WASHINGTON STATE DEPARTMENT OF NATURAL RESOURCES

TIMBER NOTICE OF SALE

***SALE NAME**: MAID MARRIAN* ***AGREEMENT NO**: 30-106339*

AUCTION: March 26, 2025 starting at 10:00 a.m., Northwest Region Office, Sedro-Woolley, WA

COUNTY: Whatcom, Skagit

SALE LOCATION: Sale located approximately 12 miles northwest of Sedro-Woolley, WA.

PRODUCTS SOLD AND SALE AREA:

All timber bounded by white timber sale boundary tags and the AL-ML Road, except trees 60 inches or larger measured at diameter at breast height, cedar salvage (cedar snags, preexisting dead and down cedar trees and cedar logs), trees marked with blue paint on the bole and root collar, forest products tagged out by blue special management tags (WMZs and RMZs), and forest products tagged out by yellow leave tree area tags in Unit #1 (collectively labelled 1A and 1B).

All timber bounded by white timber sale boundary tags, except trees 60 inches or larger measured at diameter at breast height, cedar salvage (cedar snags, preexisting dead and down cedar trees and cedar logs), trees marked with blue paint on the bole and root collar, forest products tagged out by blue special management tags (WMZs and RMZs), and forest products tagged out by yellow leave tree area tags in Unit #2 (collectively labelled 2A, 2B, 2C and 2D).

All timber bounded by white timber sale boundary tags and AL-ML Road, except trees 60 inches or larger measured at diameter at breast height, cedar salvage (cedar snags, preexisting dead and down cedar trees and cedar logs), trees marked with blue paint on the bole and root collar, and forest products tagged out by yellow leave tree area tags in Units #3.

All timber bounded by white timber sale boundary tags, property line, and the AM-ML and AL-ML roads, except trees 60 inches or larger measured at diameter at breast height, cedar salvage (cedar snags, preexisting dead and down cedar trees and cedar logs), trees marked with blue paint on the bole and root collar, and forest products tagged out by yellow leave tree area tags in Units #4 (collectively labelled 4A, 4B, and 4C).

All timber as described for removal in Schedule B located in the RMZ and WMZ thinning areas (beyond the blue special management tags up to the white timber sale boundary tags) within Units #1 and #2.

All timber bounded by orange right of way tags, except that title to the timber within the right of way tags is not conveyed to the Purchaser unless the road segment is actually constructed, except as described for removal in Schedule B.

All forest products above located on part(s) of Sections 1 and 2 all in Township 36 North, Range 4 East, Sections 35 and 36 all in Township 37 North, Range 4 East, W.M., containing 133 acres, more or less.

CERTIFICATION: This sale is certified under the Sustainable Forestry Initiative® program Standard (cert no: BVC-SFIFM-018227)

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TIMBER NOTICE OF SALE

ESTIMATED SALE VOLUMES AND QUALITY:

Species	Avg DBH	Ring Count	Total MBF	MBF by Grade 1P	2P	3P	SM	1S	2S	3S	4S	UT
Hemlock	16.3		2,032						1,111	706	213	2
Douglas fir	20.4	6	1,938						1,310	576	52	
Silver fir	14.3		105						40	36	29	
Redcedar	29.2		63							62	1	
Red alder	12		55							21	34	
Sale Total			4,193									

MINIMUM BID: $1,050,000.00

BID METHOD: Sealed Bids

PERFORMANCE SECURITY: $100,000.00

SALE TYPE: Lump Sum

EXPIRATION DATE: March 31, 2027

ALLOCATION: Export Restricted

BID DEPOSIT: $105,000.00 or Bid Bond. Said deposit shall constitute an opening bid at the appraised price.

HARVEST METHOD: Cable; shovel, tracked skidder or "6-wheeled rubber-tired skidders with over-the-tire tracks spanning both sets of rear tires" on sustained slopes 40% or less; self-leveling equipment on sustained slopes 55% or less; tethered equipment may be utilized (See below for restrictions); also, a feller-buncher may be utilized on sustained slopes 40% or less for falling.

Purchaser must obtain prior written approval from the Contract Administrator for areas as to where to utilize tethered equipment prior to use. If ground disturbance is causing excessive damage, as determined by the Contract Administrator, the equipment will no longer be authorized.

Falling and yarding in RMZ and WMZ thinning areas shall not be permitted during the bark slippage season unless the Purchaser provides a written plan outlining mitigation measures and the plan is pre-authorized in writing by the Contract Administrator. This season is estimated to run from April 1 to July 15 but may vary depending on weather conditions. Falling and Yarding will not be permitted from November 1 to March 31 unless authorized in writing by the Contract Administrator (THIS PERTAINS TO GROUND-BASED EQUIPMENT ONLY) to reduce soil damage and erosion. In addition, there is also a lot of at least seasonally wet areas under a quarter acre and the soil is very susceptible to erosion.

ROADS: 77.35 stations of required construction. 765.20 stations of required prehaul maintenance. 44.30 stations of abandonment.

Rock may be obtained from the following source(s) on State land at no charge to the Purchaser: Alger Pit at Station 216+65 of the AL-ML Road. Doc Spratley Pit at Station 3+00 of the ML-04 Road. Christie Pit at Station 181+35 of the CT-ML Road.

Development of new and/or existing rock source(s) may involve drilling, shooting, and processing rock to generate riprap, shot rock, and 3-inch-minus ballast rock.

An estimated total quantity of rock needed for this proposal: 288 cubic yards of riprap, 2,730 cubic yards of shot rock and 4,705 cubic yards of 3-inch minus ballast rock.

Road work, the hauling of rock and the hauling of forest products on the ML-ML Road will not be permitted from November 1 to March 31. THIS SHALL NOT BE WAIVED (this is a Lake Whatcom WAU requirement). Road work and the hauling of rock on the AL-ML, AL-79, AL-82, AL-8203, AM-ML, AM-43 roads will not be permitted from November 1 to March 31 unless authorized in writing by the Contract Administrator to reduce soil damage and siltation. The hauling of forest products will not be permitted from November 1 to March 31 unless authorized in writing by the Contract Administrator (except the ML-ML Road which is in the Lake Whatcom WAU, see restriction stated above) to reduce soil damage and siltation.

ACREAGE DETERMINATION

CRUISE METHOD: Acres determined by GPS and LiDAR traverse for units and for right-of-way. Cruise was conducted via variable plot sample type on most areas except for Unit 4A and right-of-ways #1, #2, #4, and #8 in which 1/20 acre fixed plot sample type was used. See Cruise Narrative for further details. Shapefiles of units are available upon request, and on the DNR website after the BNR meeting in which the sale is presented.

FEES: $71,281.00 is due on day of sale. $9.00 per MBF is due upon removal. These are in addition to the bid price.

SPECIAL REMARKS:

1. Trees marked with orange paint represent the last take tree on State land along property line boundaries.
2. Outer boundary of harvest area in RMZ and/or WMZ thinning areas is demarcated with blue special management tags within the sale area.
3. A portion of the construction work is located on abandoned grade.
4. A portion of the existing road abandonment work is required prior to timber removal, see Road Plan Section 0-11 for further details.
5. A portion of the sale area has been previously thinned (majority of Unit 1A and all VDT areas).
6. The gated road system leading to the sale area may be opened for hunting season or other purposes. The Purchaser may request to install a temporary gate closer to the sale harvest units. The gate location, type, and lock(s) shall be presented to the Contract Administrator for review and approval.
7. Recreation trail repair/clean out shall be completed before November 1 each year that harvest activity or road building occurs within 200 feet of the PNW trail. See Schedule C for more details.
8. There are areas internal to the overall unit perimeter that have been bound out by white timber sale boundary tags in Units #1 and #2.
9. Cedar salvage may be offered for sale separately from the timber sale and is NOT included in the products sold.

Schedule B
Thinning Prescription

THINNING PRESCRIPTION MAID MARRIAN VDT AREAS (UNITS 1A, 1B, 2C, AND 2D):

Purchaser shall maintain 130 trees per acre (TPA) harvesting specified trees in the following order:

1) Western hemlock 14" to 18" DBH
2) Douglas-fir 8" to 18" DBH

A total of five (5) conifer trees per acre from the largest diameter class of the prescribed removal trees shall be designated for riparian habitat enhancement. These five (5) trees are in addition to the minimum of 130 dominant and co-dominant live residual trees (>6" DBH) required per acre. Three to five of these trees shall be felled toward the stream. The trees to be felled shall be chosen from within 25 feet of the harvest boundary adjacent to the stream if possible and shall be felled toward the stream where feasible.

THINNING COMPLIANCE:

The Contract Administrator will approve and certify in writing all persons engaged in felling or yarding of timber prior to any cutting operations, per the H-011 clause of the contract.

The Purchaser shall demonstrate, to the satisfaction of the Contract Administrator, a working knowledge and ability to accurately measure and calculate TPA.

To ensure that the Purchaser follows the unit prescription, the Purchaser shall measure sample plots across the units concurrently while felling timber. These plots shall be pre-determined, with approval by the Contract Administrator, on a grid or along a line to ensure random and unbiased plot locations. Plot centers and count trees will be marked in the field with marking approved by the Contract Administrator.

The Purchaser shall submit compliance plot data to the Contract Administrator after 5 acres of have been cut and every 5 acres thereafter.

If the average plot data has demonstrates that the trees per acre is below 130 for a submitted 5-acre portion of the harvest area the harvester shall stop harvest activities until a recertification of fallers can be done.

Schedule C
Recreation Trail Clean Out and Repair

Purchaser is responsible for locating and marking the Pacific Northwest Trail (shown on Timber Sale map as PNW Trail) within the sale boundary on the ground prior to harvest as approved by the Contract Administrator. If needed upon completion of harvest activities, Purchaser shall locate the original trail location with pink flagging. Wooden stream crossings within 200 feet of harvest units must also be located and marked in the field. The Contract Administrator will then approve the trail and wooden stream crossing locations in writing and the repair/clean out can begin.

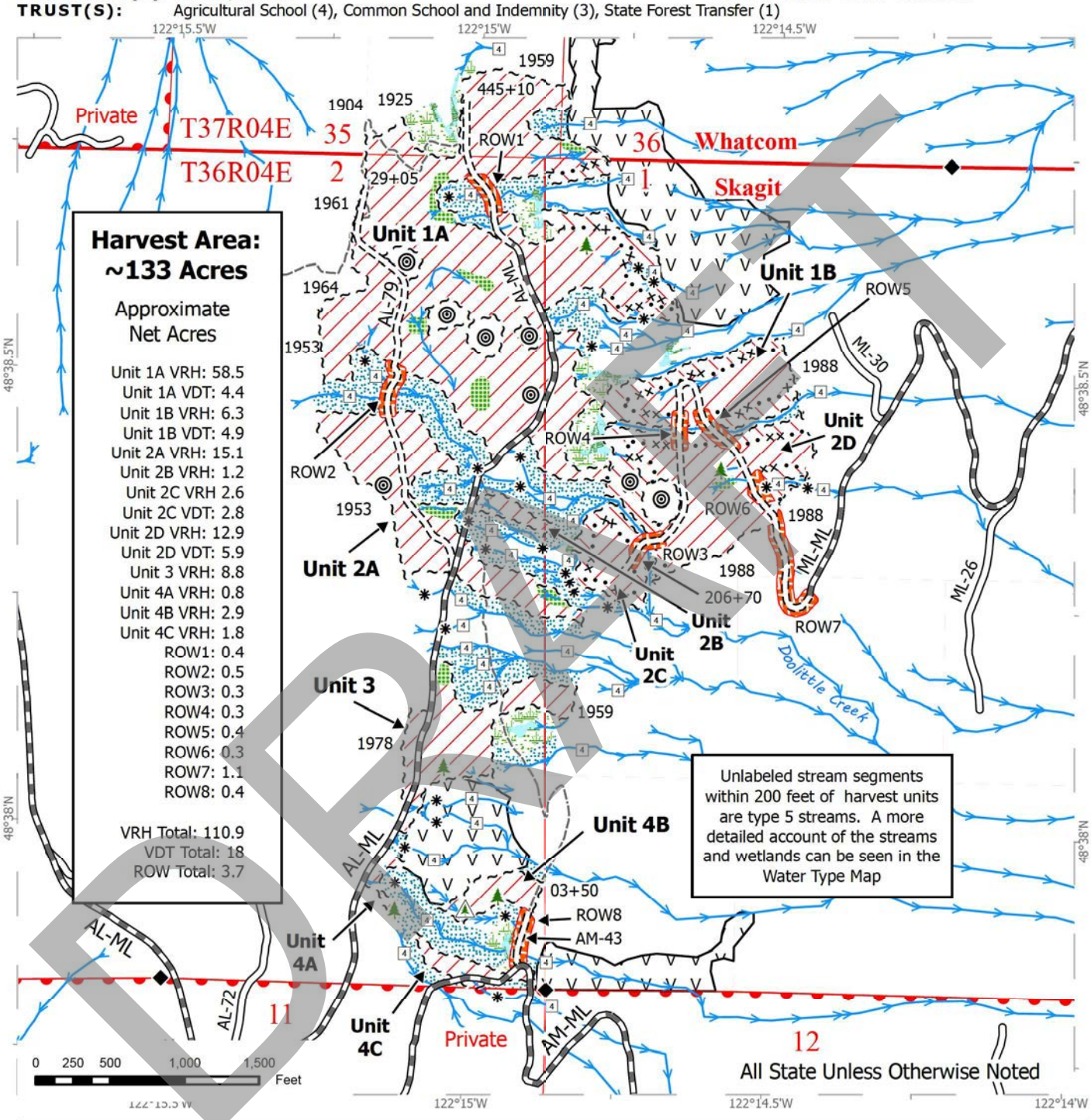
Recreation trail repair/clean out shall be completed before November 1 each year that harvest activity or road building occurs within 200 feet of the trail. Clean out/repair shall consist of the following:

- Remove all logging debris from the recreation trail and the area within 5 feet of the travel path.
- The trail will be repaired where holes or ruts resulted due to logging damage. The trail will be returned to its original width on mineral soils and free of organic debris.
- Existing drainage control measures shall be returned to pre-harvest conditions.
- If damaged by harvest activities and not located within new road construction, wooden stream crossing structures shall be repaired or reconstructed to pre-harvest conditions.

TIMBER SALE MAP

SALE NAME: MAID MARRIAN
AGREEMENT#: 30-106339
TOWNSHIP(S): T36R4E, T37R4E
TRUST(S): Agricultural School (4), Common School and Indemnity (3), State Forest Transfer (1)

REGION: Northwest Region
COUNTY(S): Skagit, Whatcom
ELEVATION RGE: 2160-3240



Harvest Area: ~133 Acres

Approximate Net Acres

Unit 1A VRH:	58.5
Unit 1A VDT:	4.4
Unit 1B VRH:	6.3
Unit 1B VDT:	4.9
Unit 2A VRH:	15.1
Unit 2B VRH:	1.2
Unit 2C VRH	2.6
Unit 2C VDT:	2.8
Unit 2D VRH:	12.9
Unit 2D VDT:	5.9
Unit 3 VRH:	8.8
Unit 4A VRH:	0.8
Unit 4B VRH:	2.9
Unit 4C VRH:	1.8
ROW1:	0.4
ROW2:	0.5
ROW3:	0.3
ROW4:	0.3
ROW5:	0.4
ROW6:	0.3
ROW7:	1.1
ROW8:	0.4
VRH Total:	110.9
VDT Total:	18
ROW Total:	3.7

Unlabeled stream segments within 200 feet of harvest units are type 5 streams. A more detailed account of the streams and wetlands can be seen in the Water Type Map

- Variable Retention Harvest
- Variable Density Thinning
- Tagged Right-of-Way
- Leave Tree Area
- Forested Wetland
- Wetland Mgt Zone
- Riparian Mgt Zone
- No Entry Zone
- Sale Boundary Tags
- Special Mgmt Area Tags
- Existing Roads
- Required Pre-Haul Maintenance
- Required Construction
- PNW Trail (See H-141 & Schedule C)
- Streams
- Stream Type
- Stream Break
- Leave Tree Area <1/4-acre
- Non-Tradeable Leave Trees
- Area Bound Out By TSB Tags
- Survey Monument

N

Accessed: 01/09/2025 13:18
Prepared By: ctho490
Modification Date: ctho490 10/17/2024

