



TIMBER NOTICE OF SALE

SALE NAME: Q COPPER SWAN

AGREEMENT NO: 30-106142

AUCTION: July 23, 2024 starting at 10:00 a.m., Northeast Region Office, Colville, WA COUNTY: Ferry

SALE LOCATION: Sale located approximately 2 miles west of Republic, WA.

PRODUCTS SOLD AND SALE AREA: All conifer species except for leave trees banded with orange paint and two standing snags per acre in Units 1, 2, 3, 4, 5, 6, 7, 8 and 9 bounded by white timber sale boundary tags; and all right of way timber banded with yellow paint.

All forest products above located on part(s) of Sections 4, 5, 16, 20, 27 and 33 all in Township 36 North, Range 32 East, W.M., containing 268 acres, more or less.

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

ESTIMATED SALE VOLUMES AND QUALITY:

Table with columns: Species, Avg Ring DBH, Ring Count, Total MBF, MBF by Grade (P, SM, 1S, 2S, 3S, 4S, 5S, 6S, UT). Rows include Douglas fir, Larch, Lodgepole, and Sale Total.

MINIMUM BID: \$0.00 BID METHOD: Sealed Bids

PERFORMANCE SECURITY: \$0.00 SALE TYPE: Lump Sum

EXPIRATION DATE: November 1, 2026 ALLOCATION: Export Restricted

BID DEPOSIT: \$0.00 or Bid Bond. Said deposit shall constitute an opening bid at the appraised price.

HARVEST METHOD: Ground based equipment, Dozer, and Rubber tired skidder. Falling and Yarding will not be permitted from March 15 to June 1 unless authorized in writing by the Contract Administrator due to spring breakup.

ROADS: 21.31 stations of required construction. 447.58 stations of required prehaul maintenance. Road construction will not be permitted from March 15 to June 1 unless authorized in writing by the Contract Administrator due to spring breakup. The hauling of forest products will not be permitted from March 15 to June 1 unless authorized in writing by the Contract Administrator due spring breakup.

ACREAGE DETERMINATION

CRUISE METHOD: Acreage determined using GPS methods. Acreage shown above is net harvest acres in harvest units. All species: 7.0 - 17.5 inches dbh has minimum top of 4.6 inch dib. All species 17.6 inches and greater dbh have a minimum top dib of 40% of dob at 16 feet or a 6 inch top whichever is greater.



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FEES: Within 10 days of day of sale, Purchaser shall provide payment for three road use permits in the amount of \$500.00 each and payment for one road use permit in the amount of \$250.00. \$40,647.00 is due on day of sale. \$9.00 per MBF is due upon removal. These are in addition to the bid price.

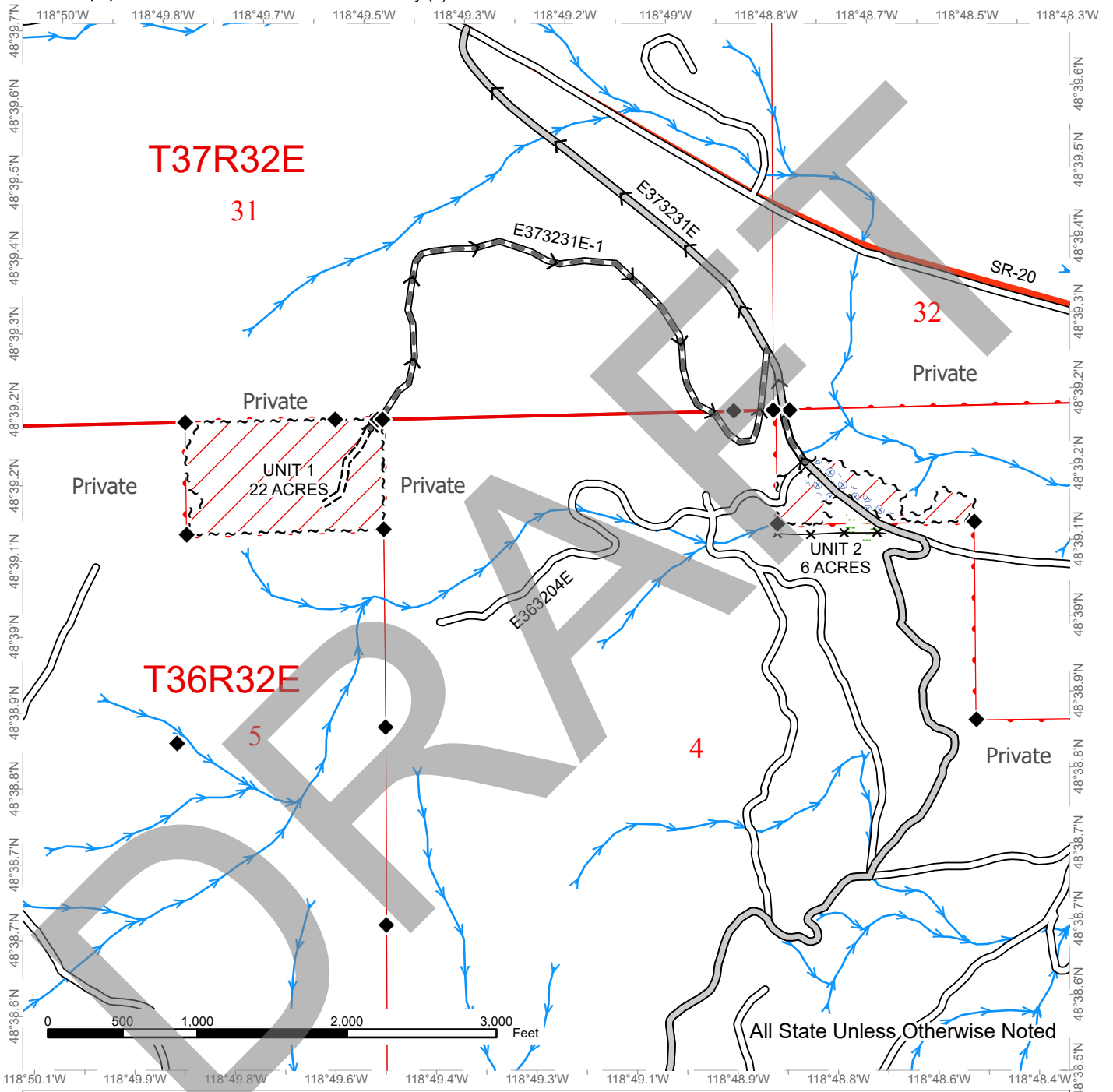
SPECIAL REMARKS: Locked gate restricts access to Units 3, 4, 5 and 8. Contact Northeast Region Office (509) 684-7474 for access.

DRAFT

TIMBER SALE MAP

SALE NAME: Q COPPER SWAN
AGREEMENT #: 30-106142
TOWNSHIP(S): T36R32E
TRUST(S): Common School and Indemnity (3)

REGION: Northeast Region
COUNTY(S): Ferry
ELEVATION RGE: 3000-3840



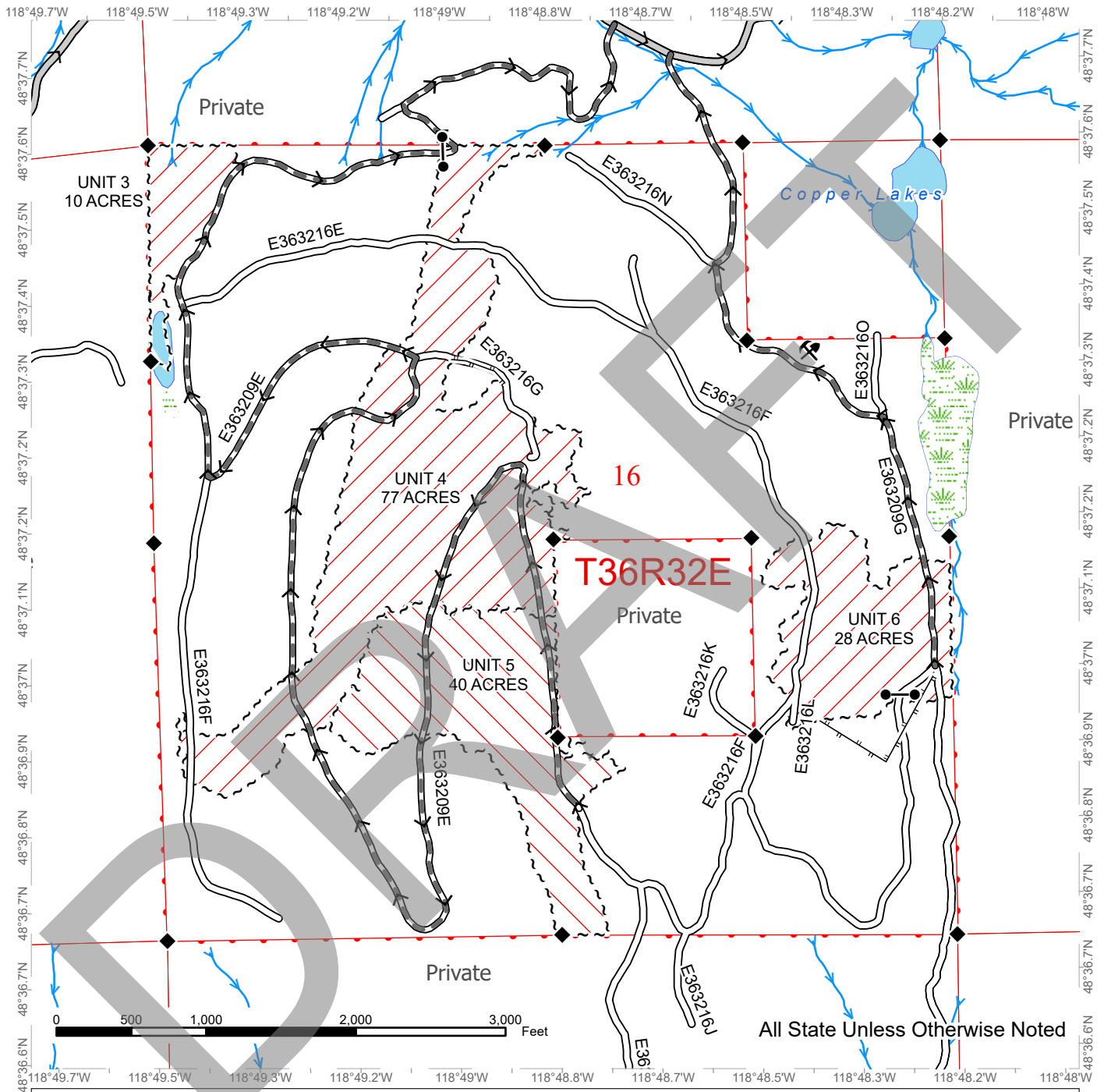
Public Land Survey Sections	County Road	Fence
DNR Managed Lands	Existing Roads	Streams
Variable Retention Harvest	Required Pre-Haul Maintenance	Survey Monument
Highway	Required Construction	Haul Route
Sale Boundary Tags	Wetland Mgt Zone	
	Hazard Abatement Area	



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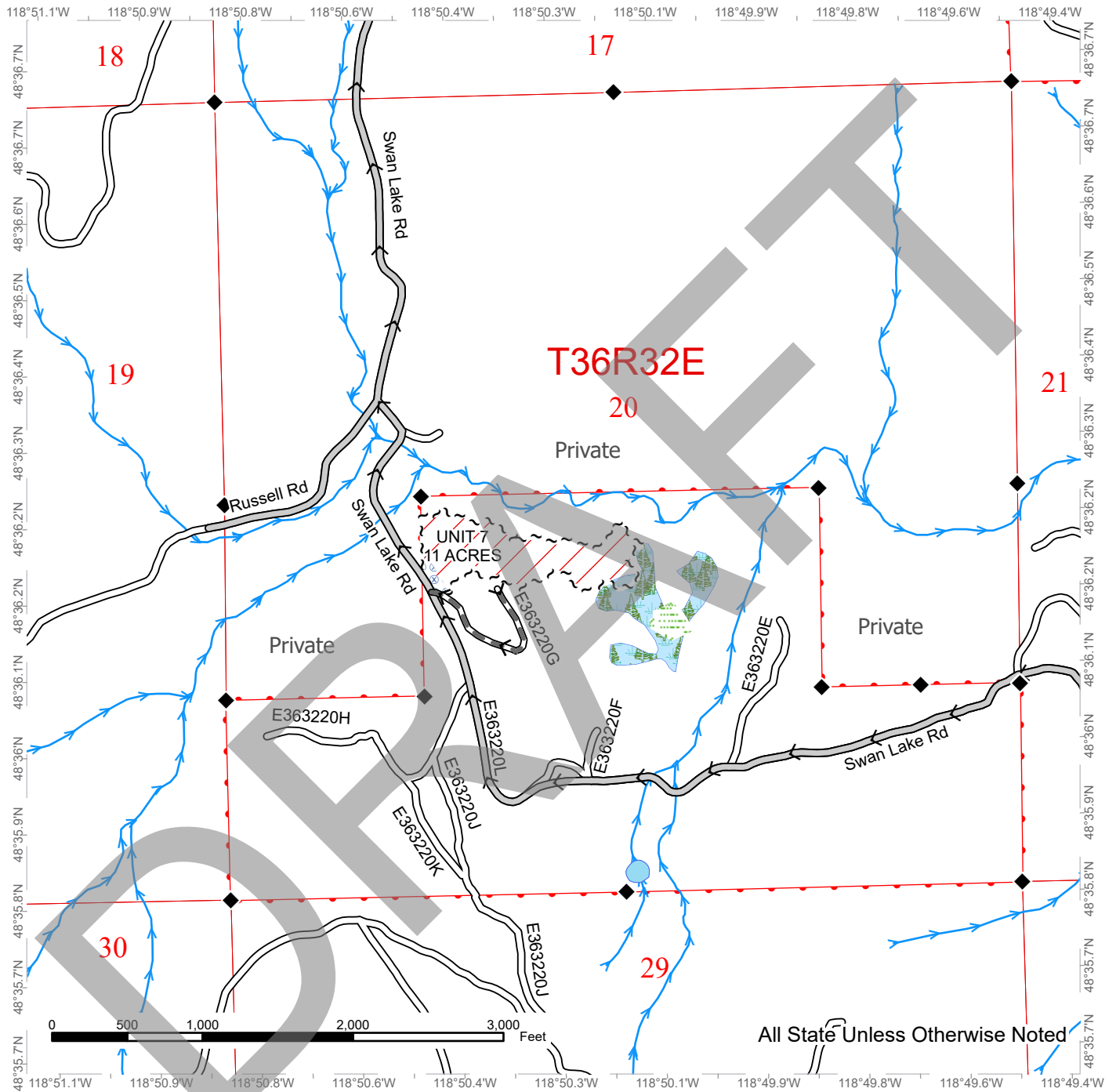
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|-----------------------------|-------------------------------|-----------------|
| Public Land Survey Sections | County Road | Streams |
| DNR Managed Lands | Existing Roads | Survey Monument |
| Variable Retention Harvest | Required Pre-Haul Maintenance | Gates |
| Uneven-Aged Management | Designated Skid Trail | Rock Pit |
| Sale Boundary Tags | Wetland Mgt Zone | Haul Route |



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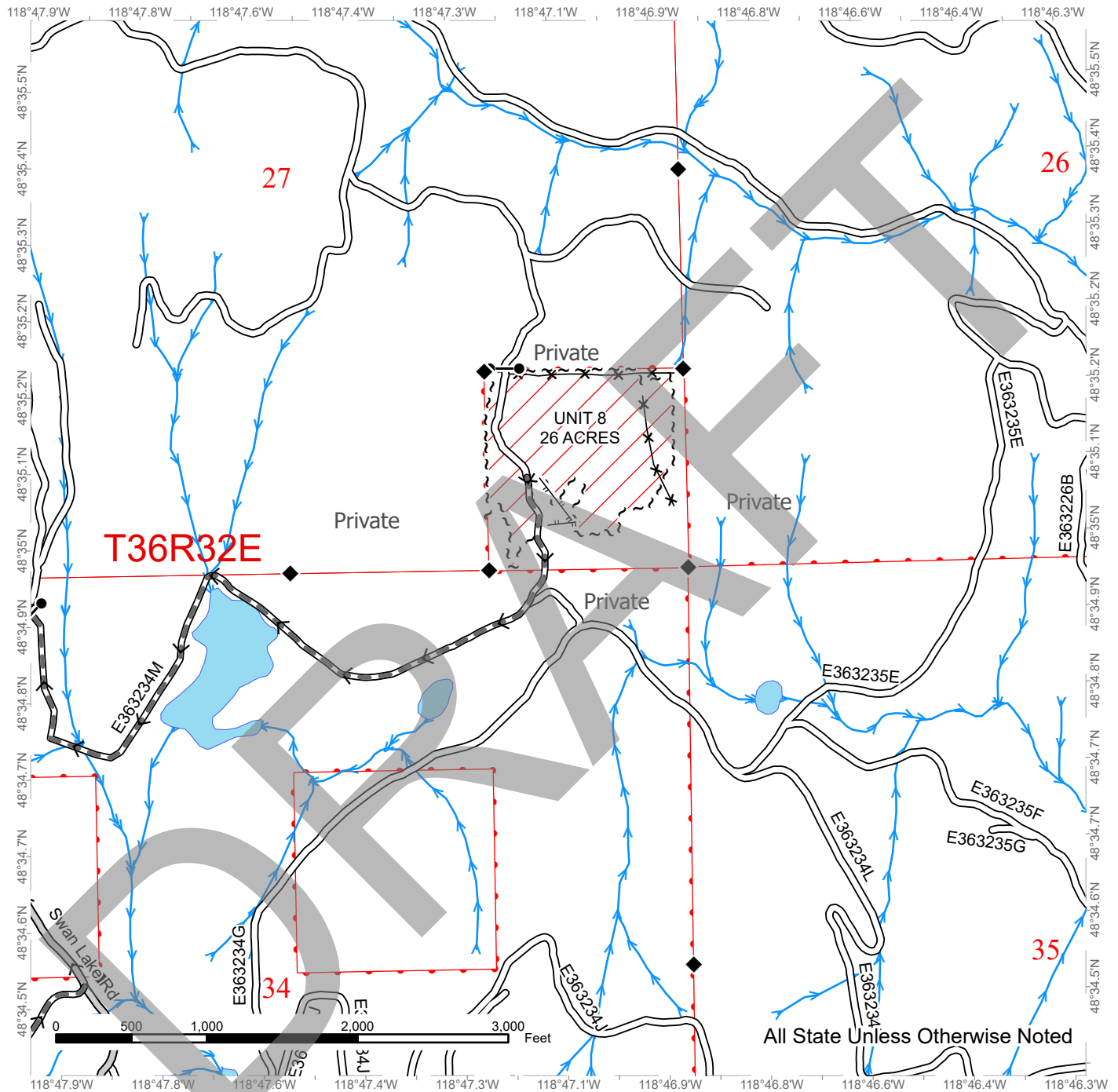


Public Land Survey Sections	County Road	Streams
DNR Managed Lands	Existing Roads	Survey Monument
Variable Retention Harvest	Required Pre-Haul Maintenance	Haul Route
Sale Boundary Tags	Forested Wetland	
	Wetland Mgt Zone	
	Hazard Abatement Area	

