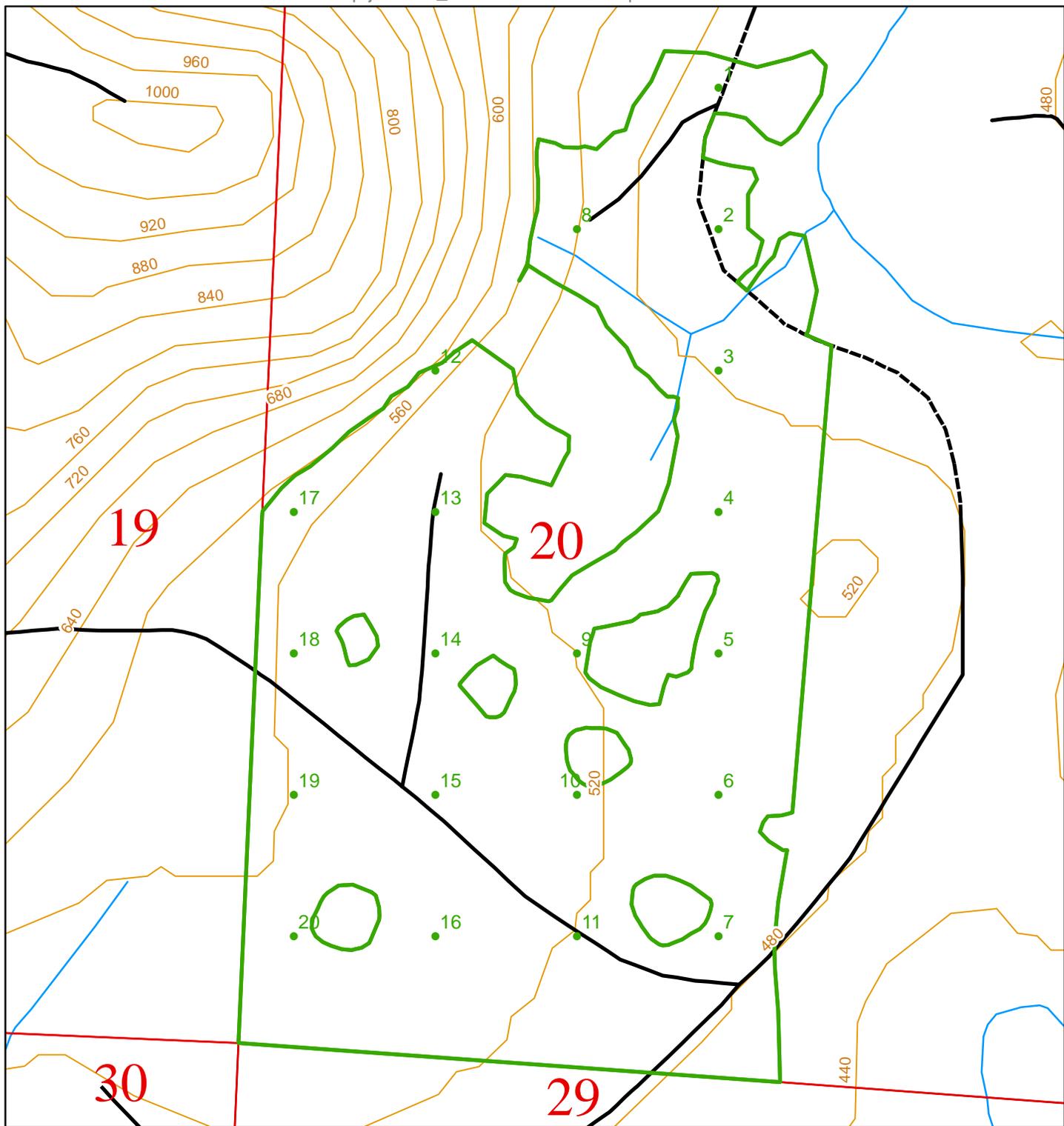
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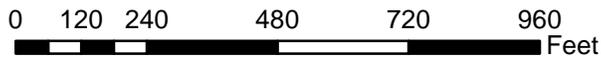
Legend

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



Cruiser Sample Point Locations

LAYER NAME:	u6	Township:	T30R12W
POLY ID:	1	Total Sample Points:	20
Acres:	53	Spacing Between Points:	350
		Point Rotation Degrees:	0



Scale 1:4,200

Legend

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



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

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

FPA/N No: 2614100
 Effective Date: 3/26/2016
 Expiration Date: 3/26/2019
 Shut Down Zone: 652NW, 650
 EARR Tax Credit: Eligible [] Non-eligible
 Reference: DNR - Shuwah Thin 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

Class II [] Class III [] Class IVG Class IVS

Number of Years Granted on Multi-Year Request

4 years [] 5 years

Conditions on Approval / Reasons for Disapproval

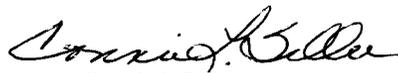
Issued By: Erik Dukes

Region: Olympic

Title: Forest Practice Forester

Date: 3/26/2016

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) (post office location)
postage paid, a true and accurate copy of this document. Notice of Decision FPA # _____ 2614100
_____ (Printed name) _____ (Signature)