DRIVING MAP

SALE NAME: MAID MARRIAN
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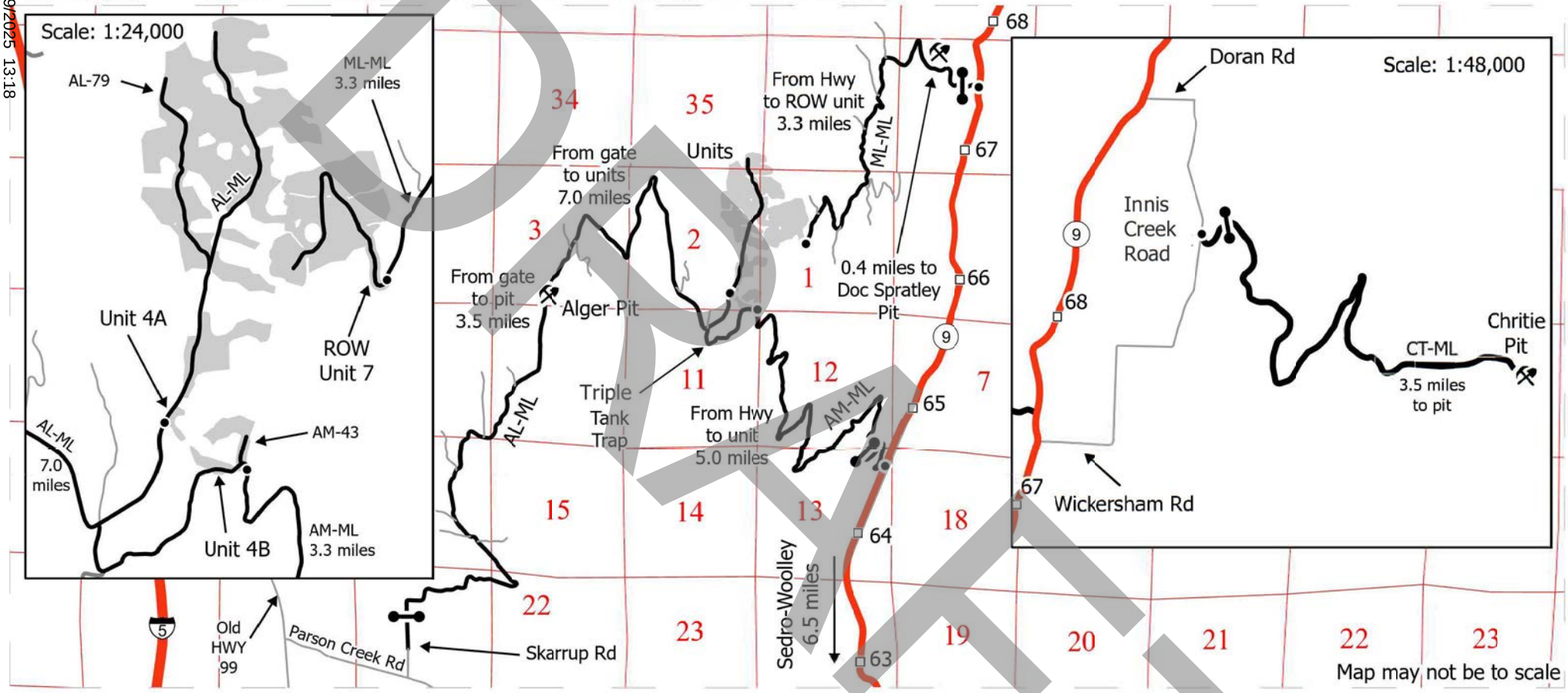
TOWNSHIP(S): T36R4E, T37R4E
TRUST(S): Agricultural School (4), Common School and Indemnity (3), State Forest Transfer (1)

REGION: Northwest Region
COUNTY(S): Skagit, Whatcom
ELEVATION RGE: 2160-3240



Legend

- Harvest Units
- Highway
- Haul Route
- Other Roads
- Rock Pit
- Gate F1-3 Lock
- Distance Indicator
- Milepost Marker

DRIVING DIRECTIONS:

Units:

From Hwy 9 between MP markers 64 & 65 travel west (through gate) on the AM-ML for 5.0 miles to Unit 4B.
From Hwy 9 between MP markers 67 & 68 travel west (through gate) on the ML-ML for 3.3 miles to ROW Unit 7.
From Parson Creek Road turn north onto Skarrup Road. Skarrup Road becomes the AL-ML.
Continue through the gate (F1-3 lock) on the AL-ML for 7.0 miles to Unit 4A.

Rock Pits:

Alger Pit: From Skarrup Road continue through the gate onto the AL-ML and continue for 3.5 miles. The pit will be to the east.
Doc Spratley Pit: From Hwy 9 between MP markers 67 & 68 turn west onto the ML-ML. Travel 0.4 miles (through gate) and the pit is to the north.
Christie Pit: From Hwy 9 take either Wickersham or Doran road to Innis Creek Road. From Innis Creek Road turn east onto the CT-ML.
Travel (through gate) for 3.5 miles and the pit is to the north.

N

Prepared By: ctho490

Modification Date: ctho490 10/17/2024

Timber Sale Cruise Report
Maid Marrian

Sale Name: MAID MARRIAN

Sale Type: LUMP SUM

Region: NORTHWEST

District: BAKER

Lead Cruiser: Bailey Vos

Other Cruisers: Matt Llobet

Cruise Narrative:
Location: Maid Marrian is comprised of 14 harvest units and 8 right of way units. Units are accessed from the Alger ML off of Skarrup RD. Additional units are accessed from the AM-ML between milepost 64 and 65 on HWY 9.

Legal Description: SEC 1, 2 T36, R04E
Elevation Range: 2120'-3120'

Cruise Design: In the cruise design, Unit 4B was cruised using a 62.5 BAF, while all other harvest units were sampled with a 54.44 BAF. For ROW assessment along old road grades, 1/20th acre fixed-radius plots were utilized. Throughout the sale, a 1:1 cruise-to-count sample ratio was maintained, with one plot installed per every 2 acres. Bole height was measured with a
Relaskop/laser and taken to a 5"/6" top or break point (40% of diameter at 16 feet). Trees were segmented into common west-side log lengths and defect was observed at each cruise plot.

Timber Quality: The sale is comprised primarily of Douglas fir, western hemlock, silver fir, and a component of red cedar in unit 4b. Timber quality is comparable to fast growing Douglas fir stands throughout western Washington. Minor defect is present in the Douglas fir and western hemlock, IE: spike knot, sinuosity, broken tops and standing dead.

Logging and Stand Conditions: The topography is mellow and only slightly sloped. Approximately 90% of the sale will be easily ground based. Small portions of the sale may require cable harvest.

Timber Sale Notice Volume (MBF)

				MBF Volume by Grade				
Sp	DBH	Rings/In	Age	All	2 Saw	3 Saw	4 Saw	Utility
WH	16.3			2,032	1,111	706	213	3
DF	20.4	6.0		1,937	1,310	576	52	
SF	14.3			105	40	36	29	
RC	29.2			64		62	1	
RA	12.0			55		21	34	
ALL	17.5	6.0		4,193	2,461	1,400	329	3

Timber Sale Notice Weight (tons)

	Tons by Grade				
Sp	All	2 Saw	3 Saw	4 Saw	Utility
WH	17,243	8,537	6,504	2,170	31
DF	14,543	9,043	4,994	506	
SF	925	321	297	307	
RC	435		424	12	
RA	412		146	266	
ALL	33,558	17,902	12,364	3,261	31

Timber Sale Overall Cruise Statistics

BA (sq ft/acre)	BA SE (%)	V-BAR (bf/sq ft)	V-BAR SE (%)	Net Vol (bf/acre)	Vol SE (%)
277.7	2.9	132.1	1.7	36,979	3.4

Timber Sale Unit Cruise Design

Unit	Design	Cruise Acres	FMA Acres	N Plots	N Cruise Plots	N Void Plots
MAID MARRIAN 1A	B1C: VR, 1 BAF (54.44) Measure/ Count Plots, Sighting Ht = 4.5 ft	58.5	60.9	32	16	0
MAID MARRIAN 1B	B1C: VR, 1 BAF (54.44) Measure/ Count Plots, Sighting Ht = 4.5 ft	6.3	6.3	5	3	0
MAID MARRIAN 2A	B1C: VR, 1 BAF (54.44) Measure/ Count Plots, Sighting Ht = 4.5 ft	15.1	16.0	8	7	0
MAID MARRIAN 2B	B1: VR, 1 BAF (54.44) Measure All, Sighting Ht = 4.5 ft	1.2	1.2	2	2	0
MAID MARRIAN 2C	B1C: VR, 1 BAF (54.44) Measure/ Count Plots, Sighting Ht = 4.5 ft	2.6	2.6	3	2	0
MAID MARRIAN 2D	B1C: VR, 1 BAF (54.44) Measure/ Count Plots, Sighting Ht = 4.5 ft	12.9	13.3	7	3	0
MAID MARRIAN 3	B1C: VR, 1 BAF (54.44) Measure/ Count Plots, Sighting Ht = 4.5 ft	8.8	9.3	6	3	0
MAID MARRIAN 4A	FX: FR plots (20 tree / acre expansion)	0.8	0.9	1	1	0
MAID MARRIAN 4B	B1: VR, 1 BAF (62.5) Measure All, Sighting Ht = 4.5 ft	2.9	2.9	2	2	0
MAID MARRIAN 4C	B1: VR, 1 BAF (54.44) Measure All, Sighting Ht = 4.5 ft	1.8	1.8	2	2	0
MAID MARRIAN VDT 1A	B1: VR, 1 BAF (54.44) Measure All, Sighting Ht = 4.5 ft	4.4	4.4	3	3	0
MAID MARRIAN	B1: VR, 1 BAF (54.44) Measure All,	4.9	4.9	4	4	0

Unit	Design	Cruise Acres	FMA Acres	N Plots	N Cruise Plots	N Void Plots
VDT 1B	Sighting Ht = 4.5 ft					
MAID MARRIAN VDT 2C	B1: VR, 1 BAF (54.44) Measure All, Sighting Ht = 4.5 ft	2.8	2.8	4	4	0
MAID MARRIAN VDT 2D	B1: VR, 1 BAF (54.44) Measure All, Sighting Ht = 4.5 ft	5.9	5.9	5	5	0
MAID MARRIAN ROW 1	FX: FR plots (20 tree / acre expansion)	0.4	0.4	1	1	0
MAID MARRIAN ROW 2	FX: FR plots (20 tree / acre expansion)	0.5	0.5	1	1	0
MAID MARRIAN ROW 3	B1: VR, 1 BAF (54.44) Measure All, Sighting Ht = 4.5 ft	0.3	0.3	1	1	0
MAID MARRIAN ROW 4	FX: FR plots (20 tree / acre expansion)	0.3	0.3	1	1	0
MAID MARRIAN ROW 5	B1: VR, 1 BAF (54.44) Measure All, Sighting Ht = 0 ft	0.4	0.4	1	1	0
MAID MARRIAN ROW 6	B1: VR, 1 BAF (54.44) Measure All, Sighting Ht = 4.5 ft	0.3	0.3	1	1	0
MAID MARRIAN ROW 7	B1: VR, 1 BAF (46.94) Measure All, Sighting Ht = 4.5 ft	1.1	1.1	2	2	0
MAID MARRIAN ROW 8	FX: FR plots (20 tree / acre expansion)	0.4	0.4	1	1	0
All		132.6	136.6	93	66	0

Timber Sale Log Grade x Sort Summary

Sp	Status	Grade	Sort	Dia	Len	BF Gross	BF Net	Defect %	Tons	MBF Net
DF	LIVE	2 SAW	Domestic	14.3	38	9,930	9,876	0.5	9,042.8	1,309.6
DF	LIVE	3 SAW	Domestic	8.7	36	4,371	4,340	0.7	4,994.4	575.5
DF	LIVE	4 SAW	Domestic	6.9	23	404	392	2.8	506.1	52.0
DF	LIVE	CULL	Cull	15.2	5	86	0	100.0	0.0	0.0
RA	LIVE	3 SAW	Domestic	10.6	40	157	157	0.0	145.6	20.9
RA	LIVE	4 SAW	Domestic	6.3	27	257	257	0.0	266.1	34.1
RC	LIVE	3 SAW	Domestic	13.1	36	488	470	3.6	423.5	62.4
RC	LIVE	4 SAW	Domestic	5.5	26	10	10	0.0	11.7	1.3
RC	LIVE	CULL	Cull	28.7	16	51	0	100.0	0.0	0.0
SF	LIVE	2 SAW	Domestic	12.7	32	305	305	0.0	321.3	40.5
SF	LIVE	3 SAW	Domestic	7.4	32	270	270	0.0	296.7	35.8
SF	LIVE	4 SAW	Domestic	6.2	29	236	219	7.0	307.1	29.1
WH	LIVE	2 SAW	Domestic	14.4	36	8,446	8,375	0.8	8,537.4	1,110.6
WH	LIVE	3 SAW	Domestic	9.0	35	5,357	5,322	0.6	6,504.2	705.8

Sp	Status	Grade	Sort	Dia	Len	BF Gross	BF Net	Defect %	Tons	MBF Net
WH	LIVE	4 SAW	Domestic	6.6	24	1,629	1,604	1.5	2,170.2	212.7
WH	LIVE	CULL	Cull	16.0	7	89	0	100.0	0.0	0.0
WH	LIVE	UTILITY	Pulp	5.0	34	22	22	0.0	31.3	2.9

Timber Sale Log Sort x Diameter Bin Summary

Sp	Bin	Status	Sort	Dia	Len	BF Net	Defect %	Tons	MBF Net
DF	5 - 7	LIVE	Domestic	6.6	31	1,461	0.8	1,921.3	193.7
DF	8 - 11	LIVE	Domestic	9.7	36	3,272	0.9	3,579.1	433.9
DF	12 - 15	LIVE	Cull	13.7	4	0	100.0	0.0	0.0
DF	12 - 15	LIVE	Domestic	13.7	38	7,287	0.7	6,894.1	966.3
DF	16 - 19	LIVE	Domestic	17.0	37	2,589	0.2	2,148.7	343.2
DF	16 - 19	LIVE	Cull	17.2	8	0	100.0	0.0	0.0
RA	5 - 7	LIVE	Domestic	6.2	27	257	0.0	266.1	34.1
RA	8 - 11	LIVE	Domestic	10.6	40	157	0.0	145.6	20.9
RC	5 - 7	LIVE	Domestic	6.4	31	23	5.9	33.9	3.0
RC	8 - 11	LIVE	Domestic	10.6	32	64	1.6	63.8	8.5
RC	12 - 15	LIVE	Domestic	12.7	35	45	5.8	57.7	6.0
RC	16 - 19	LIVE	Domestic	16.2	38	142	0.0	124.6	18.8
RC	20+	LIVE	Domestic	22.8	36	206	5.6	155.2	27.3
RC	20+	LIVE	Cull	28.7	16	0	100.0	0.0	0.0
SF	5 - 7	LIVE	Domestic	6.1	33	394	4.0	502.8	52.3
SF	8 - 11	LIVE	Domestic	9.0	40	95	0.0	101.0	12.6
SF	12 - 15	LIVE	Domestic	13.9	38	305	0.0	321.3	40.5
WH	5 - 7	LIVE	Pulp	5.0	34	22	0.0	31.3	2.9
WH	5 - 7	LIVE	Domestic	6.3	30	3,176	1.1	4,144.6	421.1
WH	8 - 11	LIVE	Domestic	9.6	36	3,751	0.6	4,529.8	497.3
WH	12 - 15	LIVE	Domestic	13.5	37	6,489	1.0	6,844.2	860.5
WH	12 - 15	LIVE	Cull	14.5	16	0	100.0	0.0	0.0
WH	16 - 19	LIVE	Cull	16.1	7	0	100.0	0.0	0.0
WH	16 - 19	LIVE	Domestic	17.5	40	1,886	0.2	1,693.2	250.1

Cruise Unit Report
MAID MARRIAN 1A

Unit Sale Notice Volume (MBF): MAID MARRIAN 1A

				MBF Volume by Grade			
Sp	DBH	Rings/In	Age	All	2 Saw	3 Saw	4 Saw
DF	20.7	6.0		1,041	728	291	22
WH	18.8			782	505	224	52
SF	14.2			52	25	22	5
ALL	19.6	6.0		1,874	1,258	537	79

Unit Cruise Design: MAID MARRIAN 1A

Design	Cruise Acres	FMA Acres	N Plots	N Cruise Plots	N Void Plots
B1C: VR, 1 BAF (54.44) Measure/Count Plots, Sighting Ht = 4.5 ft	58.5	60.9	32	16	0

Unit Cruise Summary: MAID MARRIAN 1A

Sp	Cruised Trees	All Trees	Trees/Plot	Ring-Count Trees
DF	43	78	2.4	2
WH	26	60	1.9	0
SF	2	6	0.2	0
ALL	71	144	4.5	2

Unit Cruise Statistics: MAID MARRIAN 1A

Sp	BA (sq ft/acre)	BA CV (%)	BA SE (%)	V-BAR (bf/sq ft)	V-BAR CV (%)	V-BAR SE (%)	Net Vol (bf/acre)	Vol CV (%)	Vol SE (%)
DF	132.7	76.5	13.5	134.1	17.5	2.7	17,790	78.5	13.8
WH	102.1	93.6	16.5	130.9	27.3	5.4	13,361	97.5	17.4
SF	10.2	251.2	44.4	87.0	21.4	15.1	888	252.1	46.9
ALL	245.0	23.9	4.2	130.8	22.3	2.6	32,039	32.7	5.0

Unit Summary: MAID MARRIAN 1A

Sp	Status	Rx	N	D	DBH	BL	THT	BF Gross	BF Net	Defect %	TPA	BA	RD	MBF Net
DF	LIVE	CUT	43	ALL	20.6	77	98	18,005	17,790	1.2	57.3	132.7	29.2	1,040.7
SF	LIVE	CUT	2	ALL	15.7	53	65	888	888	0.0	7.6	10.2	2.6	52.0

Sp	Status	Rx	N	D	DBH	BL	THT	BF Gross	BF Net	Defect %	TPA	BA	RD	MBF Net
WH	LIVE	CUT	26	ALL	17.7	67	83	13,556	13,361	1.4	59.7	102.1	24.3	781.6
ALL	LIVE	CUT	71	ALL	19.0	71	89	32,449	32,039	1.3	124.6	245.0	56.1	1,874.3
ALL	ALL	ALL	71	ALL	19.0	71	89	32,449	32,039	1.3	124.6	245.0	56.1	1,874.3

Cruise Unit Report
MAID MARRIAN 1B

Unit Sale Notice Volume (MBF): MAID MARRIAN 1B

				MBF Volume by Grade			
Sp	DBH	Rings/In	Age	All	2 Saw	3 Saw	4 Saw
DF	22.0			168	133	28	8
WH	11.7			143	20	102	21
ALL	13.7			311	153	130	29

Unit Cruise Design: MAID MARRIAN 1B

Design	Cruise Acres	FMA Acres	N Plots	N Cruise Plots	N Void Plots
B1C: VR, 1 BAF (54.44) Measure/Count Plots, Sighting Ht = 4.5 ft	6.3	6.3	5	3	0