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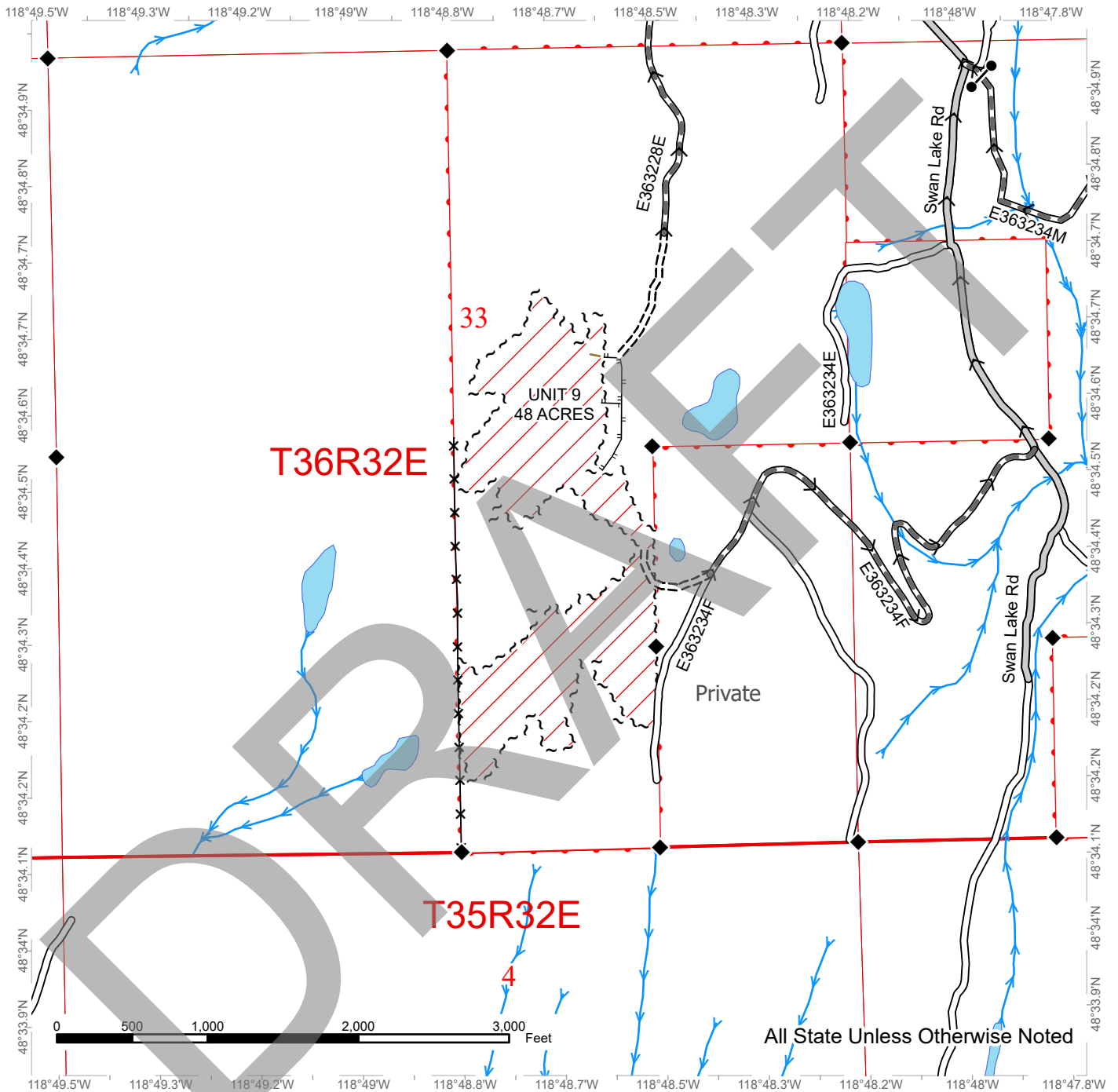
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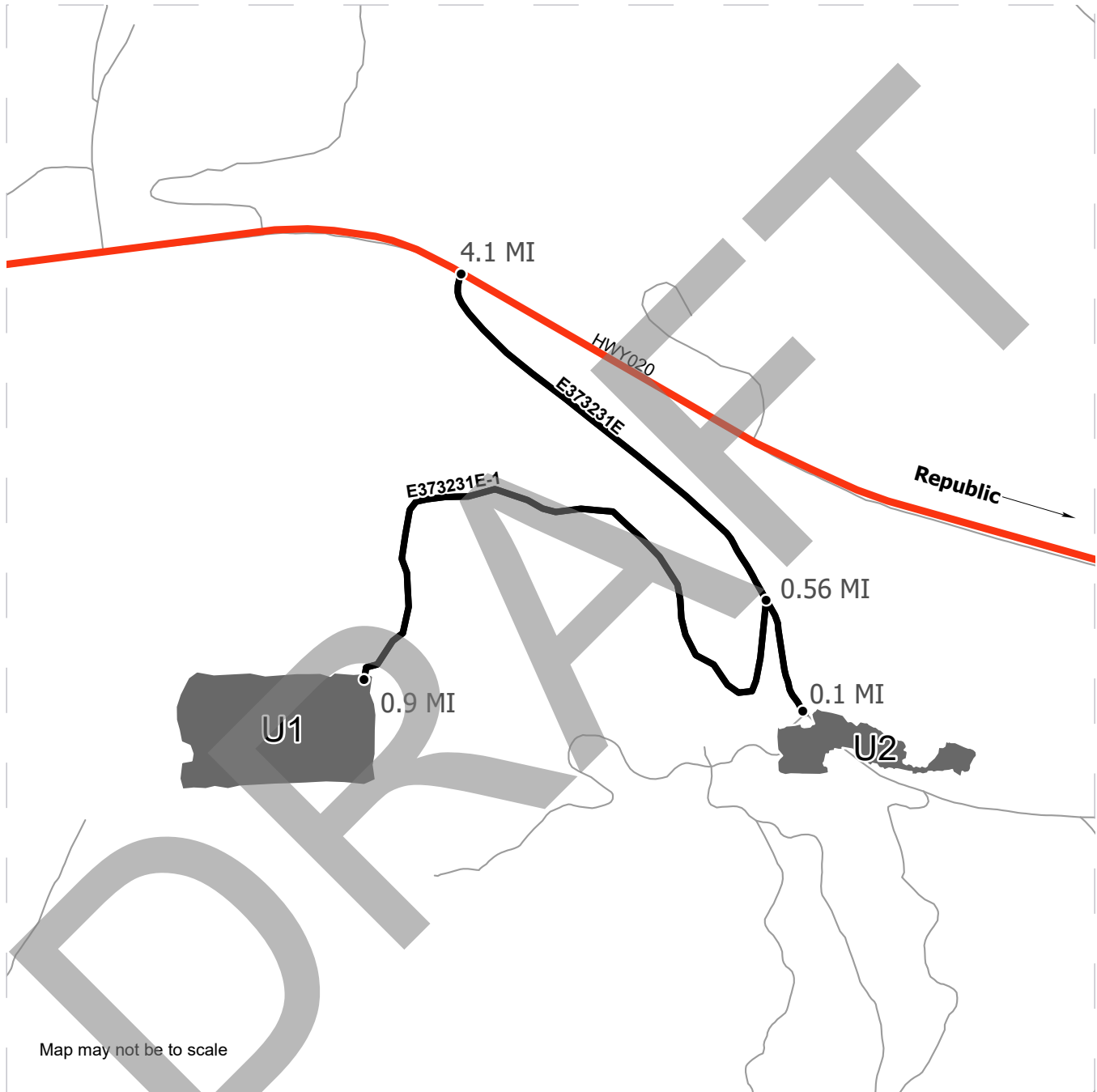
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Variable Retention Harvest	Required Pre-Haul Maintenance	Survey Monument
Sale Boundary Tags	Required Construction	Gates
	Designated Skid Trail	Haul Route



DRIVING MAP

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Map may not be to scale

- Timber Sale Unit
- Haul Route
- Highway
- Distance Indicator

DRIVING DIRECTIONS:

To access Units 1 and 2: From Republic, WA travel approximately 4.1 miles West on highway 20 until turning left on Sage road. To access U1 travel for approximately 0.5 miles before reaching the "Y" intersection. To access Unit 1 stay to the right and travel approximately 0.9 miles on the E373231E-1 road. To access Unit 2 stay to the left at the "Y" and travel for approximately 0.1 miles.

To access units 3-6: From Republic, WA travel West 2.2 miles on highway 20 until turning left onto Swan Lake road. To access Unit 6 travel south on Swan lake road for approximately 2.1 miles to the E363209G road, from there travel south 0.8 miles. To access Units 3-5 travel 0.5 miles south from the intersection of Swan Lake road and E363209E until reaching Unit 4. To access Unit 3 continue on the E363209E road for approximately 0.27 miles more. To access Unit 5 continue on the E363209E road for approximately 1.3 miles more.

To access Unit 7 travel south from the intersection of Swan Lake Road and E363209E on Swan Lake Road for approximately 3.0 miles until reaching E363220G, travel East on E363220G until reaching U7. To access Unit 8 travel beyond Unit 7 access for 2.9 miles on the Swan lake road until reaching the E363234M road. Continue traveling East on E363234M for approximately 1.1 miles to reach U8. To access Unit 9 travel north from the intersection of the Swan Lake and E263234M road for approximately 0.4 miles until reaching the E362228E road. Travel West on the E363228E road for approximately 0.9 miles until reaching U9.







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-  Distance Indicator
-  Rock Pit

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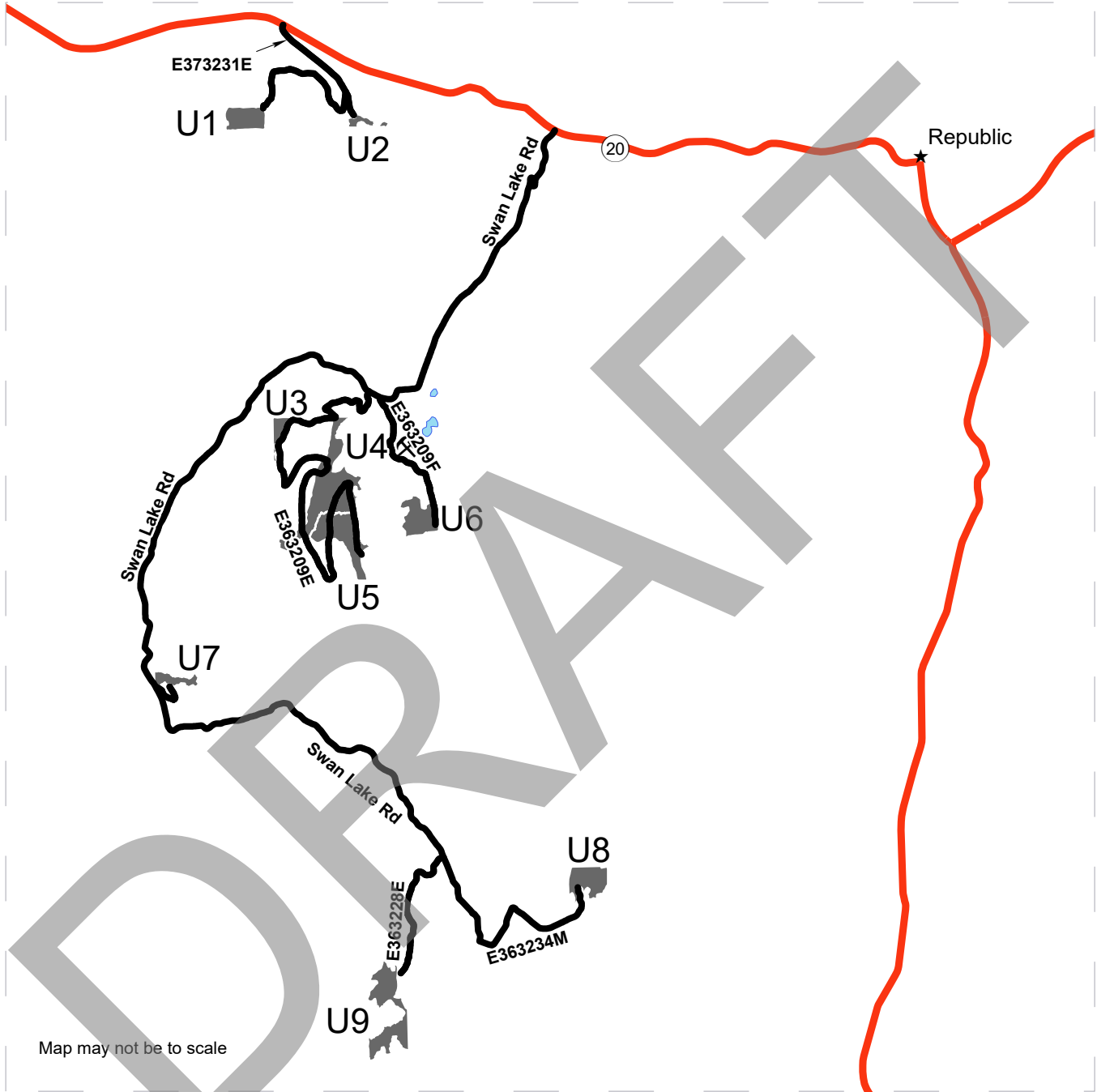
To access Unit 7 travel south from the intersection of Swan Lake Road and E363209E on Swan Lake Road for approximately 3.0 miles until reaching E363220G, travel East on E363220G until reaching U7. To access Unit 8 travel beyond Unit 7 access for 2.9 miles on the Swan lake road until reaching the E363234M road. Continue traveling East on E363234M for approximately 1.1 miles to reach U8. To access Unit 9 travel north from the intersection of the Swan Lake and E263234M road for approximately 0.4 miles until reaching the E362228E road. Travel West on the E363228E road for approximately 0.9 miles until reaching U9.



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Timber Sale Cruise Report Copper Swan

Sale Name: Q COPPER SWAN

Sale Type: LUMP SUM

Region: NORTHEAST

District: HIGHLANDS

Lead Cruiser: Jake Culp

Other Cruisers: Hailey Howard

Cruise Narrative:

Location:

Legal – Sections 4, 5, 16, 20, 27, and 33 of T36N R32E.

General – Approx. 5 miles SW of Republic, WA in Ferry County.

Access – Units 1 and 2 accessed off Sage Rd. via Hwy. 20. Units 3-9 accessed off Swan Lake Rd. via Hwy 20.

Cruise Design:

-This sale was cruised using variable radius plots, utilizing the cruise-count method. Plot locations found using a Garmin handheld GPS unit. The walk-through method was used on plots near boundaries.

-Minor species cruise intensity: We grade the first tree of all minor species encountered; then follow the set cruise design.

-Min. DBH: 8" DBH for PP and RC, 7" DBH for all other species

-Log Length and grades: 32' logs where possible, minimum of 12' lengths. Trees are graded using Eastside Scaling Rules.

-Top DIB: Trees less than 17.5" DBH have a minimum top of 4.6" DIB for all species; Trees 17.6" and greater DBH have a minimum top DOB of 40% of DOB at 16' or a 6" top, whichever is greater.

Take/Leave Prescription:

Cut all trees not marked with orange paint. Leave all ponderosa pine.

Cruise Acres determination:

Net harvest unit acreages are used for cruise acreages.

Stand composition:

Units are moderately stocked with second growth, even aged Douglas fir with minor components of western larch and lodgepole pine. Large residual trees and legacy trees are found within the sale area.

Timber quality:

Timber to be harvested is comprised of domestic quality Douglas fir (82%), western larch (16%), and lodgepole pine (2%).

Stand health/defect:

Older timber in the sale area can be rough, with branch clusters, sweep, and crooks. Other defects noted include forks, spike knots, wind and snow damage. Root rot pockets observed throughout the sale as well as red belt fungus. Mistletoe observed in DF and WL.

Aspect:

North, Northeast, East, West

Elevation:

3000'-3900'

Harvesting methods:

100% ground based

Slope:

Unit 1- Max 35%, Avg. 10%

Unit 2- Max 30%, Avg. 10%

Unit 3- Max 20%, Avg. 10%

Unit 4- Max 35%, Avg. 15%

Unit 5- Max 35%, Avg. 15%

Unit 6- Max 65%, Avg. 25%

Unit 7- Max 25%, Avg. 5%

Unit 8- Max 40%, Avg. 12%

Unit 9- Max 50%, Avg. 15%

Other considerations/remarks:

Unit 6 and Unit 9 both have areas with steep pitches and rocky outcroppings.

Trust:

This sale is 100% Trust 3.

Timber Sale Notice Volume (MBF)

Sp	DBH	Rings/In	Age	MBF Volume by Grade			
				All	2 Saw	3 Saw	4 Saw
DF	13.7			1,951	461	1,080	410
WL	13.8			379	75	236	68
LP	10.0			61		32	29
ALL	13.3			2,391	536	1,349	506

Timber Sale Notice Weight (tons)

Sp	Tons by Grade			
	All	2 Saw	3 Saw	4 Saw
DF	14,113	2,749	8,168	3,196
WL	2,398	407	1,610	381
LP	368		202	166
ALL	16,879	3,156	9,979	3,744

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 (%)
77.9	4.5	113.2	2.7	8,917	5.4

Timber Sale Unit Cruise Design

Unit	Design	Cruise Acres	FMA Acres	N Plots	N Cruise Plots	N Void Plots
COPPER SWAN U1	B1C: VR, 1 BAF (25.15) Measure/Count Plots, Sighting Ht = 4.5 ft	22.0	22.0	20	7	2
COPPER SWAN U2	B1C: VR, 1 BAF (25.15) Measure/Count Plots, Sighting Ht = 4.5 ft	6.4	6.7	8	4	0
COPPER SWAN U3	B1C: VR, 1 BAF (20) Measure/Count Plots, Sighting Ht = 4.5 ft	10.2	10.2	13	7	0
COPPER SWAN U4	B1C: VR, 1 BAF (25.15) Measure/Count Plots, Sighting Ht = 4.5 ft	76.5	77.7	56	15	3
COPPER SWAN U5	B1C: VR, 1 BAF (25.15) Measure/Count Plots, Sighting Ht = 4.5 ft	39.6	40.4	27	7	3
COPPER SWAN U6	B1C: VR, 1 BAF (25.15) Measure/Count Plots, Sighting Ht = 4.5 ft	27.6	28.0	25	9	4
COPPER SWAN U7	B1C: VR, 1 BAF (20) Measure/Count Plots, Sighting Ht = 4.5 ft	11.4	11.4	11	6	0
COPPER SWAN U8	B1C: VR, 1 BAF (20) Measure/Count Plots, Sighting Ht = 4.5 ft	26.1	26.4	26	10	4
COPPER SWAN U9	B1C: VR, 1 BAF (20) Measure/Count Plots, Sighting Ht = 4.5 ft	48.3	48.3	37	10	2
All		268.1	271.1	223	75	18

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	13.6	32	1,735	1,721	0.8	2,748.6	461.3
DF	LIVE	3 SAW	Domestic	7.9	32	4,056	4,029	0.7	8,167.6	1,080.2
DF	LIVE	4 SAW	Domestic	5.3	22	1,555	1,528	1.8	3,196.3	409.5
LP	LIVE	3 SAW	Domestic	6.5	32	120	120	0.0	202.1	32.2
LP	LIVE	4 SAW	Domestic	5.2	28	107	106	0.7	166.2	28.5
WL	LIVE	2 SAW	Domestic	13.5	32	280	280	0.0	407.4	74.9
WL	LIVE	3 SAW	Domestic	7.7	32	910	881	3.1	1,609.8	236.2
WL	LIVE	4 SAW	Domestic	5.2	23	253	253	0.0	381.0	67.7

Timber Sale Log Sort x Diameter Bin Summary

Sp	Bin	Status	Sort	Dia	Len	BF Net	Defect %	Tons	MBF Net
DF	5 - 8	LIVE	Domestic	5.9	26	3,489	1.1	7,459.8	935.5
DF	9 - 11	LIVE	Domestic	9.9	32	1,814	0.4	3,510.8	486.3
DF	12 - 14	LIVE	Domestic	12.8	32	1,288	1.1	2,141.9	345.4
DF	15 - 19	LIVE	Domestic	16.2	32	615	0.0	905.5	164.9

Sp	Bin	Status	Sort	Dia	Len	BF Net	Defect %	Tons	MBF Net
DF	20+	LIVE	Domestic	24.1	32	70	12.4	94.5	18.9
LP	5 - 8	LIVE	Domestic	5.7	30	227	0.3	368.3	60.7
WL	5 - 8	LIVE	Domestic	6.0	28	730	1.8	1,310.9	195.6
WL	9 - 11	LIVE	Domestic	10.0	32	425	3.5	712.9	113.8
WL	12 - 14	LIVE	Domestic	12.6	32	73	0.0	112.4	19.4
WL	15 - 19	LIVE	Domestic	15.3	32	186	0.0	262.1	50.0

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Cruise Unit Report COPPER SWAN U1

Unit Sale Notice Volume (MBF): COPPER SWAN U1

Sp	DBH	Rings/In	Age	MBF Volume by Grade			
				All	2 Saw	3 Saw	4 Saw
DF	12.2			209	11	150	49
WL	21.5			49	30	16	3
ALL	12.4			258	41	166	52

Unit Cruise Design: COPPER SWAN U1

Design	Cruise Acres	FMA Acres	N Plots	N Cruise Plots	N Void Plots
B1C: VR, 1 BAF (25.15) Measure/Count Plots, Sighting Ht = 4.5 ft	22.0	22.0	20	7	2

Unit Cruise Summary: COPPER SWAN U1

Sp	Cruised Trees	All Trees	Trees/Plot	Ring-Count Trees
DF	20	69	3.5	0
WL	1	9	0.5	0
ALL	21	78	3.9	0

Unit Cruise Statistics: COPPER SWAN U1

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	86.8	68.1	15.2	109.6	23.5	5.2	9,508	72.1	16.1
WL	11.3	183.5	41.0	197.2	0.0	0.0	2,232	183.5	41.0
ALL	98.1	62.8	14.0	119.7	26.3	5.7	11,740	68.1	15.2

Unit Summary: COPPER SWAN U1

Sp	Status	Rx	N	D	DBH	BL	THT	BF Gross	BF Net	Defect %	TPA	BA	RD	MBF Net
DF	LIVE	CUT	20	ALL	12.2	62	77	9,630	9,508	1.3	106.9	86.8	24.8	209.2
WL	LIVE	CUT	1	ALL	21.5	88	112	2,232	2,232	0.0	4.5	11.3	2.4	49.1
ALL	LIVE	CUT	21	ALL	12.7	63	78	11,862	11,740	1.0	111.4	98.1	27.3	258.3
ALL	ALL	ALL	21	ALL	12.7	63	78	11,862	11,740	1.0	111.4	98.1	27.3	258.3

Cruise Unit Report COPPER SWAN U2

Unit Sale Notice Volume (MBF): COPPER SWAN U2

Sp	DBH	Rings/In	Age	MBF Volume by Grade			
				All	2 Saw	3 Saw	4 Saw
DF	15.5			91	25	59	6
WL	13.2			12		10	2
ALL	15.2			103	25	70	8

Unit Cruise Design: COPPER SWAN U2

Design	Cruise Acres	FMA Acres	N Plots	N Cruise Plots	N Void Plots
B1C: VR, 1 BAF (25.15) Measure/Count Plots, Sighting Ht = 4.5 ft	6.4	6.7	8	4	0

Unit Cruise Summary: COPPER SWAN U2

Sp	Cruised Trees	All Trees	Trees/Plot	Ring-Count Trees
DF	17	34	4.3	0
WL	2	5	0.6	0
ALL	19	39	4.9	0

Unit Cruise Statistics: COPPER SWAN U2

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	106.9	60.0	21.2	132.3	22.8	5.5	14,141	64.2	21.9
WL	15.7	119.0	42.1	119.6	19.1	13.5	1,880	120.6	44.2
ALL	122.6	43.1	15.2	130.7	22.4	5.1	16,021	48.5	16.1

Unit Summary: COPPER SWAN U2

Sp	Status	Rx	N	D	DBH	BL	THT	BF Gross	BF Net	Defect %	TPA	BA	RD	MBF Net
DF	LIVE	CUT	17	ALL	15.5	69	87	14,235	14,141	0.7	81.6	106.9	27.1	90.5
WL	LIVE	CUT	2	ALL	13.2	74	93	1,942	1,880	3.2	16.5	15.7	4.3	12.0
ALL	LIVE	CUT	19	ALL	15.1	70	88	16,177	16,021	1.0	98.1	122.6	31.5	102.5
ALL	ALL	ALL	19	ALL	15.1	70	88	16,177	16,021	1.0	98.1	122.6	31.5	102.5

Cruise Unit Report COPPER SWAN U3

Unit Sale Notice Volume (MBF): COPPER SWAN U3

Sp	DBH	Rings/In	Age	MBF Volume by Grade		
				All	3 Saw	4 Saw
DF	12.9			61	49	12
WL	12.4			8	6	2
ALL	12.9			69	55	14

Unit Cruise Design: COPPER SWAN U3

Design	Cruise Acres	FMA Acres	N Plots	N Cruise Plots	N Void Plots
B1C: VR, 1 BAF (20) Measure/Count Plots, Sighting Ht = 4.5 ft	10.2	10.2	13	7	0

Unit Cruise Summary: COPPER SWAN U3

Sp	Cruised Trees	All Trees	Trees/Plot	Ring-Count Trees
DF	16	39	3.0	0
WL	3	4	0.3	0
ALL	19	43	3.3	0

Unit Cruise Statistics: COPPER SWAN U3

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	60.0	49.1	13.6	100.4	22.9	5.7	6,026	54.1	14.8
WL	6.2	204.9	56.8	123.1	41.3	23.8	757	209.0	61.6
ALL	66.2	45.2	12.5	102.5	27.6	6.3	6,784	52.9	14.0

Unit Summary: COPPER SWAN U3

Sp	Status	Rx	N	D	DBH	BL	THT	BF Gross	BF Net	Defect %	TPA	BA	RD	MBF Net
DF	LIVE	CUT	16	ALL	12.9	59	74	6,026	6,026	0.0	66.1	60.0	16.7	61.5
WL	LIVE	CUT	3	ALL	12.4	69	86	757	757	0.0	7.3	6.2	1.7	7.7
ALL	LIVE	CUT	19	ALL	12.9	60	75	6,784	6,784	0.0	73.4	66.2	18.5	69.2
ALL	ALL	ALL	19	ALL	12.9	60	75	6,784	6,784	0.0	73.4	66.2	18.5	69.2