STATE OF WASHINGTON
DEPARTMENT OF NATURAL RESOURCES

SHUWAH VDT TIMBER SALE ROAD PLAN
CLALLAM COUNTY
COAST DISTRICT

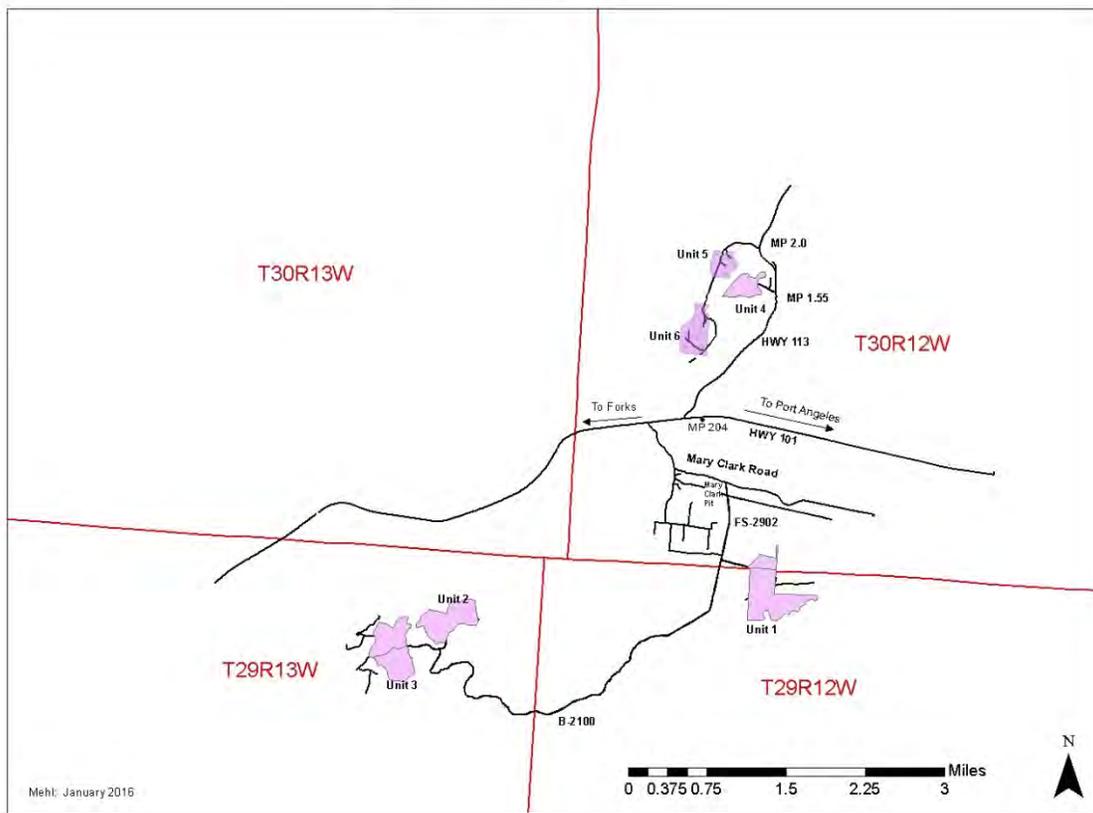
AGREEMENT NO.: 30-092732

DATE: APRIL 4, 2016

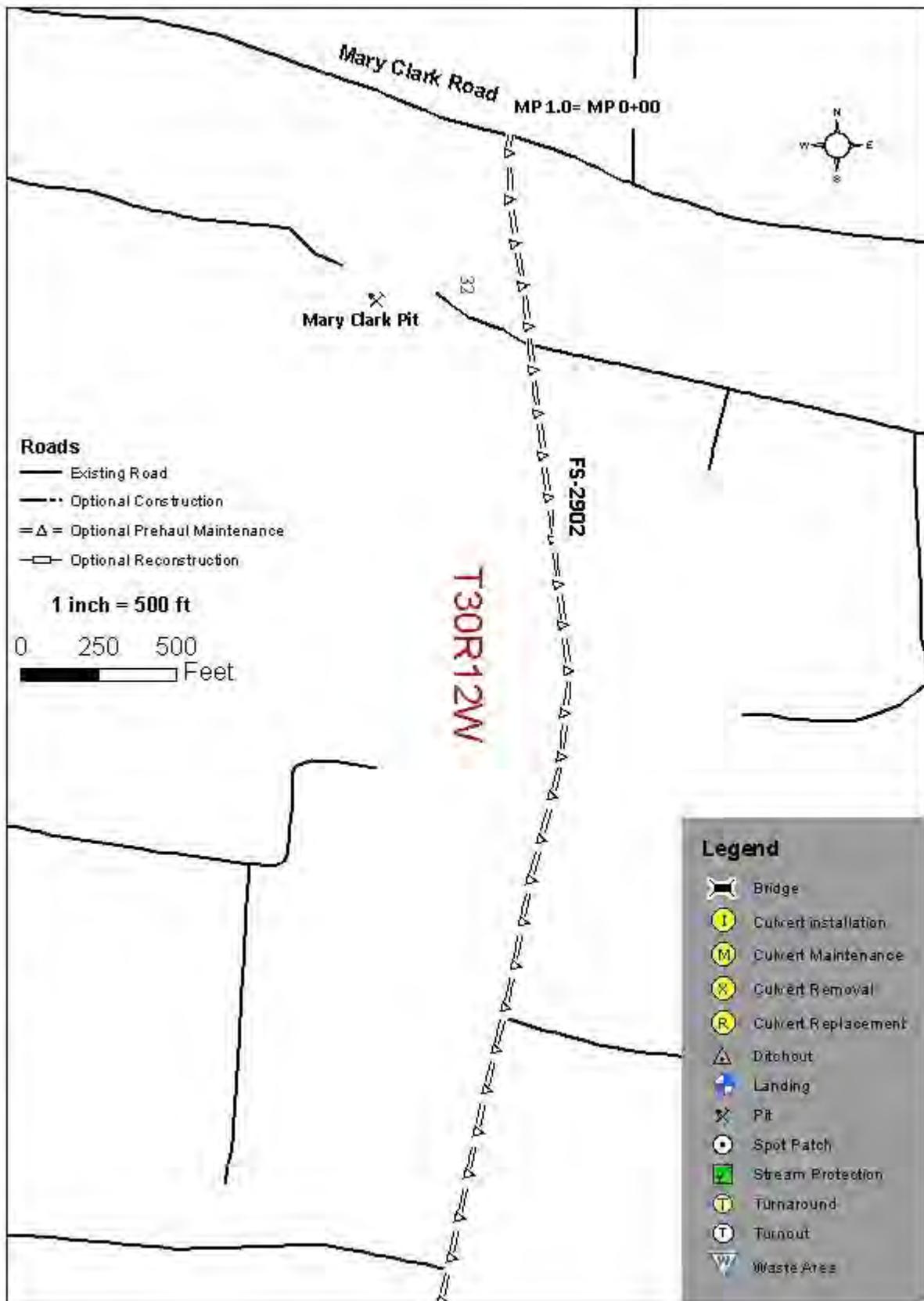
DRAWN & COMPILED BY: MADISEN WARNSTADT

REVISED BY: BILL MEHL: APRIL 2016

Shuwah Project Map

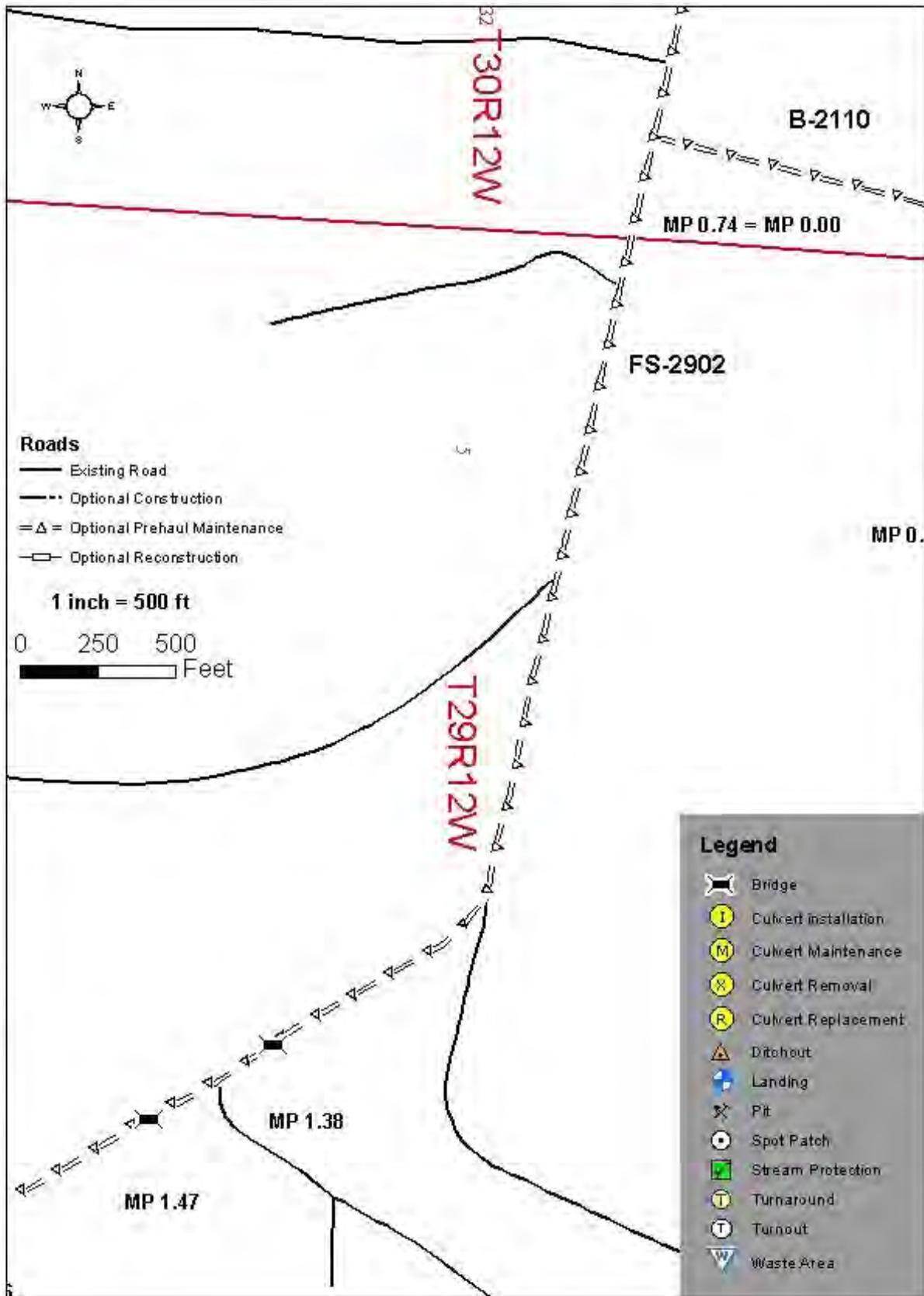


FS-2902 Prehaul Maintenance



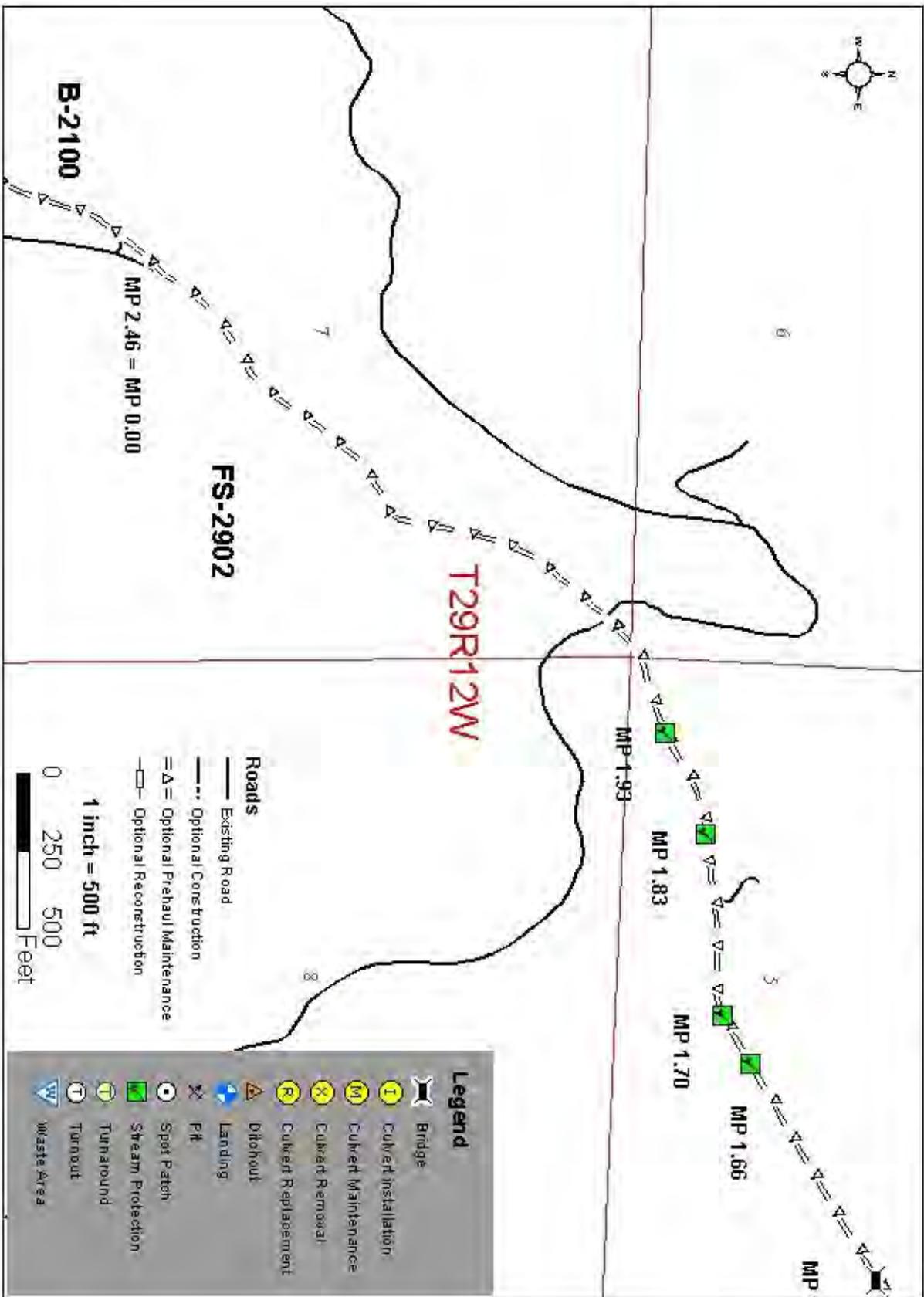
Drawn By: Bill Mehl January 2016

FS-2902 Prehaul Maintenance



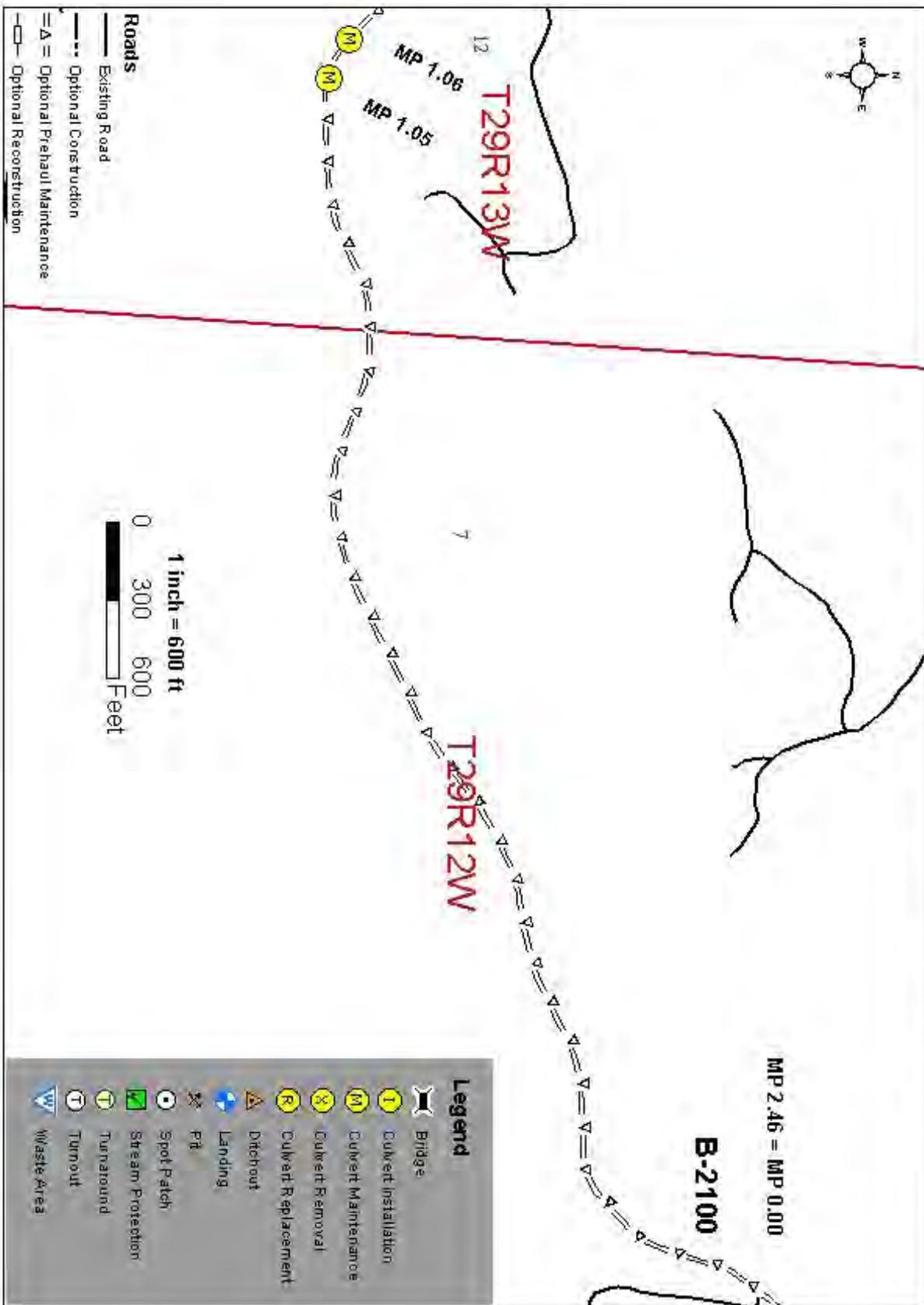
Drawn By: Bill Mehl January 2016

FS-2902 Prehaul Maintenance



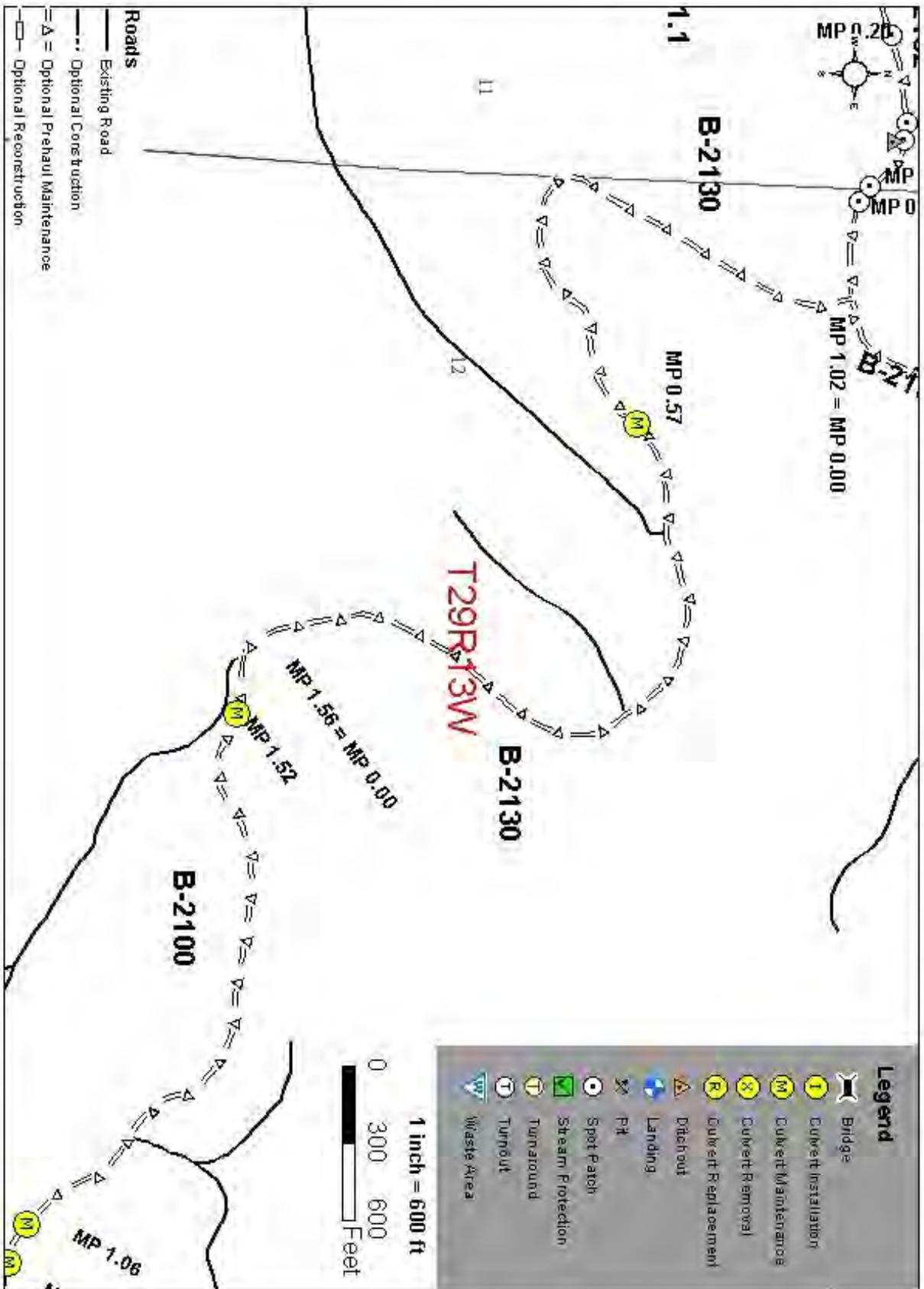
Drawn By: Bill Mehl January 2016

B-2100 Prehaul Maintenance



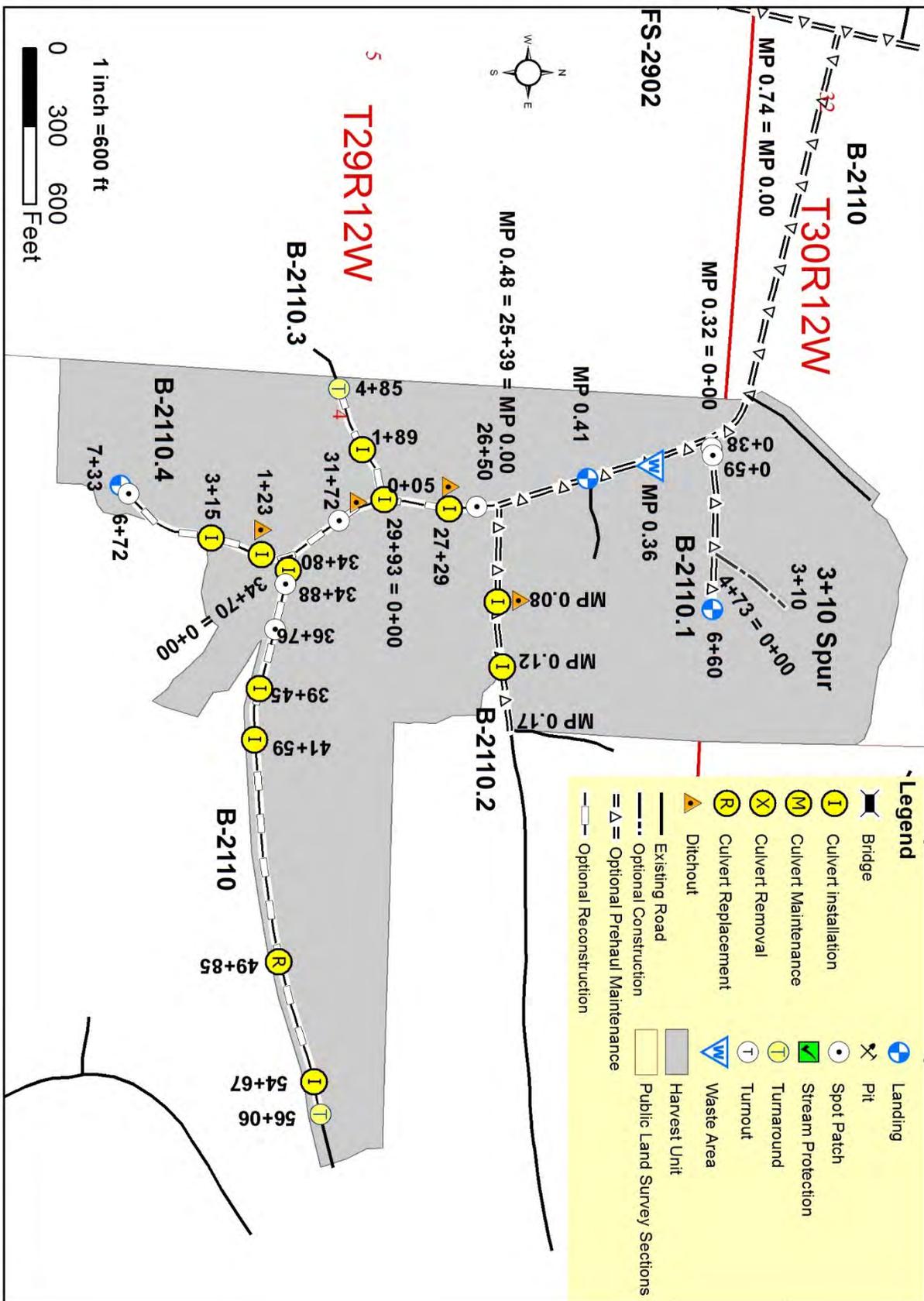
Drawn By: Bill Mehl January 2016

B-2130 Prehaul Maintenance

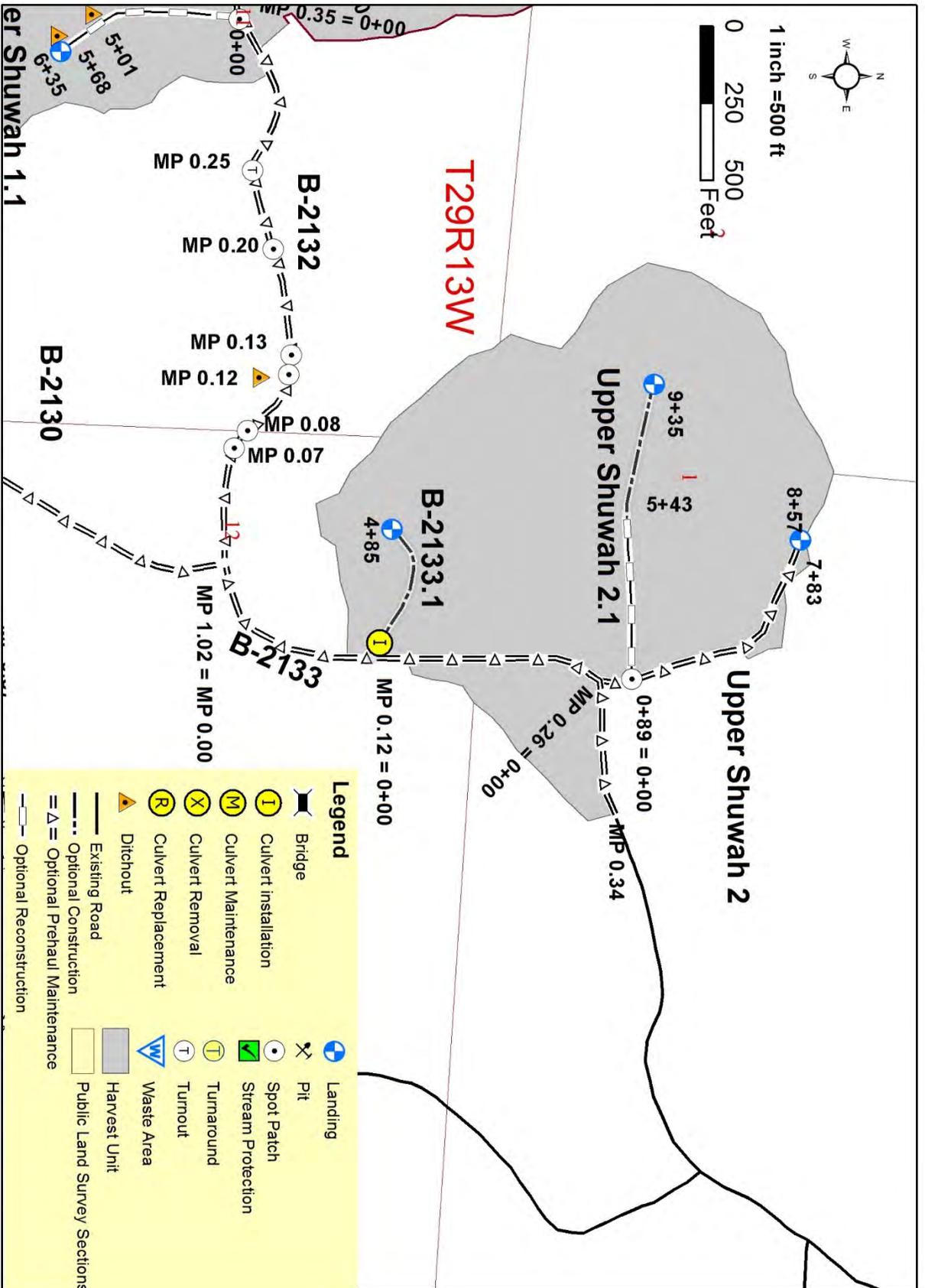


Drawn By: Bill Mehl January 2016

Unit 1

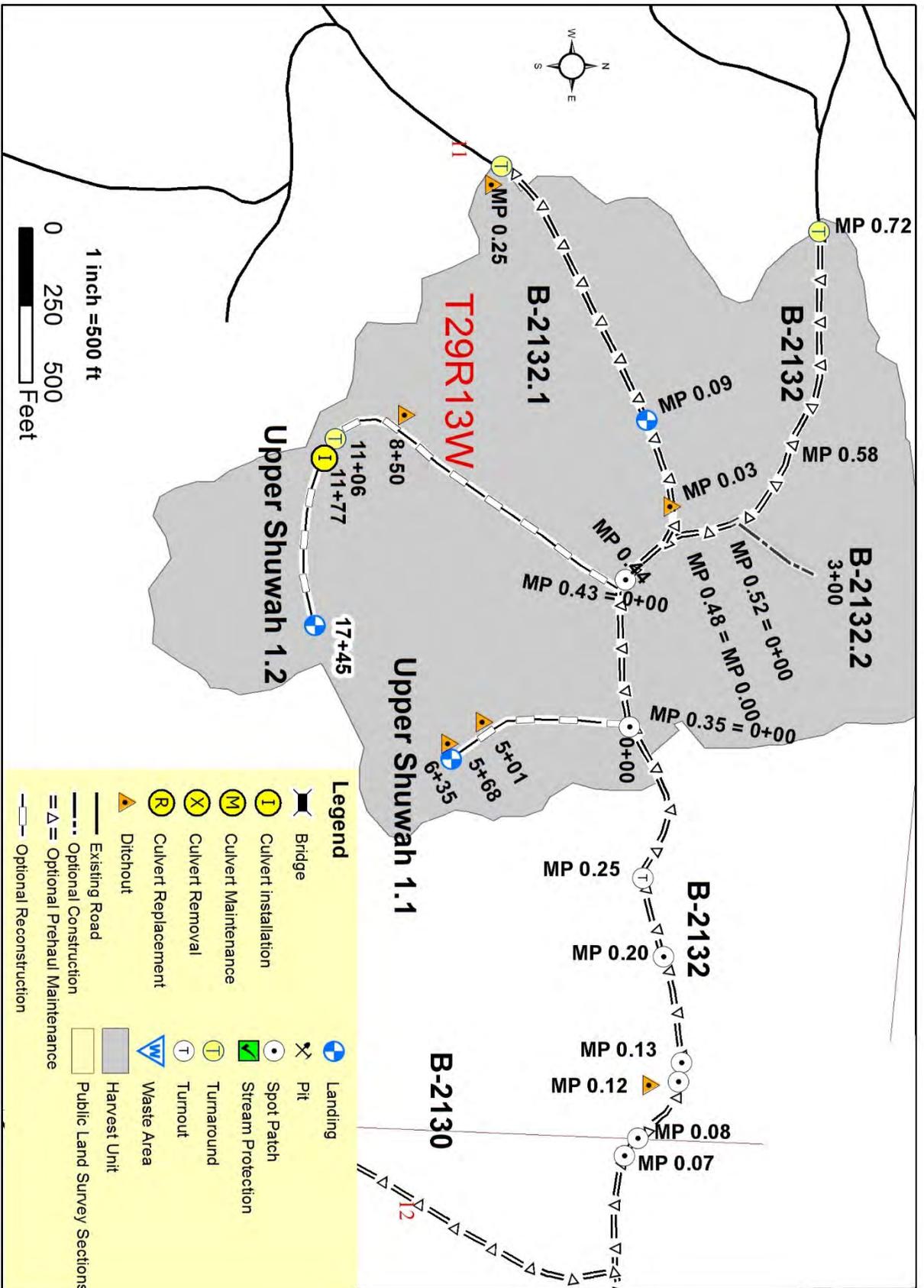


Unit 2



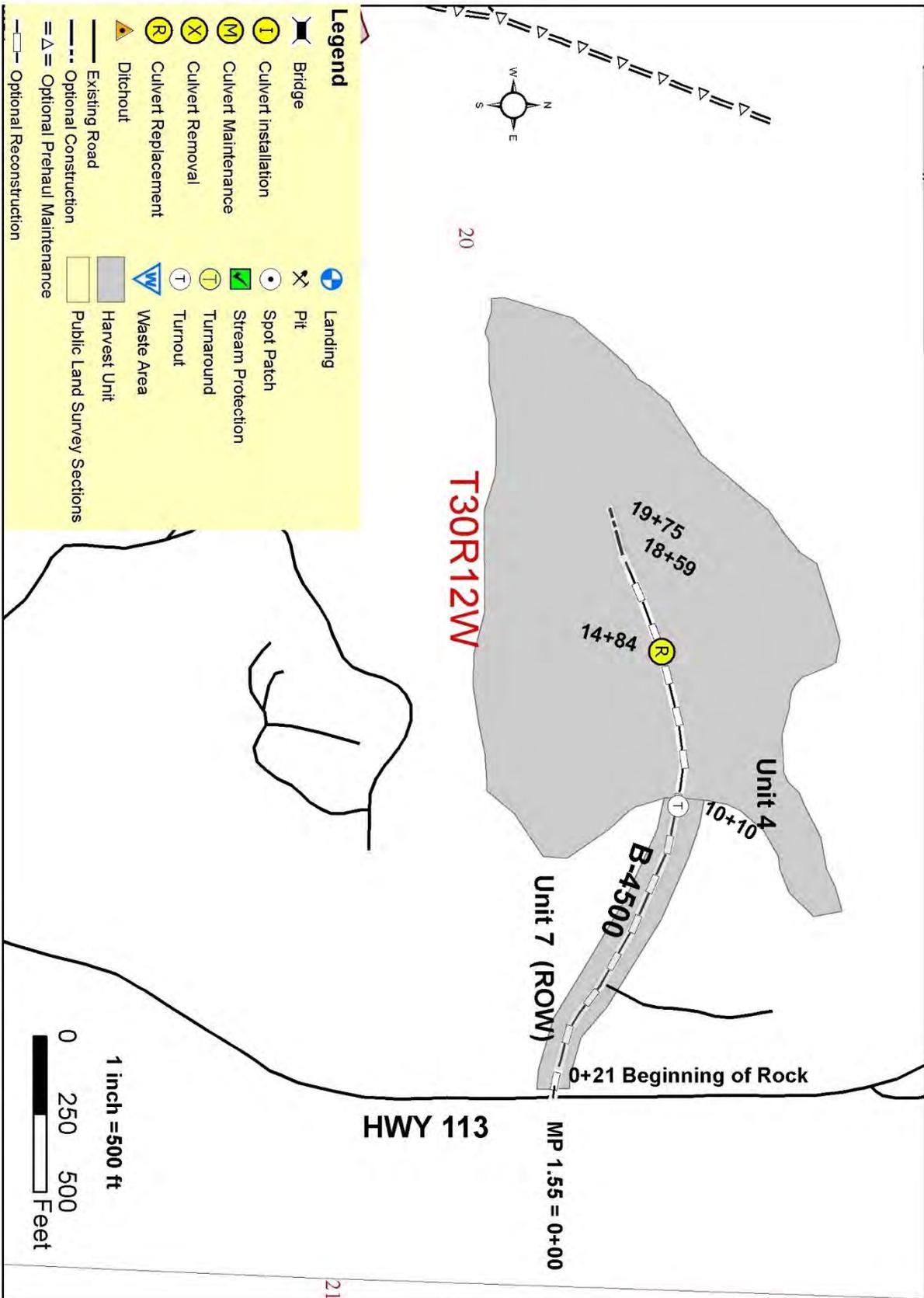
Drawn By: Bill Mehl January 2016

Unit 3



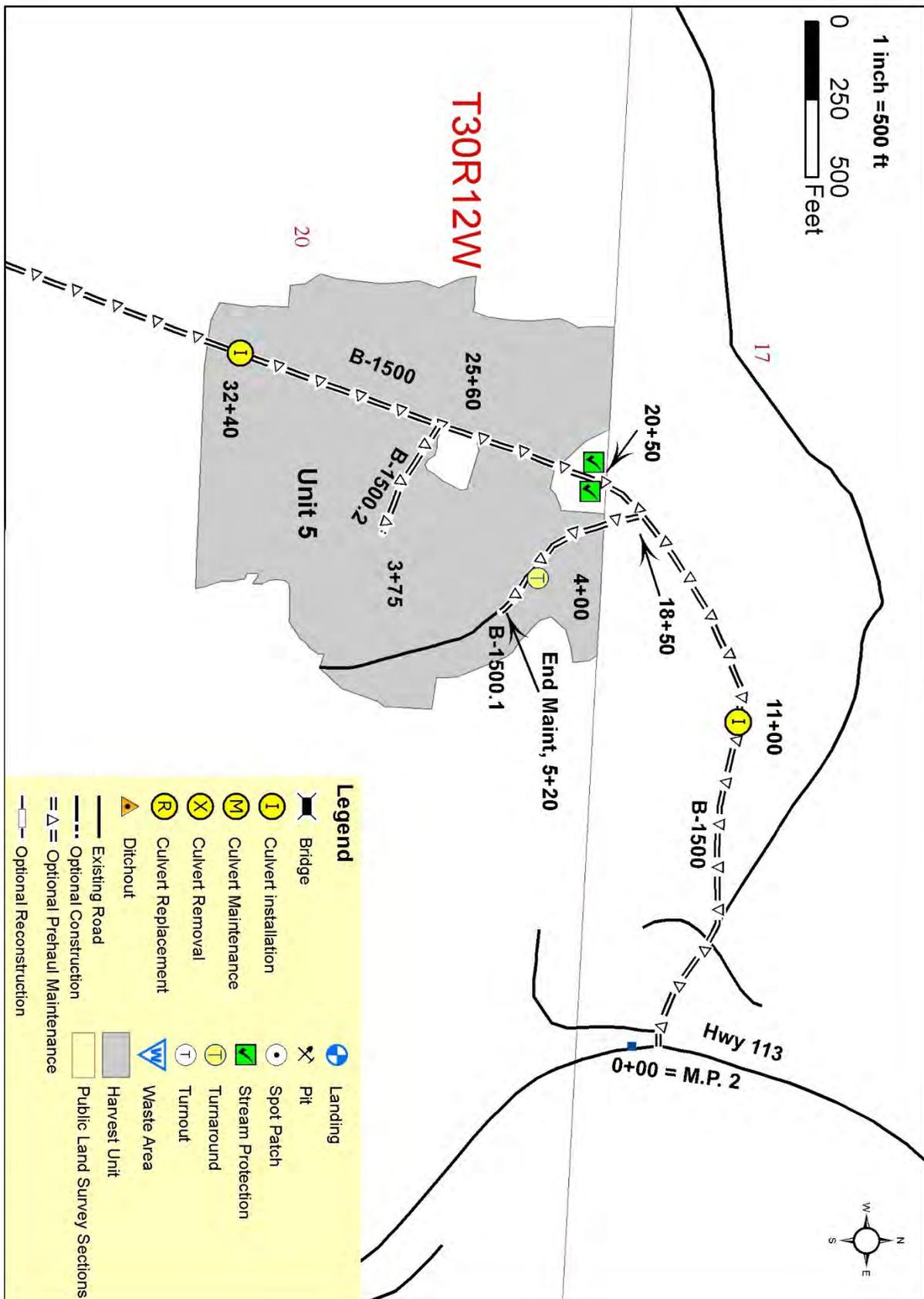
Drawn By: Bill Mehl January 2016

Unit 4



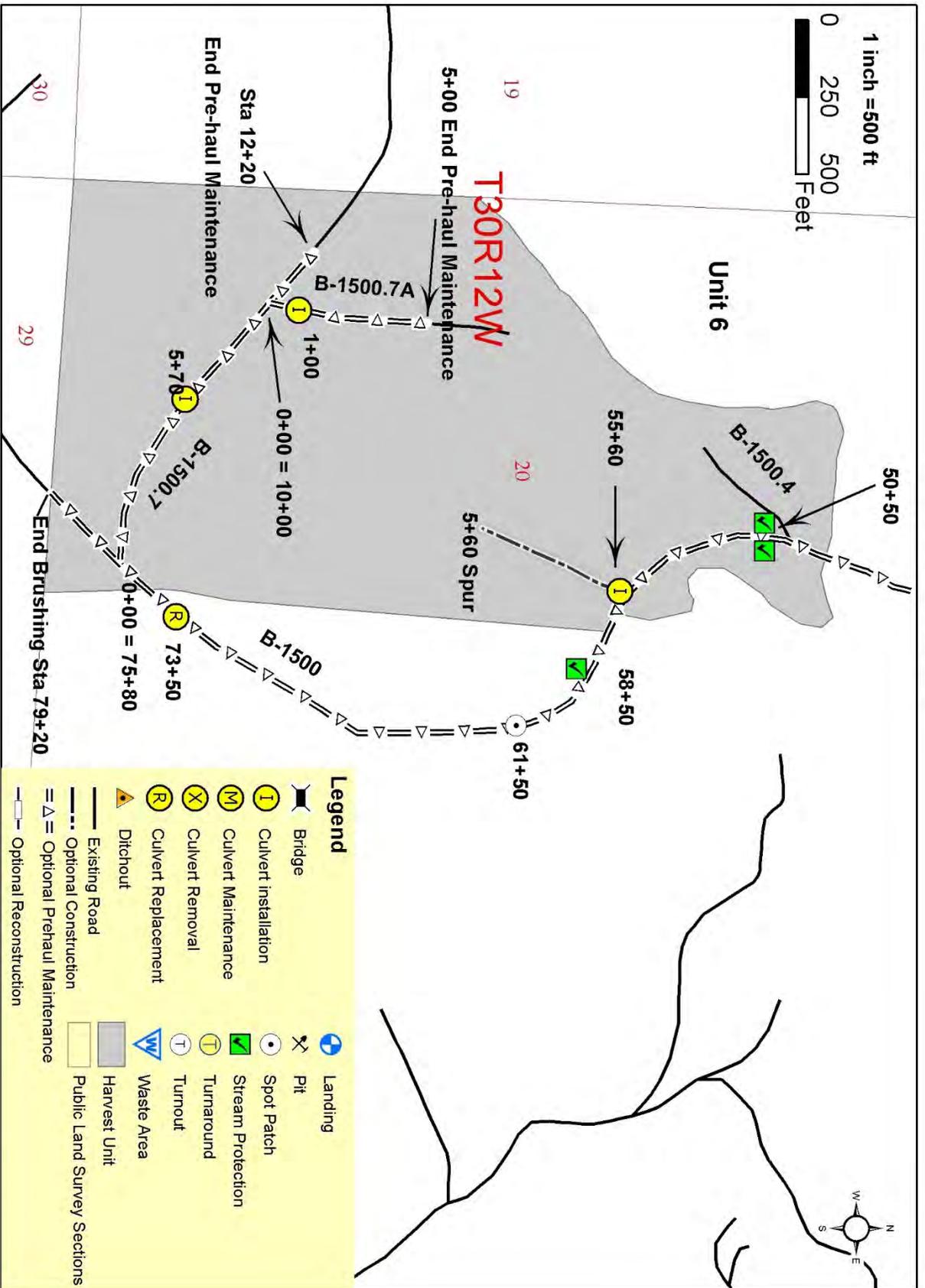
Drawn By: Bill Mehl January 2016

Unit 5



Drawn By: Bill Mehl January 2016

Unit 6



Drawn By: Bill Mehl January 2016

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.

0-3 OPTIONAL ROADS

The specified work on the following roads is not required. Any optional roads built by the Purchaser shall meet all the specifications in this Road Plan.

<u>Road</u>	<u>Stations</u>	<u>Type</u>
3+10 Spur	3.10	Construction
5+60 Spur	5.6	Construction
B-1500	79.20	Prehaul Maintenance
B-1500.1	5.20	Prehaul Maintenance
B-1500.2	3.75	Prehaul Maintenance
B-1500.7	12.20	Prehaul Maintenance
B-1500.7A	5.00	Prehaul Maintenance
B-2100	82.37	Prehaul Maintenance
B-2110	25.39	Prehaul Maintenance
B-2110	30.67	Reconstruction
B-2110.1	6.60	Prehaul Maintenance
B-2110.2	8.82	Prehaul Maintenance
B-2110.3	4.85	Reconstruction
B-2110.4	7.33	Reconstruction
B-2130	53.85	Prehaul Maintenance
B-2132	38.12	Prehaul Maintenance
B-2132.1	13.73	Prehaul Maintenance
B-2132.2	3.00	Construction
B-2133	18.06	Prehaul Maintenance
B-2133.1	4.85	Construction
B-4500	18.59	Reconstruction
B-4500	1.16	Construction
FS-2902	129.89	Prehaul Maintenance
Upper Shuwah 1.1	6.35	Reconstruction
Upper Shuwah 1.2	17.45	Reconstruction
Upper Shuwah 2	8.57	Prehaul Maintenance
Upper Shuwah 2.1	5.43	Reconstruction
Upper Shuwah 2.1	3.92	Construction

0-4 CONSTRUCTION

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

<u>Road</u>	<u>Stations</u>	<u>Requirements</u>
3+10 Spur	0+00 – 3+10	See Below.
5+60 Spur	0+00 - 5+60	See Below
B-2132.2	0+00 – 3+00	See Below.
B-2133.1	0+00 – 4+85	See Below.
Upper Shuwah 2.1	5+43 – 9+35	See Below.
B-4500	18+59 – 19+75	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, constructing ditchlines, constructing ditchouts, constructing turnouts and turn arounds, curve widening, acquisition and installation of drainage structures, application of rock, Compaction of subgrades and rock, spreading grass seed and hay.

0-5 RECONSTRUCTION