Unit Cruise Summary: MAID MARRIAN 1B

Sp	Cruised Trees	All Trees	Trees/Plot	Ring-Count Trees
DF	8	13	2.6	0
WH	13	17	3.4	0
ALL	21	30	6.0	0

Unit Cruise Statistics: MAID MARRIAN 1B

Sp	BA (sq ft/acre)	BA CV (%)	BA SE (%)	V-BAR (bf/sq ft)	V-BAR CV (%)	V-BAR SE (%)	Net Vol (bf/acre)	Vol CV (%)	Vol SE (%)
DF	141.5	84.3	37.7	188.3	11.1	3.9	26,655	85.0	37.9
WH	185.1	109.3	48.9	122.8	16.3	4.5	22,722	110.5	49.1
ALL	326.6	42.5	19.0	151.2	25.3	5.5	49,378	49.4	19.8

Unit Summary: MAID MARRIAN 1B

Sp	Status	Rx	N	D	DBH	BL	THT	BF Gross	BF Net	Defect %	TPA	BA	RD	MBF Net
DF	LIVE	CUT	8	ALL	22.2	97	123	26,655	26,655	0.0	52.7	141.5	30.0	167.9
WH	LIVE	CUT	13	ALL	12.7	55	76	22,957	22,722	1.0	210.4	185.1	51.9	143.2
ALL	LIVE	CUT	21	ALL	15.1	63	85	49,613	49,378	0.5	263.1	326.6	82.0	311.1
ALL	ALL	ALL	21	ALL	15.1	63	85	49,613	49,378	0.5	263.1	326.6	82.0	311.1

Cruise Unit Report
MAID MARRIAN 2A

Unit Sale Notice Volume (MBF): MAID MARRIAN 2A

				MBF Volume by Grade			
Sp	DBH	Rings/In	Age	All	2 Saw	3 Saw	4 Saw
WH	17.7			239	120	96	23
DF	20.6			151	116	31	4
ALL	18.6			390	235	128	27

Unit Cruise Design: MAID MARRIAN 2A

Design	Cruise Acres	FMA Acres	N Plots	N Cruise Plots	N Void Plots
B1C: VR, 1 BAF (54.44) Measure/Count Plots, Sighting Ht = 4.5 ft	15.1	16.0	8	7	0

Unit Cruise Summary: MAID MARRIAN 2A

Sp	Cruised Trees	All Trees	Trees/Plot	Ring-Count Trees
WH	17	19	2.4	0
DF	10	12	1.5	0
ALL	27	31	3.9	0

Unit Cruise Statistics: MAID MARRIAN 2A

Sp	BA (sq ft/acre)	BA CV (%)	BA SE (%)	V-BAR (bf/sq ft)	V-BAR CV (%)	V-BAR SE (%)	Net Vol (bf/acre)	Vol CV (%)	Vol SE (%)
WH	129.3	38.6	13.6	122.2	21.9	5.3	15,797	44.4	14.6
DF	81.7	87.3	30.9	122.5	28.1	8.9	10,005	91.7	32.1
ALL	211.0	35.0	12.4	122.3	23.8	4.6	25,803	42.3	13.2

Unit Summary: MAID MARRIAN 2A

Sp	Status	Rx	N	D	DBH	BL	THT	BF Gross	BF Net	Defect %	TPA	BA	RD	MBF Net
DF	LIVE	CUT	10	ALL	21.1	74	93	10,542	10,005	5.1	33.6	81.7	17.8	151.1
WH	LIVE	CUT	17	ALL	17.4	65	81	16,091	15,797	1.8	78.3	129.3	31.0	238.5
ALL	LIVE	CUT	27	ALL	18.6	67	84	26,633	25,803	3.1	111.9	211.0	48.8	389.6
ALL	ALL	ALL	27	ALL	18.6	67	84	26,633	25,803	3.1	111.9	211.0	48.8	389.6

Cruise Unit Report
MAID MARRIAN 2B

Unit Sale Notice Volume (MBF): MAID MARRIAN 2B

				MBF Volume by Grade			
Sp	DBH	Rings/In	Age	All	2 Saw	3 Saw	4 Saw
WH	19.0			17	14	1	2
DF	23.6			16	12	4	
ALL	20.6			33	26	5	2

Unit Cruise Design: MAID MARRIAN 2B

Design	Cruise Acres	FMA Acres	N Plots	N Cruise Plots	N Void Plots
B1: VR, 1 BAF (54.44) Measure All, Sighting Ht = 4.5 ft	1.2	1.2	2	2	0

Unit Cruise Summary: MAID MARRIAN 2B

Sp	Cruised Trees	All Trees	Trees/Plot	Ring-Count Trees
WH	4	4	2.0	0
DF	3	3	1.5	0
ALL	7	7	3.5	0

Unit Cruise Statistics: MAID MARRIAN 2B

Sp	BA (sq ft/acre)	BA CV (%)	BA SE (%)	V-BAR (bf/sq ft)	V-BAR CV (%)	V-BAR SE (%)	Net Vol (bf/acre)	Vol CV (%)	Vol SE (%)
WH	108.9	0.0	0.0	132.2	2.2	1.1	14,396	2.2	1.1
DF	81.7	47.1	33.3	158.7	9.6	5.5	12,962	48.1	33.8
ALL	190.5	20.2	14.3	143.6	11.7	4.4	27,358	23.3	15.0

Unit Summary: MAID MARRIAN 2B

Sp	Status	Rx	N	D	DBH	BL	THT	BF Gross	BF Net	Defect %	TPA	BA	RD	MBF Net
DF	LIVE	CUT	3	ALL	23.6	92	113	13,046	12,962	0.6	26.9	81.7	16.8	15.6
WH	LIVE	CUT	4	ALL	19.0	71	87	14,396	14,396	0.0	55.3	108.9	25.0	17.3
ALL	LIVE	CUT	7	ALL	20.6	78	96	27,442	27,358	0.3	82.2	190.5	41.8	32.8
ALL	ALL	ALL	7	ALL	20.6	78	96	27,442	27,358	0.3	82.2	190.5	41.8	32.8

Cruise Unit Report
MAID MARRIAN 2C

Unit Sale Notice Volume (MBF): MAID MARRIAN 2C

				MBF Volume by Grade			
Sp	DBH	Rings/In	Age	All	2 Saw	3 Saw	4 Saw
WH	15.0			75	20	48	7
DF	22.2			58	42	15	1
ALL	16.4			133	62	63	8

Unit Cruise Design: MAID MARRIAN 2C

Design	Cruise Acres	FMA Acres	N Plots	N Cruise Plots	N Void Plots
B1C: VR, 1 BAF (54.44) Measure/Count Plots, Sighting Ht = 4.5 ft	2.6	2.6	3	2	0

Unit Cruise Summary: MAID MARRIAN 2C

Sp	Cruised Trees	All Trees	Trees/Plot	Ring-Count Trees
WH	7	12	4.0	0
DF	3	7	2.3	0
ALL	10	19	6.3	0

Unit Cruise Statistics: MAID MARRIAN 2C

Sp	BA (sq ft/acre)	BA CV (%)	BA SE (%)	V-BAR (bf/sq ft)	V-BAR CV (%)	V-BAR SE (%)	Net Vol (bf/acre)	Vol CV (%)	Vol SE (%)
WH	217.8	43.3	25.0	133.3	21.5	8.1	29,020	48.3	26.3
DF	127.0	89.2	51.5	175.7	13.0	7.5	22,324	90.2	52.0
ALL	344.8	36.5	21.1	148.9	22.1	7.0	51,345	42.6	22.2

Unit Summary: MAID MARRIAN 2C

Sp	Status	Rx	N	D	DBH	BL	THT	BF Gross	BF Net	Defect %	TPA	BA	RD	MBF Net
DF	LIVE	CUT	3	ALL	22.0	95	121	22,483	22,324	0.7	48.1	127.0	27.1	58.0
WH	LIVE	CUT	7	ALL	14.4	67	86	29,020	29,020	0.0	192.5	217.8	57.4	75.5
ALL	LIVE	CUT	10	ALL	16.2	73	93	51,503	51,345	0.3	240.6	344.8	84.5	133.5
ALL	ALL	ALL	10	ALL	16.2	73	93	51,503	51,345	0.3	240.6	344.8	84.5	133.5

Cruise Unit Report
MAID MARRIAN 2D

Unit Sale Notice Volume (MBF): MAID MARRIAN 2D

				MBF Volume by Grade			
Sp	DBH	Rings/In	Age	All	2 Saw	3 Saw	4 Saw
DF	18.4			324	178	136	10
WH	12.3			307	193	67	48
ALL	14.9			631	371	202	58

Unit Cruise Design: MAID MARRIAN 2D

Design	Cruise Acres	FMA Acres	N Plots	N Cruise Plots	N Void Plots
B1C: VR, 1 BAF (54.44) Measure/Count Plots, Sighting Ht = 4.5 ft	12.9	13.3	7	3	0

Unit Cruise Summary: MAID MARRIAN 2D

Sp	Cruised Trees	All Trees	Trees/Plot	Ring-Count Trees
DF	11	19	2.7	0
WH	8	26	3.7	0
ALL	19	45	6.4	0

Unit Cruise Statistics: MAID MARRIAN 2D

Sp	BA (sq ft/acre)	BA CV (%)	BA SE (%)	V-BAR (bf/sq ft)	V-BAR CV (%)	V-BAR SE (%)	Net Vol (bf/acre)	Vol CV (%)	Vol SE (%)
DF	147.8	92.0	34.8	170.1	15.6	4.7	25,135	93.3	35.1
WH	202.2	63.5	24.0	117.7	35.9	12.7	23,806	73.0	27.2
ALL	350.0	21.7	8.2	139.8	30.3	6.9	48,942	37.3	10.8

Unit Summary: MAID MARRIAN 2D

Sp	Status	Rx	N	D	DBH	BL	THT	BF Gross	BF Net	Defect %	TPA	BA	RD	MBF Net
DF	LIVE	CUT	11	ALL	18.8	85	114	25,197	25,135	0.2	76.7	147.8	34.1	324.2
WH	LIVE	CUT	8	ALL	14.8	39	50	24,282	23,806	2.0	169.3	202.2	52.6	307.1
ALL	LIVE	CUT	19	ALL	16.2	53	70	49,479	48,942	1.1	246.0	350.0	86.6	631.3
ALL	ALL	ALL	19	ALL	16.2	53	70	49,479	48,942	1.1	246.0	350.0	86.6	631.3

Cruise Unit Report
MAID MARRIAN 3

Unit Sale Notice Volume (MBF): MAID MARRIAN 3

				MBF Volume by Grade			
Sp	DBH	Rings/In	Age	All	2 Saw	3 Saw	4 Saw
WH	15.2			209	134	36	39
DF	22.0			40	31	9	
SF	10.5			21			21
RC	18.0			9		7	1
ALL	15.4			278	164	53	61

Unit Cruise Design: MAID MARRIAN 3

Design	Cruise Acres	FMA Acres	N Plots	N Cruise Plots	N Void Plots
B1C: VR, 1 BAF (54.44) Measure/Count Plots, Sighting Ht = 4.5 ft	8.8	9.3	6	3	0

Unit Cruise Summary: MAID MARRIAN 3

Sp	Cruised Trees	All Trees	Trees/Plot	Ring-Count Trees
WH	10	20	3.3	0
DF	2	3	0.5	0
SF	1	4	0.7	0
RC	1	1	0.2	0
ALL	14	28	4.7	0

Unit Cruise Statistics: MAID MARRIAN 3

Sp	BA (sq ft/acre)	BA CV (%)	BA SE (%)	V-BAR (bf/sq ft)	V-BAR CV (%)	V-BAR SE (%)	Net Vol (bf/acre)	Vol CV (%)	Vol SE (%)
WH	181.5	31.0	12.6	130.7	23.9	7.6	23,724	39.1	14.7
DF	27.2	167.3	68.3	165.9	5.5	3.9	4,515	167.4	68.4
SF	36.3	122.5	50.0	64.9	0.0	0.0	2,354	122.5	50.0
RC	9.1	244.9	100.0	107.5	0.0	0.0	976	244.9	100.0
ALL	254.1	17.5	7.1	124.3	28.4	7.6	31,568	33.4	10.4

Unit Summary: MAID MARRIAN 3

Sp	Status	Rx	N	D	DBH	BL	THT	BF Gross	BF Net	Defect %	TPA	BA	RD	MBF Net
DF	LIVE	CUT	2	ALL	20.4	93	115	4,515	4,515	0.0	12.0	27.2	6.0	39.7
RC	LIVE	CUT	1	ALL	18.0	64	81	976	976	0.0	5.1	9.1	2.1	8.6
SF	LIVE	CUT	1	ALL	13.4	41	59	2,595	2,354	9.3	37.1	36.3	9.9	20.7
WH	LIVE	CUT	10	ALL	16.5	62	81	23,724	23,724	0.0	122.2	181.5	44.7	208.8
ALL	LIVE	CUT	14	ALL	16.2	60	78	31,810	31,568	0.8	176.4	254.1	62.8	277.8
ALL	ALL	ALL	14	ALL	16.2	60	78	31,810	31,568	0.8	176.4	254.1	62.8	277.8

Cruise Unit Report
MAID MARRIAN 4A

Unit Sale Notice Volume (MBF): MAID MARRIAN 4A

				MBF Volume by Grade			
Sp	DBH	Rings/In	Age	All	2 Saw	3 Saw	4 Saw
SF	15.2			9	4	3	2
WH	28.8			8	7		0
ALL	18.2			17	11	3	2

Unit Cruise Design: MAID MARRIAN 4A

Design	Cruise Acres	FMA Acres	N Plots	N Cruise Plots	N Void Plots
FX: FR plots (20 tree / acre expansion)	0.8	0.9	1	1	0

Unit Cruise Summary: MAID MARRIAN 4A

Sp	Cruised Trees	All Trees	Trees/Plot	Ring-Count Trees
SF	5	5	5.0	0
WH	1	1	1.0	0
ALL	6	6	6.0	0

Unit Cruise Statistics: MAID MARRIAN 4A

Sp	BA (sq ft/acre)	BA CV (%)	BA SE (%)	V-BAR (bf/sq ft)	V-BAR CV (%)	V-BAR SE (%)	Net Vol (bf/acre)	Vol CV (%)	Vol SE (%)
SF	126.5	0.0	0.0	86.2	16.9	7.5	10,900	16.9	7.5
WH	90.5	0.0	0.0	108.5	0.0	0.0	9,820	0.0	0.0
ALL	217.0	0.0	0.0	95.5	18.3	7.5	20,720	18.3	7.5

Unit Summary: MAID MARRIAN 4A

Sp	Status	Rx	N	D	DBH	BL	THT	BF Gross	BF Net	Defect %	TPA	BA	RD	MBF Net
SF	LIVE	CUT	5	ALL	15.2	52	68	10,900	10,900	0.0	100.4	126.5	32.4	8.7
WH	LIVE	CUT	1	ALL	28.8	67	75	9,820	9,820	0.0	20.0	90.5	16.9	7.9
ALL	LIVE	CUT	6	ALL	18.2	54	69	20,720	20,720	0.0	120.4	217.0	49.3	16.6
ALL	ALL	ALL	6	ALL	18.2	54	69	20,720	20,720	0.0	120.4	217.0	49.3	16.6

Cruise Unit Report
MAID MARRIAN 4B

Unit Sale Notice Volume (MBF): MAID MARRIAN 4B

				MBF Volume by Grade			
Sp	DBH	Rings/In	Age	All	2 Saw	3 Saw	4 Saw
RC	30.9			55		55	
RA	12.0			54		21	33
WH	15.9			32	20	10	1
ALL	15.8			141	20	86	35

Unit Cruise Design: MAID MARRIAN 4B

Design	Cruise Acres	FMA Acres	N Plots	N Cruise Plots	N Void Plots
B1: VR, 1 BAF (62.5) Measure All, Sighting Ht = 4.5 ft	2.9	2.9	2	2	0

Unit Cruise Summary: MAID MARRIAN 4B

Sp	Cruised Trees	All Trees	Trees/Plot	Ring-Count Trees
RC	5	5	2.5	0
RA	5	5	2.5	0
WH	3	3	1.5	0
ALL	13	13	6.5	0

Unit Cruise Statistics: MAID MARRIAN 4B

Sp	BA (sq ft/acre)	BA CV (%)	BA SE (%)	V-BAR (bf/sq ft)	V-BAR CV (%)	V-BAR SE (%)	Net Vol (bf/acre)	Vol CV (%)	Vol SE (%)
RC	156.3	141.4	100.0	121.5	15.8	7.1	18,981	142.3	100.2
RA	156.3	141.4	100.0	119.8	13.5	6.0	18,724	142.1	100.2
WH	93.8	141.4	100.0	117.8	17.1	9.8	11,043	142.4	100.5
ALL	406.3	32.6	23.1	120.0	13.9	3.9	48,748	35.5	23.4

Unit Summary: MAID MARRIAN 4B

Sp	Status	Rx	N	D	DBH	BL	THT	BF Gross	BF Net	Defect %	TPA	BA	RD	MBF Net
RA	LIVE	CUT	5	ALL	12.0	56	77	18,724	18,724	0.0	198.9	156.3	45.1	54.3
RC	LIVE	CUT	5	ALL	30.9	78	100	22,089	18,981	14.1	30.0	156.3	28.1	55.0

Sp	Status	Rx	N	D	DBH	BL	THT	BF Gross	BF Net	Defect %	TPA	BA	RD	MBF Net
WH	LIVE	CUT	3	ALL	15.9	64	80	11,043	11,043	0.0	68.0	93.8	23.5	32.0
ALL	LIVE	CUT	13	ALL	15.8	60	80	51,856	48,748	6.0	296.9	406.3	96.7	141.4
ALL	ALL	ALL	13	ALL	15.8	60	80	51,856	48,748	6.0	296.9	406.3	96.7	141.4