Cruise Unit Report COPPER SWAN U4

Unit Sale Notice Volume (MBF): COPPER SWAN U4

Sp	DBH	Rings/In	Age	MBF Volume by Grade			
				All	2 Saw	3 Saw	4 Saw
DF	15.1			806	314	363	129
WL	11.1			31		22	9
ALL	14.9			837	314	386	138

Unit Cruise Design: COPPER SWAN U4

Design	Cruise Acres	FMA Acres	N Plots	N Cruise Plots	N Void Plots
B1C: VR, 1 BAF (25.15) Measure/Count Plots, Sighting Ht = 4.5 ft	76.5	77.7	56	15	3

Unit Cruise Summary: COPPER SWAN U4

Sp	Cruised Trees	All Trees	Trees/Plot	Ring-Count Trees
DF	44	177	3.2	0
WL	1	8	0.1	0
ALL	45	185	3.3	0

Unit Cruise Statistics: COPPER SWAN U4

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	79.5	71.8	9.6	132.6	39.6	6.0	10,541	82.0	11.3
WL	3.6	280.9	37.5	113.1	0.0	0.0	406	280.9	37.5
ALL	83.1	68.8	9.2	131.8	39.5	5.9	10,947	79.3	10.9

Unit Summary: COPPER SWAN U4

Sp	Status	Rx	N	D	DBH	BL	THT	BF Gross	BF Net	Defect %	TPA	BA	RD	MBF Net
DF	LIVE	CUT	44	ALL	15.1	61	76	10,667	10,541	1.2	63.9	79.5	20.5	806.4
WL	LIVE	CUT	1	ALL	11.1	67	83	406	406	0.0	5.3	3.6	1.1	31.1
ALL	LIVE	CUT	45	ALL	14.8	62	77	11,074	10,947	1.1	69.2	83.1	21.5	837.5
ALL	ALL	ALL	45	ALL	14.8	62	77	11,074	10,947	1.1	69.2	83.1	21.5	837.5

Cruise Unit Report COPPER SWAN U5

Unit Sale Notice Volume (MBF): COPPER SWAN U5

Sp	DBH	Rings/In	Age	MBF Volume by Grade			
				All	2 Saw	3 Saw	4 Saw
DF	12.8			310	50	184	76
WL	15.1			40		34	5
ALL	13.2			350	50	218	82

Unit Cruise Design: COPPER SWAN U5

Design	Cruise Acres	FMA Acres	N Plots	N Cruise Plots	N Void Plots
B1C: VR, 1 BAF (25.15) Measure/Count Plots, Sighting Ht = 4.5 ft	39.6	40.4	27	7	3

Unit Cruise Summary: COPPER SWAN U5

Sp	Cruised Trees	All Trees	Trees/Plot	Ring-Count Trees
DF	13	85	3.1	0
WL	3	8	0.3	0
ALL	16	93	3.4	0

Unit Cruise Statistics: COPPER SWAN U5

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	79.2	71.4	13.7	98.9	35.4	9.8	7,830	79.7	16.9
WL	7.5	261.7	50.4	133.9	9.0	5.2	998	261.8	50.6
ALL	86.6	64.1	12.3	101.9	33.5	8.4	8,828	72.3	14.9

Unit Summary: COPPER SWAN U5

Sp	Status	Rx	N	D	DBH	BL	THT	BF Gross	BF Net	Defect %	TPA	BA	RD	MBF Net
DF	LIVE	CUT	13	ALL	12.8	57	71	7,830	7,830	0.0	88.6	79.2	22.1	310.1
WL	LIVE	CUT	3	ALL	15.1	73	92	998	998	0.0	6.0	7.5	1.9	39.5
ALL	LIVE	CUT	16	ALL	13.0	58	73	8,828	8,828	0.0	94.6	86.6	24.0	349.6
ALL	ALL	ALL	16	ALL	13.0	58	73	8,828	8,828	0.0	94.6	86.6	24.0	349.6

Cruise Unit Report COPPER SWAN U6

Unit Sale Notice Volume (MBF): COPPER SWAN U6

Sp	DBH	Rings/In	Age	MBF Volume by Grade			
				All	2 Saw	3 Saw	4 Saw
DF	13.8			149	53	66	29
WL	13.0			39	16	18	5
LP	8.7			22		11	11
ALL	12.3			210	69	95	46

Unit Cruise Design: COPPER SWAN U6

Design	Cruise Acres	FMA Acres	N Plots	N Cruise Plots	N Void Plots
B1C: VR, 1 BAF (25.15) Measure/Count Plots, Sighting Ht = 4.5 ft	27.6	28.0	25	9	4

Unit Cruise Summary: COPPER SWAN U6

Sp	Cruised Trees	All Trees	Trees/Plot	Ring-Count Trees
DF	16	48	1.9	0
WL	4	9	0.4	0
LP	4	7	0.3	0
ALL	24	64	2.6	0

Unit Cruise Statistics: COPPER SWAN U6

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	48.3	105.2	21.0	111.9	42.8	10.7	5,402	113.5	23.6
WL	9.1	298.7	59.7	157.2	38.9	19.5	1,424	301.3	62.8
LP	7.0	300.9	60.2	111.4	3.2	1.6	784	301.0	60.2
ALL	64.4	97.1	19.4	118.2	40.4	8.3	7,610	105.1	21.1

Unit Summary: COPPER SWAN U6

Sp	Status	Rx	N	D	DBH	BL	THT	BF Gross	BF Net	Defect %	TPA	BA	RD	MBF Net
DF	LIVE	CUT	16	ALL	13.8	52	64	5,508	5,402	1.9	46.5	48.3	13.0	149.1
LP	LIVE	CUT	4	ALL	8.7	55	68	784	784	0.0	17.1	7.0	2.4	21.6
WL	LIVE	CUT	4	ALL	13.0	59	73	1,458	1,424	2.4	9.8	9.1	2.5	39.3

Sp	Status	Rx	N	D	DBH	BL	THT	BF Gross	BF Net	Defect %	TPA	BA	RD	MBF Net
ALL	LIVE	CUT	24	ALL	12.7	54	66	7,750	7,610	1.8	73.4	64.4	17.9	210.0
ALL	ALL	ALL	24	ALL	12.7	54	66	7,750	7,610	1.8	73.4	64.4	17.9	210.0

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Cruise Unit Report COPPER SWAN U7

Unit Sale Notice Volume (MBF): COPPER SWAN U7

Sp	DBH	Rings/In	Age	MBF Volume by Grade		
				All	3 Saw	4 Saw
WL	14.3			39	34	5
DF	13.3			36	27	9
LP	10.1			18	6	12
ALL	12.3			92	67	26

Unit Cruise Design: COPPER SWAN U7

Design	Cruise Acres	FMA Acres	N Plots	N Cruise Plots	N Void Plots
B1C: VR, 1 BAF (20) Measure/Count Plots, Sighting Ht = 4.5 ft	11.4	11.4	11	6	0

Unit Cruise Summary: COPPER SWAN U7

Sp	Cruised Trees	All Trees	Trees/Plot	Ring-Count Trees
WL	4	15	1.4	0
DF	9	18	1.6	0
LP	5	9	0.8	0
ALL	18	42	3.8	0

Unit Cruise Statistics: COPPER SWAN U7

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 (%)
WL	27.3	94.3	28.4	124.8	17.4	8.7	3,404	95.9	29.7
DF	32.7	116.8	35.2	95.8	23.3	7.8	3,134	119.1	36.1
LP	16.4	106.8	32.2	95.8	14.9	6.7	1,568	107.8	32.9
ALL	76.4	46.6	14.0	106.2	21.5	5.1	8,107	51.3	14.9

Unit Summary: COPPER SWAN U7

Sp	Status	Rx	N	D	DBH	BL	THT	BF Gross	BF Net	Defect %	TPA	BA	RD	MBF Net
DF	LIVE	CUT	9	ALL	13.3	61	75	3,201	3,134	2.1	33.9	32.7	9.0	35.7
LP	LIVE	CUT	5	ALL	10.1	64	79	1,568	1,568	0.0	29.4	16.4	5.1	17.9
WL	LIVE	CUT	4	ALL	14.3	73	92	3,404	3,404	0.0	24.5	27.3	7.2	38.8

Sp	Status	Rx	N	D	DBH	BL	THT	BF Gross	BF Net	Defect %	TPA	BA	RD	MBF Net
ALL	LIVE	CUT	18	ALL	12.6	65	81	8,173	8,107	0.8	87.8	76.4	21.3	92.4
ALL	ALL	ALL	18	ALL	12.6	65	81	8,173	8,107	0.8	87.8	76.4	21.3	92.4

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Cruise Unit Report COPPER SWAN U8

Unit Sale Notice Volume (MBF): COPPER SWAN U8

Sp	DBH	Rings/In	Age	MBF Volume by Grade			
				All	2 Saw	3 Saw	4 Saw
DF	10.6			109	9	67	32
WL	12.3			61	12	33	16
LP	10.1			10		7	3
ALL	11.1			179	20	107	51

Unit Cruise Design: COPPER SWAN U8

Design	Cruise Acres	FMA Acres	N Plots	N Cruise Plots	N Void Plots
B1C: VR, 1 BAF (20) Measure/Count Plots, Sighting Ht = 4.5 ft	26.1	26.4	26	10	4

Unit Cruise Summary: COPPER SWAN U8

Sp	Cruised Trees	All Trees	Trees/Plot	Ring-Count Trees
DF	15	57	2.2	0
WL	13	25	1.0	0
LP	4	5	0.2	0
ALL	32	87	3.3	0

Unit Cruise Statistics: COPPER SWAN U8

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	43.8	100.8	19.8	94.8	54.9	14.2	4,157	114.7	24.3
WL	19.2	191.7	37.6	120.6	21.9	6.1	2,318	193.0	38.1
LP	3.8	255.6	50.1	96.0	43.9	22.0	369	259.3	54.7
ALL	66.9	76.0	14.9	102.3	41.6	7.3	6,845	86.7	16.6

Unit Summary: COPPER SWAN U8

Sp	Status	Rx	N	D	DBH	BL	THT	BF Gross	BF Net	Defect %	TPA	BA	RD	MBF Net
DF	LIVE	CUT	15	ALL	10.6	48	59	4,157	4,157	0.0	71.5	43.8	13.5	108.5
LP	LIVE	CUT	4	ALL	10.1	57	71	377	369	2.0	6.9	3.8	1.2	9.6
WL	LIVE	CUT	13	ALL	12.3	67	84	2,364	2,318	1.9	23.3	19.2	5.5	60.5

Sp	Status	Rx	N	D	DBH	BL	THT	BF Gross	BF Net	Defect %	TPA	BA	RD	MBF Net
ALL	LIVE	CUT	32	ALL	11.0	53	66	6,898	6,845	0.8	101.7	66.9	20.2	178.7
ALL	ALL	ALL	32	ALL	11.0	53	66	6,898	6,845	0.8	101.7	66.9	20.2	178.7

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Cruise Unit Report COPPER SWAN U9

Unit Sale Notice Volume (MBF): COPPER SWAN U9

Sp	DBH	Rings/In	Age	MBF Volume by Grade			
				All	2 Saw	3 Saw	4 Saw
DF	11.5			180		114	66
WL	11.7			101	18	63	20
LP	12.0			12		9	3
ALL	11.6			292	18	185	90

Unit Cruise Design: COPPER SWAN U9

Design	Cruise Acres	FMA Acres	N Plots	N Cruise Plots	N Void Plots
B1C: VR, 1 BAF (20) Measure/Count Plots, Sighting Ht = 4.5 ft	48.3	48.3	37	10	2

Unit Cruise Summary: COPPER SWAN U9

Sp	Cruised Trees	All Trees	Trees/Plot	Ring-Count Trees
DF	22	83	2.2	0
WL	16	32	0.9	0
LP	1	3	0.1	0
ALL	39	118	3.2	0

Unit Cruise Statistics: COPPER SWAN U9

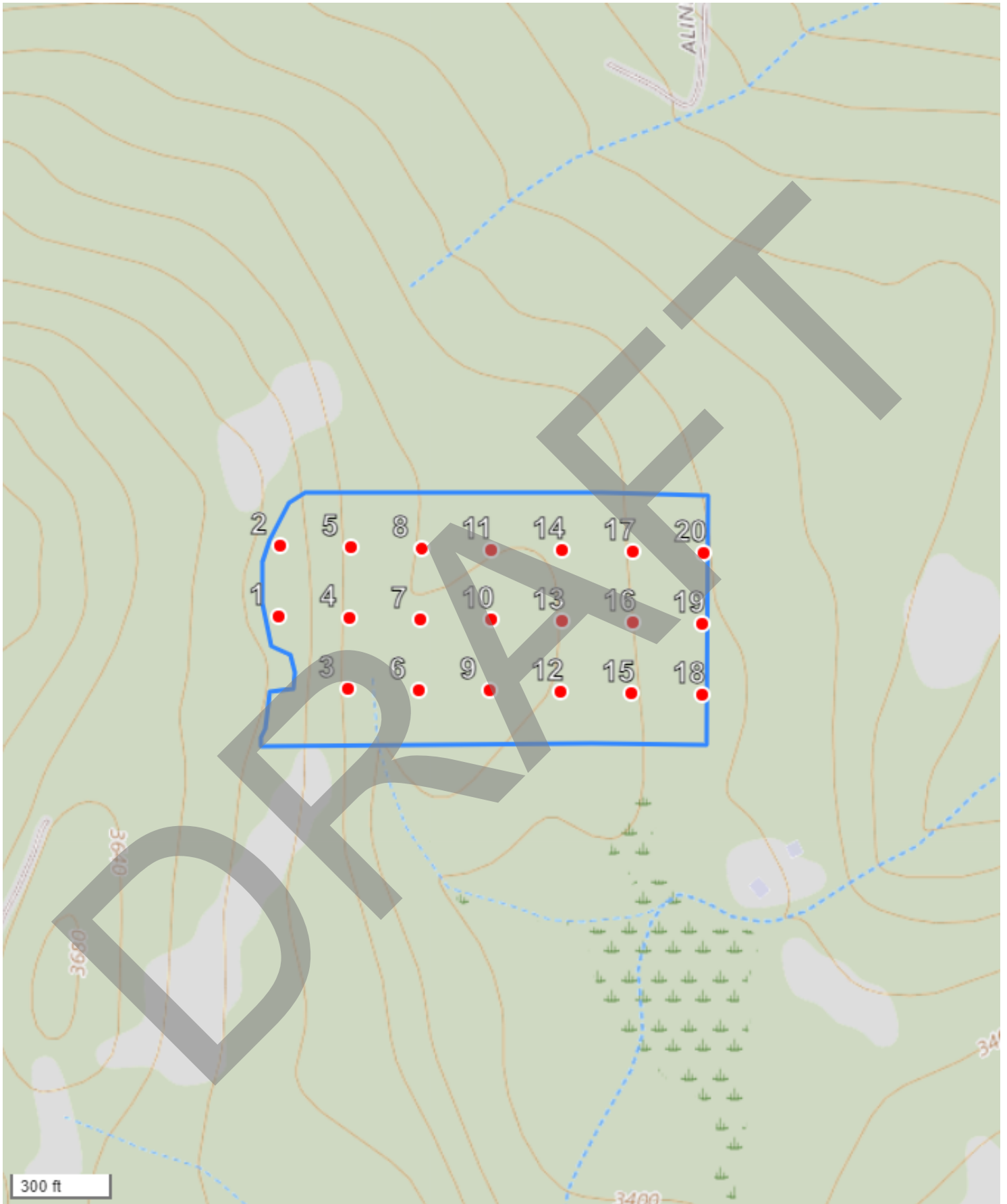
Sp	BA (sq ft/acre)	BA CV (%)	BA SE (%)	V-BAR (bf/sq ft)	V-BAR CV (%)	V-BAR SE (%)	Net Vol (bf/acre)	Vol CV (%)	Vol SE (%)
DF	44.9	76.8	12.6	83.1	24.9	5.3	3,728	80.7	13.7
WL	17.3	170.5	28.0	120.6	33.5	8.4	2,085	173.8	29.3
LP	1.6	608.3	100.0	147.7	0.0	0.0	240	608.3	100.0
ALL	63.8	47.8	7.9	94.9	37.7	6.0	6,053	60.9	9.9

Unit Summary: COPPER SWAN U9

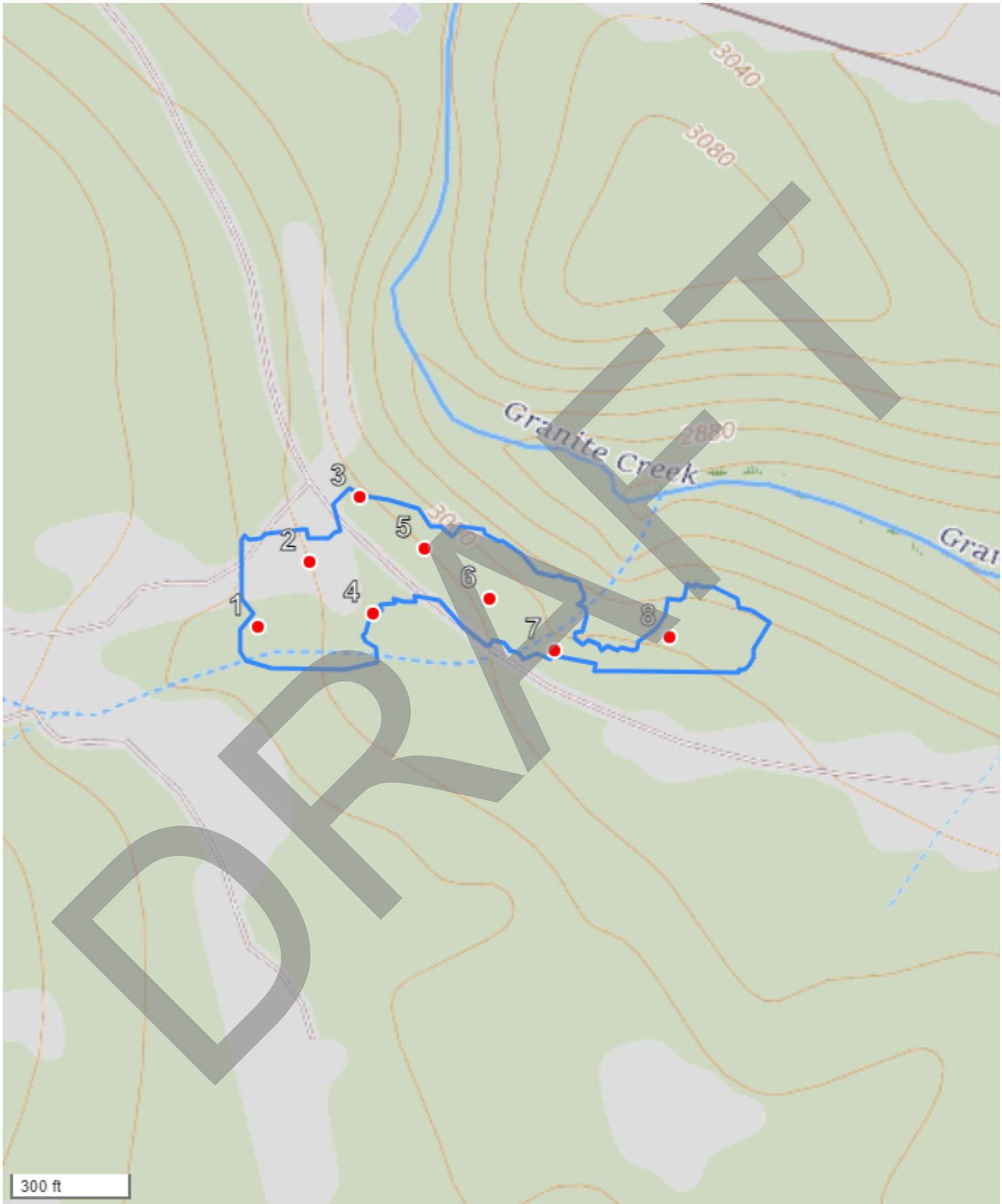
Sp	Status	Rx	N	D	DBH	BL	THT	BF Gross	BF Net	Defect %	TPA	BA	RD	MBF Net
DF	LIVE	CUT	22	ALL	11.5	54	66	3,766	3,728	1.0	62.2	44.9	13.2	180.1
LP	LIVE	CUT	1	ALL	12.0	65	82	240	240	0.0	2.1	1.6	0.5	11.6
WL	LIVE	CUT	16	ALL	11.7	65	82	2,192	2,085	4.9	23.2	17.3	5.1	100.7

Sp	Status	Rx	N	D	DBH	BL	THT	BF Gross	BF Net	Defect %	TPA	BA	RD	MBF Net
ALL	LIVE	CUT	39	ALL	11.6	57	71	6,197	6,053	2.3	87.5	63.8	18.8	292.4
ALL	ALL	ALL	39	ALL	11.6	57	71	6,197	6,053	2.3	87.5	63.8	18.8	292.4