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

<u>Road</u>	<u>Stations</u>	<u>Requirements</u>
B-2110	25+39 – 56+06	Clear road. Apply rock in accordance with Rock List. Install culvert in accordance with Culvert List. Grade and shape road in accordance with Typical Section Sheet. Compact road in accordance with the Compaction List. Construct Ditchouts. End haul waste as per CLAUSE 4-37.
B-2110.3	0+00 – 4+85	Remove all vegetative material from road with a minimum loss of rock. Apply rock in accordance with Rock List. Install culvert in accordance with Culvert List. Grade and shape road in accordance with Typical Section Sheet. Compact road in accordance to the Compaction List. Construct ditches in accordance with CLAUSE 2-7.
B-2110.4	0+00 – 7+33	Remove all vegetative material from road with a minimum loss of rock. Clear road. Apply rock in accordance with Rock List. Install culvert in accordance with Culvert List. Grade and shape road in accordance with Typical Section Sheet. Compact road in accordance to the Compaction List. Construct ditchouts. End haul waste as per CLAUSE 4-37.
Upper Shuwah 1.1	0+00 – 6+35	Remove all vegetative material from road with a minimum loss of rock. Clear road. Apply rock in accordance with Rock List. Grade and shape road in accordance with Typical Section Sheet. Compact road in accordance to the Compaction List. Construct ditches in accordance with CLAUSE 2-7. Construct ditchouts.
Upper Shuwah 1.2	0+00 – 17+45	Remove all vegetative material from road with a minimum loss of rock. Clear road. Apply rock in accordance with Rock List. Install culvert in accordance with Culvert List. Grade and shape road in accordance with Typical Section Sheet. Compact road in accordance to the Compaction List. Construct ditchouts.
Upper Shuwah 2.1	0+00 – 5+43	Remove all vegetative material from road with a minimum loss of rock. Clear road. Apply rock in accordance with Rock List. Grade and shape road in accordance with Typical Section Sheet. Compact road in accordance to the Compaction List.
B-4500	0+00 – 18+59	Remove all vegetative material from road with a minimum loss of rock. Apply rock in accordance with Rock List. Install culvert in accordance with Culvert List. Grade and shape road in accordance with Typical Section Sheet.

Reconstruction includes, but is not limited to:
 Installing additional culverts, realigning road segments, application of rock, removing culverts.

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>
B-1500	0+00 – 79+20	Brush Road. Install culverts in accordance with Culvert List. Clean or construct ditches in accordance to Clause 2-7. Apply rock in accordance to the rock list. Compact road in accordance to the Compaction List. Install stream protection in accordance to Clause 8-1.
B-1500.1	0+00 – 5+20	Remove all vegetative material from road with a minimum loss of rock. Apply rock in accordance with Rock List. Grade and shape road in accordance with Typical Section Sheet. Compact road in accordance to the Compaction List.