Cruise Unit Report
MAID MARRIAN 4C

Unit Sale Notice Volume (MBF): MAID MARRIAN 4C

				MBF Volume by Grade				
Sp	DBH	Rings/In	Age	All	2 Saw	3 Saw	4 Saw	Utility
WH	15.4			89	46	36	4	3
SF	17.4			22	11	9	1	
ALL	15.7			111	57	45	5	3

Unit Cruise Design: MAID MARRIAN 4C

Design	Cruise Acres	FMA Acres	N Plots	N Cruise Plots	N Void Plots
B1: VR, 1 BAF (54.44) Measure All, Sighting Ht = 4.5 ft	1.8	1.8	2	2	0

Unit Cruise Summary: MAID MARRIAN 4C

Sp	Cruised Trees	All Trees	Trees/Plot	Ring-Count Trees
WH	13	13	6.5	0
SF	3	3	1.5	0
ALL	16	16	8.0	0

Unit Cruise Statistics: MAID MARRIAN 4C

Sp	BA (sq ft/acre)	BA CV (%)	BA SE (%)	V-BAR (bf/sq ft)	V-BAR CV (%)	V-BAR SE (%)	Net Vol (bf/acre)	Vol CV (%)	Vol SE (%)
WH	353.9	10.9	7.7	139.0	28.2	7.8	49,203	30.2	11.0
SF	81.7	141.4	100.0	150.9	3.7	2.2	12,320	141.5	100.0
ALL	435.5	17.7	12.5	141.3	25.1	6.3	61,524	30.7	14.0

Unit Summary: MAID MARRIAN 4C

Sp	Status	Rx	N	D	DBH	BL	THT	BF Gross	BF Net	Defect %	TPA	BA	RD	MBF Net
SF	LIVE	CUT	3	ALL	17.4	75	102	12,348	12,320	0.2	49.5	81.7	19.6	22.2
WH	LIVE	CUT	13	ALL	15.4	64	82	50,234	49,203	2.1	273.6	353.9	90.2	88.6
ALL	LIVE	CUT	16	ALL	15.7	66	85	62,581	61,524	1.7	323.1	435.5	109.7	110.7
ALL	ALL	ALL	16	ALL	15.7	66	85	62,581	61,524	1.7	323.1	435.5	109.7	110.7

Cruise Unit Report
MAID MARRIAN VDT 1A

Unit Sale Notice Volume (MBF): MAID MARRIAN VDT 1A

				MBF Volume by Grade		
Sp	DBH	Rings/In	Age	All	2 Saw	3 Saw
DF	16.6			21	7	14
WH	17.6			18	15	3
ALL	17.1			39	22	17

Unit Cruise Design: MAID MARRIAN VDT 1A

Design	Cruise Acres	FMA Acres	N Plots	N Cruise Plots	N Void Plots
B1: VR, 1 BAF (54.44) Measure All, Sighting Ht = 4.5 ft	4.4	4.3	3	3	0

Unit Cruise Summary: MAID MARRIAN VDT 1A

Sp	Cruised Trees	All Trees	Trees/Plot	Ring-Count Trees
DF	2	13	4.3	0
WH	2	5	1.7	0
ALL	4	18	6.0	0

Unit Cruise Statistics: MAID MARRIAN VDT 1A

Sp	BA (sq ft/acre)	BA CV (%)	BA SE (%)	V-BAR (bf/sq ft)	V-BAR CV (%)	V-BAR SE (%)	Net Vol (bf/acre)	Vol CV (%)	Vol SE (%)
DF	235.9	74.2	42.8	132.1	2.5	1.7	31,170	74.2	42.9
WH	90.7	124.9	72.1	113.2	22.7	16.0	10,272	126.9	73.9
ALL	326.6	33.3	19.2	126.9	14.6	7.3	41,443	36.4	20.6

Unit Summary: MAID MARRIAN VDT 1A

Sp	Status	Rx	N	D	DBH	BL	THT	BF Gross	BF Net	Defect %	TPA	BA	RD	MBF Net
DF	LIVE	CUT	2	ALL	16.6	75	94	5,048	4,795	5.0	24.1	36.3	8.9	21.1
DF	LIVE	LEA	11	ALL	21.8	88	114	27,763	26,375	5.0	77.0	199.6	42.8	116.0
WH	LIVE	CUT	2	ALL	17.6	81	101	4,109	4,109	0.0	21.5	36.3	8.7	18.1
WH	LIVE	LEA	3	ALL	13.9	65	81	6,163	6,163	0.0	51.7	54.4	14.6	27.1
ALL	LIVE	LEA	14	ALL	19.0	79	101	33,926	32,538	4.1	128.7	254.1	57.4	143.2

Sp	Status	Rx	N	D	DBH	BL	THT	BF Gross	BF Net	Defect %	TPA	BA	RD	MBF Net
ALL	LIVE	CUT	4	ALL	17.1	78	97	9,157	8,904	2.8	45.6	72.6	17.6	39.2
ALL	ALL	ALL	18	ALL	18.5	78	100	43,083	41,443	3.8	174.3	326.6	74.9	182.3

Cruise Unit Report
MAID MARRIAN VDT 1B

Unit Sale Notice Volume (MBF): MAID MARRIAN VDT 1B

				MBF Volume by Grade			
Sp	DBH	Rings/In	Age	All	2 Saw	3 Saw	4 Saw
DF	18.0			29	22	7	
WH	14.7			28		24	5
ALL	16.1			58	22	31	5

Unit Cruise Design: MAID MARRIAN VDT 1B

Design	Cruise Acres	FMA Acres	N Plots	N Cruise Plots	N Void Plots
B1: VR, 1 BAF (54.44) Measure All, Sighting Ht = 4.5 ft	4.9	4.9	4	4	0

Unit Cruise Summary: MAID MARRIAN VDT 1B

Sp	Cruised Trees	All Trees	Trees/Plot	Ring-Count Trees
DF	3	22	5.5	0
WH	3	9	2.3	0
ALL	6	31	7.8	0

Unit Cruise Statistics: MAID MARRIAN VDT 1B

Sp	BA (sq ft/acre)	BA CV (%)	BA SE (%)	V-BAR (bf/sq ft)	V-BAR CV (%)	V-BAR SE (%)	Net Vol (bf/acre)	Vol CV (%)	Vol SE (%)
DF	299.4	43.3	21.6	146.6	0.0	0.0	43,889	43.3	21.6
WH	122.5	91.6	45.8	140.9	7.7	4.4	17,257	91.9	46.0
ALL	421.9	6.5	3.2	144.9	5.2	2.1	61,145	8.3	3.9

Unit Summary: MAID MARRIAN VDT 1B

Sp	Status	Rx	N	D	DBH	BL	THT	BF Gross	BF Net	Defect %	TPA	BA	RD	MBF Net
DF	LIVE	CUT	3	ALL	18.0	83	105	5,985	5,985	0.0	23.1	40.8	9.6	29.3
DF	LIVE	LEA	19	ALL	22.0	92	117	37,904	37,904	0.0	98.0	258.6	55.1	185.7
WH	LIVE	CUT	3	ALL	14.7	70	88	5,752	5,752	0.0	34.6	40.8	10.6	28.2
WH	LIVE	LEA	6	ALL	20.5	86	106	11,504	11,504	0.0	35.6	81.7	18.0	56.4
ALL	LIVE	LEA	25	ALL	21.6	91	114	49,408	49,408	0.0	133.6	340.3	73.2	242.1

Sp	Status	Rx	N	D	DBH	BL	THT	BF Gross	BF Net	Defect %	TPA	BA	RD	MBF Net
ALL	LIVE	CUT	6	ALL	16.1	75	95	11,737	11,737	0.0	57.7	81.7	20.3	57.5
ALL	ALL	ALL	31	ALL	20.1	86	108	61,145	61,145	0.0	191.3	421.9	93.4	299.6

Cruise Unit Report
MAID MARRIAN VDT 2C

Unit Sale Notice Volume (MBF): MAID MARRIAN VDT 2C

				MBF Volume by Grade			
Sp	DBH	Rings/In	Age	All	2 Saw	3 Saw	4 Saw
WH	14.3			35		29	6
DF	17.2			12	4	7	
ALL	14.8			47	4	36	6

Unit Cruise Design: MAID MARRIAN VDT 2C

Design	Cruise Acres	FMA Acres	N Plots	N Cruise Plots	N Void Plots
B1: VR, 1 BAF (54.44) Measure All, Sighting Ht = 4.5 ft	2.8	2.8	4	4	0

Unit Cruise Summary: MAID MARRIAN VDT 2C

Sp	Cruised Trees	All Trees	Trees/Plot	Ring-Count Trees
DF	2	16	4.0	0
WH	7	12	3.0	0
ALL	9	28	7.0	0

Unit Cruise Statistics: MAID MARRIAN VDT 2C

Sp	BA (sq ft/acre)	BA CV (%)	BA SE (%)	V-BAR (bf/sq ft)	V-BAR CV (%)	V-BAR SE (%)	Net Vol (bf/acre)	Vol CV (%)	Vol SE (%)
DF	217.8	35.4	17.7	154.0	2.6	1.8	33,540	35.4	17.8
WH	163.3	72.0	36.0	131.0	18.1	6.9	21,389	74.3	36.7
ALL	381.1	23.3	11.7	144.1	16.0	5.3	54,929	28.3	12.8

Unit Summary: MAID MARRIAN VDT 2C

Sp	Status	Rx	N	D	DBH	BL	THT	BF Gross	BF Net	Defect %	TPA	BA	RD	MBF Net
DF	LIVE	CUT	2	ALL	17.2	82	108	4,193	4,193	0.0	16.9	27.2	6.6	11.7
DF	LIVE	LEA	14	ALL	19.6	90	114	29,348	29,348	0.0	90.9	190.5	43.0	82.2
WH	LIVE	CUT	7	ALL	14.3	67	87	13,438	12,477	7.2	85.4	95.3	25.2	34.9
WH	LIVE	LEA	5	ALL	17.3	78	98	9,599	8,912	7.2	41.7	68.0	16.4	25.0
ALL	LIVE	LEA	19	ALL	18.9	86	109	38,947	38,260	1.8	132.6	258.6	59.4	107.1

Sp	Status	Rx	N	D	DBH	BL	THT	BF Gross	BF Net	Defect %	TPA	BA	RD	MBF Net
ALL	LIVE	CUT	9	ALL	14.8	69	91	17,631	16,669	5.5	102.3	122.5	31.8	46.7
ALL	ALL	ALL	28	ALL	17.2	79	101	56,577	54,929	2.9	234.9	381.1	91.2	153.8

Cruise Unit Report
MAID MARRIAN VDT 2D

Unit Sale Notice Volume (MBF): MAID MARRIAN VDT 2D

				MBF Volume by Grade		
Sp	DBH	Rings/In	Age	All	3 Saw	4 Saw
WH	13.9			24	21	4
ALL	13.9			24	21	4

Unit Cruise Design: MAID MARRIAN VDT 2D

Design	Cruise Acres	FMA Acres	N Plots	N Cruise Plots	N Void Plots
B1: VR, 1 BAF (54.44) Measure All, Sighting Ht = 4.5 ft	5.9	5.9	5	5	0

Unit Cruise Summary: MAID MARRIAN VDT 2D

Sp	Cruised Trees	All Trees	Trees/Plot	Ring-Count Trees
SF		1	0.2	0
DF		15	3.0	0
WH	3	14	2.8	0
ALL	3	30	6.0	0

Unit Cruise Statistics: MAID MARRIAN VDT 2D

Sp	BA (sq ft/acre)	BA CV (%)	BA SE (%)	V-BAR (bf/sq ft)	V-BAR CV (%)	V-BAR SE (%)	Net Vol (bf/acre)	Vol CV (%)	Vol SE (%)
SF	10.9	223.6	100.0						
DF	163.3	52.7	23.6						
WH	152.4	88.9	39.8	125.6	30.4	17.6	19,150	94.0	43.5
ALL	326.6	28.9	12.9	125.6	30.4	17.6	41,035	41.9	21.8

Unit Summary: MAID MARRIAN VDT 2D

Sp	Status	Rx	N	D	DBH	BL	THT	BF Gross	BF Net	Defect %	TPA	BA	RD	MBF Net
DF	LIVE	LEA	15	ALL	22.8	91	116				57.6	163.3	34.2	
SF	LIVE	LEA	1	ALL	19.8	78	99				5.1	10.9	2.4	
WH	LIVE	CUT	3	ALL	13.9	67	90	4,205	4,104	2.4	31.0	32.7	8.8	24.2
WH	LIVE	LEA	11	ALL	18.5	83	103	15,419	15,046	2.4	64.2	119.8	27.8	88.8

Sp	Status	Rx	N	D	DBH	BL	THT	BF Gross	BF Net	Defect %	TPA	BA	RD	MBF Net
ALL	LIVE	CUT	3	ALL	13.9	67	90	4,205	4,104	2.4	31.0	32.7	8.8	24.2
ALL	LIVE	LEA	27	ALL	20.6	86	109	15,419	15,046	2.4	126.9	294.0	64.5	88.8
ALL	ALL	ALL	30	ALL	19.5	83	105	19,624	19,150	2.4	157.9	326.6	73.3	113.0

Cruise Unit Report
MAID MARRIAN ROW 1

Unit Sale Notice Volume (MBF): MAID MARRIAN ROW 1

				MBF Volume by Grade			
Sp	DBH	Rings/In	Age	All	2 Saw	3 Saw	4 Saw
DF	21.0			4	3	0	0
ALL	21.0			4	3	0	0

Unit Cruise Design: MAID MARRIAN ROW 1

Design	Cruise Acres	FMA Acres	N Plots	N Cruise Plots	N Void Plots
FX: FR plots (20 tree / acre expansion)	0.4	0.4	1	1	0

Unit Cruise Summary: MAID MARRIAN ROW 1

Sp	Cruised Trees	All Trees	Trees/Plot	Ring-Count Trees
DF	2	2	2.0	0
ALL	2	2	2.0	0

Unit Cruise Statistics: MAID MARRIAN ROW 1

Sp	BA (sq ft/acre)	BA CV (%)	BA SE (%)	V-BAR (bf/sq ft)	V-BAR CV (%)	V-BAR SE (%)	Net Vol (bf/acre)	Vol CV (%)	Vol SE (%)
DF	96.4	0.0	0.0	108.3	8.1	5.7	10,440	8.1	5.7
ALL	96.4	0.0	0.0	108.3	8.1	5.7	10,440	8.1	5.7

Unit Summary: MAID MARRIAN ROW 1

Sp	Status	Rx	N	D	DBH	BL	THT	BF Gross	BF Net	Defect %	TPA	BA	RD	MBF Net
DF	LIVE	CUT	2	ALL	21.0	70	88	10,740	10,440	2.8	40.1	96.4	21.0	4.2
ALL	LIVE	CUT	2	ALL	21.0	70	88	10,740	10,440	2.8	40.1	96.4	21.0	4.2
ALL	ALL	ALL	2	ALL	21.0	70	88	10,740	10,440	2.8	40.1	96.4	21.0	4.2

Cruise Unit Report
MAID MARRIAN ROW 2

Unit Sale Notice Volume (MBF): MAID MARRIAN ROW 2

				MBF Volume by Grade			
Sp	DBH	Rings/In	Age	All	2 Saw	3 Saw	4 Saw
DF	24.5			5	4	1	
RA	7.0			0			0
ALL	18.0			5	4	1	0

Unit Cruise Design: MAID MARRIAN ROW 2

Design	Cruise Acres	FMA Acres	N Plots	N Cruise Plots	N Void Plots
FX: FR plots (20 tree / acre expansion)	0.5	0.5	1	1	0

Unit Cruise Summary: MAID MARRIAN ROW 2

Sp	Cruised Trees	All Trees	Trees/Plot	Ring-Count Trees
DF	1	1	1.0	0
RA	1	1	1.0	0
ALL	2	2	2.0	0

Unit Cruise Statistics: MAID MARRIAN ROW 2

Sp	BA (sq ft/acre)	BA CV (%)	BA SE (%)	V-BAR (bf/sq ft)	V-BAR CV (%)	V-BAR SE (%)	Net Vol (bf/acre)	Vol CV (%)	Vol SE (%)
DF	65.5	0.0	0.0	148.4	0.0	0.0	9,720	0.0	0.0
RA	5.3	0.0	0.0	63.7	0.0	0.0	340	0.0	0.0
ALL	70.8	0.0	0.0	142.1	42.2	29.9	10,060	42.2	29.9

Unit Summary: MAID MARRIAN ROW 2

Sp	Status	Rx	N	D	DBH	BL	THT	BF Gross	BF Net	Defect %	TPA	BA	RD	MBF Net
DF	LIVE	CUT	1	ALL	24.5	87	110	10,320	9,720	5.8	20.0	65.5	13.2	4.9
RA	LIVE	CUT	1	ALL	7.0	18	24	340	340	0.0	20.0	5.3	2.0	0.2
ALL	LIVE	CUT	2	ALL	18.0	53	67	10,660	10,060	5.6	40.0	70.8	15.2	5.0
ALL	ALL	ALL	2	ALL	18.0	53	67	10,660	10,060	5.6	40.0	70.8	15.2	5.0

Cruise Unit Report
MAID MARRIAN ROW 3

Unit Sale Notice Volume (MBF): MAID MARRIAN ROW 3

				MBF Volume by Grade			
Sp	DBH	Rings/In	Age	All	2 Saw	3 Saw	4 Saw
DF	23.3			12	9	2	
WH	12.6			6	2	4	1
ALL	16.3			18	11	6	1