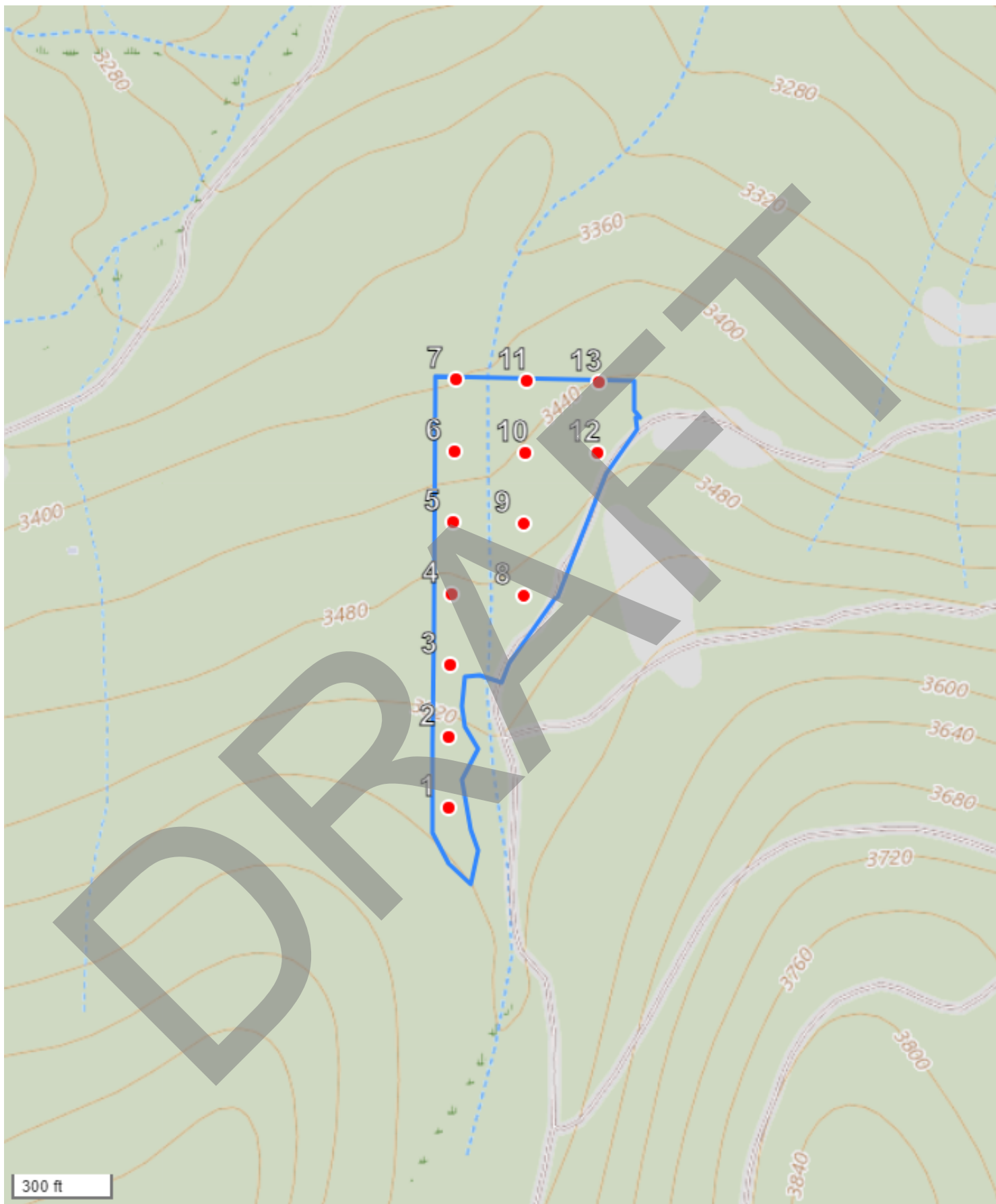
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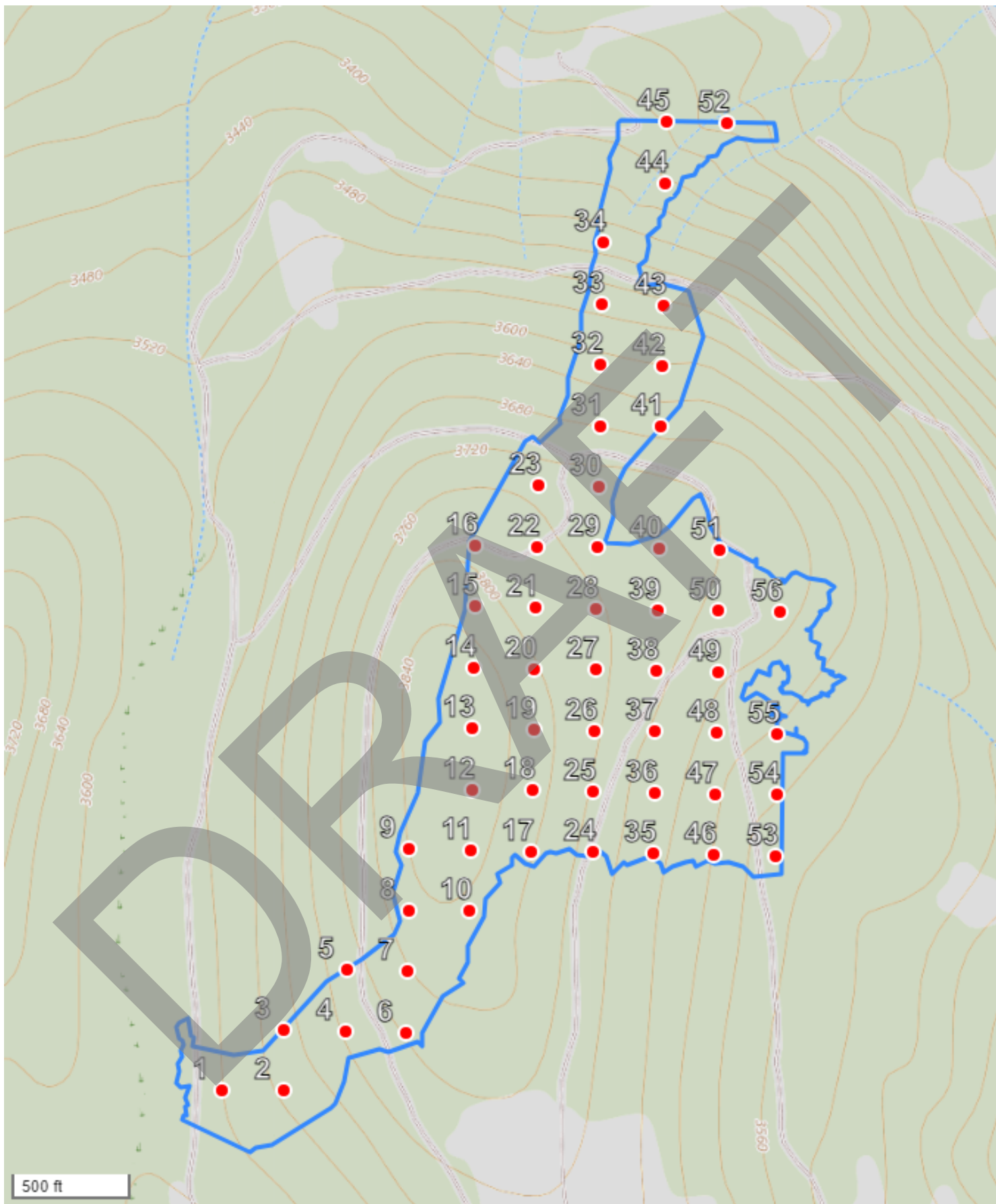
FMA Name: COPPER SWAN U1	N Plots: 20	Plot Spacing: 208.4 ft
Grid Name: COPPER SWAN U1 - 1	Acres Treated: 21.99	Main Azimuth: 1 deg



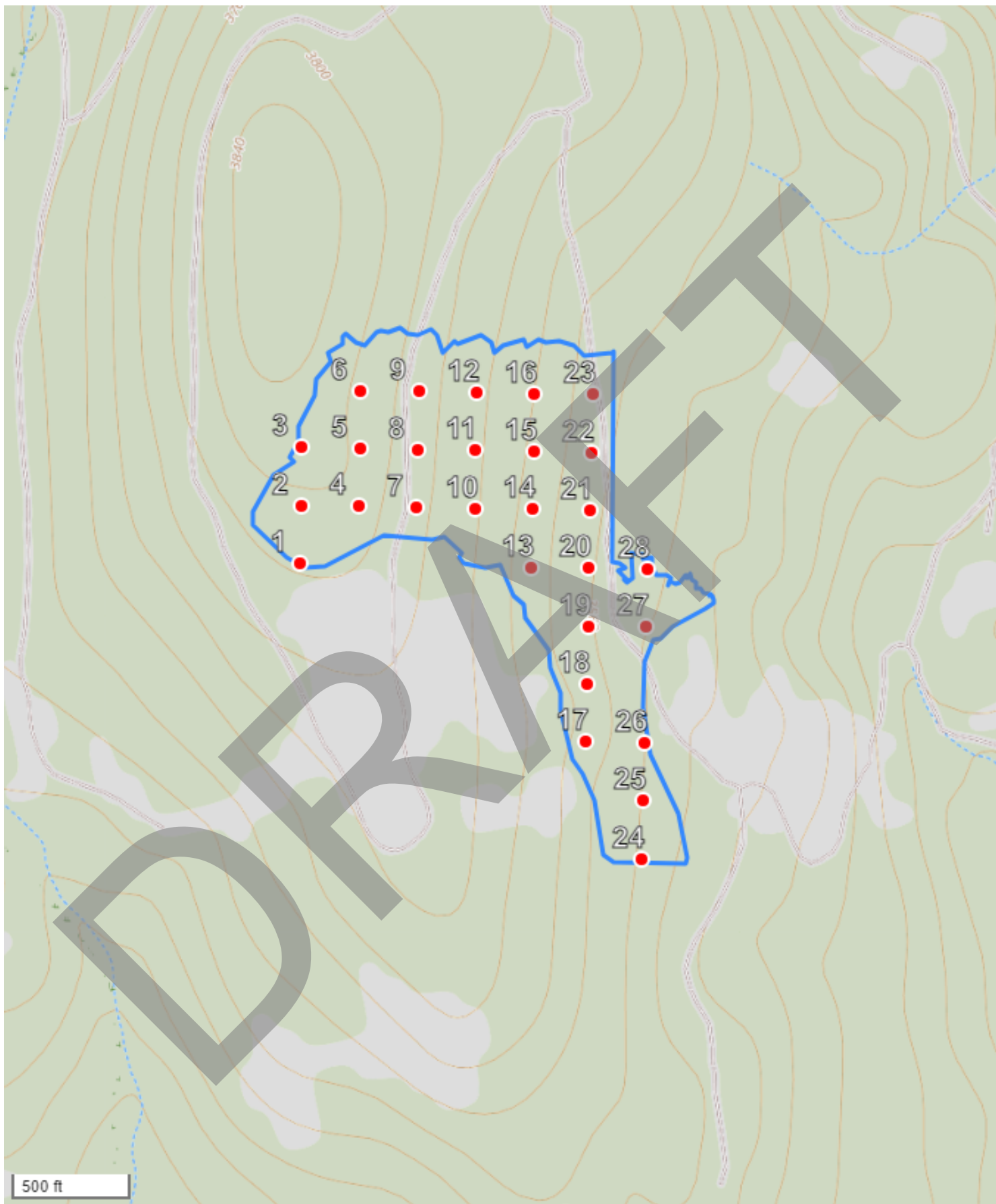
FMA Name: COPPER SWAN U2	N Plots: 8	Plot Spacing: 204.1 ft
Grid Name: COPPER SWAN U2 - 1	Acres Treated: 6.4	Main Azimuth: 38.3 deg



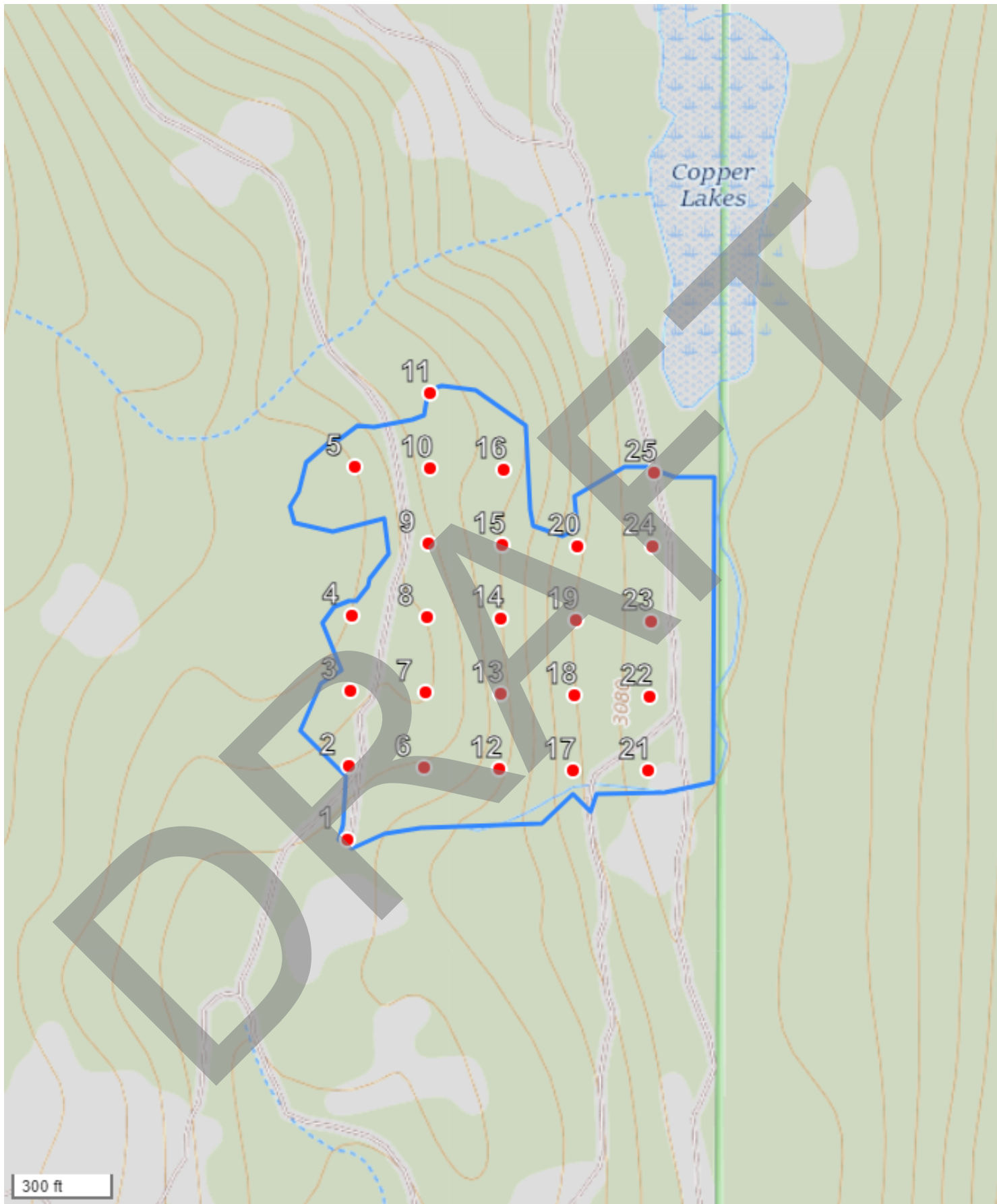
FMA Name: COPPER SWAN U3	N Plots: 13	Plot Spacing: 211 ft
Grid Name: COPPER SWAN U3 - 1	Acres Treated: 10.2	Main Azimuth: 1 deg



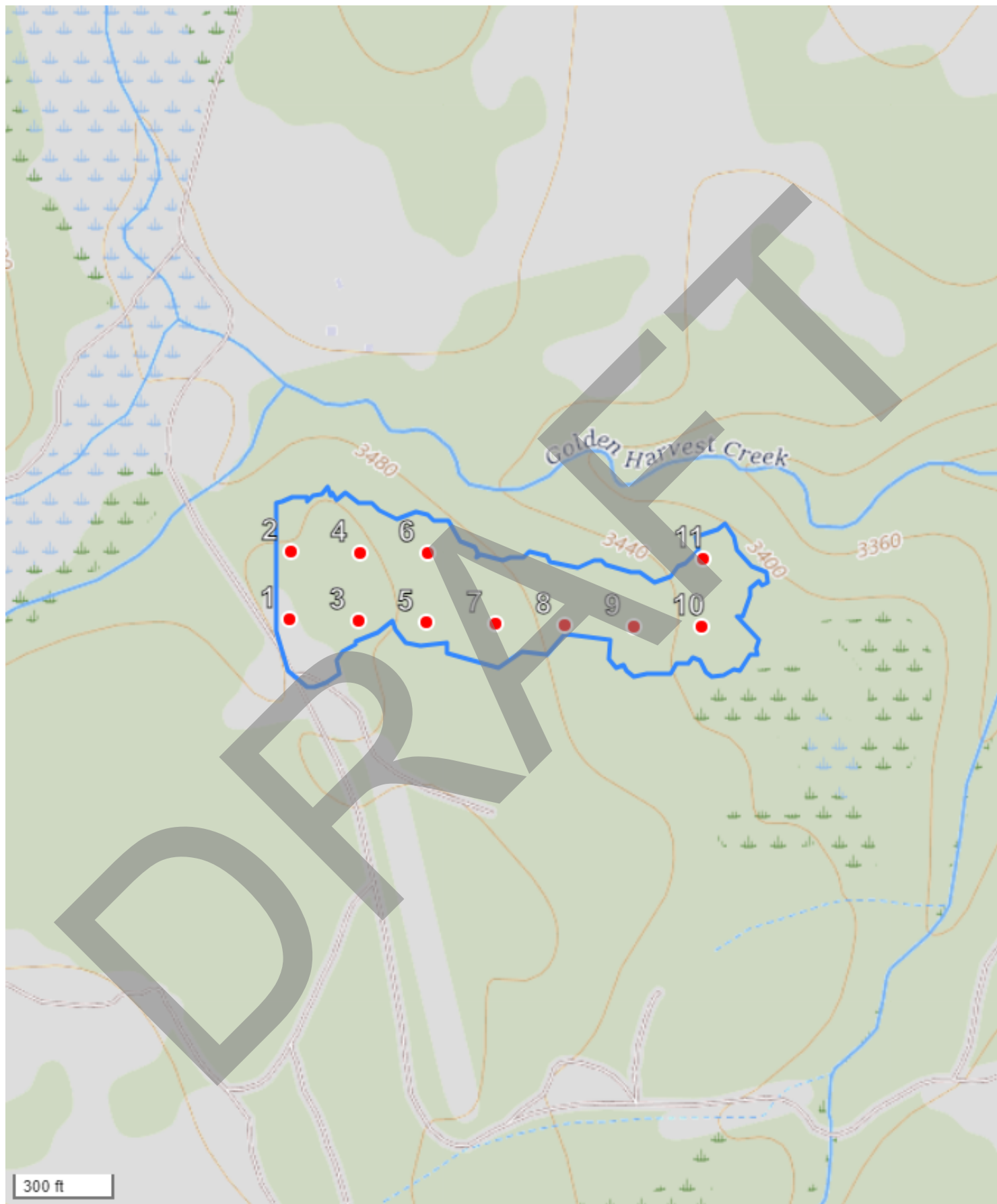
FMA Name: COPPER SWAN U4	N Plots: 56	Plot Spacing: 254.8 ft
Grid Name: COPPER SWAN U4 - 1	Acres Treated: 76.5	Main Azimuth: 1 deg



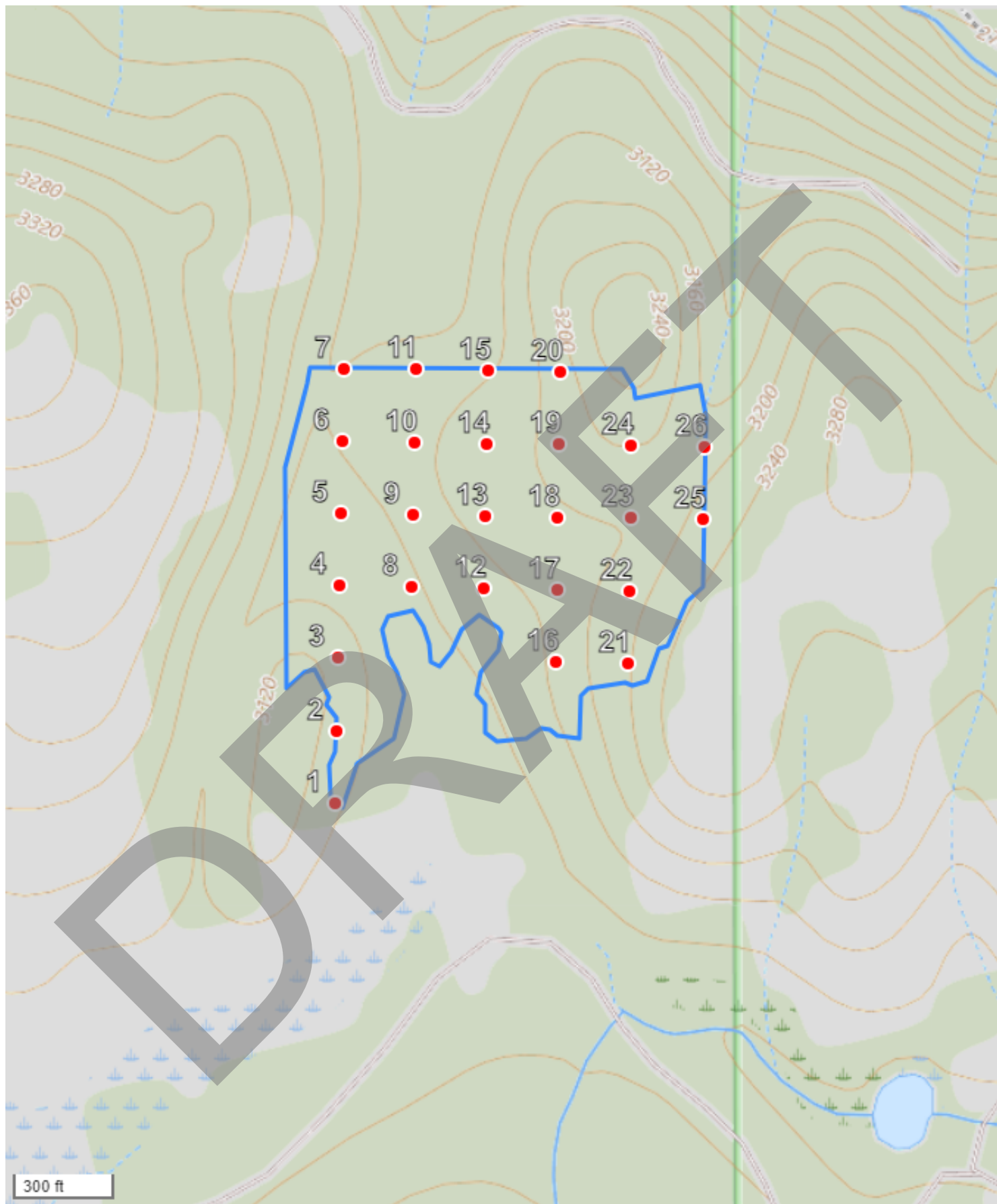
FMA Name: COPPER SWAN U5	N Plots: 28	Plot Spacing: 242 ft
Grid Name: COPPER SWAN U5 - 1	Acres Treated: 39.6	Main Azimuth: 1 deg