B-1500.2	0+00 – 3+75	Remove all vegetative material from road with a minimum loss of rock. Apply rock in accordance with Rock List. Grade and shape road in accordance with Typical Section Sheet. Compact road in accordance to the Compaction List.
B-1500.7	0+00 – 12+20	Remove all vegetative material from road with a minimum loss of rock. Clean or construct ditches in accordance to Clause 2-7. Apply rock in accordance with Rock List. Grade and shape road in accordance with Typical Section Sheet. Install culvert in accordance with Culvert List. Compact road in accordance to the Compaction List.
B-1500.7A	0+00 – 5+00	Remove all vegetative material from road with a minimum loss of rock. Apply rock in accordance with Rock List. Grade and shape road in accordance with Typical Section Sheet. Install culvert in accordance with Culvert List. Compact road in accordance to the Compaction List.
B-2100	MP 0.00 – MP 1.56	Apply rock in accordance with Rock List. Install and maintain culverts in accordance with Culvert List. Apply post-haul rock in accordance with Clause 6-72 and grade road.
B-2110	MP 0.00 – MP 0.48	Remove all vegetative material from road with a minimum loss of rock. Apply rock in accordance with Rock List. Brush road. Compact road in accordance to the Compaction List. Construct ditches in accordance with CLAUSE 2-7.
B-2110.1	0+00 – 6+60	Remove all vegetative material from road with a minimum loss of rock. Apply rock in accordance with Rock List. Brush road. Grade and shape road in accordance with Typical Section Sheet. Compact road in accordance to the Compaction List.
B-2110.2	MP 0.00 – MP 0.17	Apply rock in accordance with Rock List. Install culverts in accordance with Culvert List. Construct

		ditchouts. Grade, shape and compact road in accordance with Typical Section Sheet.
B-2130	MP 0.00 – MP 1.02	Apply rock in accordance with Rock List. Install and maintain culverts in accordance with Culvert List. Construct ditches in accordance with CLAUSE 2-7. Apply post-haul rock in accordance with Clause 6-72 and grade road.
B-2132	MP 0.00 – MP 0.72	Apply rock in accordance with Rock List. Brush road. Grade, shape and compact road in accordance with Typical Section Sheet. Construct ditches in accordance with CLAUSE 2-7. Construct ditchouts.
B-2132.1	MP 0.00 – MP 0.26	Apply rock in accordance with Rock List. Brush road. Grade and shape road in accordance with Typical Section Sheet. Compact road in accordance to the Compaction List. Construct ditches in accordance with CLAUSE 2-7. Construct ditchouts.
B-2133	MP 0.00 – MP 0.34	Apply rock in accordance with Rock List. Apply post-haul rock in accordance with Clause 6-72 and grade road.
Upper Shuwah 2	0+00 – 8+57	Remove all vegetative material from road with a minimum loss of rock. Brush road. Apply rock in accordance with Rock List. Grade and shape road in accordance with Typical Section Sheet. Compact road in accordance to the Compaction List.
FS-2902	MP 0.00 – MP 2.46	Apply rock in accordance with Rock List. Maintain stream protection in accordance with Clause 8-1. Apply post-haul rock in accordance with Clause 6-72 and grade road. Replace all four bridge reflectors and posts at MP 1.38 and MP 1.47.