Unit Cruise Design: MAID MARRIAN ROW 3

Design	Cruise Acres	FMA Acres	N Plots	N Cruise Plots	N Void Plots
B1: VR, 1 BAF (54.44) Measure All, Sighting Ht = 4.5 ft	0.3	0.3	1	1	0

Unit Cruise Summary: MAID MARRIAN ROW 3

Sp	Cruised Trees	All Trees	Trees/Plot	Ring-Count Trees
DF	4	4	4.0	0
WH	3	3	3.0	0
ALL	7	7	7.0	0

Unit Cruise Statistics: MAID MARRIAN ROW 3

Sp	BA (sq ft/acre)	BA CV (%)	BA SE (%)	V-BAR (bf/sq ft)	V-BAR CV (%)	V-BAR SE (%)	Net Vol (bf/acre)	Vol CV (%)	Vol SE (%)
DF	217.8	0.0	0.0	176.9	14.7	7.4	38,525	14.7	7.4
WH	163.3	0.0	0.0	126.2	7.6	4.4	20,619	7.6	4.4
ALL	381.1	0.0	0.0	155.2	21.4	8.1	59,143	21.4	8.1

Unit Summary: MAID MARRIAN ROW 3

Sp	Status	Rx	N	D	DBH	BL	THT	BF Gross	BF Net	Defect %	TPA	BA	RD	MBF Net
DF	LIVE	CUT	4	ALL	23.3	95	118	38,525	38,525	0.0	73.5	217.8	45.1	11.6
WH	LIVE	CUT	3	ALL	12.6	57	78	20,619	20,619	0.0	188.6	163.3	46.0	6.2
ALL	LIVE	CUT	7	ALL	16.3	68	89	59,143	59,143	0.0	262.1	381.1	91.1	17.7
ALL	ALL	ALL	7	ALL	16.3	68	89	59,143	59,143	0.0	262.1	381.1	91.1	17.7

Cruise Unit Report
MAID MARRIAN ROW 4

Unit Sale Notice Volume (MBF): MAID MARRIAN ROW 4

				MBF Volume by Grade			
Sp	DBH	Rings/In	Age	All	2 Saw	3 Saw	4 Saw
DF	19.2			8	6	2	
WH	19.7			7	5	2	0
ALL	19.4			15	11	4	0

Unit Cruise Design: MAID MARRIAN ROW 4

Design	Cruise Acres	FMA Acres	N Plots	N Cruise Plots	N Void Plots
FX: FR plots (20 tree / acre expansion)	0.3	0.3	1	1	0

Unit Cruise Summary: MAID MARRIAN ROW 4

Sp	Cruised Trees	All Trees	Trees/Plot	Ring-Count Trees
DF	4	4	4.0	0
WH	3	3	3.0	0
ALL	7	7	7.0	0

Unit Cruise Statistics: MAID MARRIAN ROW 4

Sp	BA (sq ft/acre)	BA CV (%)	BA SE (%)	V-BAR (bf/sq ft)	V-BAR CV (%)	V-BAR SE (%)	Net Vol (bf/acre)	Vol CV (%)	Vol SE (%)
DF	161.4	0.0	0.0	166.1	15.4	7.7	26,820	15.4	7.7
WH	126.5	0.0	0.0	181.0	10.2	5.9	22,900	10.2	5.9
ALL	287.9	0.0	0.0	172.7	13.6	5.1	49,720	13.6	5.1

Unit Summary: MAID MARRIAN ROW 4

Sp	Status	Rx	N	D	DBH	BL	THT	BF Gross	BF Net	Defect %	TPA	BA	RD	MBF Net
DF	LIVE	CUT	4	ALL	19.2	86	111	26,820	26,820	0.0	80.3	161.4	36.8	8.0
WH	LIVE	CUT	3	ALL	19.7	92	113	24,160	22,900	5.2	59.8	126.5	28.5	6.9
ALL	LIVE	CUT	7	ALL	19.4	88	112	50,980	49,720	2.5	140.1	287.9	65.3	14.9
ALL	ALL	ALL	7	ALL	19.4	88	112	50,980	49,720	2.5	140.1	287.9	65.3	14.9

Cruise Unit Report
MAID MARRIAN ROW 5

Unit Sale Notice Volume (MBF): MAID MARRIAN ROW 5

				MBF Volume by Grade			
Sp	DBH	Rings/In	Age	All	2 Saw	3 Saw	4 Saw
DF	23.0			12	11	1	1
ALL	23.0			12	11	1	1

Unit Cruise Design: MAID MARRIAN ROW 5

Design	Cruise Acres	FMA Acres	N Plots	N Cruise Plots	N Void Plots
B1: VR, 1 BAF (54.44) Measure All, Sighting Ht = 0 ft	0.4	0.4	1	1	0

Unit Cruise Summary: MAID MARRIAN ROW 5

Sp	Cruised Trees	All Trees	Trees/Plot	Ring-Count Trees
DF	3	3	3.0	0
ALL	3	3	3.0	0

Unit Cruise Statistics: MAID MARRIAN ROW 5

Sp	BA (sq ft/acre)	BA CV (%)	BA SE (%)	V-BAR (bf/sq ft)	V-BAR CV (%)	V-BAR SE (%)	Net Vol (bf/acre)	Vol CV (%)	Vol SE (%)
DF	163.3	0.0	0.0	189.6	8.4	4.9	30,961	8.4	4.9
ALL	163.3	0.0	0.0	189.6	8.4	4.9	30,961	8.4	4.9

Unit Summary: MAID MARRIAN ROW 5

Sp	Status	Rx	N	D	DBH	BL	THT	BF Gross	BF Net	Defect %	TPA	BA	RD	MBF Net
DF	LIVE	CUT	3	ALL	23.0	97	124	31,768	30,961	2.5	56.6	163.3	34.1	12.4
ALL	LIVE	CUT	3	ALL	23.0	97	124	31,768	30,961	2.5	56.6	163.3	34.1	12.4
ALL	ALL	ALL	3	ALL	23.0	97	124	31,768	30,961	2.5	56.6	163.3	34.1	12.4

Cruise Unit Report
MAID MARRIAN ROW 6

Unit Sale Notice Volume (MBF): MAID MARRIAN ROW 6

				MBF Volume by Grade			
Sp	DBH	Rings/In	Age	All	2 Saw	3 Saw	4 Saw
WH	18.6			13	10	3	
DF	27.6			3	3		0
ALL	19.5			17	14	3	0

Unit Cruise Design: MAID MARRIAN ROW 6

Design	Cruise Acres	FMA Acres	N Plots	N Cruise Plots	N Void Plots
B1: VR, 1 BAF (54.44) Measure All, Sighting Ht = 4.5 ft	0.3	0.3	1	1	0

Unit Cruise Summary: MAID MARRIAN ROW 6

Sp	Cruised Trees	All Trees	Trees/Plot	Ring-Count Trees
WH	5	5	5.0	0
DF	1	1	1.0	0
ALL	6	6	6.0	0

Unit Cruise Statistics: MAID MARRIAN ROW 6

Sp	BA (sq ft/acre)	BA CV (%)	BA SE (%)	V-BAR (bf/sq ft)	V-BAR CV (%)	V-BAR SE (%)	Net Vol (bf/acre)	Vol CV (%)	Vol SE (%)
WH	272.2	0.0	0.0	161.4	5.7	2.6	43,940	5.7	2.6
DF	54.4	0.0	0.0	213.0	0.0	0.0	11,594	0.0	0.0
ALL	326.6	0.0	0.0	170.0	13.3	5.4	55,534	13.3	5.4

Unit Summary: MAID MARRIAN ROW 6

Sp	Status	Rx	N	D	DBH	BL	THT	BF Gross	BF Net	Defect %	TPA	BA	RD	MBF Net
DF	LIVE	CUT	1	ALL	27.6	102	130	11,594	11,594	0.0	13.1	54.4	10.4	3.5
WH	LIVE	CUT	5	ALL	18.6	83	104	43,940	43,940	0.0	144.3	272.2	63.1	13.2
ALL	LIVE	CUT	6	ALL	19.5	85	107	55,534	55,534	0.0	157.4	326.6	73.5	16.7
ALL	ALL	ALL	6	ALL	19.5	85	107	55,534	55,534	0.0	157.4	326.6	73.5	16.7

Cruise Unit Report
MAID MARRIAN ROW 7

Unit Sale Notice Volume (MBF): MAID MARRIAN ROW 7

				MBF Volume by Grade		
Sp	DBH	Rings/In	Age	All	3 Saw	4 Saw
DF	14.8			33	27	6
ALL	14.8			33	27	6

Unit Cruise Design: MAID MARRIAN ROW 7

Design	Cruise Acres	FMA Acres	N Plots	N Cruise Plots	N Void Plots
B1: VR, 1 BAF (46.94) Measure All, Sighting Ht = 4.5 ft	1.1	1.1	2	2	0

Unit Cruise Summary: MAID MARRIAN ROW 7

Sp	Cruised Trees	All Trees	Trees/Plot	Ring-Count Trees
DF	11	11	5.5	0
ALL	11	11	5.5	0

Unit Cruise Statistics: MAID MARRIAN ROW 7

Sp	BA (sq ft/acre)	BA CV (%)	BA SE (%)	V-BAR (bf/sq ft)	V-BAR CV (%)	V-BAR SE (%)	Net Vol (bf/acre)	Vol CV (%)	Vol SE (%)
DF	258.2	38.6	27.3	116.8	22.6	6.8	30,143	44.7	28.1
ALL	258.2	38.6	27.3	116.8	22.6	6.8	30,143	44.7	28.1

Unit Summary: MAID MARRIAN ROW 7

Sp	Status	Rx	N	D	DBH	BL	THT	BF Gross	BF Net	Defect %	TPA	BA	RD	MBF Net
DF	LIVE	CUT	11	ALL	14.8	68	87	30,430	30,143	0.9	216.1	258.2	67.1	33.2
ALL	LIVE	CUT	11	ALL	14.8	68	87	30,430	30,143	0.9	216.1	258.2	67.1	33.2
ALL	ALL	ALL	11	ALL	14.8	68	87	30,430	30,143	0.9	216.1	258.2	67.1	33.2

Cruise Unit Report
MAID MARRIAN ROW 8

Unit Sale Notice Volume (MBF): MAID MARRIAN ROW 8

				MBF Volume by Grade		
Sp	DBH	Rings/In	Age	All	3 Saw	4 Saw
SF	16.5			2	1	0
RA	8.6			1		1
ALL	11.8			2	1	1

Unit Cruise Design: MAID MARRIAN ROW 8

Design	Cruise Acres	FMA Acres	N Plots	N Cruise Plots	N Void Plots
FX: FR plots (20 tree / acre expansion)	0.4	0.4	1	1	0

Unit Cruise Summary: MAID MARRIAN ROW 8

Sp	Cruised Trees	All Trees	Trees/Plot	Ring-Count Trees
SF	1	1	1.0	0
RA	2	2	2.0	0
ALL	3	3	3.0	0

Unit Cruise Statistics: MAID MARRIAN ROW 8

Sp	BA (sq ft/acre)	BA CV (%)	BA SE (%)	V-BAR (bf/sq ft)	V-BAR CV (%)	V-BAR SE (%)	Net Vol (bf/acre)	Vol CV (%)	Vol SE (%)
SF	29.7	0.0	0.0	144.1	0.0	0.0	4,280	0.0	0.0
RA	16.3	0.0	0.0	84.9	15.4	10.9	1,380	15.4	10.9
ALL	46.0	0.0	0.0	123.2	27.3	15.8	5,660	27.3	15.8

Unit Summary: MAID MARRIAN ROW 8

Sp	Status	Rx	N	D	DBH	BL	THT	BF Gross	BF Net	Defect %	TPA	BA	RD	MBF Net
RA	LIVE	CUT	2	ALL	8.6	36	60	1,380	1,380	0.0	40.3	16.3	5.5	0.6
SF	LIVE	CUT	1	ALL	16.5	77	95	4,280	4,280	0.0	20.0	29.7	7.3	1.7
ALL	LIVE	CUT	3	ALL	11.8	49	72	5,660	5,660	0.0	60.3	46.0	12.9	2.3
ALL	ALL	ALL	3	ALL	11.8	49	72	5,660	5,660	0.0	60.3	46.0	12.9	2.3

WASHINGTON STATE
DEPT. OF NATURAL RESOURCES
NORTHWEST REGION

ROAD PLAN AND SPECIFICATIONS
#30-106339 MAID MARRIAN

SHEET INDEX

LEGEND

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- REQUIRED CONSTRUCTION
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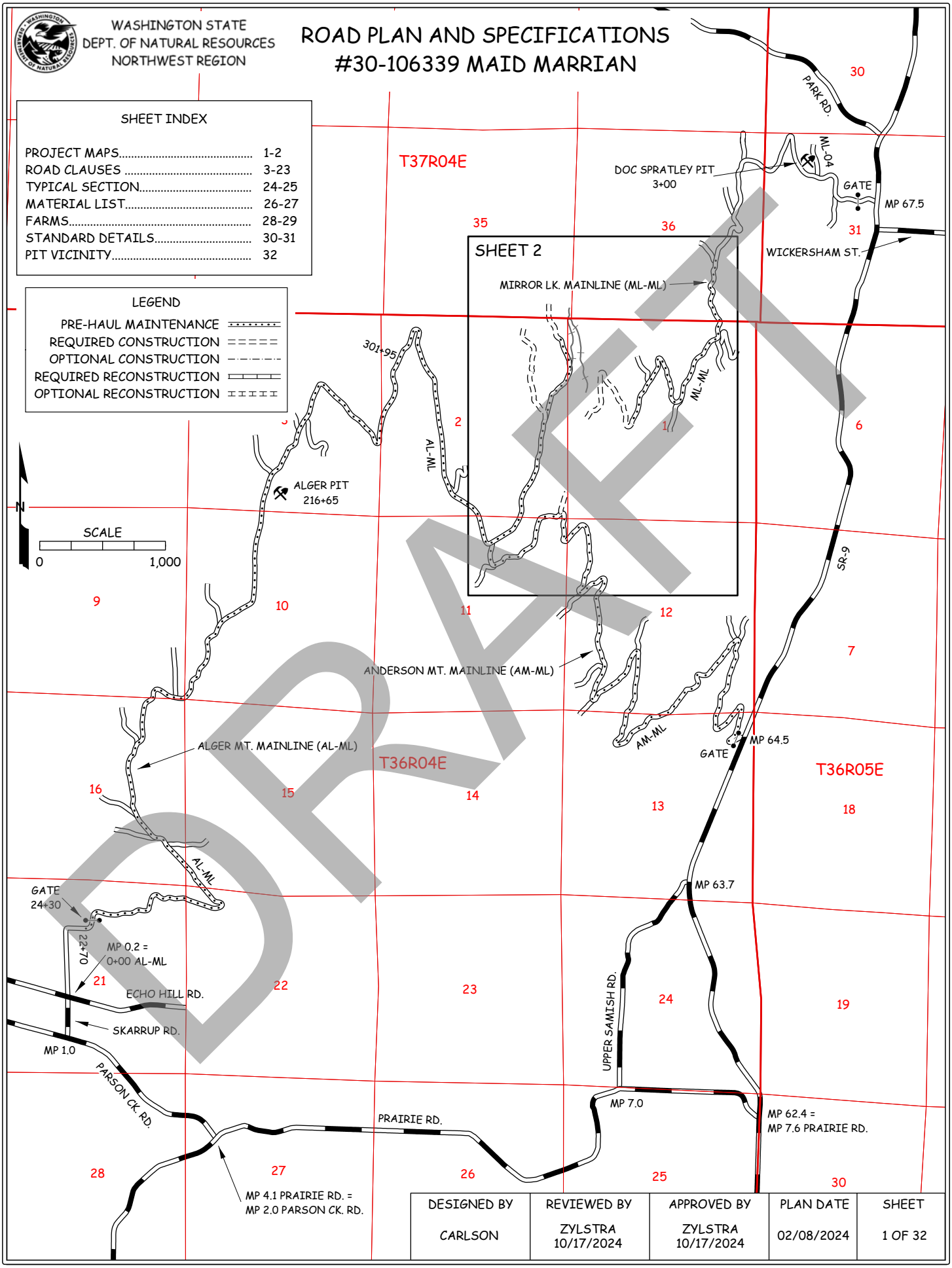
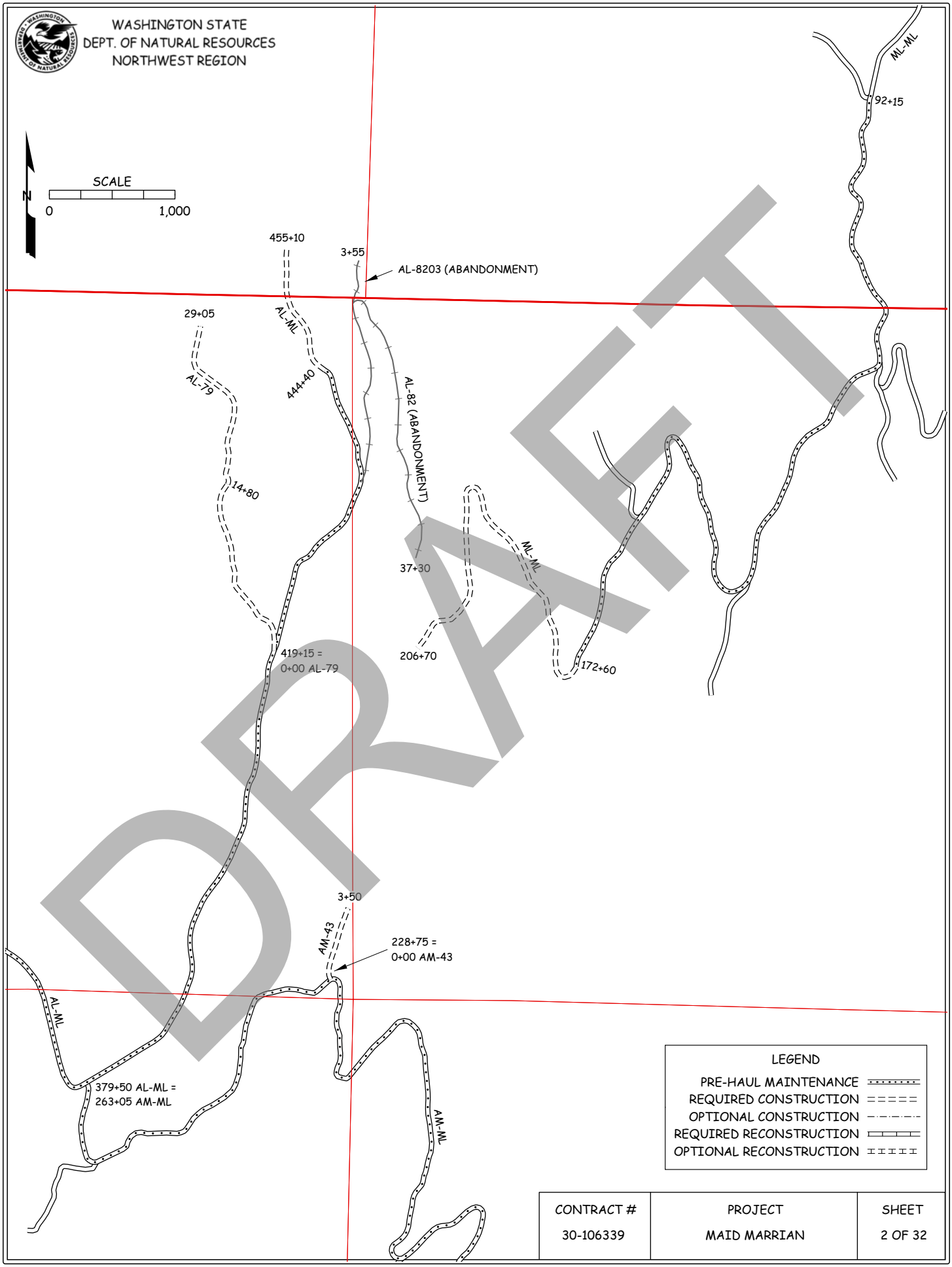
- OPTIONAL RECONSTRUCTION