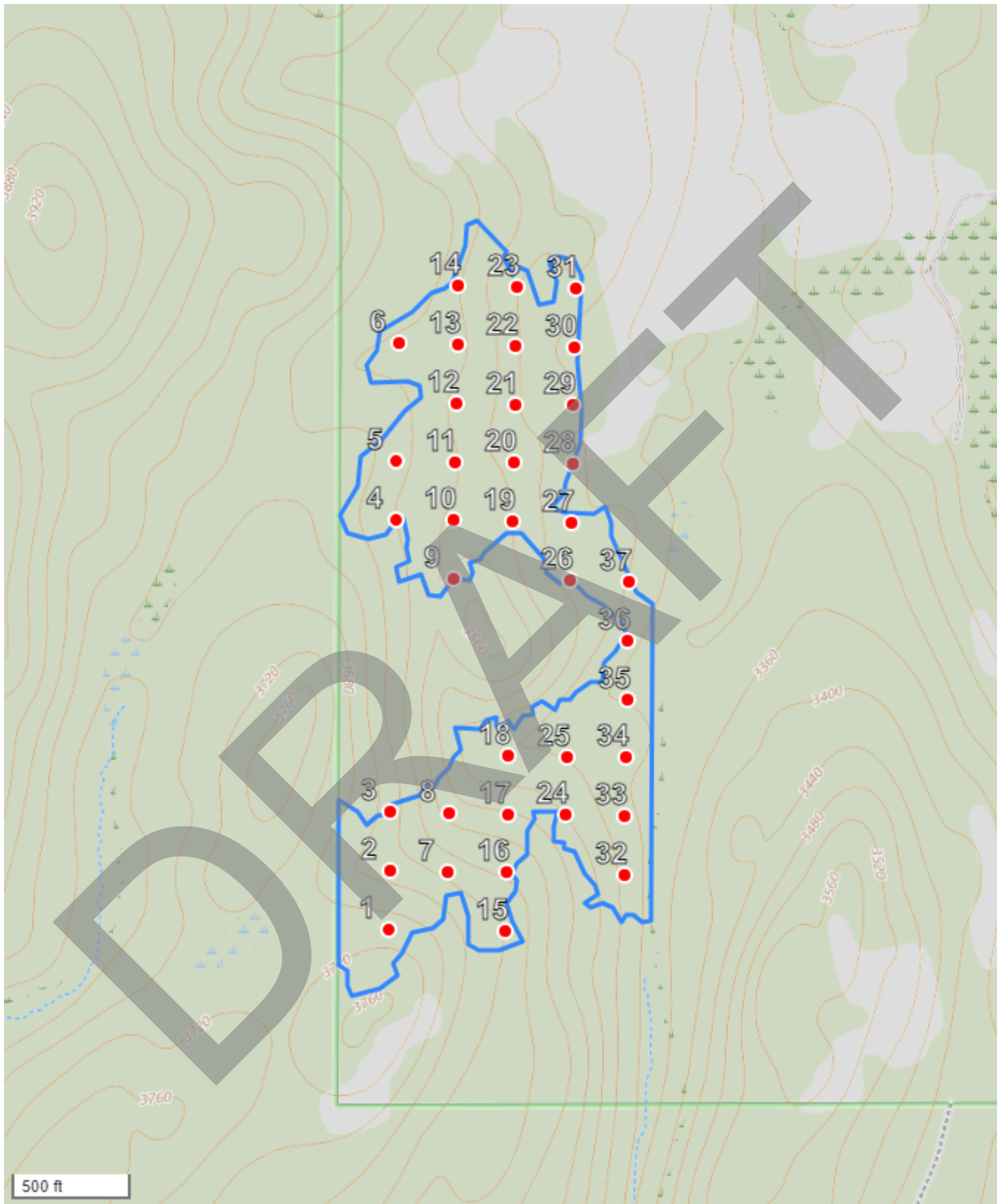
FMA Name: COPPER SWAN U6	N Plots: 25	Plot Spacing: 220.5 ft
Grid Name: COPPER SWAN U6 - 1	Acres Treated: 27.6	Main Azimuth: 1 deg



FMA Name: COPPER SWAN U7	N Plots: 11	Plot Spacing: 203.2 ft
Grid Name: COPPER SWAN U7 - 1	Acres Treated: 11.4	Main Azimuth: 1 deg



FMA Name: COPPER SWAN U8	N Plots: 26	Plot Spacing: 214.1 ft
Grid Name: COPPER SWAN U8 - 1	Acres Treated: 26.1	Main Azimuth: 1 deg



FMA Name: COPPER SWAN U9	N Plots: 37	Plot Spacing: 244.8 ft
Grid Name: COPPER SWAN U9 - 1	Acres Treated: 48.3	Main Azimuth: 1 deg

Washington State Department of Natural Resources

Sale Name: Copper Swan

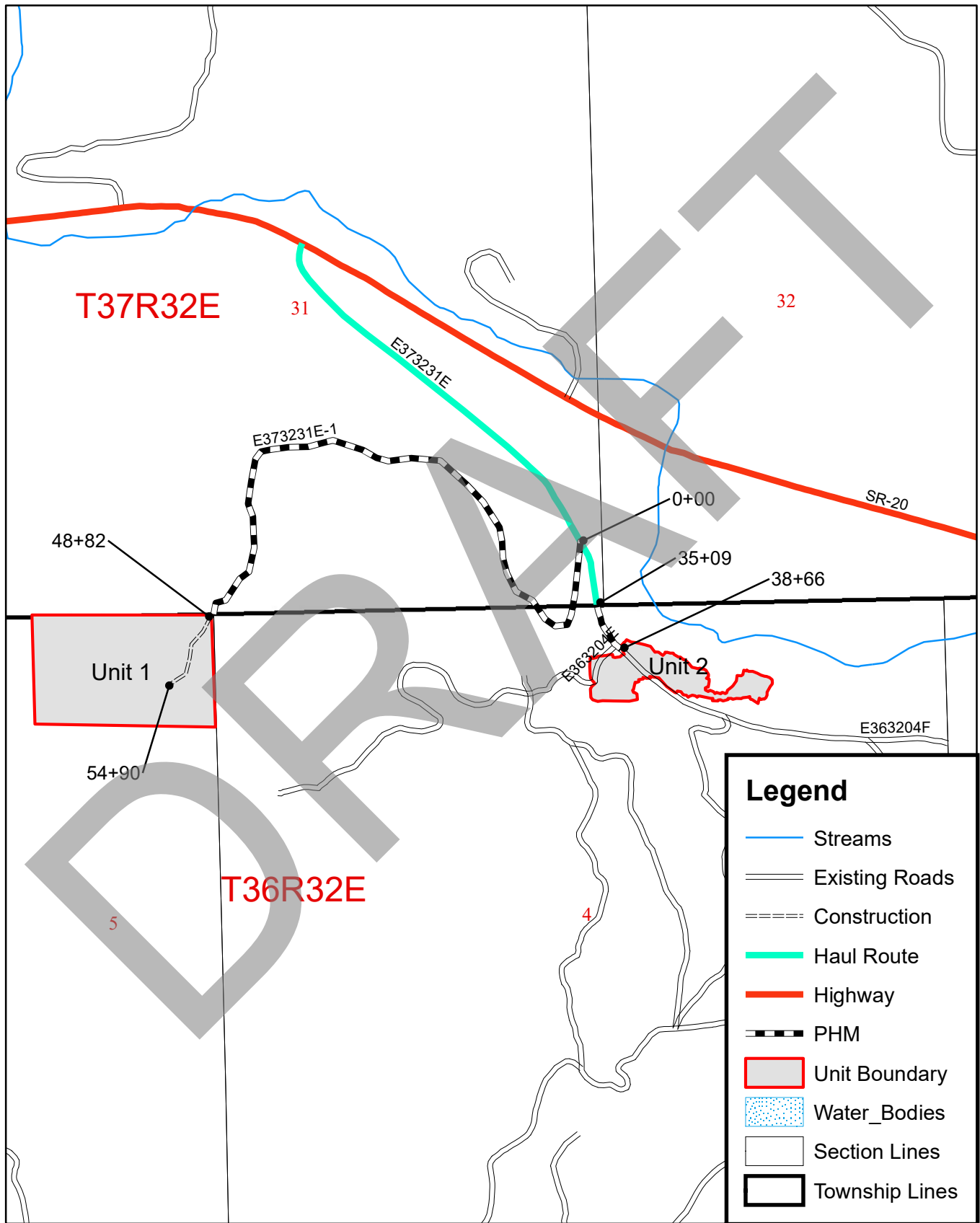
Road Plan Map

Region: Northeast

Agreement No: 30-106142

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County: Okanogan



0 0.075 0.15 0.3 0.45 0.6 Miles

1 inch = 1000 feet

10/22/2023

Colin Rojas

Washington State Department of Natural Resources

Sale Name: Copper Swan

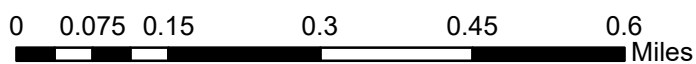
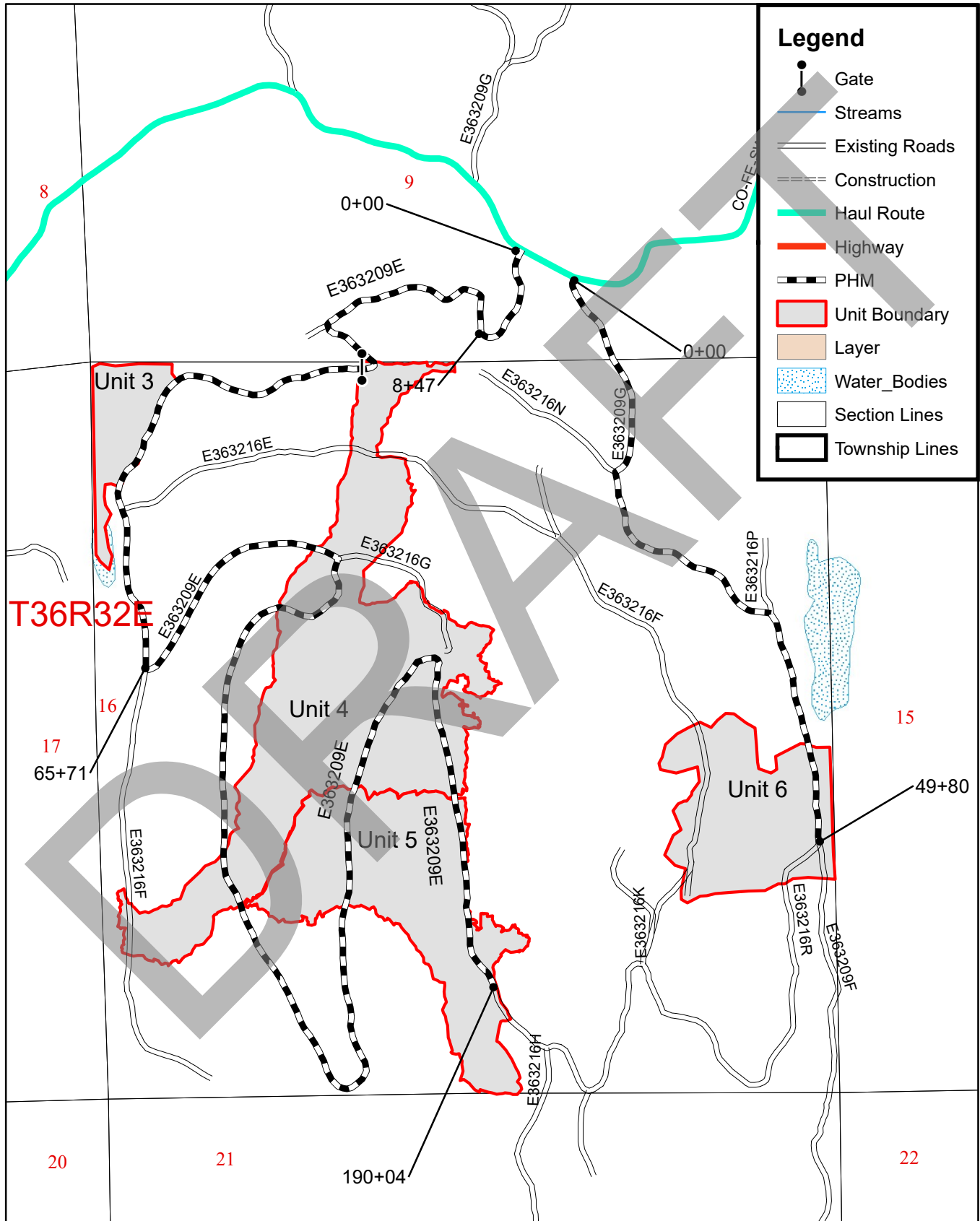
Road Plan Map

Region: Northeast

Agreement No: 30-106142

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County: Okanogan



1 inch = 1000 feet

10/22/2023

Colin Rojas

Washington State Department of Natural Resources

Sale Name: Copper Swan

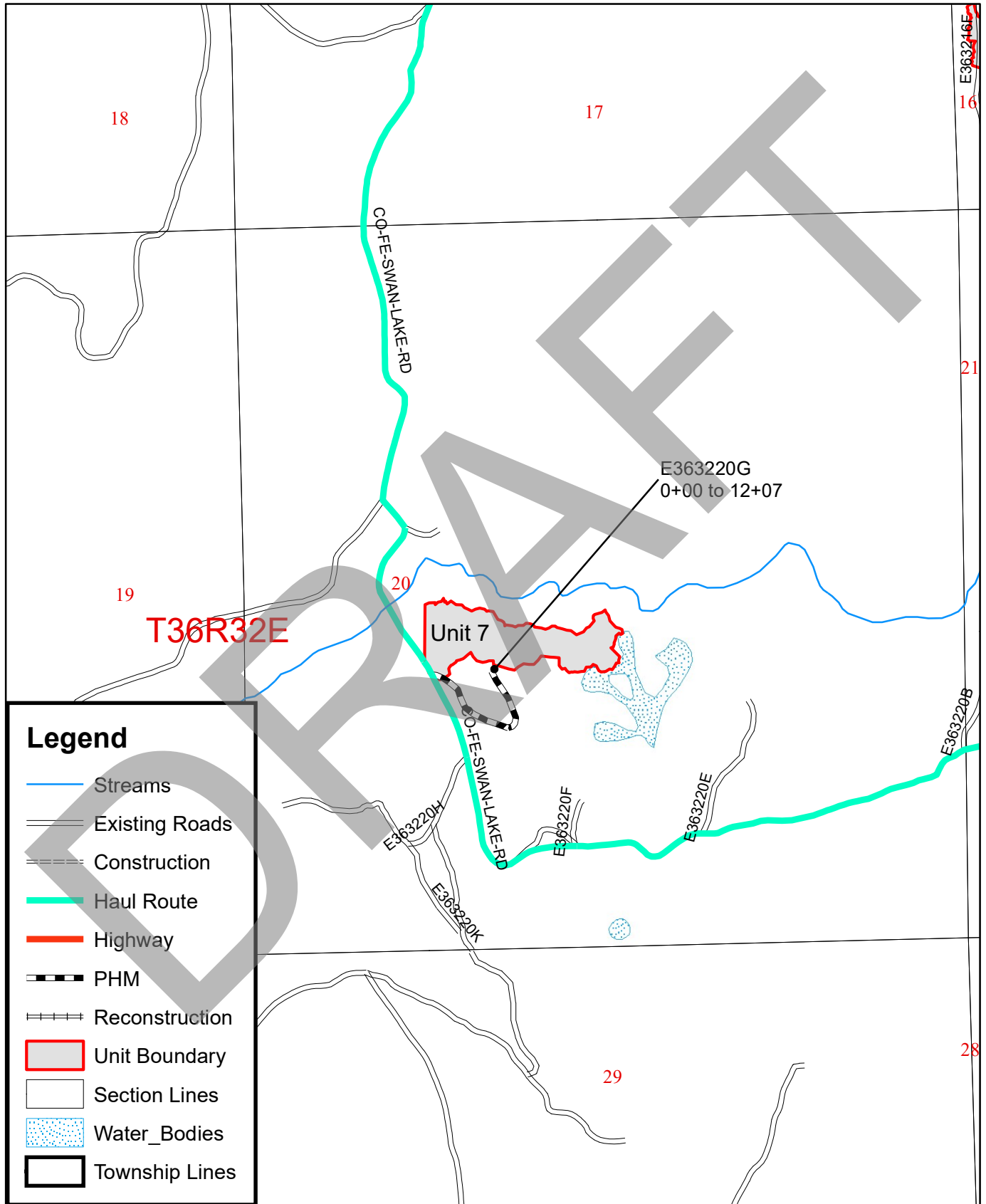
Road Plan Map

Region: Northeast

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County: Okanogan



Legend

- Streams
- Existing Roads
- Construction
- Haul Route
- Highway
- PHM
- Reconstruction
- Unit Boundary
- Section Lines
- Water_Bodies
- Township Lines

Washington State Department of Natural Resources

Sale Name: Copper Swan

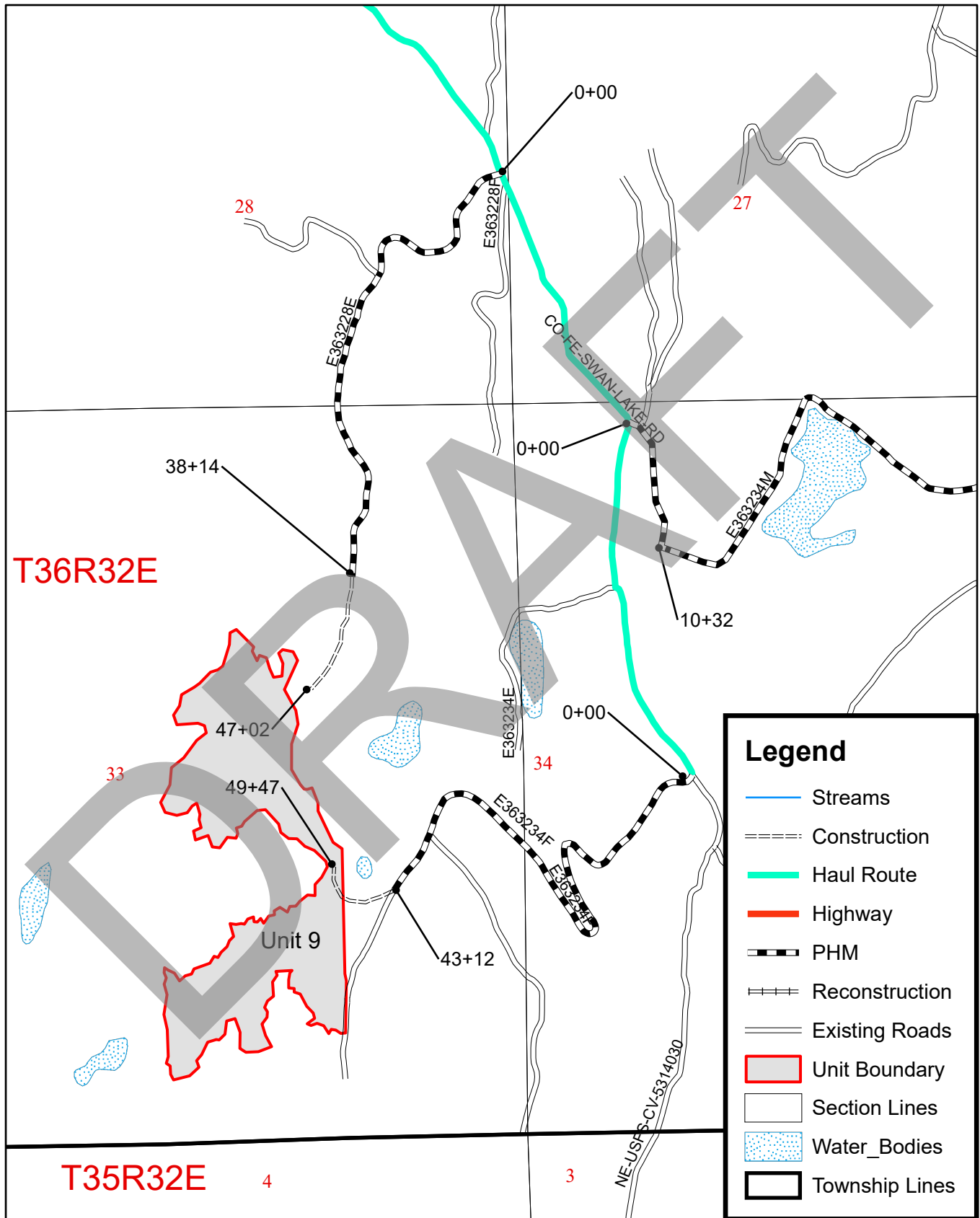
Road Plan Map

Region: Northeast

Agreement No: 30-106142

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0 0.07 0.15 0.3 0.45 0.6 Miles

1 inch = 1000 feet

10/22/2023

Colin Rojas

Washington State Department of Natural Resources

Sale Name: Copper Swan

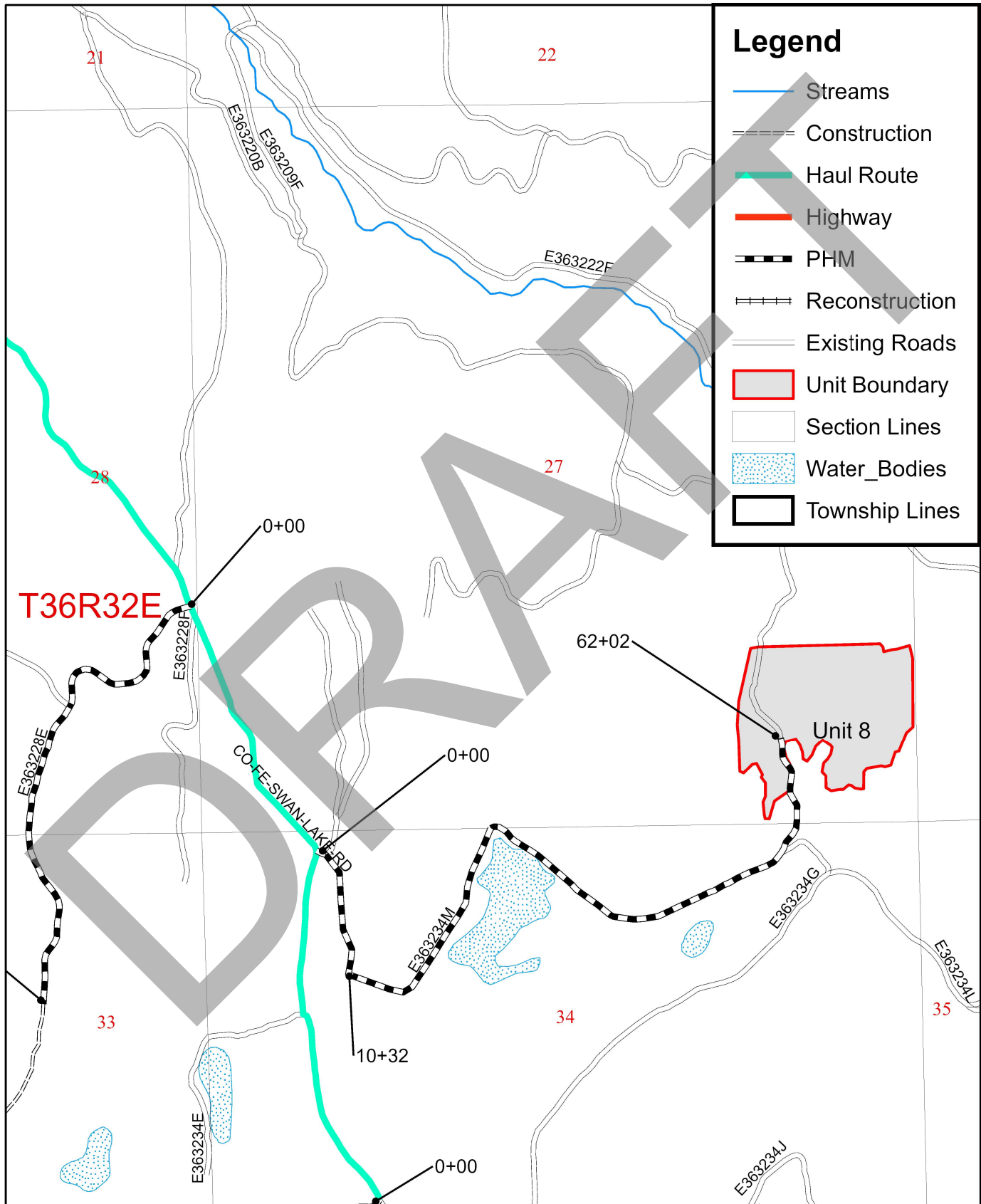
Road Plan Map

Region: Northeast

Agreement No: 30-106142

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0 0.07 0.15 0.3 0.45 0.6 Miles