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, but is not limited to post-haul road maintenance listed in Clause 9-5 Post Haul Maintenance.

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 UNFORSEEN 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

shall 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 shall 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" means the Washington State Department of Transportation's Standard Specifications for Road, Bridge, and Municipal Construction 2012 (M41-10).

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.

1-13 LOG LOADING

At no time shall the loading of logs occur on the FS-2902, B-2100, and B-2130 roads. In addition, no debris from harvesting operations shall be allowed on this road.

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

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

SUBSECTION TIMING

1-20 COMPLETE BY DATE

On the all roads, road work shall be completed 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

1-25 ACTIVITY TIMING RESTRICTION

On the following road(s), the specified activities are not permitted during the listed closure period(s) unless authorized in writing by the Contract Administrator.

<u>Road</u>	<u>Stations</u>	<u>Activity</u>	<u>Closure Period</u>
B-2110	25+39 – 56+06	All	October 15 th – April 15 th
B-2110.3	0+00 – 4+85	All	October 15 th – April 15 th
B-2110.4	0+00 – 7+33	All	October 15 th – April 15 th
All	All	Construction	October 15 th – April 15 th

1-26 OPERATING DURING CLOSURE PERIOD

If permission is granted to operate during a closure period listed in Clause 1-25 Activity Timing Restriction, the Purchaser shall provide a maintenance plan to include further protection of State resources. The Contract Administrator must approve the maintenance plan in writing, and preventative measures shall be put in place, before operation in the closure period. The Purchaser shall be required to maintain all haul roads at their own expense including those listed in Contract Clause C-060 Designated Road Maintainer. If other operators are using, or desire to use these designated maintainer roads, a joint operating plan shall be developed. All parties shall follow this plan.

1-29 SEDIMENT RESTRICTION

Silt-bearing runoff shall not be permitted to go into 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 bridge or asphalt surfaces at any time. If Purchaser must run equipment on bridge 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 bridge or asphalt surfaces, Purchaser shall immediately cease all road work and hauling operations. Any dirt, rock, or other material tracked or spilled on bridge or asphalt surface(s) 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, snowplowing shall be permitted only after the execution of a Snow Plowing Agreement, which is available from the Contact 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>
Mary Clark
Hwy 113

1-41 REQUIREMENTS FOR PAVED ROAD APPROACHES

Requirements for the FS-2902/Mary Clark road approaches:
Approaches shall be built up to allow a smooth grade transition between the FS-2902 and Mary Clark roads. The top of the FS-2902 road surfacing shall be kept level with the asphalt surface of the Mary Clark road at all times. On sloped approaches, the surface of the FS-2902 approach shall slope from the edge of the Mary Clark road at the rate of no more than 2%, unless otherwise directed by the Contract Administrator.

SECTION 2 – MAINTENANCE

2-1 GENERAL ROAD MAINTENANCE

All roads used under this contract shall be maintained 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. Maintenance work shall be 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>
B-2110	25+39 – 56+06	Grade, Shape, and Compact
B-2110.1	0+00 – 6+60	Grade, Shape, and Compact
B-2110.2	MP 0.00 – MP 0.17	Grade, Shape, and Compact
B-2110.3	0+00 – 4+85	Grade, Shape, and Compact
B-2110.4	0+00 – 7+33	Grade, Shape, and Compact
B-2132	MP 0.00 – MP 0.72	Grade, Shape, and Compact
B-2132.1	MP 0.00 – MP 0.26	Grade, Shape, and Compact
B-4500	0+21 – 18+59	Grade, Shape, and Compact
Upper Shuwah 1.1	0+00 – 6+35	Grade, Shape, and Compact
Upper Shuwah 1.2	0+00 – 17+45	Grade, Shape, and Compact
Upper Shuwah 2	0+00 – 8+57	Grade, Shape, and Compact
Upper Shuwah 2.1	0+00 – 5+43	Grade, Shape, and Compact

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>
B-1500	73+50 – 75+80	Right
B-1500.7	0+00 -4+00	Right
B-2110	MP 0.00 – MP 0.31	Right
	MP 0.00 – MP 0.39	Left
	34+00 – 43+21	Right
B-2110.3	53+54 – 54+20	Right
	0+00 – 1+30	Right
	0+00 – 4+85	Left
B-2132	MP 0.06 – MP 0.08	Right
	MP 0.12 – MP 0.13	Right
B-2132.1	MP 0.19 – MP 0.25	Left
Upper Shuwah 1.1	0+00 – 5+68	Right
	0+00 – 6+35	Left

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.

<u>Road</u>	<u>Stations</u>
B-1500.1	5.20
B-1500.2	3.75
B-1500.7	12.20
B-1500.7A	5.00
B-2110	MP 0.00 – MP 0.48 25+39 – 56+06
B-2110.1	0+00 – 6+60
B-2110.3	0+00 – 4+85
B-2110.4	0+00 – 7+33
B-4500	0+21 – 18+59
Upper Shuwah 1.1	0+00 – 6+35
Upper Shuwah 1.2	0+00 – 17+45
Upper Shuwah 2	0+00 – 8+57
Upper Shuwah 2.1	0+00 – 5+43

SECTION 3 – CLEARING, GRUBBING, AND DISPOSAL

SUBSECTION BRUSHING

3-1 BRUSHING

On the following road(s), vegetative material up to 5 inches in diameter, including limbs, shall be cut as shown on the Brushing Detail. Brushing shall be achieved by mechanical cutting of brush, trees, and branches. Root systems and stumps of cut vegetation shall not be disturbed unless directed by the Contract Administrator.

<u>Road</u>	<u>Stations</u>
B-1500	5+00 – 79+20
B-2110	MP 0.00 – MP 0.32
B-2110.1	0+00 – 6+60
B-2132	MP 0.35 – MP 0.72
B-2132.1	MP 0.00 – MP 0.26
Upper Shuwah 2	0+00 – 8+57

3-2 BRUSHING RESTRICTION

Pulling, digging, pushing over, and other non-cutting methods used for vegetation removal shall not be used for brushing. Excavator buckets, log loaders and similar equipment shall not be used for brushing.

3-3 BRUSH REMOVAL

Remove brushing debris from the road surface, ditchlines, and culvert inlets and outlets. Brush should be disposed of so that it will not fall back onto the road prism.

SUBSECTION CLEARING

3-5 CLEARING

Fell all vegetative material larger than 2 inches DBH or over 5 feet high between the marked right-of-way boundaries and within waste and debris areas, or if not marked in the field, between the clearing limits specified on the Typical Section Sheet. Clearing shall 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 prehaul 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:

- a. Adverse grades on switchbacks shall not exceed 10%.
- b. Favorable grades through switchbacks shall not exceed 12%.
- c. Transition grades entering and leaving switchbacks shall not exceed a 5% grade change.
- d. 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 B-2133.1, full bench construction shall be utilized for the entire subgrade width where slopes exceed 45%.

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 shall drain to cross-drain culverts and 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>
B-2110	27+29	Left
	31+00	Right
B-2110.2	MP 0.08	Left
B-2110.4	1+23	Right
B-2132	MP 0.12	Left
B-2132.1	MP 0.03	Right
	MP 0.25	Left
Upper Shuwah 1.1	5+01	Left
	5+68	Right
Upper Shuwah 1.2	8+50	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

Waste material may be sidecast on side slopes up to 45% if the waste material is compacted and free of organic debris. On side slopes greater than 45%, all excavation shall be end hauled or pushed to designated embankment sites and waste areas.

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>
B-2110 MP 0.36	B-2110	39+45	25
	B-2110	49+85	30
	B-2110	54+67	30
	B-2110.4	3+15	35

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 percent if the waste material is compacted and free of debris. On side slopes of 45 percent 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. Except for side hill embankments too narrow to accommodate excavation equipment may be placed by end-dumping or side casting until sufficiently wide to support the equipment.

SUBSECTION BORROW

4-47 NATIVE MATERIAL

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

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 of 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 on all pre-haul maintenance and reconstruction roads 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

Surface compaction in accordance with the Compaction List, shall consist of two 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 START

5-3 PUNCHEON PLACEMENT

On the following road(s), puncheon may be utilized in the subgrade on the following road. 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>
B-2132.2	0+00 -3+00
3+10 Spur	0+00 – 3+10
Upper Shuwah 2.1	5+43 – 9+35
5+60 Spur	0+00 – 5+60

5-4 PUNCHEON RESTRICTED

Except on the roads listed in 5-3, at no time shall puncheon be used in the subgrade, unless approved by the Contract Administrator.

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.

5-11 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, 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.

5-21 DOWNSPOUTS AND FLUMES

Downspouts and flumes longer than 10 feet shall be staked on both sides at maximum intervals of 10 feet with 6-foot heavy-duty steel posts or 1 ½" X 3/16" angle iron, and fastened securely to the posts with No. 10 galvanized smooth wire, or bolted using minimum 5/16" bolts and 2 washers per bolt, in accordance with the Culvert Installation Typical Details Page.

5-24 PLASTIC CULVERT BANDS

All plastic culvert bands shall be secured using No. 10 galvanized smooth wire.

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>
B-2110	27+29	Oversized
	34+80	
	39+45	
	41+59	
	49+85	
B-2110.3	54+67	Oversized
B-2110.4	1+89	Oversized
	1+23	Oversized
	3+15	

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>
Mary Clark Pit	T30N R12W Sec 32	1 1/4" minus crushed, Pitrun, Oversized, Light Loose Rip Rap

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 2735 cubic yards of 1 1/2" minus crushed rock.

<u>Source</u>	<u>Location</u>	<u>Quantity</u>
1 1/4" minus crushed stockpile	Mary Clark Pit	970 yd ³

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 GRADATIONS

6-29 1 ½-INCH MINUS CRUSHED ROCK

% Passing 1 ½" square sieve	100%
% Passing 1" square sieve	50 - 85%
% Passing U.S. #4 sieve	30 - 50%
% Passing U.S. #40 sieve	16% maximum
% Passing U.S. #200 sieve	5% maximum

The portion of aggregate retained on the No. 4 sieve shall not contain more than 0.2 percent organic debris and trash. All percentages are by weight.

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.

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"

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 1 1/4" minus crushed rock in accordance with the quantities shown on the Rock List. Quantities may be switched between road systems at the discretion of the contract administrator and Contractor.

<u>Road</u>	<u>Stations</u>	<u>Amount</u>
B-2100	MP 0.00 – MP 1.56	100 yd ³
B-2130	MP 0.00 – MP 1.02	100 yd ³
B-2133	MP 0.00 – MP 0.34	50 yd ³
FS-2902	MP 0.00 – MP 2.46	200 yd ³

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.

SUBSECTION BRIDGE MAINTENANCE

7-30 BRIDGE MAINTENANCE

On the following road(s), bridge maintenance, as listed below, is required as part of this contract. All old bridge 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>	<u>Drawing</u>
FS-2902	MP 1.38	Replace all four bridge reflectors and posts	Typical Bridge Reflector Replacement
FS-2902	MP 1.47	Replace all four bridge reflectors and posts	Typical Bridge Reflector Replacement

SECTION 8 – EROSION CONTROL

8-1 SEDIMENT CONTROL

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

<u>Road</u>	<u>Station</u>	<u>Comments</u>
B-1500	20+50	300' silt fence, Left & Right
B-1500	50+50	50' Silt fence, Left & Right
B-1500	58+50	Silt Fence in Ditch (Right Side)
FS-2902	MP 1.64 – MP 1.66	Maintain 87 ft Rock Berm on downstream side
FS-2902	MP 1.65 – MP 1.66	Maintain 72 ft Rock Berm on upstream side
FS-2902	MP 1.69 – MP 1.71	Maintain 93 ft Rock Berm on downstream side

FS-2902	MP 1.81 – MP 1.84	Maintain 130 ft Rock Berm on upstream side
FS-2902	MP 1.92 – MP 1.93	Maintain 45 ft Rock Berm on downstream side

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 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 addition 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:

- Perennial Ryegrass 40.00 % by weight
- Creeping Red Fescue 40.00 % by weight
- White Dutch Clover 10.00 % by weight
- Colonial Bentgrass 10.00 % by weight

Weed seed shall not exceed 0.5% by weight.

1. All seed species shall have a minimum 90% germination rate, unless otherwise specified.
2. Seed shall be furnished in standard containers the show the following information:
 - a) Common name of seed
 - b) Net weight
 - c) Percent of purity

- d) Percentage of germination
- e) Percentage of weed seed and inert material

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
B-2100	MP 0.00 – MP 1.56	Apply post haul rock as per Clause 6-72.
B-2130	MP 0.00 – MP 1.02	Apply post haul rock as per Clause 6-72.
B-2133	MP 0.00 – MP 0.34	Apply post haul rock as per Clause 6-72.
FS-2902	MP 0.00 – MP 2.46	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.

SECTION 10 MATERIALS

SUBSECTION GEOTEXTILES

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 ⁻¹
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 EROSION CONTROL AND REVEGETATION

10-10 JUTE EROSION CONTROL MATTING

Jute mesh shall have a uniform open plain weave made from jute yarn that does not vary by more than half its nominal diameter. Erosion control matting shall conform to the specifications listed below, and shall be recommended by the manufacturer for use on embankments with a slope of 1½:1 (H:V) or steeper.

- Mesh size 1 inch max.
- Mesh mass, 0.9 lb/yd² ±5%

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).

10-16 CORRUGATED ALUMINUM CULVERT

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

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.