DESIGNED BY	REVIEWED BY	APPROVED BY	PLAN DATE	SHEET
CARLSON	ZYLSTRA 10/17/2024	ZYLSTRA 10/17/2024	02/08/2024	1 OF 32



STATE OF WASHINGTON
DEPARTMENT OF NATURAL RESOURCES

MAID MARRIAN TIMBER SALE ROAD PLAN
SKAGIT/WHATCOM COUNTY
BAKER DISTRICT
NORTHWEST REGION

AGREEMENT NO.: 30-106339 STAFF ENGINEER: CARLSON

DATE: FEBRUARY 8, 2024

SECTION 0 – SCOPE OF PROJECT

0-1 ROAD PLAN SCOPE

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

0-2 REQUIRED ROADS

The specified work on the following roads is required.

Road	Stations	Type
AL-ML	22+70 to 444+40	Pre-haul Maintenance
AL-ML*	444+40 to 455+10	Construction
AL-79**	0+00 to 29+05	Construction
AL-82	0+00 to 37+30	Abandonment
AL-8203	0+00 to 3+55	Abandonment
ML-ML	92+15 to 172+60	Pre-haul Maintenance
ML-ML	172+60 to 206+70	Construction
AM-ML	0+00 to 263+05	Pre-haul Maintenance
AM-43*	0+00 to 3+50	Construction

*Construction is on an abandoned grade
**Construction from 0+00 to 14+80 is on an abandoned grade

0-4 CONSTRUCTION

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

0-6 PRE-HAUL MAINTENANCE

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

Road	Stations	Requirements
AL-ML	22+70 to 301+95	Blading, shaping, and ditching the road prism to dimensions shown in the TYPICAL SECTION.
AL-ML	301+95 to 444+40	Cleaning culverts, ditches, headwalls, and catch basins. Blading, shaping, and ditching the road prism to dimensions shown in the TYPICAL SECTION. Culvert installation and application of 3-inch minus ballast rock over each installation.
ML-ML	92+15 to 172+60	Cleaning culverts, ditches, headwalls, and catch basins. Blading, shaping, and ditching the road prism to dimensions shown in the TYPICAL SECTION.
AM-ML	0+00 to 263+05	Blading, shaping, and ditching the road prism to dimensions shown in the TYPICAL SECTION. Filling in of triple tank traps and application of 3-inch minus ballast rock over re-shaped road prism. .

0-7 POST-HAUL MAINTENANCE

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

0-10 ABANDONMENT

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

0-11 ABANDONMENT BEFORE TIMBER REMOVAL

Purchaser shall abandon the following road(s) at the start of the timber sale contract, before the removal of timber.

Road	Stations	Requirements
AL-82	0+00 to 37+30	Any timber felled for access outside of units must be left on-site.
AL-8203	0+00 to 3+55	

0-12 DEVELOP ROCK SOURCE

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

SECTION 1 – GENERAL

1-1 ROAD PLAN CHANGES

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

1-2 UNFORESEEN CONDITIONS

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

1-3 ROAD DIMENSIONS

Purchaser shall perform road work in accordance with the dimensions shown on the TYPICAL SECTION SHEET and the specifications within this road plan, unless controlled by construction stakes.

1-4 ROAD TOLERANCES

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

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

1-6 ORDER OF PRECEDENCE

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

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

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

1-8 REPAIR OR REPLACEMENT OF DAMAGED MATERIALS

Purchaser shall repair or replace all materials, roadway infrastructure, and road components damaged during road work or operation activities. The Contract Administrator will direct repairs and replacements. Repairs to structural materials must be made in accordance with the manufacturer's recommendation, and may not begin without written approval from the Contract Administrator.

1-9 DAMAGED METALLIC COATING

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

1-18 REFERENCE POINT DAMAGE

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

1-21 HAUL APPROVAL

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

1-23 ROAD WORK PHASE APPROVAL

Purchaser shall obtain approval from the Contract Administrator upon completion of each of the following phases of road work, if applicable:

- Right-of-way
  - Falling/decking
  - Clearing/grubbing
- Subgrade Construction
  - Excavation and embankment to subgrade
  - Culvert installation
  - Ditch construction
  - Subgrade compaction
- Rock application
  - Rock compaction
  - Rock depth
- Erosion and sediment control
- Revegetation
- Abandonment

1-25 ACTIVITY TIMING RESTRICTION

The specified activities are not allowed during the listed closure periods unless authorized in writing by the Contract Administrator, except as listed.

Road	Activity	Closure Period
AL-ML, AL-79, AL-82, AL-8203, AM-ML, AM-43	All activities	November 1 through March 31 (waivable)
ML-ML	All activities	November 1 through March 31 (non-waivable)

1-26 OPERATING DURING CLOSURE PERIOD

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

1-29 SEDIMENT RESTRICTION

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

1-30 CLOSURE TO PREVENT DAMAGE

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

- Wheel track rutting exceeds 6 inches on roads.
- Surface or base stability problems persist.
- Weather is such that satisfactory results cannot be obtained in an area of operations.
- When, in the opinion of the Contract Administrator excessive road damage or rutting may occur.

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

1-33 SNOW PLOWING RESTRICTION

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

1-40 ROAD APPROACHES TO COUNTY ROADS AND STATE HIGHWAYS

Purchaser shall immediately remove any mud, dirt, rock, or other material tracked or spilled on to county roads and state highways.

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

SECTION 2 – MAINTENANCE

2-1 GENERAL ROAD MAINTENANCE

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

2-2 ROAD MAINTENANCE – PURCHASER MAINTENANCE

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

2-3 ROAD MAINTENANCE – DESIGNATED MAINTAINER

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

2-5 MAINTENANCE GRADING – EXISTING ROAD

On the following roads, Purchaser shall use a grader to shape the existing surface before any hauling. Purchaser shall accomplish all grading using a motor grader with a minimum of 175 horsepower.

Road	Stations
AL-ML	22+70 to 301+95 see Clause 0-6 PRE-HAUL MAINTENANCE
AL-ML	301+95 to 444+40 see Clause 0-6 PRE-HAUL MAINTENANCE
ML-ML	92+15 to 172+60 see Clause 0-6 PRE-HAUL MAINTENANCE
AM-ML	0+00 to 263+05 see Clause 0-6 PRE-HAUL MAINTENANCE

2-6 CLEANING CULVERTS

On the following roads, Purchaser shall use an excavator or backhoe to clean the inlets and outlets of all culverts and shall obtain written approval from the Contract Administrator before any hauling.

Road	Stations
AL-ML	301+95 to 444+40
ML-ML	92+15 to 172+60

2-7 CLEANING DITCHES, HEADWALLS, AND CATCH BASINS

On the following roads, Purchaser shall use an excavator or backhoe to clean ditches, headwalls, and catchbasins. Work must be done in accordance with the TYPICAL SECTION and Purchaser shall obtain written approval from the Contract Administrator before any hauling.

Road	Stations
AL-ML	301+95 to 444+40
ML-ML	92+15 to 172+60

SECTION 3 – CLEARING, GRUBBING, AND DISPOSAL

3-5 CLEARING

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

3-8 PROHIBITED DECKING AREAS

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

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

3-10 GRUBBING

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

3-20 ORGANIC DEBRIS DEFINITION

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

3-21 DISPOSAL COMPLETION

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

3-22 DESIGNATED WASTE AREA FOR ORGANIC DEBRIS

Waste areas for organic debris are located within the cleared right-of-way or in natural openings as designated at areas approved in writing by the Contract Administrator.

3-23 PROHIBITED DISPOSAL AREAS

Purchaser shall not place organic debris in the following areas:

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

3-24 BURYING ORGANIC DEBRIS RESTRICTED

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

3-25 SCATTERING ORGANIC DEBRIS

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

SECTION 4 – EXCAVATION

4-1 EXCAVATOR CONSTRUCTION

Purchaser shall use a track mounted hydraulic excavator for construction work, unless authorized in writing by the Contract Administrator.

4-2 PIONEERING

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

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

4-3 ROAD GRADE AND ALIGNMENT STANDARDS

Purchaser shall follow these standards for road grade and alignment except as designed:

- Grade and alignment must have smooth continuity, without abrupt changes in direction.
- Maximum grades may not exceed 18 percent favorable and 12 percent adverse.
- Minimum curve radius is 50 feet at centerline.
- Maximum grade change for sag vertical curves is 5% in 100 feet.
- Maximum grade change for crest vertical curves is 4% in 100 feet.

4-4 SWITCHBACK STANDARDS

A switchback is defined as a curved segment of road between a beginning and end of the same curve, where the change of traffic travel direction is greater than 90 degrees. Purchaser shall follow these standards for switchbacks:

- Maximum adverse grades for switchbacks is 10%.
- Maximum favorable grades for switchbacks is 12%.
- Maximum transition grades entering and leaving switchbacks is a 5% grade change.
- Transition grades required to meet switchback grade limitations must be constructed on the tangents preceding and departing from the switchbacks.

4-5 CUT SLOPE RATIO

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

Material Type	Excavation Slope Ratio	Excavation Slope Percent
Common Earth (on side slopes up to 55%)	1:1	100
Common Earth (56% to 70% side slopes)	¾:1	133
Fractured or loose rock	½:1	200
Hardpan or solid rock	¼:1	400

4-6 EMBANKMENT SLOPE RATIO

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

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

4-7 SHAPING CUT AND FILL SLOPE

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

4-8 CURVE WIDENING

The minimum widening placed on the inside of curves is:

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

4-9 EMBANKMENT WIDENING

The minimum embankment widening is:

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

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

4-21 TURNOUTS

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

4-22 TURNAROUNDS

At the end of all roads exceeding five stations, purchaser shall construct turnarounds as shown on the TURNAROUND DETAIL. Turnaround type and location are subject to written approval by the Contract Administrator.

4-25 DITCH CONSTRUCTION

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

4-28 DITCH DRAINAGE

Ditches must drain to cross-drain culverts or ditchouts.

4-29 DITCHOUTS

Purchaser shall construct ditchouts as needed and as directed by the Contract Administrator. Ditchouts must be constructed in a manner that diverts ditch water onto the forest floor and must have excavation backslopes no steeper than a 1:1 ratio.

4-35 WASTE MATERIAL DEFINITION

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

4-36 DISPOSAL OF WASTE MATERIAL

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

4-37 WASTE AREA LOCATION

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

4-38 PROHIBITED WASTE DISPOSAL AREAS

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

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

4-55 ROAD SHAPING

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

4-60 FILL COMPACTION

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

4-61 SUBGRADE COMPACTION

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

SECTION 5 – DRAINAGE

5-5 CULVERTS

Purchaser shall install culverts as part of this contract. Culverts must be installed concurrently with subgrade work and must be installed before subgrade compaction and rock application. Culvert locations and the minimum requirements for culvert length and diameter are designated on MATERIALS LIST. Culvert, downspout, and flume lengths may be adjusted to fit as-built conditions and may not terminate directly on unprotected soil. Culverts may be new or used material (if specified in Clause 5-7) and must meet the specifications in Clauses 10-15 through 10-24.

5-7 USED CULVERT MATERIAL

On the following roads, Purchaser may install used culverts. All other roads must have new culverts installed. Purchaser shall obtain approval from the Contract Administrator for the quality of the used culverts before installation.

Road	Stations
ML-ML	203+25 to 206+70

5-12 UNUSED MATERIALS STATE PROPERTY

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

5-15 CULVERT INSTALLATION

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

5-16 APPROVAL FOR LARGER CULVERT INSTALLATION

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

5-17 CROSS DRAIN SKEW AND SLOPE

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

5-18 CULVERT DEPTH OF COVER

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

5-20 ENERGY DISSIPATERS

Purchaser shall install energy dissipaters in accordance with the CULVERT AND DRAINAGE SPECIFICATION DETAIL at all cross drain culverts, Energy dissipater installation is subject to approval by the Contract Administrator.

Rock used for energy dissipaters must be light/loose riprap. Energy dissipaters must extend a minimum of 1 foot to each side of the culvert at the outlet and a minimum of 2 feet beyond the outlet. Rock must be set in place by machine. Placement must be by zero-drop-height method only. No placement by end dumping or dropping of rock is allowed. Rock type shall meet the specifications in Clause 6-50 LIGHT LOOSE RIP RAP.

5-25 CATCH BASINS

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

5-26 HEADWALLS FOR CROSS DRAIN CULVERTS

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

5-27 ARMORING FOR STREAM CROSSING CULVERTS

At stream crossing culverts, Purchaser shall place riprap in conjunction with construction of the embankment. Rock must be placed on shoulders, slopes, and around culvert inlets and outlets as designated on the MATERIALS LIST or as directed by the Contract Administrator. Rock may not restrict the flow of water into culvert inlets or catch basins. Placement must be by zero-drop-height method only. No placement by end dumping or dropping of rock is allowed.

6-2 ROCK SOURCE ON STATE LAND

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

Source	Location	Rock Type
Alger Pit	Sta. 216+65 of the AL-ML	3-inch minus ballast rock riprap
Doc Spratley Pit	Sta. 3+00 of the ML-04	shot rock riprap
Christie Pit	Sta. 181+35 of the CT-ML	3-inch minus ballast rock

6-5 ROCK FROM COMMERCIAL SOURCE

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

6-11 ROCK SOURCE DEVELOPMENT PLAN BY PURCHASER

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

Source
Alger Pit
Doc Spratley Pit
Christie Pit

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

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

6-12 ROCK SOURCE SPECIFICATIONS

Rock sources must be in accordance with the following:

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

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

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

6-23 ROCK GRADATION TYPES

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

6-34 3-INCH MINUS BALLAST ROCK

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

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

6-42 SHOT ROCK

No more than 50 percent of the rock may be less than 6 inches in any dimension and no rock may be larger than 24 inches in any dimension. Shot rock may not contain more than 5 percent by weight of organic debris, dirt, and trash. Rock may require processing to meet this specification.

6-50 LIGHT LOOSE RIP RAP

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

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

6-51 HEAVY LOOSE RIP RAP

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

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

6-55 ROCK APPLICATION MEASURED BY COMPACTED DEPTH

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

6-70 APPROVAL BEFORE ROCK APPLICATION

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

6-71 ROCK APPLICATION

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

6-73 ROCK FOR WIDENED PORTIONS

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

SECTION 8 – EROSION CONTROL

8-2 PROTECTION FOR EXPOSED SOIL

Purchaser shall provide and evenly spread a 4-inch layer of straw to all exposed soils within 50 feet of a stream or wetland. Soils must be covered before the first anticipated storm event.

8-6 DITCH ARMOR

On the following road, Contractor shall armor ditchline with machine placed clean light/loose riprap.

Road	Stations	Requirements
ML-ML	177+25 to 177+75	Beginning at culvert installation at 177+25, line ditch for 50 ft. with clean light/loose riprap.

8-15 REVEGETATION

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

8-16 REVEGETATION SUPPLY

The Purchaser shall provide the required grass seed and fertilizer.

8-17 REVEGETATION TIMING

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

8-18 PROTECTION FOR SEED

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

8-19 ASSURANCE FOR SEEDED AREA

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

8-25 GRASS SEED

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

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

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

8-27 FERTILIZER

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

Chemical Component	% by Weight
Nitrogen	16
Phosphorous	16
Potassium	16
Sulphur	3
Inerts	49

SECTION 9 – POST-HAUL ROAD WORK

9-3 CULVERT MATERIAL REMOVED FROM STATE LAND

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

9-5 POST-HAUL MAINTENANCE

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

9-10 LANDING DRAINAGE

Purchaser shall provide for drainage of the landing surface.