1 inch = 1000 feet

10/22/2023

Colin Rojas

Washington State Department of Natural Resources

Sale Name: Copper Swan

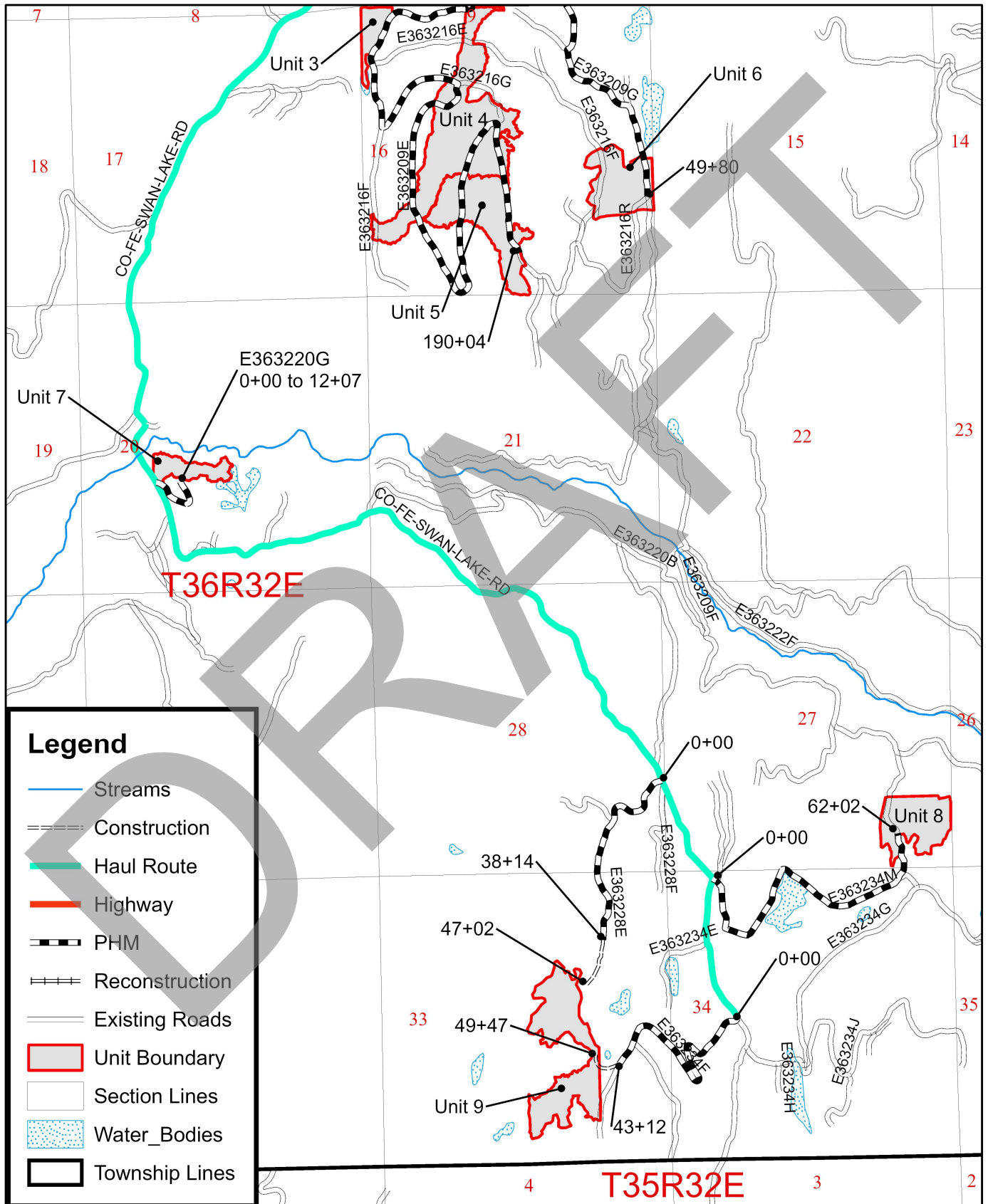
Road Plan Map

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Washington State Department Of Natural Resources

Sale Name: Copper Swan

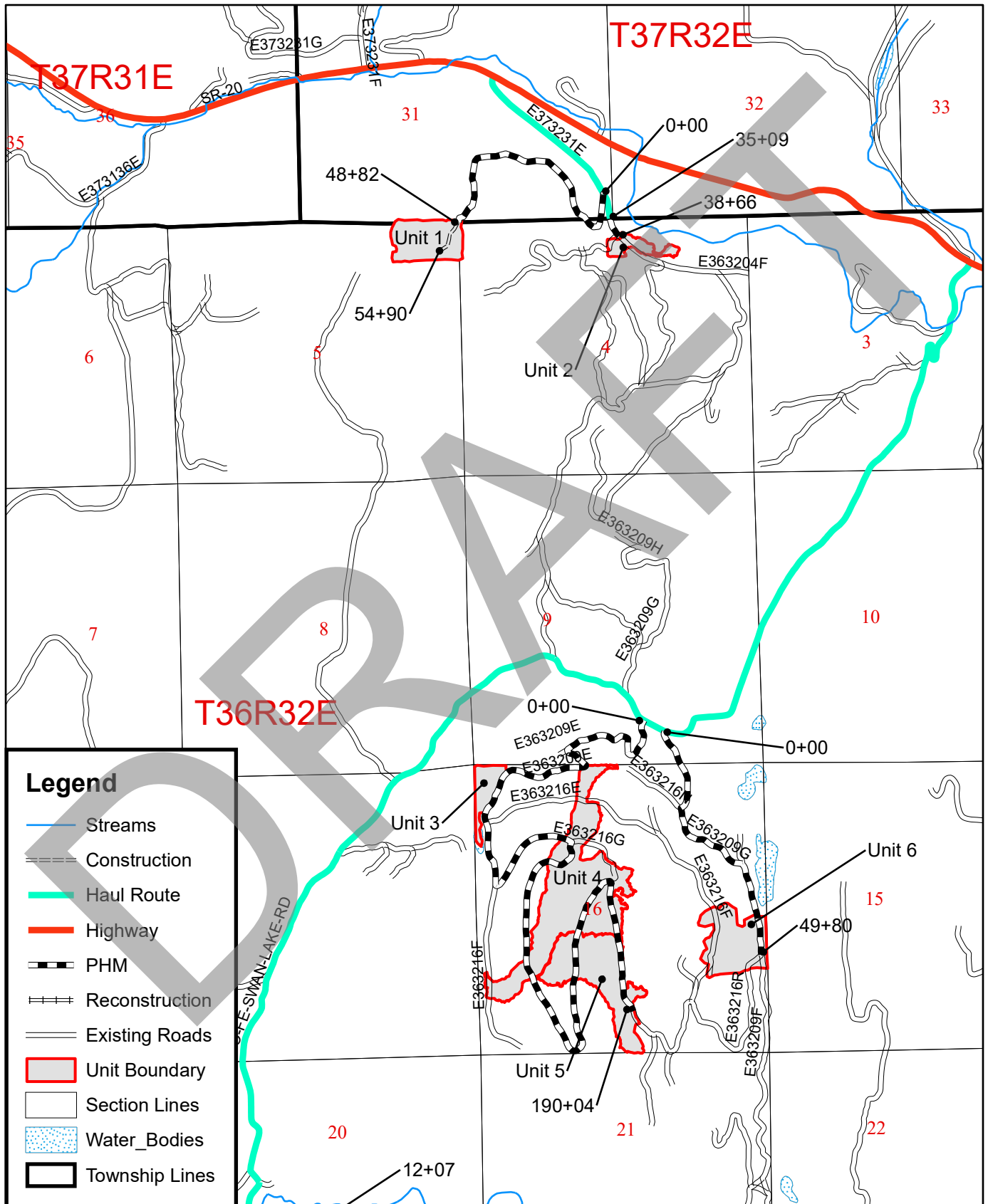
Road Plan Map

Region: Northeast

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STATE OF WASHINGTON
DEPARTMENT OF NATURAL RESOURCES

COPPER SWAN TIMBER SALE ROAD PLAN
OKANOGAN COUNTY
HIGHLAND DISTRICT
NORTHEAST REGION

AGREEMENT NO.: 30-106142

STAFF ENGINEER: COLIN ROJAS

DATE: 10/22/2023

DRAWN & COMPILED BY: COLIN ROJAS

SECTION 0 – SCOPE OF PROJECT

0-1 ROAD PLAN SCOPE

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

0-2 REQUIRED ROADS

The specified work on the following roads is required.

<u>Road</u>	<u>Stations</u>	<u>Type</u>
E363209E	190.04	Pre Haul Maintenance
E363209G	49.80	Pre Haul Maintenance
E363220G	12.07	Pre Haul Maintenance
E363228E	38.14	Pre Haul Maintenance
E363228E	8.88	Construction
E363234F	43.12	Pre Haul Maintenance
E363234F	6.35	Construction
E363234M	62.02	Pre Haul Maintenance
E373231E	3.57	Pre Haul Maintenance
E373231E-1	48.82	Pre Haul Maintenance
E373231E-1	6.08	Construction

0-4 CONSTRUCTION

Construction includes, but is not limited to clearing & grubbing, pioneering & decking logs, subgrade construction, rolling dip, cross drain, and culvert installation, Fish passage structure installation, cut & fill, embankment construction, riprap and rock application. Construct to the TYPICAL SECTION SHEET, ROCK LIST, and CULVERT & DRAINAGE LIST, for general specifications, unless otherwise specified in design details.

<u>Road</u>	<u>Stations</u>	<u>Requirements</u>
E363228E	38+14 to 47+02	See Sections 3, 4 , and 5

E363234F	43+12 to 49+47	See Sections 3, 4 , and 5
E373231E-1	48+82 to 54+90	See Sections 3, 4, and 5

0-6 PRE-HAUL MAINTENANCE

Maintenance includes, but is not limited to brushing, subgrade reshaping, subgrade lifting, rolling dip, and culvert installation, grading, riprap and rock application. Reference the TYPICAL SECTION SHEET, ROCK LIST, and CULVERT & DRAINAGE LIST, for general specifications. Boundaries

<u>Road</u>	<u>Stations</u>	<u>Requirements</u>
E363209E	0+00 to 190+04	Brushing, Grubbing, curve widening, grading, road reshaping due to washout
E363209G	0+00 to 49+80	Brushing, Grubbing, and Grading
E363220G	0+00 to 12+07	Brushing, Grubbing, and Grading
E363228E	0+00 to 38+14	Brushing, Grubbing, and Grading
E363234F	0+00 to 43+12	Brushing, Grubbing, and Grading
E363234M	0+00 to 62+02	Grading
E373231E	35+09 to 38+66	Brushing and Grading
E373231-E	0+00 to 48+82	Brushing, grubbing, and Grading

0-7 POST-HAUL MAINTENANCE

This project includes post-haul road maintenance listed in Clause 9-5 POST-HAUL MAINTENANCE9-5 .

SECTION 1 – GENERAL

1-1 ROAD PLAN CHANGES

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

1-2 UNFORESEEN CONDITIONS

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

1-3 ROAD DIMENSIONS

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

1-4 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. These tolerances do not supersede clauses 1-6, 4-3, and 4-4.

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

1-6 ORDER OF PRECEDENCE

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

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

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

1-7 TEMPORARY ROAD CLOSURE

The Purchaser shall notify the Contract Administrator a minimum of 5 calendar days before the closure of any road. Construction shall not close any road for more than 21 consecutive days.

1-8 REPAIR OR REPLACEMENT OF DAMAGED MATERIALS

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

1-9 DAMAGED METALLIC COATING

Any 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.

1-15 ROAD MARKING

Purchaser shall perform road work in accordance with the state’s marked location. All road work is marked as follows:

- Road work and maintenance is marked with orange flagging

1-21 HAUL APPROVAL

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

1-22 WORK NOTIFICATIONS

The Purchaser shall notify the Contract Administrator a minimum of 14 calendar days before any road work begins.

1-23 ROAD WORK PHASE APPROVAL

Written approval by Contract Administrator must be received upon completion of the following phases of road work:

- Subgrade construction
- Drainage installation
- Subgrade compaction

1-25 ACTIVITY TIMING RESTRICTION

No operation of road construction equipment will be allowed on weekends or state recognized holidays, without written approval from the Contract Administrator.

Construction restrictions apply to this contract. All construction and transportation of heavy equipment and/or trucks is prohibited between the following dates, except as may be authorized in writing by the Contract Administrator.

March 15th - June 1st

1-26 OPERATING DURING CLOSURE PERIOD

If permission is granted to operate during a closure period listed in Clause 1-25 ACTIVITY TIMING RESTRICTIONS, the Purchaser shall provide a maintenance plan to include further protection of state resources. The Contract Administrator must approve the maintenance plan, in writing, before operation in the closure period. The Purchaser shall be required to maintain all haul roads at their own expense.

1-29 SEDIMENT RESTRICTION

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

1-30 CLOSURE TO PREVENT DAMAGE

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

- Wheel track rutting exceeds 4 inches on jaw run/pit run roads.
- Wheel track rutting exceeds 4 inches on crushed rock roads.
- Wheel track rutting exceeds 6 inches on native surface roads.
- Surface or base stability problems persist.
- Weather is such that satisfactory results cannot be obtained in an area of operations.
- 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.

1-33 SNOW PLOWING RESTRICTION

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

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.

2-4 PASSAGE OF LIGHT VEHICLES

Purchaser shall maintain the roads in a condition that will allow the passage of light administrative vehicles.

2-5 MAINTENANCE GRADING – EXISTING ROAD

A grader shall be used to shape existing surfaces.

2-6 CLEANING CULVERTS

All inlets and outlets of culverts shall be cleaned before the haul of timber and shall be subject to the written approval of the Contract Administrator.

2-7 CLEANING DITCHES, HEADWALLS, AND CATCH BASINS

Purchaser shall clean all ditches and catch basins. Work shall be completed before haul of timber.

SECTION 3 – CLEARING, GRUBBING, AND DISPOSAL

3-1 BRUSHING

Vegetative material up to 3 inches in diameter, including limbs, shall be cut as shown on the BRUSHING DETAIL-D2. Brushing shall be achieved by manual or mechanical cutting of brush, trees, and branches. Root systems and stumps of cut vegetation shall not be disturbed unless directed by the Contract Administrator.

3-2 BRUSHING RESTRICTION

Pulling, digging, pushing over, and other non-cutting methods used for vegetation removal shall not be used for brushing. The Purchaser is required to submit a detailed list of equipment and methods to be used during brushing, for approval by the Contract Administrator before starting work. Excavator buckets, log loaders and similar equipment shall not be used for brushing unless otherwise approved in writing by the Contract Administrator.

3-5 CLEARING

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

3-7 RIGHT-OF-WAY DECKING

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

3-8 PROHIBITED DECKING AREAS

Right-of-way timber shall not be decked in the following areas:

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

3-10 GRUBBING

Remove all stumps between the grubbing limits specified on the TYPICAL SECTION SHEET. Those stumps outside the grubbing limits but with undercut roots shall also be removed. Stumps over 22 inches diameter shall be split. Stumps over 40 inches shall be quartered. Grubbing shall be completed before starting excavation and embankment.

3-12 STUMP PLACEMENT

Grubbed stumps shall be placed outside of the clearing limits as directed by the Contract Administrator and in compliance with all other clauses in this road plan. Stumps shall be piled. Piles shall be dirt free and piled with a hydraulic excavator.

3-14 STUMPS WITHIN DESIGNATED WASTE AREAS

Purchaser is not required to remove stumps within waste areas if they are cut flush with the ground.

3-20 ORGANIC DEBRIS DEFINITION

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

3-21 DISPOSAL COMPLETION

All disposal of organic debris, shall be completed before approval of final maintenance.

3-22 DESIGNATED WASTE AREA FOR ORGANIC DEBRIS

Waste areas for organic debris shall be located within the cleared right-of-way or in natural openings approved in writing by the Contract Administrator.

3-23 PROHIBITED DISPOSAL AREAS

Organic debris shall not be deposited in the following areas:

- Within 50 feet of a cross drain culvert.
- Within 100 feet of a live stream, or wetland, on road subgrades road prism excavation and embankment slopes embankments as shown on the TYPICAL SECTION SHEET.
- On slopes greater than 40%.

- Within the operational area for cable landings where debris may shift or roll.
- On locations where brush will fall into the ditch or onto the road surface.
- Against standing timber.

3-24 BURYING ORGANIC DEBRIS RESTRICTED

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 or in natural openings unless otherwise directed by the Contract Administrator. Where natural openings are unavailable or restrictive, alternate debris disposal methods are subject to the written approval of the Contract Administrator.

3-30 EXCLUSION OF DOZER BLADES

Dozer blades are not permitted for the piling of organic debris.

3-31 PILING

Organic debris shall be piled. Debris piles shall be made to be burnable, clean, tight, and free of rock or soil. Piles shall be made no closer than 20 feet from standing timber, and no higher than 10 feet. Debris piles shall be placed within the cleared right-of-way, or in natural openings, as designated by the Contract Administrator. Placement of debris piles outside of the right-of-way limits is subject to the written approval of the Contract Administrator.

SECTION 4 – EXCAVATION

4-1 EXCAVATOR CONSTRUCTION

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

4-2 PIONEERING

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

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

4-3 ROAD GRADE AND ALIGNMENT STANDARDS

The following road grade and alignment standards shall be followed except as designed:

- Grade and alignment shall have smooth continuity, without abrupt changes in direction.
- Maximum grade shall not exceed 18 percent favorable and 12 percent adverse.
- Minimum curve radius is 60 feet at centerline.
- Sag vertical curves shall not have a grade change greater than 5% in 100 feet.
- Crest vertical curves shall not have a grade change greater than 4% in 100 feet.

4-4 SWITCHBACK STANDARDS

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

- Adverse grades on switchbacks shall not exceed 10%.
- Favorable grades through switchbacks shall not exceed 12%.
- Transition grades entering and leaving switchbacks shall not exceed a 5% grade change.

Transition grades required to meet switchback grade limitations shall be constructed on the tangents preceding and departing from the switchbacks.

4-5 CUT SLOPE RATIO

Purchaser shall construct excavation slopes no steeper than shown on the following table:

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

4-6 EMBANKMENT SLOPE RATIO

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

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

4-7 SHAPING CUT AND FILL SLOPE

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

Turnouts shall be intervisible with maximum of 1,000 feet between turnouts, unless shown otherwise on drawings. Locations shall be adjusted to fit the final subgrade alignment and sight distances. Minimum dimensions are shown on the TYPICAL SECTION SHEET. Turnouts are subject to written approval from the contract administrator.

4-22 TURNAROUNDS

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

4-25 DITCH CONSTRUCTION AND RECONSTRUCTION

The Purchaser shall construct or reconstruct ditches into the subgrade as specified on the TYPICAL SECTION SHEET. Excavated slopes shall be consistent with Clause 4-5 CUT SLOPE RATIO. Ditches shall be constructed concurrently with construction of the subgrade.

4-27 DITCH WORK – MATERIAL USE PROHIBITED

Purchaser shall not pull ditch material across the road or mix in with the road surface. Excavated material must be scattered outside the grubbing limits.

4-28 DITCH DRAINAGE

Ditches must drain to cross-drain culverts or ditchouts.

4-35 WASTE MATERIAL DEFINITION

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

4-36 DISPOSAL OF WASTE MATERIAL

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

4-38 PROHIBITED WASTE DISPOSAL AREAS

Waste material shall not be deposited 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.
- Within a riparian management zone.
- On side slopes steeper than 45%.
- In locations that interfere with the construction of the road prism.
- In locations that impede drainage.
- Against standing timber.
- Outside the clearing limits.
- Waste Disposal areas are subject to written approval from the contract administrator.
- On non DNR Land.

4-46 COMMON BORROW

Common borrow consists of soil, and/or aggregate that is non-plastic and contains no more than 5% clay, organic debris, or trash by volume. The material is considered non-plastic if the fines in the sample cannot be rolled, between the hand and a smooth surface, into a thread at any moisture content. Common borrow material must be free of rocks greater than 6 inches in any dimension.

4-55 ROAD SHAPING

The road subgrade and surface shall be shaped as shown on the TYPICAL SECTION SHEET. The subgrade and surface shape shall ensure runoff in an even, un-concentrated manner, and shall be uniform, firm, and rut-free. All grading shall be accomplished using a motor grader with a minimum of 175 horsepower.

4-56 DRY WEATHER SHAPING

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

4-60 FILL COMPACTION

All embankment and waste material shall be compacted. Minimum acceptable compaction is achieved by placing embankments in 1 foot or shallower lifts, and routing excavation equipment over the entire width of each lift. Except as otherwise specified in this plan, a vibratory plate compactor or tamper shall be used for areas specifically requiring keyed embankment construction, and for embankment segments too narrow

to accommodate equipment. Compaction with a plate compactor shall be made by a minimum of three full coverages; each lift shall not exceed 6 inches in depth.

4-61 SUBGRADE COMPACTION

Constructed or reconstructed subgrades shall be compacted full width. Subgrade compaction shall be approved, in writing, by the Contract Administrator before rock application or timber haul.

4-62 DRY WEATHER COMPACTION

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

SECTION 5 – DRAINAGE

5-1 REMOVAL OF SHOULDER BERMS

Berms shall be removed from road shoulders to permit the escape of runoff. The construction of ditch outs will be required where ponding will result from the effects of side cast debris.

5-5 CULVERTS

Culverts shall be installed as part of this contract. Culverts shall be installed concurrently with subgrade work and shall be installed before subgrade compaction and rock application. Culvert locations and the minimum requirements for culvert length and diameter are designated on the CULVERT AND DRAINAGE LIST. Culvert, downspout, and flume lengths shall be adjusted to fit as-built conditions and shall not terminate directly on unprotected soil that will erode. Culverts shall be new steel, aluminum, or polyethylene meeting the material specifications in Clauses 10-15 through 10-23. Culvert placement shall precede embankment construction.