10-20 FLUME AND DOWNSPOUT

Downspouts and flumes shall meet the AASHTO specification designated for the culvert. Plastic downspouts and flumes 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

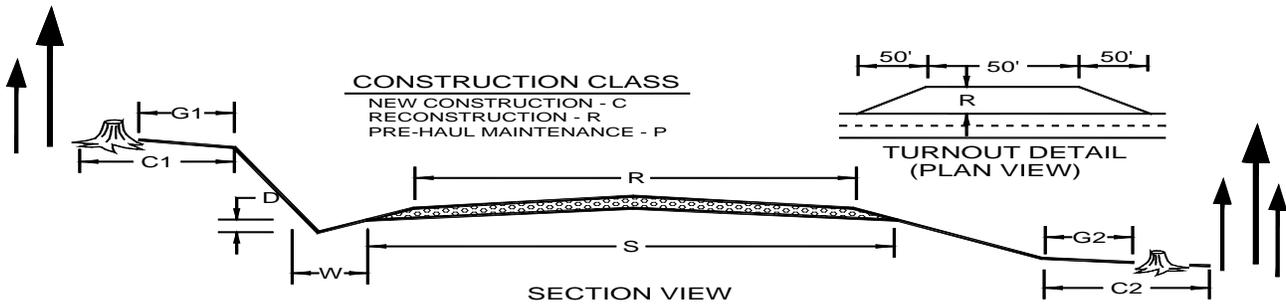
Rubber gaskets must be continuous closed cell, synthetic expanded rubber gaskets conforming to the requirements of ASTM D 1056. Rubber gaskets must be used with all corrugated metal pipe coupling bands.

10-24 GAGE AND CORRUGATION

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

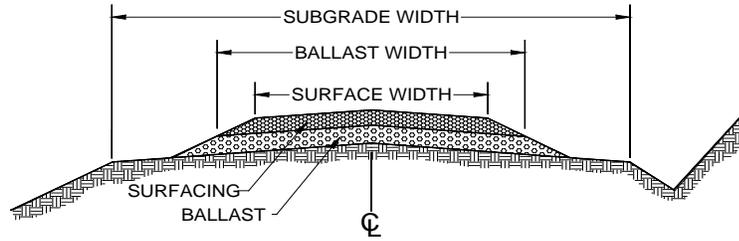
<u>Diameter</u>	<u>Gage</u>	<u>Corrugation</u>
18"	16 (0.064")	2 ² / ₃ " X 1/2"
24" to 42"	14 (0.079")	2 ² / ₃ " X 1/2"
48" to 54"	12	3" X 1"
60" +	10	5" X 1"

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)
3+10 Spur	0+00	3+10	C	17'	12'	3"	3'	1'	5'	5'	10'	5'
5+60 Spur	0+00	5+60	C	17'	12'	3"	3'	1'	5'	5'	10'	5'
B-1500	0+00	79+20	P		12'	3"	3'	1'				
B-1500.1	0+00	5+20	P		12'	3"	3'	1'				
B-1500.2	0+00	3+75	P		12'	3"	3'	1'				
B-1500.7	0+00	12+20	P		12'	3"	3'	1'				
B-1500.7A	0+00	5+00	P		12'	3"	3'	1'				
B-2100	MP 0.00	MP 1.21	P		12'	3	3'	1'				
B-2100	MP 1.21	MP 1.23	P		12'	+3/-3	3'	1'				
B-2100	MP 1.23	MP 1.56	P		12'	3	3'	1'				
B-2110	MP 0.00	MP 0.48	P		12'	3	3'	1'				
B-2110	25+39	56+06	R		12'	3	3'	1'	5'	5'	10'	5'
B-2110.1	0+00	6+60	P		12'	3	3'	1'	5'	5'	10'	5'
B-2110.2	MP 0.00	MP 0.17	P		12'	3	3'	1'				
B-2110.3	0+00	4+85	R		12'	3	3'	1'	5'	5'	10'	5'
B-2110.4	0+00	7+33	R		12'	3	3'	1'	5'	5'	10'	5'
B-2130	MP 0.00	MP 0.45	P		12'	3	3'	1'				
B-2130	MP 0.45	MP 0.48	P		12'	-3/+3	3'	1'				
B-2130	MP 0.48	MP 1.02	P		12'	3	3'	1'				
B-2132	MP 0.00	MP 0.72	P		12'	3	3'	1'				
B-2132.1	MP 0.00	MP 0.26	P		12'	3	3'	1'	5'	5'	10'	5'
B-2132.2	0+00	3+00	C	17'	12'	3	3'	1'	5'	5'	10'	5'
B-2133	MP 0.00	MP 0.34	P		12'	3	3'	1'				
B-2133.1	0+00	4+85	C	17'	12'	3	3'	1'	5'	5'	10'	5'
B-4500	0+00	18+59	R		12'	3	3'	1'	5'	5'	10'	5'
B-4500	18+59	19+75	C	17'	12'	3	3'	1'	5'	5'	10'	5'
FS-2902	MP 0.00	MP 2.46	P		12'	3	3'	1'				
Upper Shuwah 1.1	0+00	6+35	R		12'	3	3'	1'	5'	5'	10'	5'

ROCK LIST SHEET

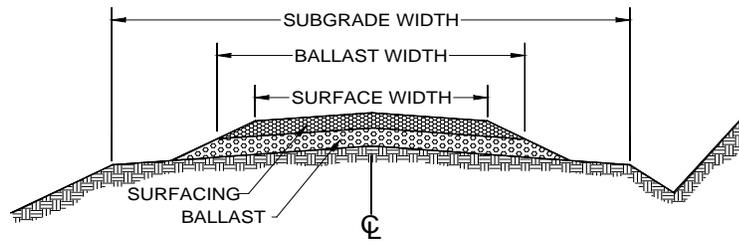


SECTION VIEW

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: Mary Clark 1 ½" minus stockpile, 2: Mary Clark Pitrun, 3:Mary Clark Pit Oversize, 4:Mary Clark Light Loose Rip Rap

ROAD NAME	START STATION	END STATION	SUBGRADE WIDTH (ft)	Pitrun SOURCE	Pitrun WIDTH (ft)	Pitrun DEPTH (in)	Pitrun Quantity(yd ³ /sta)	Pitrun SUBTOTAL(yd ³)	Crushed SOURCE	Crushed WIDTH (ft)	Crushed DEPTH (in)	Crushed Quantity(yd ³ /sta)	Crushed Subtotal(yd ³)	Oversize/ Rip rap Source	Oversize/Rip Rap Quantity(yd ³)
3+10 Spur	0+00	3+10	17	2	12	12	70	220							
5+60 Spur	0+00	5+60	17	2	12	13	80	450							
Culvert	0+10			2				20							
B-1500															
Misc				2				100							
Culvert	11+00			2				20							
Culvert	32+40			2				20							
Spot Patch	61+50			2				40							
Culvert	73+50			2				20							
B-1500.1	0+00	5+20		2	12'	6"	35	180							
Turnaround	4+00			2				50							
B-1500.2															
Misc.								50							
B-1500.7															
Misc				2				50							
Culvert	5+70			2				20							
B-1500.7A	0+00	5+00		2	12'	6"	35	180							
Culvert	1+00			2				20							
B-2100															
Culvert	MP 1.05													3	5
Culvert	MP 1.52													3	3
Post Haul	MP 0.00	MP 1.56							1				100		
Totals:								1440					100		8

ROCK LIST SHEET CONTINUED

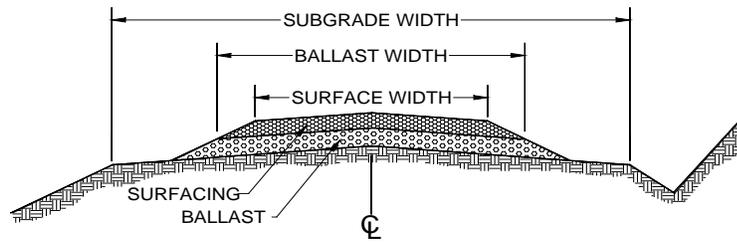


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ROAD NAME	START STATION	END STATION	SUBGRADE WIDTH (ft)	Pitrun SOURCE	Pitrun WIDTH (ft)	Pitrun DEPTH (in)	Pitrun Quantity(yd ³ /sta)	Pitrun SUBTOTAL(yd ³)	Crushed SOURCE	Crushed WIDTH (ft)	Crushed DEPTH (in)	Crushed Quantity(yd ³ /sta)	Crushed Subtotal(yd ³)	Oversize/ Rip rap Source	Oversize/Rip Rap Quantity(yd ³)
B-2110															
Spot Patching	MP 0.00	MP 0.48							1				100		
Landing	MP 0.41			2				50							
Lift	25+39	30+81		2	12	6	35	190							
Spot Patch	26+50			2				20							
Culvert	27+29			2				20						3	1
Spot Patch	31+72			2				20							
Lift	33+09	35+01		2	12	6	35	70							
Half Lane Lift	33+09	33+66		2	6	6	18	10							
Culvert	34+80													3	1
Spot Patch	34+88			2				10							
Half Lane Lift	35+01	39+93		2	6	24	80	390							
Spot Patch	36+76			2				30							
Culvert	39+45			2				20						3	2
Lift	39+93	54+67		2	12	12	70	1030							
Culvert	41+59			2				10						3	2
Culvert	49+85			2				10						3	2
Culvert	54+67			2				30						3	2
Turnaround	56+06			2				50							
Spot Patching	25+39	56+06		2				300							
B-2110.1	0+00	5+03		2	12	6	35	180							
Spot Patch	0+38			2				30							
Spot Patch	0+59			2				30							
Lift	5+03	6+60		2	12	12	70	110							
Landing	6+60			2				50							
Totals:								2660					100		11

ROCK LIST SHEET CONTINUED

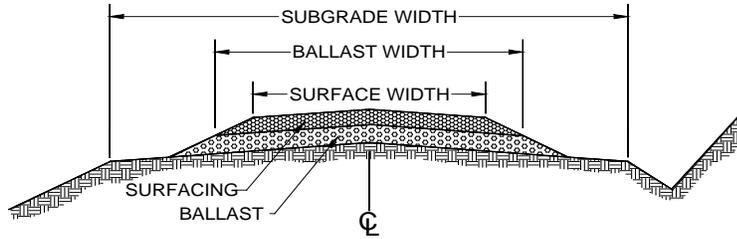


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ROAD NAME	START STATION	END STATION	SUBGRADE WIDTH (ft)	Pitrun SOURCE	Pitrun WIDTH (ft)	Pitrun DEPTH (in)	Pitrun Quantity(yd³/sta)	Pitrun SUBTOTAL(yd³)	Crushed SOURCE	Crushed WIDTH (ft)	Crushed DEPTH (in)	Crushed Quantity(yd³/sta)	Crushed Subtotal(yd³)	Oversize/ Rip rap Source	Oversize/Rip Rap Quantity(yd³)
B-2110.2															
Culvert	MP 0.08			2			20								
Culvert	MP 0.12			2			20								
Spot Patching	MP 0.00	MP 0.17							1				50		
B-2110.3	0+00	2+98		2	12	12	70	210							
Culvert	0+05			2				20						3	1
Culvert	1+89			2				20						3	2
Lift	2+98	4+85		2	12	6	35	70							
Turnaround	4+85			2				20							
B-2110.4	0+00	3+15		2	12	12	70	220							
Culvert	1+23			2				20						3	2
Culvert	3+15			2				20						3	2
Lift	4+86	7+33		2	12	12	70	170							
Spot Patch	6+72			2				10							
Landing	7+33			2				50							
B-2130															
Culvert	MP 0.57													3	3
Post Haul	MP 0.00	MP 1.02							1				100		
B-2132	Misc			2				40							
Spot Patch	MP 0.07								1				10		
Spot Patch	MP 0.12								1				10		
Spot Patch	MP 0.13								1				10		
Turnout	MP 0.25								1				10		
Spot Patch	MP 0.44								1				10		
Turnaround	MP 0.71								1				30		
Totals:								910					240		10

ROCK LIST SHEET CONTINUED



SECTION VIEW

1. Rock quantities, subtotals and totals are "truck measure" estimates. Rock shall be applied to at least the depths listed.
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ROAD NAME	START STATION	END STATION	SUBGRADE WIDTH (ft)	Pitrun SOURCE	Pitrun WIDTH (ft)	Pitrun DEPTH (in)	Pitrun Quantity(yd ³ /sta)	Pitrun SUBTOTAL(yd ³)	Crushed SOURCE	Crushed WIDTH (ft)	Crushed DEPTH (in)	Crushed Quantity(yd ³ /sta)	Crushed Subtotal(yd ³)	Oversize/ Rip rap Source	Oversize/Rip Rap Quantity(yd ³)
B-2132.1															
Landings	MP 0.09			2				60							
Turnaround	MP 0.25								1				20		
Spot Patching	MP 0.00	MP 0.26							1				150		
B-2132.2	0+00	3+00	17	2	12	13	80	240							
B-2133															
Post Haul	MP 0.00	MP 0.34							1				50		
B-2133.1	0+00	4+85	17	2	12	18	100	490							
Culvert	0+10							40							
Landing	4+85			2				50							
B-4500	0+21	18+59		2	12	6	35	650							
Turnaround	10+10			2				50							
Culvert	14+84			2				20						3	2
Lift	18+59	19+75		2	12	18	110	130							
FS-2902															
Spot Patching	MP 0.00	MP 1.94							1				50		
Rock Berms	MP 1.66								1				4		
Rock Berm	MP 1.70								1				2		
Rock Berm	MP 1.83								1				3		
Rock Berm	MP 1.93								1				1		
Spot Patching	MP 1.94	MP 2.46							1				40		
Post Haul	MP 0.00	MP 2.46							1				200		
Totals:								1730					520		2