9-12 LANDING EMBANKMENT REMOVAL

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

9-21 ROAD ABANDONMENT

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

Road	Stations
AL-82	0+00 to 37+30
AL-8203	0+00 to 3+55
ML-ML	203+25 to 206+70

9-22 ABANDONMENT

- Remove all ditch relief culverts. The resulting slopes must be 1:1 or flatter. Place and compact the removed fill material in a location that will not erode into any Type 1 through 5 waters or wetlands.
- Remove all culverts in natural drainages. The resulting slopes must be 1½ :1 or flatter. Strive to match the existing native stream bank gradient. The natural streambed width must be re-established. Place and compact the removed fill material in a location that will not erode into any Type 1 through 5 waters or wetlands.
- Transport all removed culverts off site. All removed culverts are the property of the Purchaser.
- Construct non-drivable waterbars at natural drainage points and at a spacing that will produce a vertical drop of no more than 20 feet between waterbars and with a maximum horizontal spacing of 400 feet.
- Skew waterbars at least 30 degrees from perpendicular to the road centerline on roads in excess of 3 percent grade.
- Key waterbars into the cut-slope to intercept the ditch. Waterbars must be outsloped to provide positive drainage. Outlets must be on stable locations.
- Inslope or outslope the road as appropriate.
- Remove bridges and other structures.
- Pull back unstable fill that has potential of failing and entering any Type 1 through 5 waters or wetlands. Place and compact removed material in a stable location.
- Remove berms except as designed.
- Block the road by constructing an aggressive barrier of dense interlocked large woody debris (logs, stumps, root wads, etc.) so that four wheel highway vehicles cannot pass the point of abandonment. Typical barrier dimensions are 10 feet high by 20 feet deep, spanning the entire road prism from top of cutslope to toe of fillslope. Long term effectiveness is the primary objective. If necessary construct a vehicular turn-around near the point of abandonment.
- Apply grass seed to all exposed soils resulting from the abandonment work and in accordance with Section 8 EROSION CONTROL.

SECTION 10 MATERIALS

10-15 CORRUGATED STEEL CULVERT

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

10-17 CORRUGATED PLASTIC CULVERT

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

10-21 METAL BAND

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

10-22 PLASTIC BAND

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

10-23 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.

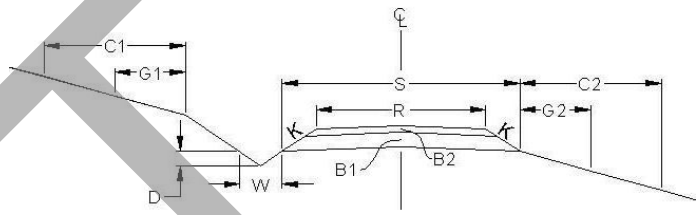
10-24 GAUGE AND CORRUGATION

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

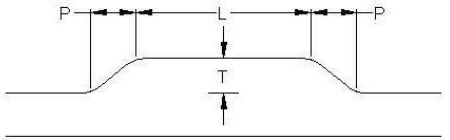
Diameter	Gage	Corrugation
18"	16 (0.064”)	2 $^{2}/_{3}$" X $^{1}/_{2}$"
24" to 48"	14 (0.079”)	2 $^{2}/_{3}$" X $^{1}/_{2}$"
54" to 96"	14 (0.079”)	3" X 1"

ROAD #		AL-ML	AL-ML*	AL-79*	AL-79
REQUIRED / OPTIONAL		REQUIRED	REQUIRED	REQUIRED	REQUIRED
CONSTRUCT / RECONSTRUCT		PRE-HAUL	CONSTRUCT	CONSTRUCT	CONSTRUCT
TOLERANCE CLASS (A/B/C)		A	C	A	A
STATION / MP TO		22+70	444+40	0+00	14+80
STATION / MP		444+40	455+10	14+80	29+05
ROAD WIDTH	R	12	12	12	12
CROWN (INCHES @ C/L)		3	3	3	3
DITCH WIDTH	W	3	3	3	3
DITCH DEPTH	D	1	1	1	1
TURNOUT LENGTH	L	50	50	50	50
TURNOUT WIDTH	T	10	10	10	10
TURNOUT TAPER	P	25	25	25	25
GRUBBING	G1	--	5	5	5
	G2	--	5	5	5
CLEARING	C1	--	10	10	10
	C2	--	10	10	10
ROCK FILLSLOPE	K:1	--	1½	1½	1½
❖ BALLAST DEPTH	B1	--	--	--	--
CUBIC YARDS / STATION		--	--	--	--
➢ TOTAL CY BALLAST		--	--	--	--
❖ SURFACING DEPTH	B2	--	9	9	18
CUBIC YARDS / STATION		--	53	53	114
➢ TOTAL CY SURFACING		260 **A**	565 **A**	785 **A**	1625 **A**
➢ TOTAL CUBIC YARDS		260**	565	785	1625
SUBGRADE WIDTH	S	--	14.25	14.25	16.5
BRUSHCUT (Y/N)		N	N	N	N
BLADE, SHAPE, & DITCH (Y/N)		y	N	N	N

TYPICAL SECTION



TURNOUT DETAIL (PLAN VIEW)



SYMBOL NOTES

❖ Specified Rock Depth is FINISHED COMPACTED DEPTH in inches.

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

*CONSTRUCTION IS ON AN ABANDONED GRADE
**SPOT PATCHING AND FILL OVER CULVERTS
***FILL OVER TANK TRAPS

A 3-INCH MINUS BALLAST ROCK FROM ALGER PIT
B SHOT ROCK FROM DOC SPRATLEY PIT
C 3-INCH MINUS BALLAST ROCK FROM CHRISTIE PIT

TOTAL SHOT ROCK = 2730 CY
TOTAL 3-INCH MINUS BALLAST ROCK = 4705 CY
TOTAL RIPRAP = 288 CY

ROAD #		ML-ML	ML-ML	AM-ML	AM-43*				
REQUIRED / OPTIONAL		REQUIRED	REQUIRED	REQUIRED	REQUIRED				
CONSTRUCT / RECONSTRUCT		PRE-HAUL	CONSTRUCT	PRE-HAUL	CONSTRUCT				
TOLERANCE CLASS (A/B/C)		A	C	A	A				
STATION / MP TO		92+15	172+60	0+00	0+00				
STATION / MP		172+60	206+70	263+05	3+50				
ROAD WIDTH	R	12	12	12	12				
CROWN (INCHES @ C/L)		3	3	3	3				
DITCH WIDTH	W	3	3	3	3				
DITCH DEPTH	D	1	1	1	1				
TURNOUT LENGTH	L	50	50	50	50				
TURNOUT WIDTH	T	10	10	10	10				
TURNOUT TAPER	P	25	25	25	25				
GRUBBING	G1	--	5	--	5				
	G2	--	5	--	5				
CLEARING	C1	--	10	--	10				
	C2	--	10	--	10				
ROCK FILLSLOPE	K:1	--	1½	--	1½				
❖ BALLAST DEPTH	B1	--	12	--	--				
CUBIC YARDS / STATION		--	80	--	--				
➢ TOTAL CY BALLAST		--	2730 **B**	--	--				
❖ SURFACING DEPTH	B2	--	6	--	12				
CUBIC YARDS / STATION		--	34	--	72				
➢ TOTAL CY SURFACING		--	1160 **C**	60 **A**	250 **A**				
➢ TOTAL CUBIC YARDS		--	3890	60***	250				
SUBGRADE WIDTH	S	--	16.5	--	15.0				
BRUSHCUT (Y/N)		N	N	N	N				
BLADE, SHAPE, & DITCH (Y/N)		Y	N	y	N				

MATERIALS LIST

LOCATION		CULVERT			DWNSPT		RIPRAP			FILL TYPE	TOLERANCE	REMARKS
ROAD #	STATION	DIAMETER	LENGTH	TYPE	LENGTH	TYPE	INLET	OUTLET	TYPE			Note: Galvanized metal culverts shall conform to the following specifications for gage and corrugation as a function of the diameter: Diameter / Gage / Corrugation 18" / 16 / 2 2/3" x 1/2" 24" – 48" / 14 / 2 2/3" x 1/2" 54" – 96" / 14 / 3" x 1"
AL-ML	379+50	18	40	XX			2	3	L	NT	C	
AL-ML	417+55	18	36	XX			2	3	L	NT	C	
AL-ML	422+55	18	36	XX			2	3	L	NT	C	
AL-ML	445+80	24	30	XX			3	5	H/L	NT	C	Seep
AL-ML	446+50	24	30	XX			3	5	H/L	NT	C	Seep
AL-ML	447+95	24	30	XX			3	5	H/L	NT	C	Type 5 Stream
AL-ML	448+90	18	30	XX			2	3	L	NT	C	
AL-ML	451+55	18	30	XX			2	3	L	NT	C	
AL-79	3+30	24	40	XX			3	5	H/L	NT	C	Seep
AL-79	5+25	18	30	XX			2	3	L	NT	C	
AL-79	6+70	24	40	XX			3	5	H/L	NT	C	Seep
AL-79	8+10	18	36	XX			2	3	L	NT	C	
AL-79	10+05	18	36	XX			2	3	L	NT	C	
AL-79	13+75	30	40	XX			5	10	H/L	NT	C	Type 4 Stream
AL-79	14+20	30	40	XX			5	10	H/L	NT	C	Type 4 Stream
AL-79	14+80	18	40	XX			2	3	L	NT	C	
AL-79	17+55	18	30	XX			2	3	L	NT	C	
AL-79	18+60	18	40	XX			2	3	L	NT	C	
AL-79	20+90	18	40	XX			2	3	L	NT	C	
AL-79	22+45	18	30	XX			2	3	L	NT	C	

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

MATERIALS LIST

LOCATION		CULVERT			DWNSPT		RIPRAP			FILL TYPE	TOLERANCE	REMARKS
ROAD #	STATION	DIAMETER	LENGTH	TYPE	LENGTH	TYPE	INLET	OUTLET	TYPE			**Note: Galvanized metal culverts shall conform to the following specifications for gage and corrugation as a function of the diameter:** **Diameter / Gage / Corrugation** **18" / 16 / 2 2/3" x 1/2"** **24" – 48" / 14 / 2 2/3" x 1/2"** **54" – 96" / 14 / 3" x 1"**
ML-ML	173+85	18	30	XX			2	3	L	NT	C	
ML-ML	175+55	18	36	XX			2	3	L	NT	C	
ML-ML	177+25	24	40	XX			3	5	H/L	NT	C	Seep
ML-ML	177+25-177+75						10		L		C	See Clause 8-6 DITCH ARMOR
ML-ML	180+60	18	30	XX			2	3	L	NT	C	
ML-ML	182+45	18	36	XX			2	3	L	NT	C	
ML-ML	183+80	24	30	XX			3	5	H/L	NT	C	Seep
ML-ML	186+35	18	36	XX			2	3	L	NT	C	
ML-ML	187+45	18	30	XX			2	3	L	NT	C	
ML-ML	188+05	30	40	XX			3	5	H/L	NT	C	Type 4 Stream
ML-ML	188+85	18	30	XX			2	3	L	NT	C	
ML-ML	190+90	24	60	XX			3	5	H/L	NT	C	Seep
ML-ML	192+00	24	40	XX			3	5	H/L	NT	C	Seep
ML-ML	193+15	18	30	XX			2	3	L	NT	C	
ML-ML	193+90	18	30	XX			2	3	L	NT	C	
ML-ML	195+00	30	30	XX			3	5	H/L	NT	C	Type 4 Stream
ML-ML	195+55	18	36	XX			2	3	L	NT	C	
ML-ML	203+95	48	40	XX			10	15	H/L	NT	C	Type 4 Stream
ML-ML	204+90	18	30	XX			2	3	L	NT	C	
AM-43	1+05	30	40	XX			5	10	H/L	NT	C	Type 4 Stream

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

FOREST ACCESS ROAD MAINTENANCE SPECIFICATIONS

Cuts and Fills

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

Surface

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

Drainage

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

Preventative Maintenance

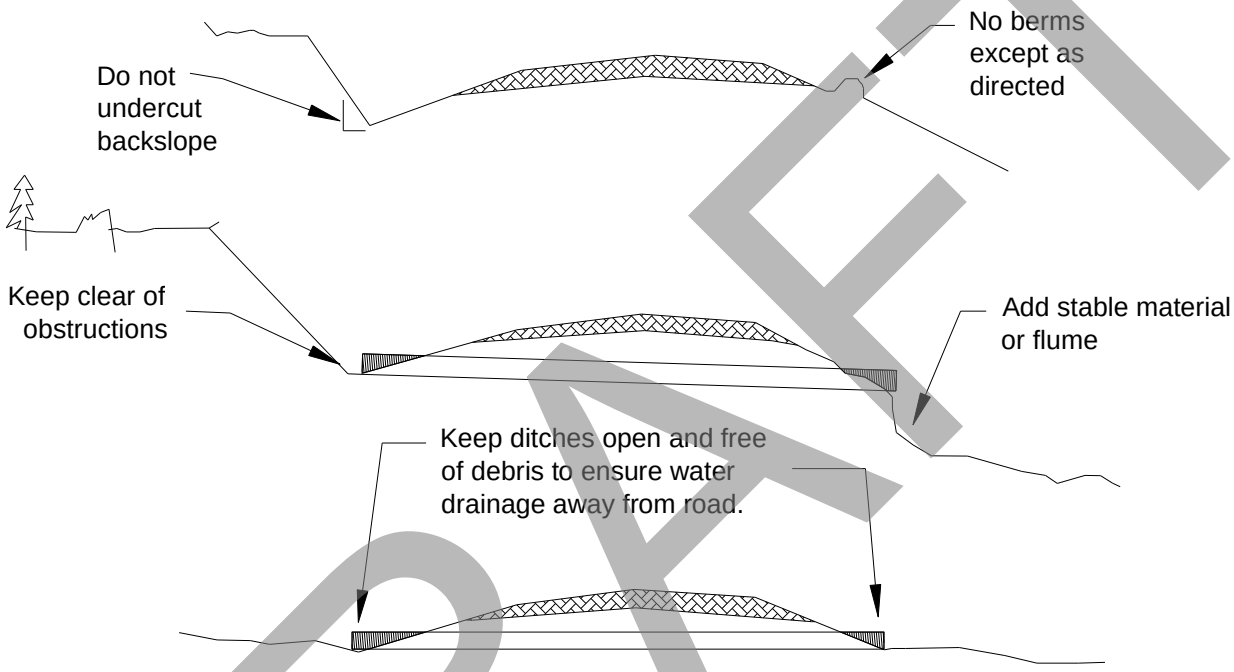
- Perform preventative maintenance work to safeguard against storm damage, such as blading to ensure correct runoff, ditch and culvert cleaning, and waterbar maintenance.

Termination of Use or End of Season

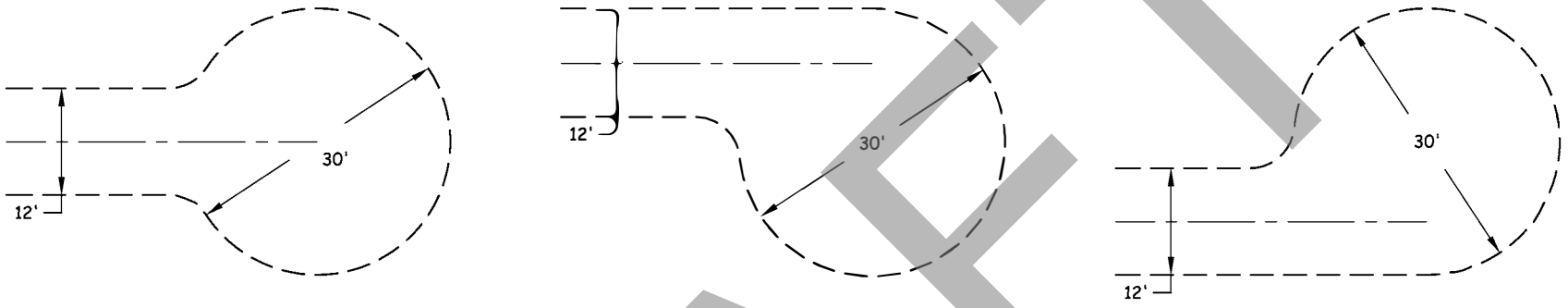
- At the conclusion of logging operations, ensure all conditions of these specifications have been met.

Debris

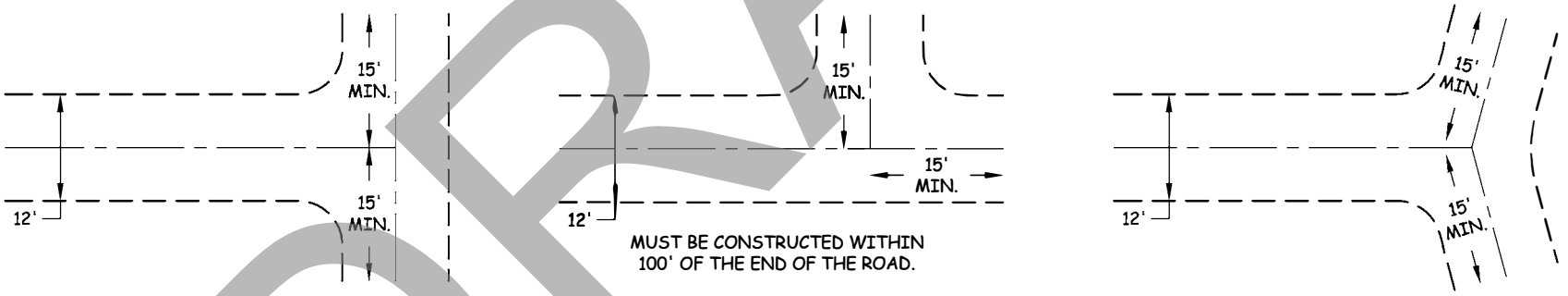
- Remove fallen timber, limbs, and stumps from the slopes, roadway, ditchlines, and culvert inlets.