5-15 CULVERT INSTALLATION

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

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 shall 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 shall be installed with a depth of cover specified in the Engineer's design, or to the minimum depth recommended by the culvert manufacturer for the type of cover material over the pipe, whichever is greater.

5-20 ENERGY DISSIPATERS

Energy dissipaters shall be installed to prevent erosion and are subject to approval by the Contract Administrator. The type of energy dissipater and the amount of material shall be consistent with the specifications listed on the CULVERT AND DRAINAGE SPECIFICATION DETAIL. Energy dissipaters will be consistent with light loose rip rap specifications.

5-25 CATCH BASINS

Catch basins shall be constructed to resist erosion in accordance with CULVERT AND DRAINAGE SPECIFICATION DETAIL. Minimum dimensions of catch basins are 4 feet wide and 4 feet long with back slopes consistent with Clause 4-5 CUT SLOPE RATIO.

5-26 HEADWALLS FOR CROSS DRAIN CULVERTS

Headwalls shall be constructed in accordance with the CULVERT AND DRAINAGE SPECIFICATION DETAIL at all permanent cross drain culverts. Rock used for headwalls shall meet the specifications for Light Loose Rip Rap. Rock shall be placed on shoulders, slopes, and around culvert inlets and outlets. Minimum specifications require that rock be placed at a width of one culvert diameter on each side of the culvert opening, and to a height of one culvert diameter above the top of the culvert. Rock shall not restrict the flow of water into culvert inlets or catch basins. Placement shall be by zero-drop-height method only. No placement by end dumping or dropping of rock shall be allowed.

5-30 DRIVABLE WATERBAR CONSTRUCTION

Purchaser shall construct drivable waterbars in accordance with the DRIVABLE WATERBAR DETAIL.

5-31 ROLLING DIP CONSTRUCTION

Rolling dips shall be constructed in accordance with the ROLLING DIP DETAIL and as specified on the CULVERT & DRAINAGE LIST. Rolling dips shall be installed concurrently with construction of the subgrade and shall be maintained in an operable condition. Minimum frequency of rolling dips shall be at a maximum spacing of 400 feet horizontal or one for every 10 feet of vertical change.

5-32 SURFACE WATER DIVERTERS

Purchaser shall install surface water diverters in accordance with the WATER DIVERTER INSTALLATION DETAIL.

5-33 NATIVE SURFACE ROADS

If overwintered, native surface roads shall be water barred by November 1. Water bars shall be constructed according to the attached DRIVABLE WATERBAR DETAIL at a maximum spacing that will produce a vertical drop of no more than 10 feet between water bars or between natural drainage paths, and with a maximum spacing of 300 feet.

SECTION 6 – ROCK AND SURFACING

6-5 ROCK FROM COMMERCIAL SOURCE

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

6-21 IN-PLACE PROCESSING

The Purchaser may use in-place processing, such as a grid roller or other method, if suitable crushing can be demonstrated to meet the surfacing size restrictions. The use of in-place processing methods is subject to written approval by the Contract Administrator.

6-22 FRACTURE REQUIREMENT FOR ROCK

A minimum of 50% by visual inspection of coarse aggregate shall have at least one fractured face. Coarse aggregate is the material retained on each specification sieve sized 1/4-inch and above, if that sieve retains more than 5% of the total sample.

6-28 1 1/4-INCH MINUS CRUSHED ROCK

% Passing 1 1/4" square sieve	100%
% Passing 5/8" square sieve	50 - 80%
% Passing U.S. #4 sieve	30 - 50%
% Passing U.S. #40 sieve	3 - 18%
% Passing U.S. #200 sieve	5%

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

6-50 LIGHT LOOSE RIP RAP

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

<u>Quantity</u>	<u>Approximate Size Range</u>
20% to 90%	500 lbs. to 1 ton (18"- 28")
15% to 80%	50 lbs. to 500 lbs. (8"- 18")
10% to 20%	3 inch to 50 lbs. (3"- 8")

6-51 HEAVY LOOSE RIP RAP

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

<u>Quantity</u>	<u>Size Range</u>
30% to 90%	1 ton to 2 ton (28" - 36")
30% to 70%	500 lbs. to 1 ton (18" - 28")
20% to 50%	50 lbs. to 500 lbs. (8" - 18")
10% to 20%	3 inch to 50 lbs. (3" - 8")

6-55 ROCK APPLICATION MEASURED BY COMPACTED DEPTH

Measurement of specified rock depths, are defined as the compacted depth(s) using the compaction methods required in this road plan. Estimated quantities specified in the ROCK LIST are compacted 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 before rock application.

6-71 ROCK APPLICATION

Purchaser shall apply rock in accordance with the specifications and quantities shown on the Rock List. Rock must be spread, shaped, and compacted full width concurrent with rock hauling operations.

6-76 DRY WEATHER ROCK COMPACTION

The Contract Administrator may require the application of water to facilitate compaction of the rock surfacing. The method of water application is subject to approval by the Contract Administrator.

6-80 WATERING FOR DUST ABATEMENT

Purchaser shall use water for dust abatement.

7-57 CULVERT SHAPE CONTROL

Purchaser shall monitor the culvert shape during backfill and compaction. Special attention must be paid to maintaining the structure's rise dimensions, concentricity, and smooth uniform curvature. If compaction methods are resulting in peaking or deflection of the culvert, Purchaser shall modify the compaction method to achieve the appropriate end result.

7-70 GATE CLOSURE

On the following road(s), Purchaser shall keep gates closed and locked except during periods of haul or unless directed by Contract Administrator. All gates that remain open during haul must be locked or securely fastened in the open position. All gates must be closed at termination of use.

<u>Road</u>	<u>Station</u>	<u>Comment</u>
E363234M	0+00	Private land owner with cattle
E363209E	24+00	Keep locked outside business hours

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

<u>Road</u>	<u>Stations</u>	<u>Additional Requirements</u>
E363209E	190.04	Refer to Forest Access Road Maintenance Specs
E363209G	49.80	Refer to Forest Access Road Maintenance Specs
E363220G	12.07	Refer to Forest Access Road Maintenance Specs
E363228E	38.14	Refer to Forest Access Road Maintenance Specs
E363228E	8.88	Refer to Forest Access Road Maintenance Specs
E363234F	43.12	Refer to Forest Access Road Maintenance Specs
E363234F	6.35	Refer to Forest Access Road Maintenance Specs
E363234M	62.02	Refer to Forest Access Road Maintenance Specs
E373231E	3.57	Refer to Forest Access Road Maintenance Specs
E373231E-1	54.90	Refer to Forest Access Road Maintenance Specs

9-10 LANDING DRAINAGE

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

9-11 LANDING EMBANKMENT

Landing embankments shall be sloped to original construction specifications.

SECTION 10 MATERIALS

10-15 CORRUGATED STEEL CULVERT

Metallic coated steel culverts shall meet AASHTO M-36 (ASTM A-760) specifications. Culverts shall 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.

10-21 METAL BAND

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

10-22 PLASTIC BAND

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

10-24 GAUGE AND CORRUGATION

Unless otherwise stated in the engineer's design, metal culverts shall conform to the following specifications for gage and corrugation as a function of diameter.

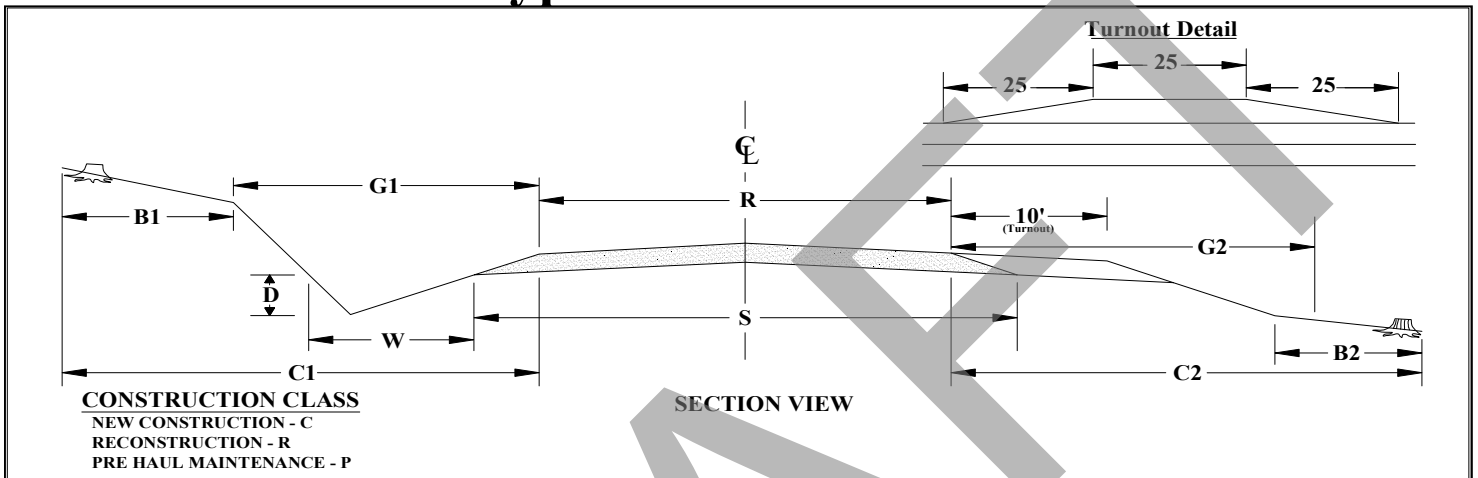
<u>Diameter</u>	<u>Gauge</u>	<u>Corrugation</u>
18"	16 (0.064")	2 ² / ₃ " X 1/2"
24" to 48"	14 (0.079")	2 ² / ₃ " X 1/2"
54" to 96"	12 (0.109")	3" X 1"

State of Washington
Department of Natural Resources

Application No. :

Name of Sale: Copper Swan

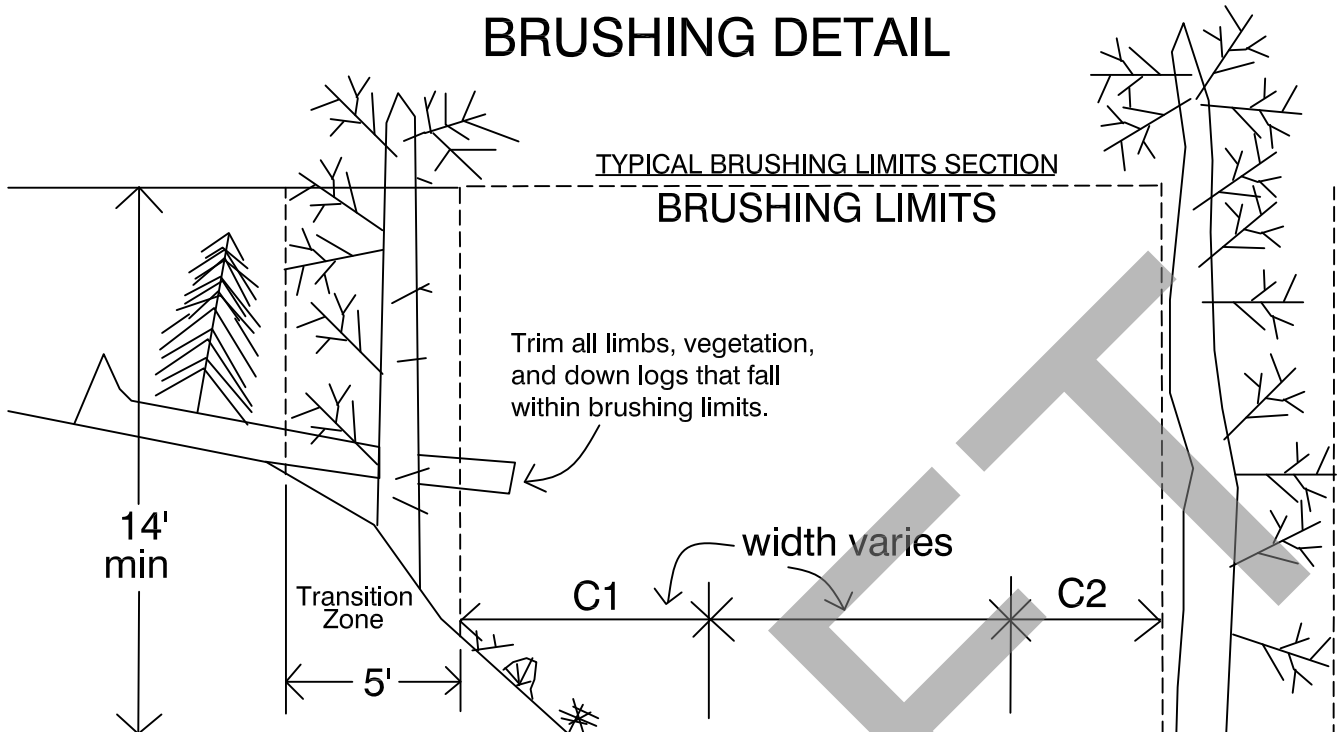
Typical Section Sheet



ROAD NAME	START STATION	END STATION	CONSTRUCTION CLASS	SUBGRADE WIDTH (S)	ROAD WIDTH (R)	INSLOPE "/>10'	OUTSLOPE "/>10'	CROWN " AT CL	DITCH WIDTH (W)	DITCH DEPTH (D)	DITCH 2 SIDES			GRUBBING CUT BANK (G)	GRUBBING FILL TOE (G2)	ROAD CUT CLEARING (B1)	ROAD FILL CLEARING (B)	R/W CUT CLEARING (C1)	R/W FILL CLEARING (C2)
E363209E	0+00	190+04	P	14										3	3			6	6
E363209G	0+00	49+80	P	14										3	3			6	6
E363220G	0+00	12+07	P	14										3	3			6	6
E363228E	0+00	38+14	P	14										3	3			6	6
E363228E	38+14	47+02	C	14			4									6	6		
E363234F	0+00	43+12	P	14										3	3			6	6
E363234F	43+12	49+47	C	14			4									6	6		
E363234M	0+00	62+02	P	12										3	3			6	6
E373231E	35+09	38+66	P	14										3	3			6	6
E373231E-1	0+00	48+82	P	12										3	3			6	6
E373231E-1	48+82	54+90	C	14			4									6	6		

Date: 10/22/2023

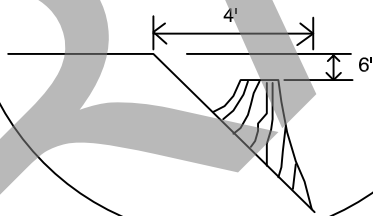
BRUSHING DETAIL



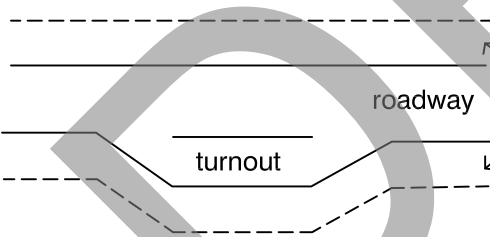
All limbs on standing trees that extend into the brushing limits shall be trimmed within 6" of the stem

Any trees less than 6" in diameter shall be cleared within the transition zones.

Trim all stumps and vegetation within 4' of edge of road and in ditch to at least 6" below the elevation of the edge of road.

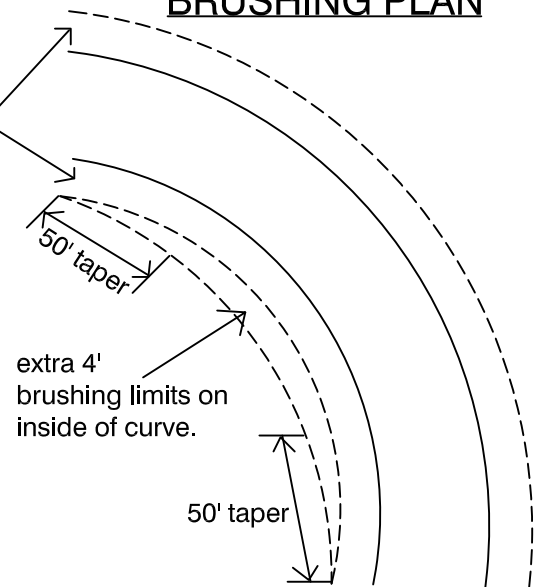


CURVE BRUSHING PLAN

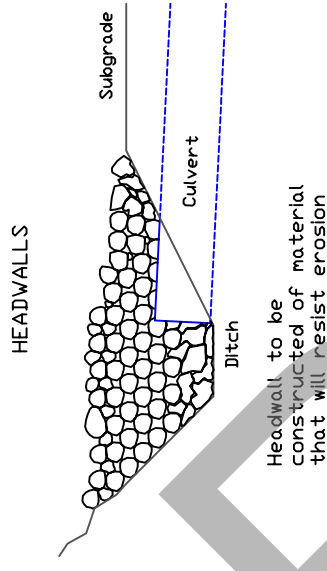
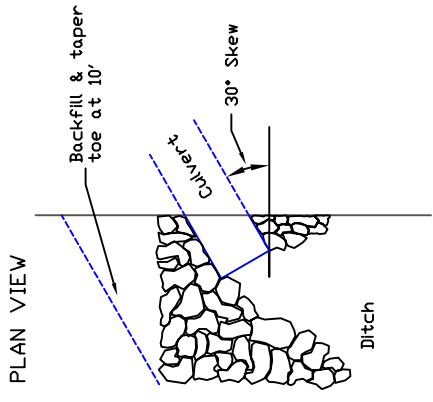


TURNOUT BRUSHING PLAN

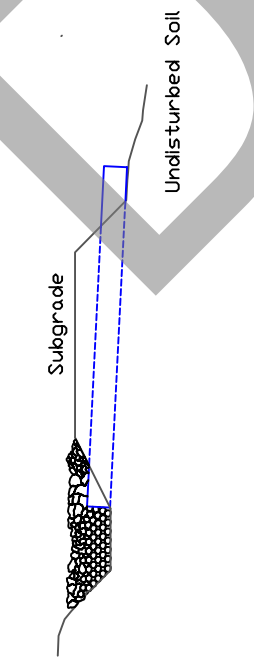
1. All vegetation within the brushing limits shall be cut to within 8" of the ground unless otherwise directed by the contract administrator.
2. All brush, trees limbs, etc. shall be removed from the road surface and ditchline.
3. All debris that may roll or migrate into the ditchline shall be removed.



CULVERT AND DRAINAGE SPECIFICATIONS DETAIL - D1

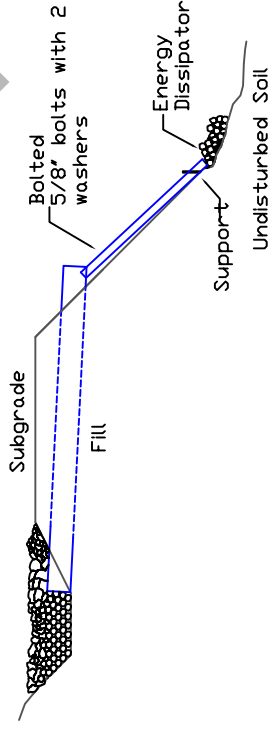


Headwall to be constructed of material that will resist erosion



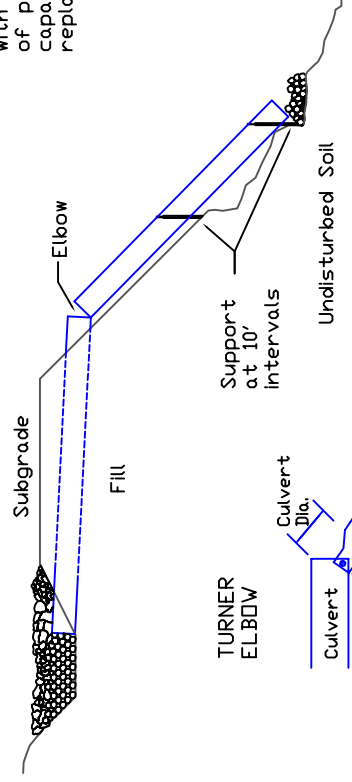
FLUME

Use where ground conditions are uniform, providing for stability of flume.



DOWNSPOUT

Use where ground conditions are irregular.

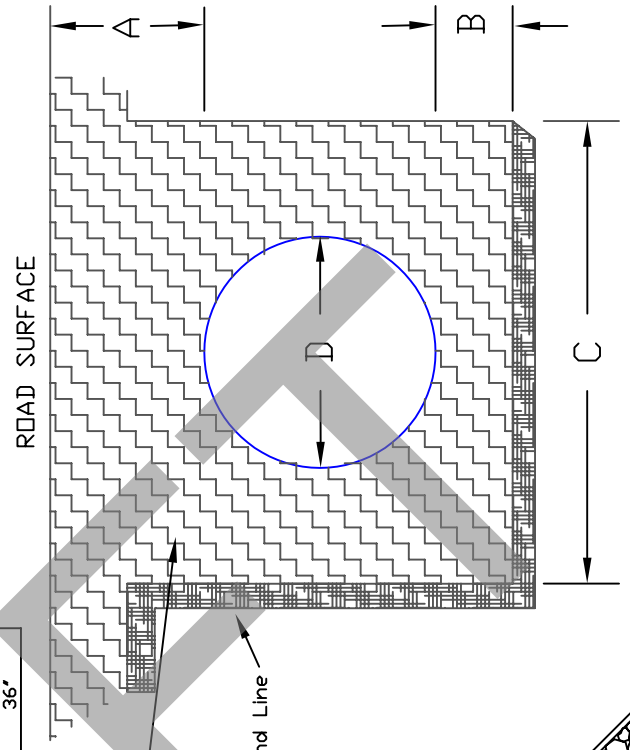


TURNER ELBOW

Bolted 5/8" bolts with bridge washers on both sides

Minimum Cover	A	Minimum Bed Depth	B	Min. Trench Width	C	Nominal Diameter	D
12"	12"	6'	36"	36"	18'	18"	
12"	12"	6'	42"	42"	24'	24"	
12"	12"	6'	48"	48"	30'	30"	
12"	12"	6'	54"	54"	36'	36"	

CULVERT BACKFILL & BASE PREPARATION (For Culverts Less Than 36')

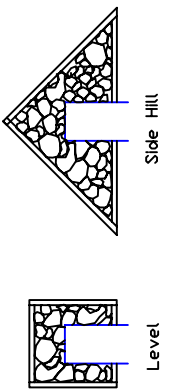


BEDDING MATERIAL:

Use granular material - 3' minus. Large rocks shall be replaced with suitable material. Materials of poor or non-uniform bearing capacity shall be removed and replaced with suitable fill.