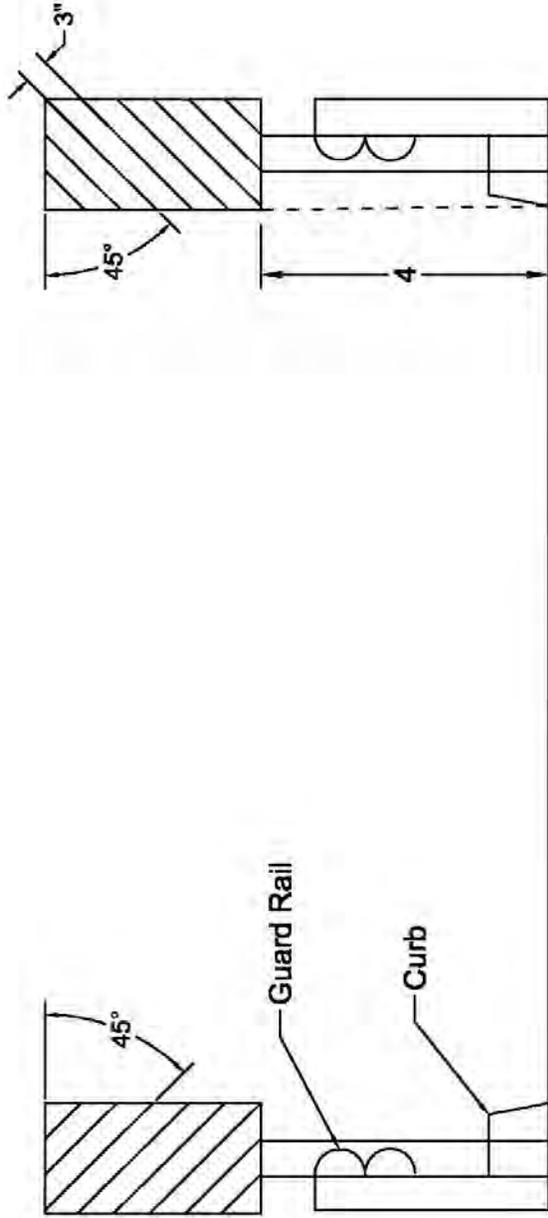
CULVERT LIST

ROAD NAME	STATION	CULVERT DIAMETER (in)	CULVERT LENGTH (ft)	FLUME LENGTH (ft)		RIP RAP - INLET (cy)	RIP RAP - OUTLET (cy)	BACKFILL MATERIAL	NOTES
B-2100	MP 1.05	12					5.0		Install Energy Dissipater
B-2100	MP 1.06	12							Install Flared Inlet
B-2100	MP 1.52	18					3.0		Install Energy Dissipater
B-2110	27+29	18	34			0.5	0.5	PR	New Culvert
B-2110	34+80					0.5	.5		Install Energy Dissipater
B-2110	39+45	24	30			1.0	1.0	PR	Replace Existing Culvert
B-2110	41+59	24	50			1.0	1.0	PR	New Culvert
B-2110	49+85	24	34			1.0	1.0	PR	New Culvert
B-2110	54+67	24	30	30		1.0	1.0	PR	New Culvert
B-2110.2	MP 0.08	18	28			0.5	0.5	PR	New Culvert
B-2110.2	MP 0.12						2.0		Install Energy Dissipater
B-2110.3	0+05	18	32			0.5	0.5	PR	New Culvert
B-2110.3	1+89	24	30			1.0	1.0	PR	New Culvert
B-2110.4	1+23	24	30			1.0	1.0	PR	New Culvert
B-2110.4	3+15	24	30			1.0	1.0	PR	New Culvert
B-2130	MP 0.57	18					3.0		Install Energy Dissipater
B-2133.1	0+10	18	40						New Culvert
B-4500	14+84	24	30			1.0	1.0	PR	Replace Existing Culvert
Upper Shuwah 1.2	11+77	18	26			0.5	0.5	PR	New Culvert
B-1500	11+00	18	26					PR	New Culvert
B-1500	32+40	18	26					PR	New Culvert
B-1500	73+50	18	26					PR	New Culvert
5+60 Spur	0+10	18	40					PR	New Culvert
B-1500.7	5+70	18	26					PR	New Culvert
B-1500.7A	1+00	18	26					PR	New Culvert

COMPACTION LIST

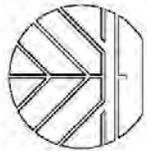
Road	Stations	Type	Max Depth Per Lift (inches)	Equipment Type	Equipment Weight (lbs)	Minimum Number of Passes	Maximum Operating Speed (mph)
B-2110 B-2110.1 B-2110.2 B-2110.3 B-2110.4 B-2132.1 B-2132 B-4500 Upper Shuwah 1.1 Upper Shuwah 1.2 Upper Shuwah 2 Upper Shuwah 2.1	25+39 – 56+06 0+00 – 6+60 MP 0.0 to MP 0.17 0+00 – 4+85 0+00 – 7+33 MP 0.00 – MP 0.26 MP 0.0 to MP 0.72 0+21 – 18+59 0+00 – 6+35 0+00 – 17+45 0+00 – 8+57 0+00 – 5+43	Existing Surface	6"	Vibratory Smooth Drum	6,000	3	3
Prehaul	All	Culvert Backfill	8"	Jumping Jack		3	
Reconstruction	All	Culvert Backfill	8"	Jumping Jack		3	
Construction	All except puncheon	Subgrade	6"	Vibratory Smooth Drum	6,000	3	3
Construction	All	Rock Placement	6"	Vibratory Smooth Drum	6,000	3	3
Reconstruction	All	Rock Lifts	6"	Vibratory Smooth Drum	6,000	3	3
Prehaul	All	Rock Lifts	6"	Vibratory Smooth Drum	6,000	3	3

Typical Bridge Flasher Replacement



Road Surface

Signs should be installed so that the alternating yellow and black lines point downward towards the center of the road at a 45 degree angle. The bottom of the sign should be 4 feet above the road surface. The inside edge of the sign should be lined up with the edge of the curb or guard rail. The signs should be secured to the post at the top and bottom of the sign.

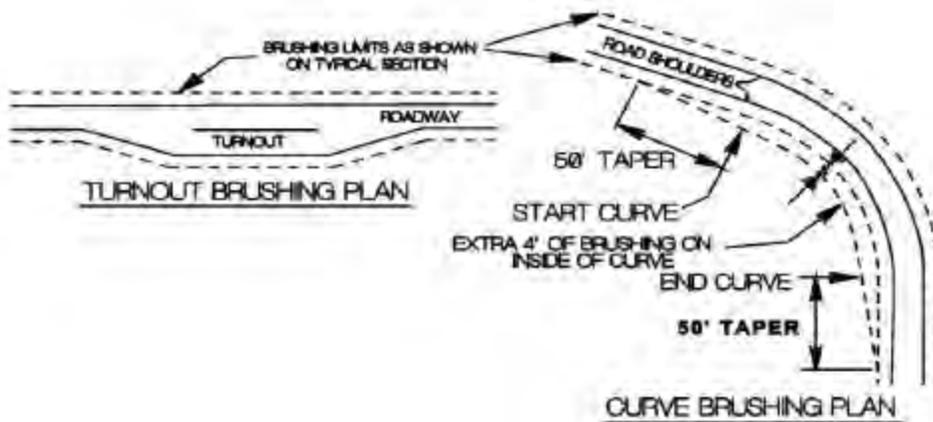
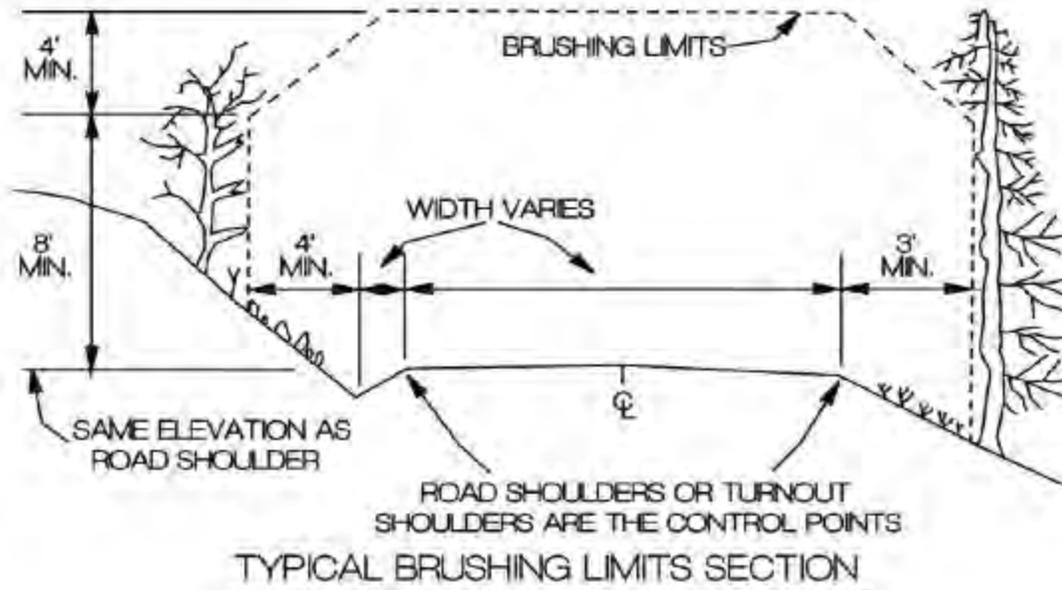


OLYMPIC REGION
 WASHINGTON STATE DEPARTMENT OF
Natural Resources
 Peter Goldmark - Commissioner of Public Lands

Note: Drawing not to Scale

Drawn by: Madisen Warnstadt
 7-6-15

BRUSHING DETAIL

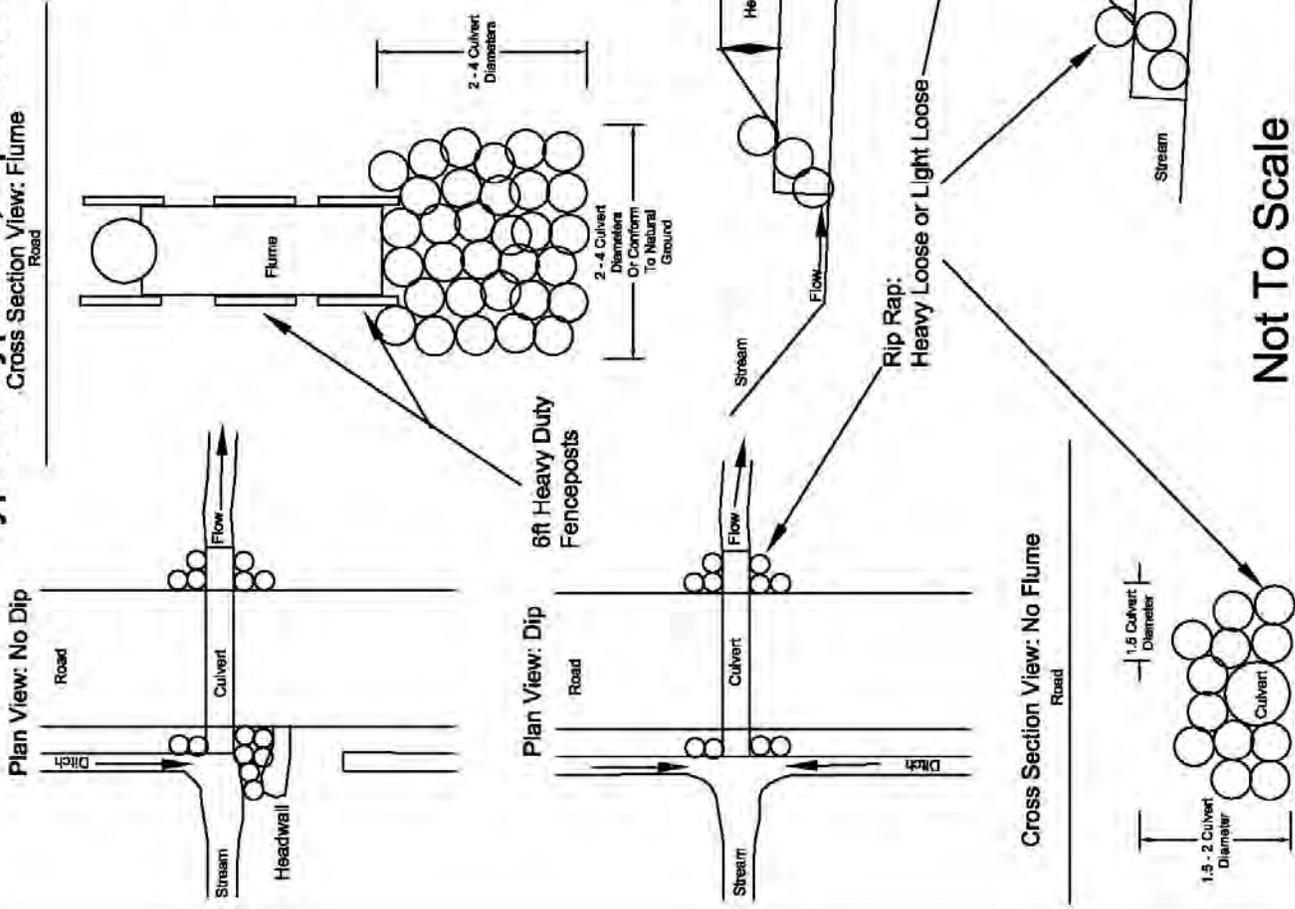


- 1) ALL VEGETATION WITHIN THE BRUSHING LIMITS SHALL BE CUT TO WITHIN 8' OF THE GROUND, UNLESS OTHERWISE DIRECTED BY THE CONTRACT ADMINISTRATOR.
- 2) ALL BRUSH, TREES, LIMBS, ETC. SHALL BE REMOVED FROM THE ROAD SURFACE.
- 3) ALL BRUSH, TREES, LIMBS, ETC. THAT MAY RESTRICT THE FLOW OF WATER SHALL BE REMOVED FROM THE DITCH LINE.
- 4) ALL DEBRIS THAT MAY ROLL OR MIGRATE INTO THE DITCHLINE SHALL BE REMOVED.

Typical Type Ns, Np Culvert Installation Detail Sheet.

- Water shall be diverted away from the work site before any "in stream" work begins, and shall continue until culvert installation is complete.
- Culvert lay shall match stream gradient up to 5%.
- Flumes 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.
- Rip rap shall be placed using a "zero height drop method", and shall be set in conjunction with the culvert installation.
- Rip rap shall be placed at headwalls, along the fill at the inlet, and at the end of flumes in accordance with this Detail. On culverts with no flume rip rap shall be placed along the fill at the outlet, unless there is stream drop or it is called for in the Road Plan, at which point it will be installed as an energy dissipater at the end of the culvert as specified in this Detail. All rip rap distance to be determined by the Contract Administrator or the District Engineer.
- Backfill compaction shall be achieved using a jumping jack, walk behind vibratory roller, or plate compactor on lifts not to exceed 6in. 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 3 times the width of the compactor footprint used..