TURNAROUND DETAILS



CUL-DE-SAC



MUST BE CONSTRUCTED WITHIN 100' OF THE END OF THE ROAD.

HAMMERHEAD

3-POINT SIDE

3-POINT WYE

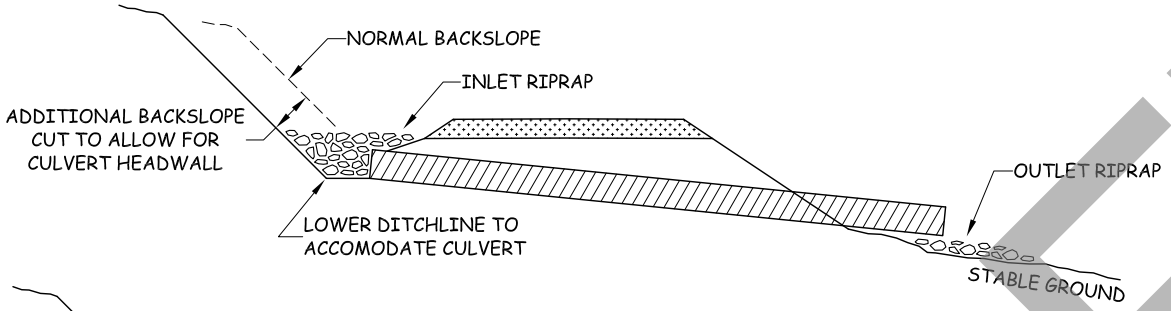
TURNAROUND TYPE AND TURNAROUND LOCATION ARE SUBJECT TO THE APPROVAL OF THE CONTRACT ADMINISTRATOR.

ROCK SHALL BE APPLIED THROUGHOUT THE TURNAROUND TO THE SAME DEPTH AND SPECIFICATIONS AS LISTED IN THE TYPICAL SECTION.

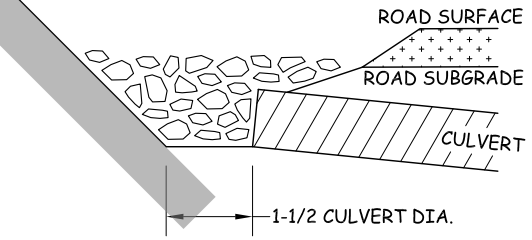
CONTRACT #	PROJECT	SHEET
30-106339	MAID MARRIAN	30 OF 32

CULVERT AND DRAINAGE SPECIFICATIONS

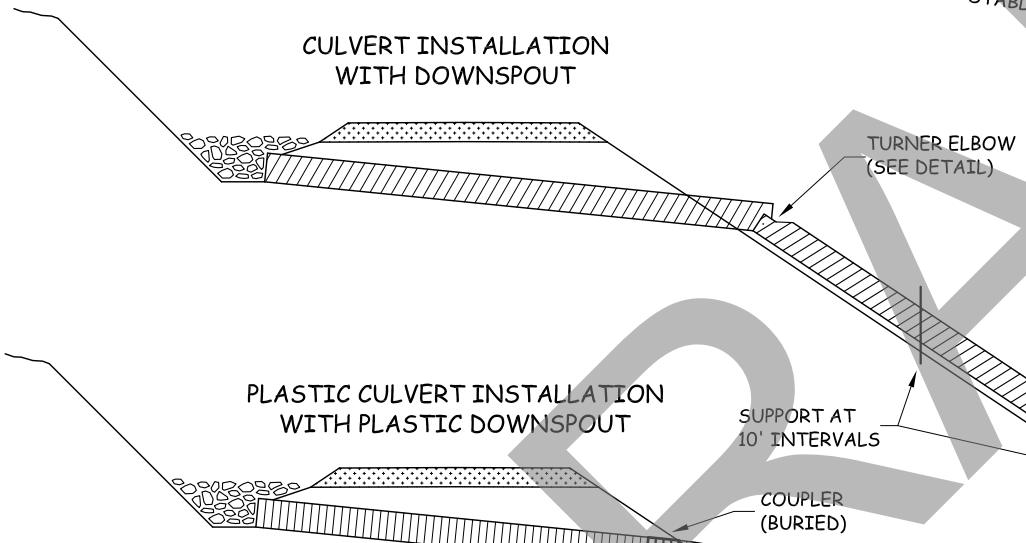
CULVERT INSTALLATION (TYPICAL)



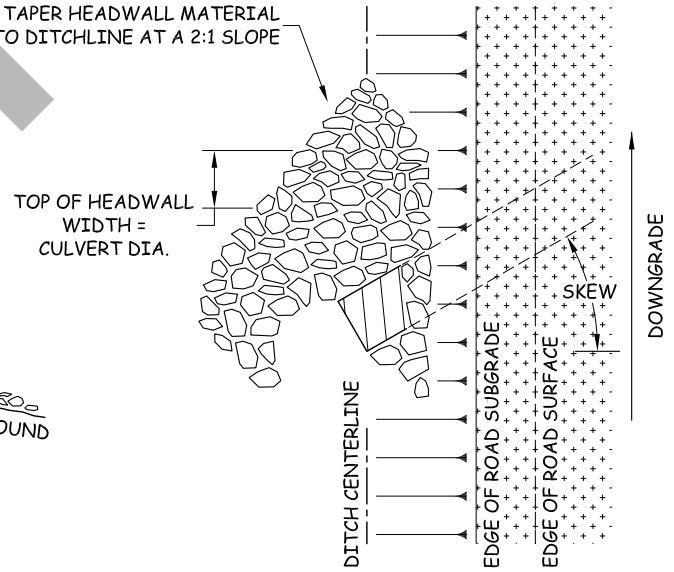
CULVERT HEADWALL - SECTION VIEW



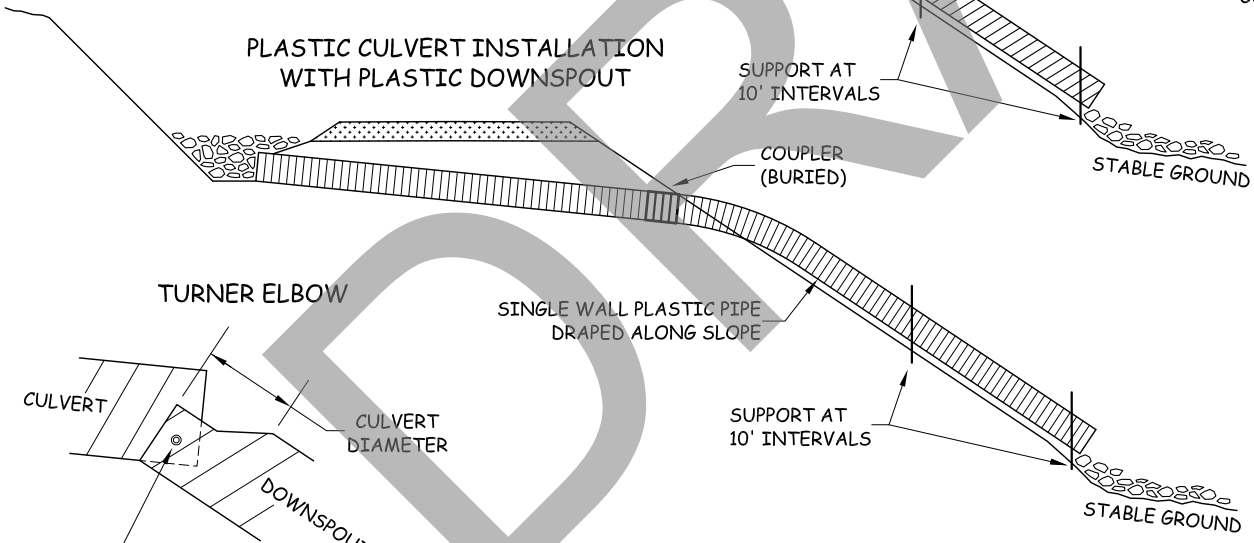
CULVERT INSTALLATION WITH DOWNSPOUT



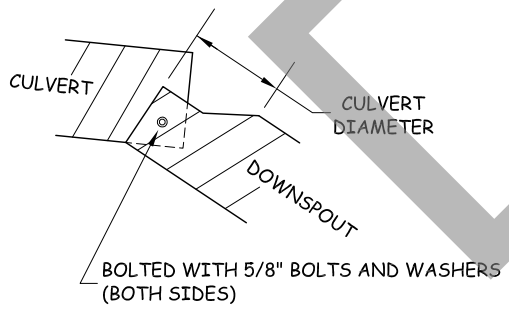
CULVERT HEADWALL - PLAN VIEW



PLASTIC CULVERT INSTALLATION WITH PLASTIC DOWNSPOUT



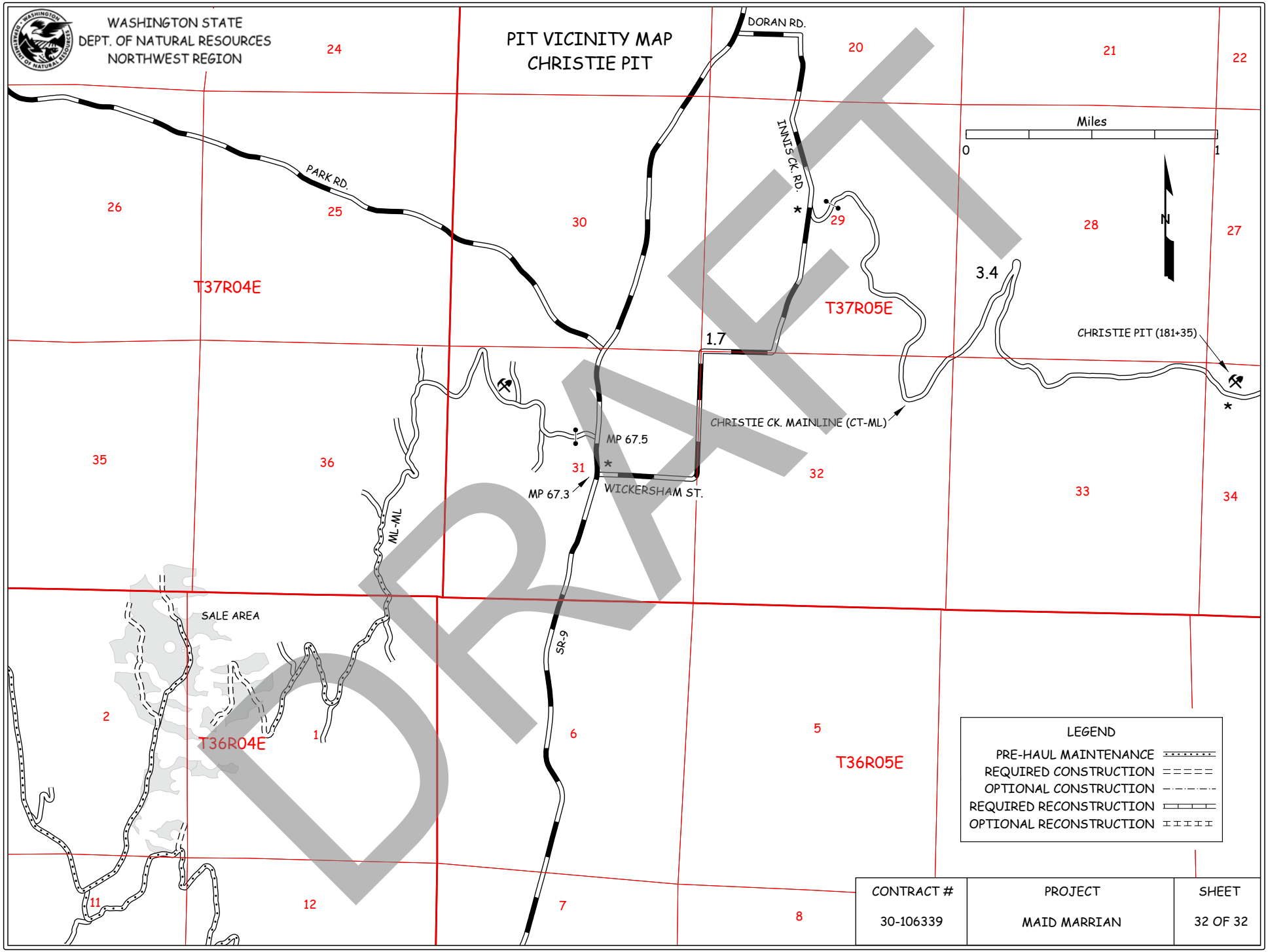
TURNER ELBOW



HEADWALL NOTE:

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

CONTRACT #	PROJECT	SHEET
30-106339	MAID MARRIAN	31 OF 32



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ROAD COST SUMMARY

Maid Marrian Timber Sale #30-106339

CONSTRUCTION SUMMARY

ROAD #	STATIONING	TOTAL STATIONS	ROCK PRODUCTION COST	ROCK LOADING COST	ROCK HAUL COST	ROCK SPREADING COST	CONSTRUCTION COST	CULVERT COST	OTHER COST	TOTAL COST	COST/STA
AL-ML	444+30 to 455+10	10.8	$5,085	$1,676	$8,236	$1,916	$4,612	$2,590	$432	$24,548	$2,273
AL-79	0+00 to 14+80	14.8	$7,065	$2,381	$11,701	$2,722	$5,189	$5,444	$592	$35,094	$2,371
AL-79	14+80 to 29+05	14.25	$14,625	$4,603	$22,619	$5,261	$8,648	$2,111	$570	$58,437	$4,101
ML-ML	172+60 to 203+25	30.65	$25,170	$15,688	$49,643	$4,989	$18,450	$10,319	$1,226	$125,484	$4,094
ML-ML	203+25 to 206+70	3.45	$1,650	$1,851	$5,830	$576	$2,883	$2,605	$138	$15,533	$4,502
AM-43	0+00 to 3+50	3.5	$2,250	$742	$3,644	$848	$1,730	$1,284	$140	$10,637	$3,039
									TOTAL	**$269,733**	

CONSTRUCTION COSTS include, clearing and grubbing, excavation and embankment, drilling and shooting on grade, and endhaul.
OTHER COSTS include erosion control, grass seeding and fertilizer, and miscellaneous other requirements detailed in the road plan.

PRE-HAUL MAINTENANCE SUMMARY

ROAD #	STATIONING	TOTAL STATIONS	ROCK PRODUCTION COST	ROCK LOADING COST	ROCK HAUL COST	ROCK SPREADING COST	CULVERT COST	OTHER COST	PRE-HAUL GRADING AND BRUSHING	TOTAL COST	COST/STA
AL-ML	22+70 to 301+95	279.25	$0	$0	$0	$0	$0	$0	$5,289	$5,289	$19
AL-ML	301+95 to 444+30	142.35	$2,340	$770	$3,025	$880	$1,685	$4,612	$2,696	$16,007	$112
ML-ML	92+15 to 172+60	80.45	$0	$0	$0	$0	$0	$3,459	$1,524	$4,983	$62
AM-ML	0+00 to 263+05	263.05	$540	$168	$825	$192	$0	$577	$4,982	$7,283	$28
									TOTAL	**$33,562**	

OTHER COSTS include cleaning culverts, ditches, headwalls, catch basins, culvert installation, and miscellaneous other requirements detailed in the road plan.

ROAD COST SUMMARY

Maid Marrian Timber Sale #30-106339

POST-HAUL MAINTENANCE SUMMARY

ROAD #	STATIONING	TOTAL STATIONS	POST-HAUL GRADING COST	OTHER COST	TOTAL COST	COST/STA
AL-ML	22+70 to 301+95	279.25	$4,231	$0	$4,231	$15
AL-ML	301+95 to 444+30	142.35	$2,157	$0	$2,157	$15
AL-ML	444+30 to 455+10	10.80	$164	$0	$164	$15
AL-79	0+00 to 14+80	14.80	$224	$0	$224	$15
AL-79	14+80 to 29+05	14.25	$216	$0	$216	$15
ML-ML	0+00 to 92+15	92.15	$1,396	$0	$1,396	$15
ML-ML	92+15 to 172+60	80.45	$1,219	$0	$1,219	$15
ML-ML	172+60 to 203+25	30.65	$464	$0	$464	$15
AM-ML	0+00 to 263+05	263.05	$3,986	$0	$3,986	$15
AM-43	0+00 to 3+50	3.50	$53	$0	$53	$15
				TOTAL	**$14,110**	

OTHER COSTS include miscellaneous other requirements detailed in the road plan.

ABANDONMENT SUMMARY

ROAD #	STATIONING	TOTAL STATIONS	ABANDONMENT COST	OTHER COST	TOTAL COST	COST/STA
AL-82	0+00 to 37+30	37.30	$3,745	$0	$3,745	$100
AL-8203	0+00 to 3+55	3.55	$535	$0	$535	$151
ML-ML	203+25 to 206+70	3.45	$1,880	$0	$1,880	$545
				TOTAL	**$6,160**	

OTHER COSTS include miscellaneous other requirements detailed in the road plan.

NOTE: ALL MOBILIZATION COSTS HAVE BEEN AMORTIZED IN WITH OTHER COSTS.

TOTAL ROAD COST $323,565
SALE VOLUME (MBF) 4000 PRE-CRUISE ESTIMATED VOLUME
ROAD COST/MBF $81