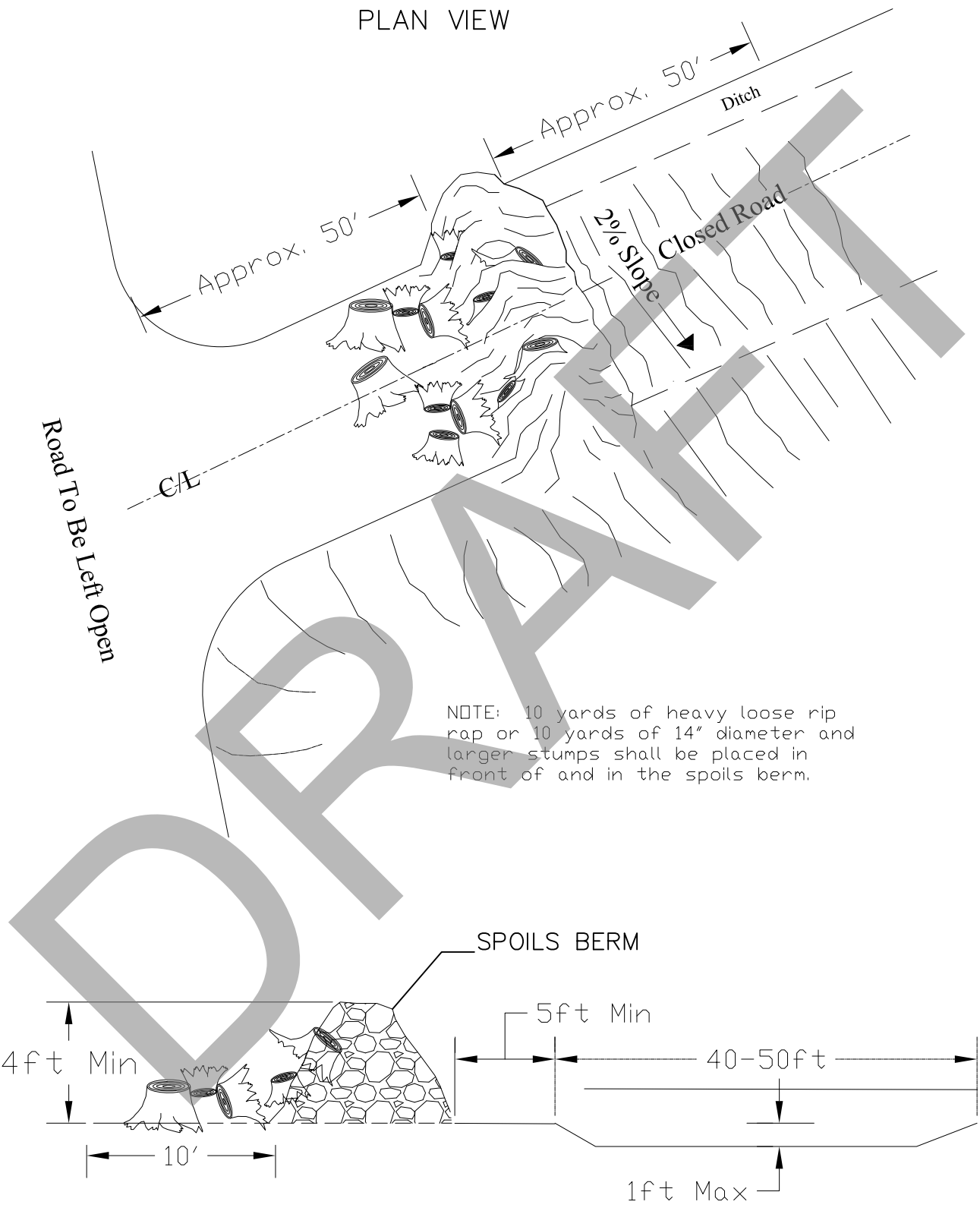
DISSIPATOR SPEC'S

Size in Culvert Diameters
Area 2 X 2
Depth 1
Aggregate 1/3



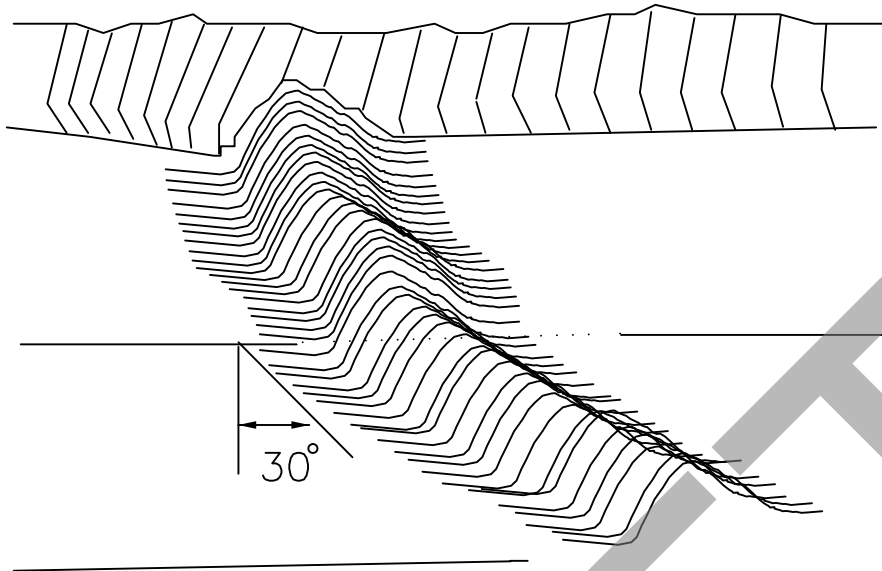
SPOILS BERM DETAIL-D8

PLAN VIEW

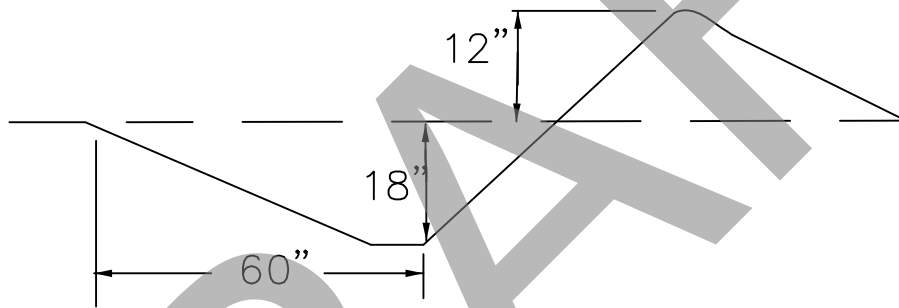


Note: $\frac{1}{3}$ of stumps or rip rap shall be partially buried in the spoils berm and/or road surface.

Top View

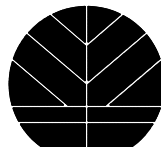


Side View



1. Waterbar construction for forest roads with little or no traffic.
2. Specifications are average and may be adjusted to conditions.
3. Bottom of waterbar must be outsloped to ensure proper drainage.
4. Rock outlet if steep fill slope is present.

Driveable Waterbar Detail



WASHINGTON STATE DEPARTMENT OF
Natural Resources

Northeast Region
Colville, Washington

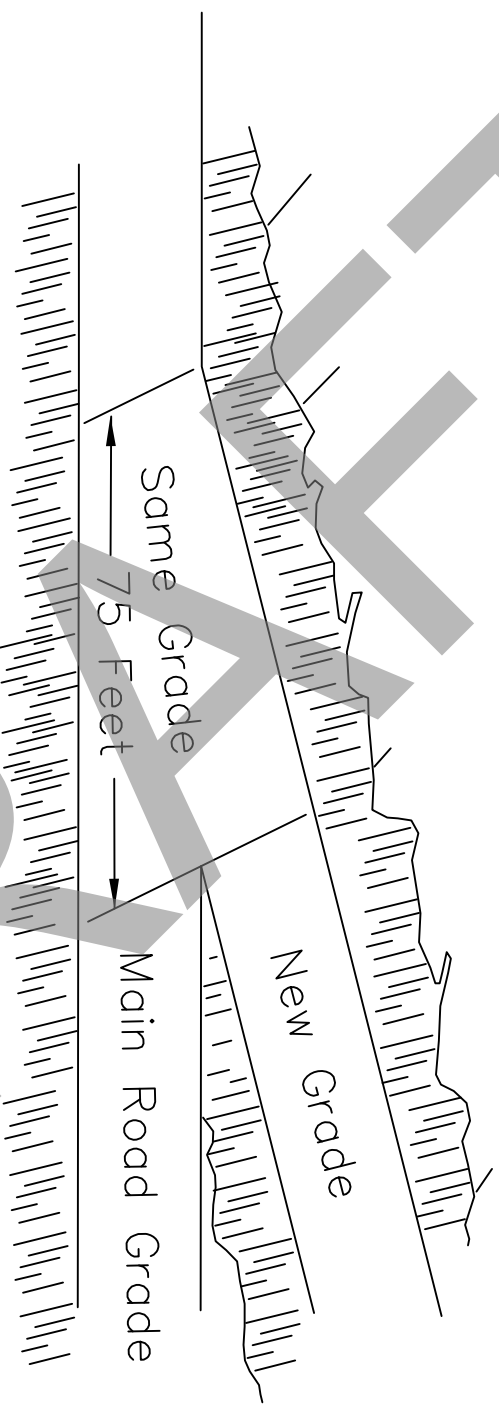
Designed By: Stash Slabinski 9/06/05

Drawn By: Stash Slabinski 9/06/05

Revised:

1 OF 1

Intersection Detail



Main road and spur must have the same grade until there is horizontal separation from each other.

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 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.

Structures

- Repair culverts, bridges, gates, fences, cattle guards, signs, and other road structures as required because of purchaser use. Repairs shall be subject to Contract Administrator's approval.

FOREST ACCESS ROAD MAINTENANCE SPECIFICATIONS

Preventative Maintenance

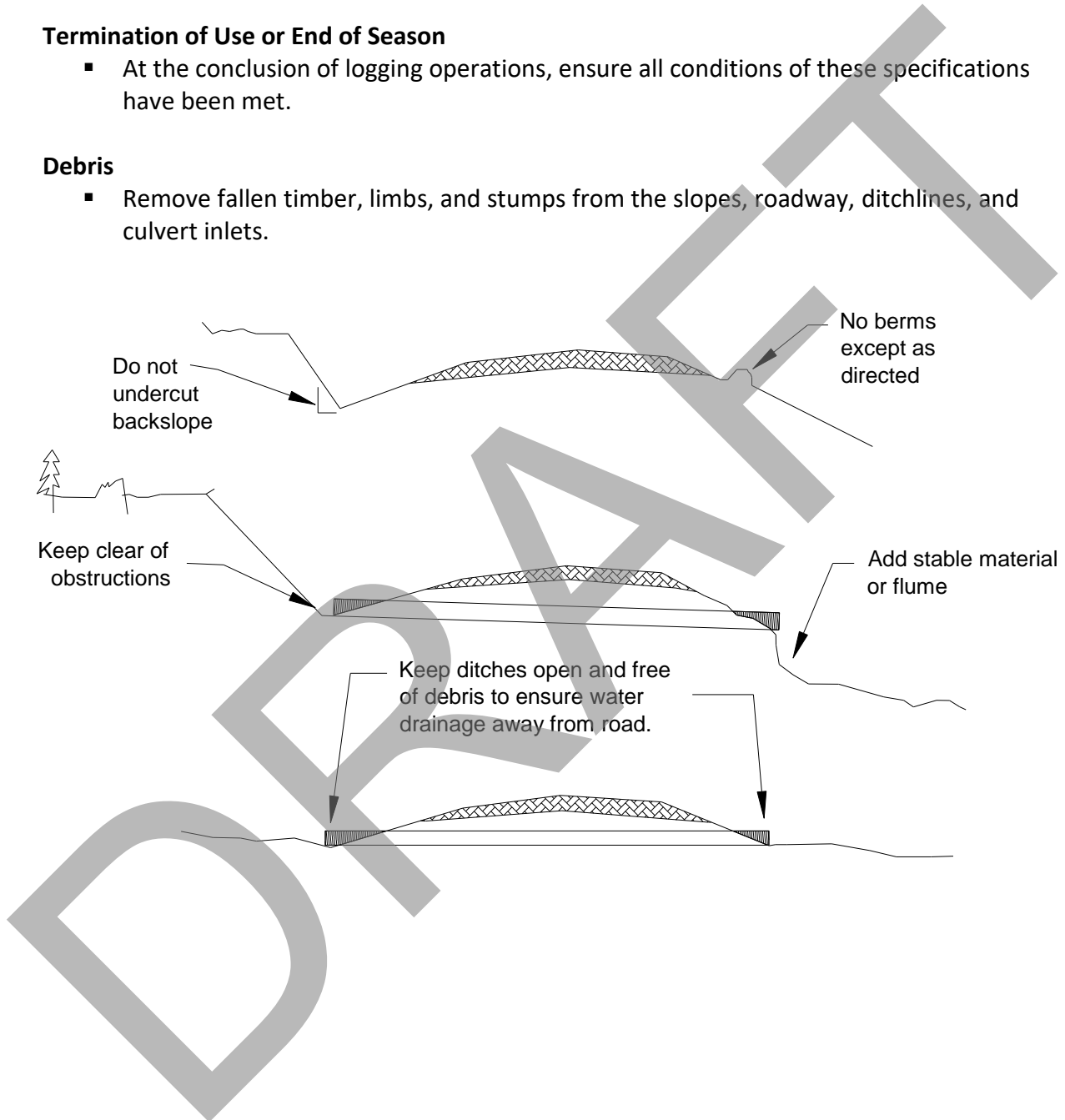
- Perform preventative maintenance work to safeguard against storm damage, such as blading to ensure correct runoff, ditch and culvert cleaning, and waterbar maintenance.

Termination of Use or End of Season

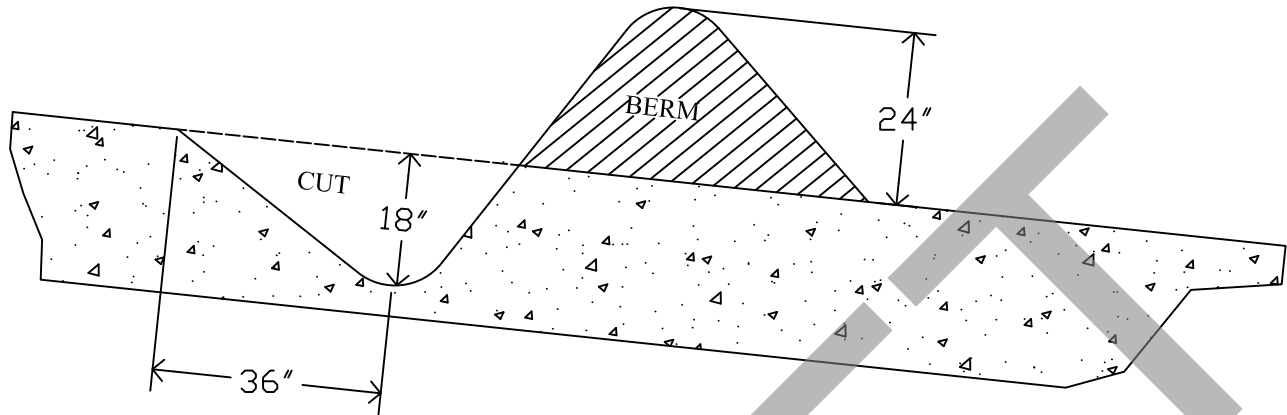
- At the conclusion of logging operations, ensure all conditions of these specifications have been met.

Debris

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



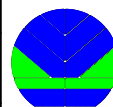
Non-Driveable Water Bar Detail



Notes:

1. WATERBAR CONSTRUCTION FOR FOREST ROADS WITH NO TRAFFIC. SPECIFICATIONS ARE AVERAGE AND MAY BE ADJUSTED TO CONDITIONS.
2. TIE BERM INTO BANK. IF DITCH EXISTS, TIE CUT INTO DITCH.
3. CONSTRUCT CROSS DRAIN BERM APPROXIMATELY 24 IN. HIGH.
4. CUT WATERBAR A MINIMUM OF 18 IN.
5. ENSURE PROPER DRAINAGE AT OUTLET.
6. SKEW WATERBAR 30 DEGREES DOWNGRADE WITH ROAD CENTERLINE.

Non-Driveable Waterbar Detail



WASHINGTON STATE DEPARTMENT OF
Natural Resources

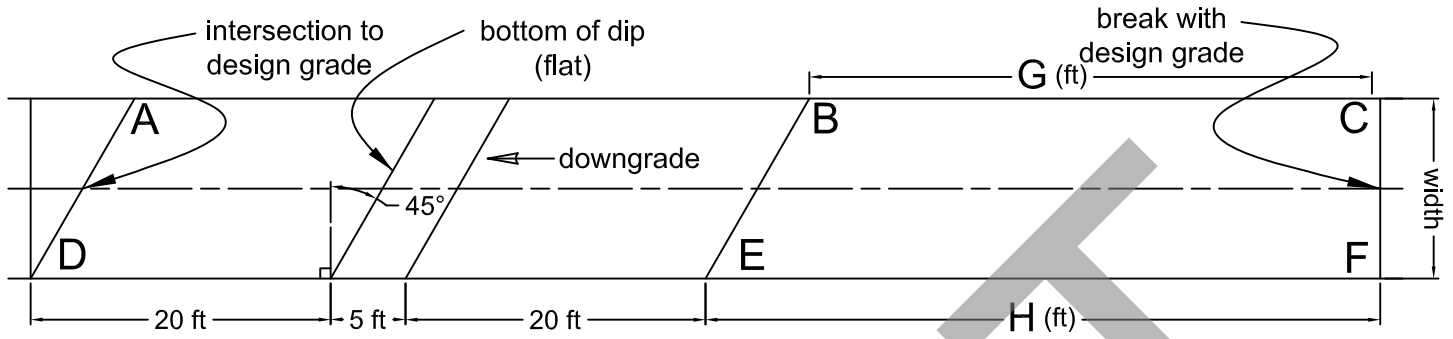
Northeast Region Colville, Washington		
Designed By:	Stash Slabinski	4/21/05
Drawn By:	Stash Slabinski	4/21/05

Revised:

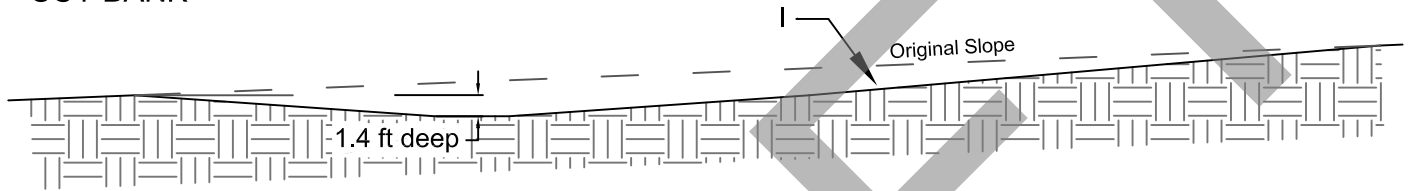
1 OF 1

STANDARD 45° ROLLING DIP

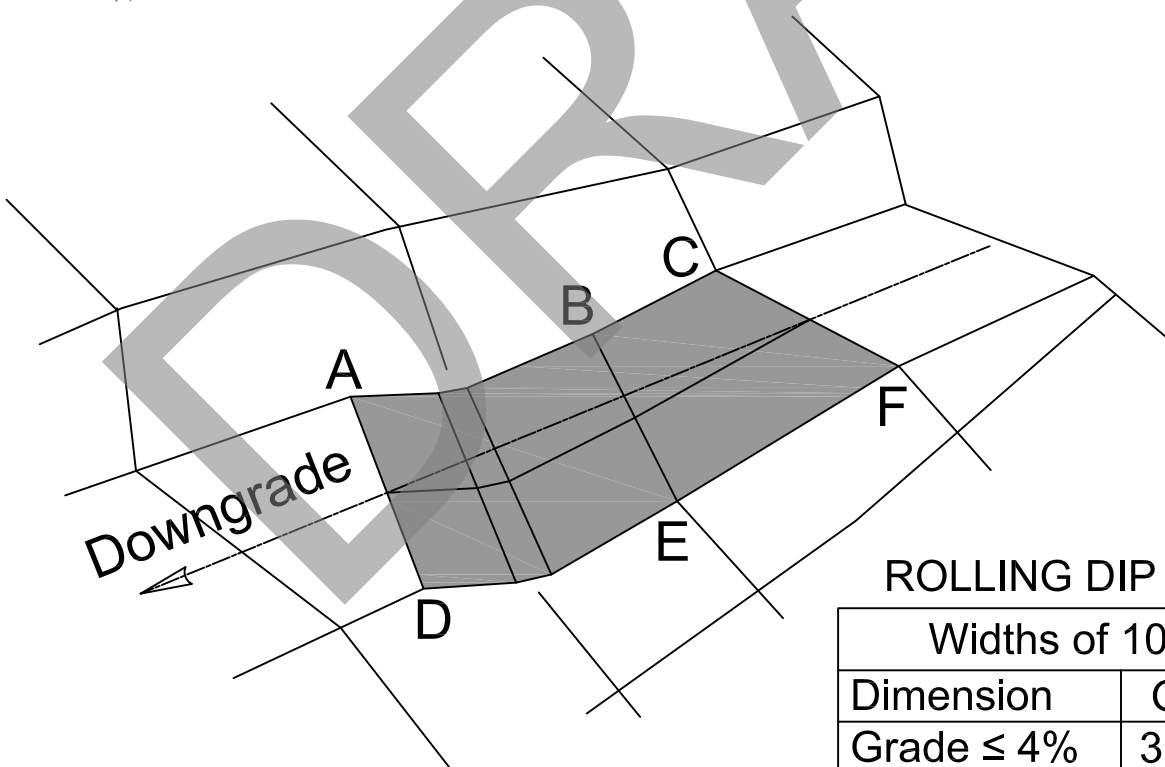
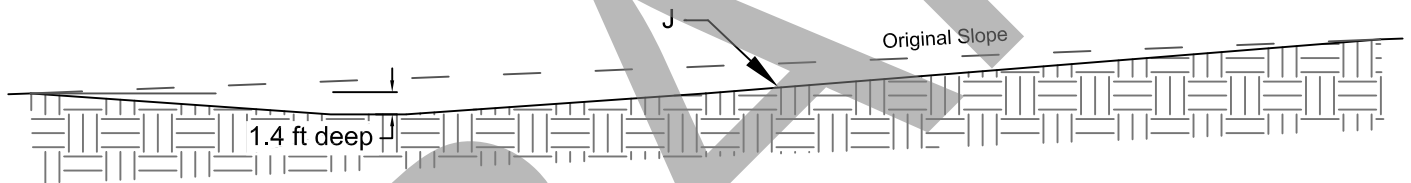
PLAN OF ROLLING DIP



CUT BANK



FILL SLOPE



ROLLING DIP DEMENSIONS

Widths of 10' through 14'				
Dimension	G	H	I	J
Grade ≤ 4%	38'	45'	9%	8%
Grade = 6%	48'	55'	11%	11%
Grade = 8%	58'	65'	14%	14%