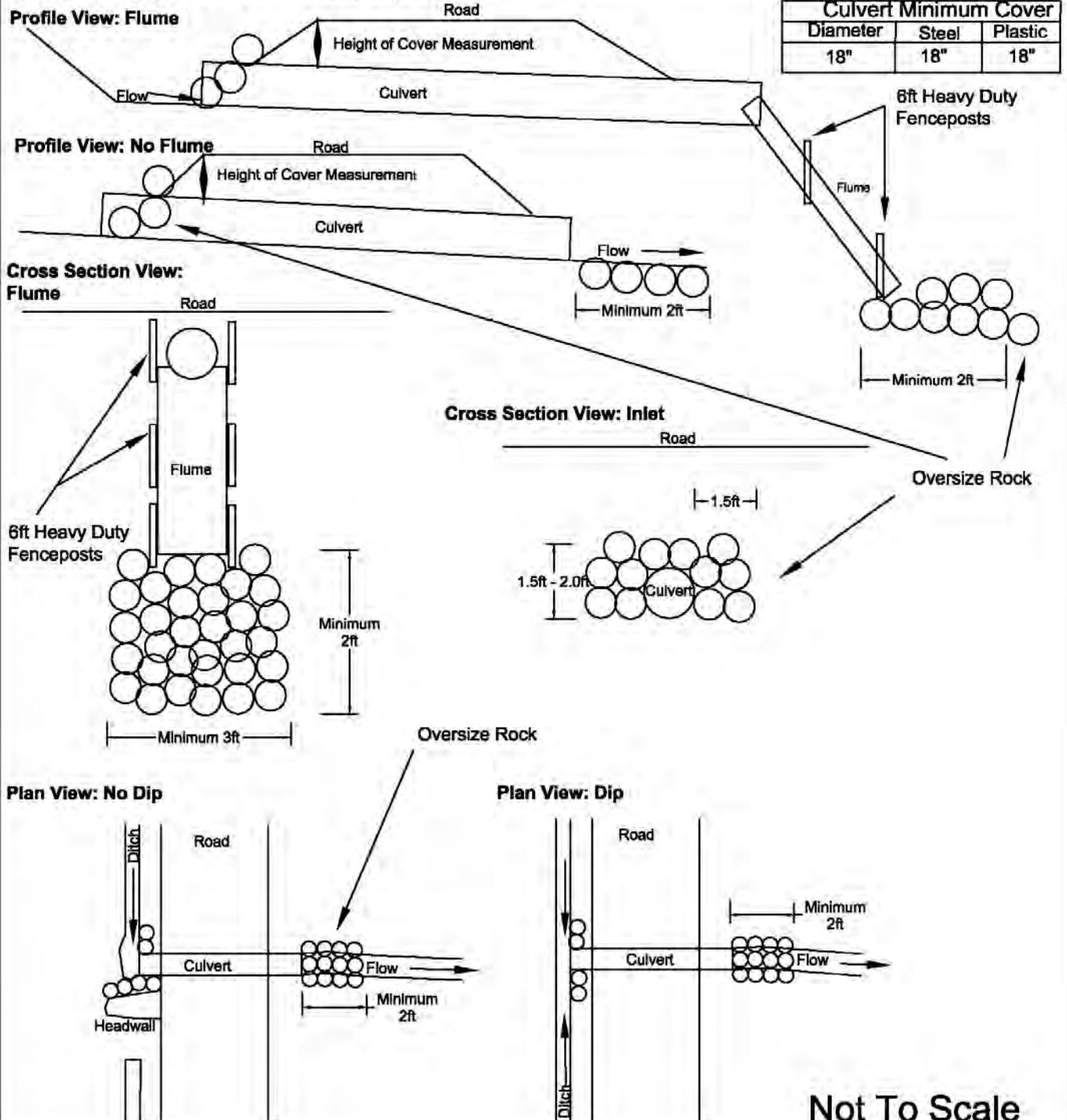
Culvert Minimum Cover	
Diameter	Material
24"	Steel
24"	Plastic
30" - 42"	24"
48" On	36"



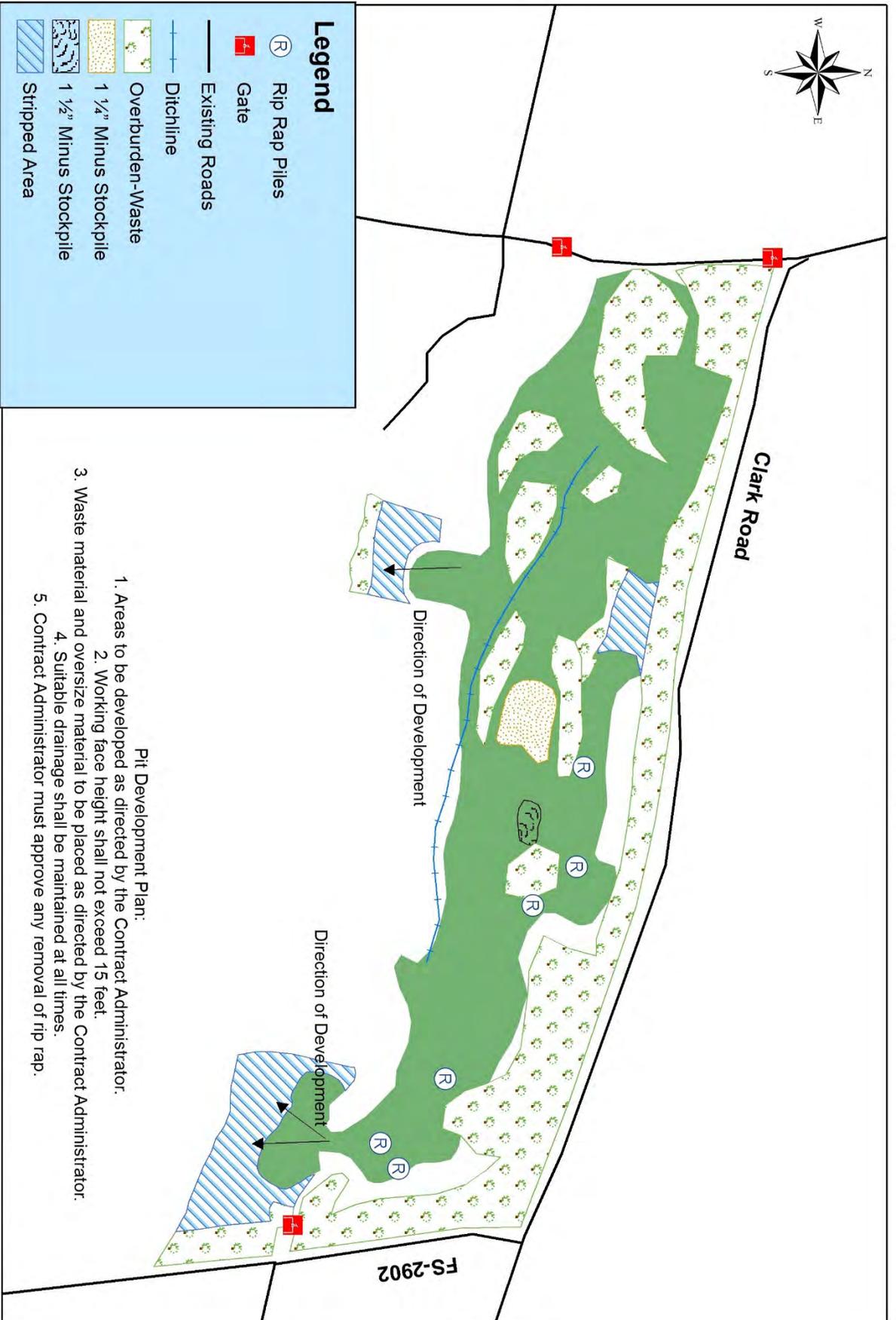
Not To Scale

Typical Cross Drain Culvert Installation Detail Sheet

- Culvert lay shall not exceed 10%.
- Flumes 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 off flumes in accordance with this Detail. On culverts with no flume 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..



Mary Clark Pit Plan T30N R12W Sec32



DEPARTMENT OF NATURAL RESOURCES

FORM 9-87(Rev. 01-08)

SUMMARY - Road Development Costs

SALE NAME: Shuwah
 CONTRACT#: 30-092732
 LEGAL DESCRIPTION: 0

REGION: Olympic

DISTRICT: Coast

ROAD NAME:	5+60 Spur	3+10 Spur	B-2132.2	B-2133.1	B-4500	Upper Shuwah		Recon		Recon		Upper Shuwah		TOTAL
ROAD TYPE:	Com	Com	Com	Com	Com	Recon	Recon	Recon	Recon	Recon	Recon	Recon	Recon	SHEET #2-3
NUMBER OF STATIONS:	5.60	3.10	3.00	4.85	1.16	3.92	30.67	4.85	7.33	18.59	6.35	89.42	513.63	
SIDESLOPE:	5%	5%	5%	2.5%	5%	5%	0%	0%	0%	0%	0%	0%		
CLEARING AND GRUBBING:	\$806	\$496	\$378	\$611	\$146	\$494	\$0	\$0	\$0	\$0	\$0	\$2,931	\$0	
ROAD BRUSHING:	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$2,602	
EXCAVATION AND FILL:	\$1,008	\$558	\$540	\$1,571	\$209	\$706	\$0	\$0	\$0	\$0	\$0	\$4,392	\$0	
ROAD GRADING:	\$0	\$0	\$0	\$0	\$0	\$0	\$199	\$32	\$48	\$121	\$41	\$441	\$642	
DITCH CLEANING/CONSTRUCTION:	\$0	\$0	\$0	\$0	\$0	\$0	\$385	\$240	\$0	\$0	\$469	\$1,094	\$1,869	
ROCK TOTALS (Cu Yds.)	8,130	8,130	\$4,301	\$1,786	\$3,031	\$5,961	\$1,140	\$4,220	\$20,701	\$3,298	\$4,288	\$6,339	\$6,431	\$61,495
Ballast:	950	950	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$9,374
Surface:	32	32	\$0	\$0	\$26	\$0	\$0	\$98	\$27	\$36	\$45	\$0	\$232	\$74
OverSIZE:														
CTL VERTS AND FLUMES:	\$880	\$0	\$0	\$880	\$0	\$0	\$4,613	\$1,440	\$1,561	\$780	\$0	\$10,155	\$4,092	
STRUCTURES:	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$600	
MISC. EXPENSES:	\$0	\$0	\$0	\$28	\$7	\$0	\$528	\$428	\$638	\$859	\$577	\$3,066	\$5,725	
OVERHEAD:	\$630	\$256	\$358	\$815	\$135	\$488	\$2,387	\$492	\$591	\$733	\$677	\$7,560	\$3,698	
TOTAL COSTS:	\$7,624	\$3,095	\$4,333	\$9,866	\$1,638	\$5,907	\$28,912	\$5,956	\$7,162	\$8,877	\$8,196	\$91,566	\$47,214	
COST PER STATION:	\$1,362	\$999	\$1,444	\$2,034	\$1,412	\$1,507	\$943	\$1,228	\$977	\$477	\$1,291	\$1,024	\$77.24	
MOBILIZATION:			\$11,650											
ROAD DEACTIVATION AND ABANDONMENT COSTS:			\$0											
PR Work:			\$0											

NOTE: This appraisal has no allowance for profit and risk.
 Sheet 1 of 3
 Plans to be furnished by:

TOTAL (All Roads) = \$150,429
 SALE VOLUME MBF = 2,324
 TOTAL COST PER MBF = \$64.73
 TOTAL COST PER STATION = \$249.45
 Compiled by: M.W. revised by Bill Mcdhl Date: 1-15-2016

ROAD COST Shuwah Thin Revised.xlsx

SALE NAME: Shuwah
 LEGAL DESCRIPTION: 0

CONTRACT#: 30-092732
 REGION: Olympic

DISTRICT: Coast

SUMMARY - Road Development Costs

ROAD NAME:	Upper Shuwah 1.2	Upper Shuwah 2.1	B-2100	B-2110	B-2110.1	B-2110.2	B-2130	B-2132	B-2132.1	B-2133	FS-2902	Upper Shuwah 2
ROAD TYPE:	Recon.	Recon.	Prehaul	Prehaul	Prehaul	Prehaul	Prehaul	Prehaul	Prehaul	Prehaul	Prehaul	Prehaul
NUMBER OF STATIONS:	17.45	5.43	82.37	25.39	6.60	8.82	53.85	38.12	13.73	18.06	129.89	8.57
SIDE SLOPE:	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
ROAD BRUSHING:	\$0	\$0	\$304	\$0	\$119	\$0	\$0	\$352	\$247	\$0	\$0	\$154
EXCAVATION AND FILL:	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
ROAD GRADING:	\$113	\$35	\$0	\$0	\$43	\$57	\$0	\$248	\$89	\$0	\$0	\$56
DITCH CLEANING/CONSTRUCTION	\$0	\$0	\$0	\$1,441	\$0	\$0	\$0	\$62	\$124	\$0	\$0	\$0
ROCK TOTALS (Cu. Yds.):												
Ballast:	\$4,108	\$1,366	\$0	\$817	\$3,348	\$0	\$0	\$533	\$761	\$0	\$0	\$629
Surface:	\$0	\$0	\$939	\$792	\$0	\$572	\$1,135	\$1,046	\$2,055	\$607	\$2,229	\$0
Oversize:	\$13	\$0	\$0	\$0	\$0	\$26	\$36	\$0	\$0	\$0	\$0	\$0
CULVERTS AND FLUMES:	\$572	\$0	\$0	\$0	\$0	\$660	\$0	\$0	\$0	\$0	\$0	\$0
STRUCTURES:	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$600	\$0
MISC. EXPENSES:	\$1,522	\$462	\$12	\$0	\$439	\$20	\$0	\$20	\$120	\$0	\$0	\$50
OVERHEAD:	\$570	\$168	\$113	\$275	\$355	\$120	\$105	\$203	\$306	\$55	\$255	\$80
TOTAL COSTS:	\$6,898	\$2,031	\$1,368	\$3,325	\$4,304	\$1,455	\$1,276	\$2,463	\$3,702	\$661	\$3,084	\$969
COST PER STATION:	\$395	\$374	\$17	\$131	\$652	\$165	\$24	\$65	\$270	\$37	\$24	\$113

SUMMARY - Road Development Costs

SALE NAME: Shuwah CONTRACT#: 30-092732 REGION: Olympic DISTRICT: Coast
 LEGAL DESCRIPTION: 0

ROAD NAME:	B-1500	B-1500.1	B-1500.2	B-1500.7	B-1500.7A	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ROAD TYPE:	Prehaul	Prehaul	Prehaul	Prehaul	Prehaul	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NUMBER OF STATIONS:	79	5	4	12	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SIDESLOPE:	0%	0%	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	\$0	\$0
ROAD BRUSHING:	\$1,426	\$0	\$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	\$0	\$0
ROAD GRADING:	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
DITCHING:	\$86	\$0	\$0	\$1,156	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
ROCK TOTALS (Cu Yds.):	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Ballast:	\$1,830	\$1,743	\$481	\$695	\$2,026	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Surface:	\$0	\$0	\$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	\$0	\$0
CULVERTS AND ELLUMES:	\$1,716	\$0	\$0	\$572	\$572	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
STRUCTURES:	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
MISC. EXPENSES:	\$1,048	\$436	\$180	\$996	\$420	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
OVERHEAD:	\$550	\$196	\$59	\$218	\$272	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
TOTAL COSTS:	\$6,655.16	\$2,375.55	\$720.49	\$2,636.82	\$3,289.62	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
COST PER STATION:	\$84.03	\$456.84	\$192.13	\$216.13	\$657.92	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00

FOREST ACCESS ROAD MAINTENANCE SPECIFICATIONS

Cuts and Fills

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

Surface

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

Drainage

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

Preventative Maintenance

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

Termination of Use or End of Season

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

Debris

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

