



TIMBER NOTICE OF SALE

SALE NAME: Q KLONDIKE

AGREEMENT NO: 30-106084

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

SALE LOCATION: Sale located approximately 4 miles northwest of Republic, WA

PRODUCTS SOLD AND SALE AREA: All conifer species (excluding ponderosa pine) except for leave trees banded with blue paint, leave trees bounded by yellow leave tree area tags and two standing snaps per acre in Units 1, 2, 3, 4, 5, 6, 7, 8, 9 and 10 bounded by white timber sale boundary tags; and all right of way timber bounded by orange right of way boundary tags or banded with orange paint.

All forest products above located on part(s) of Sections 18, 19, 20, 30 and 31 all in Township 37 North, Range 33 East, Sections 24 and 36 all in Township 37 North, Range 32 East, W.M., containing 344 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, Spruce, Ponderosa pine, and Sale Total.

MINIMUM BID: \$0.00 BID METHOD: Sealed Bids

PERFORMANCE SECURITY: \$0.00 SALE TYPE: Lump Sum

EXPIRATION DATE: November 30, 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: 192.54 stations of required construction. 6.02 stations of optional construction. 313.58 stations of required prehaul maintenance. 54.77 stations of decommissioning. 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 to spring breakup.



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### ACREAGE DETERMINATION

**CRUISE METHOD:** Acreage determined using GPS methods. Acreage shown above is net harvest acres in harvest units. Ponderosa pine: 8.0 - 17.5 inches dbh has a minimum top of 4.6 inch dib. All other 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.

**FEES:** Within 10 days of day of sale, Purchaser shall provide payment for two road use permits in the amount of \$1,000.00 each and payment for two road use permits in the amount of \$500.00 each. Purchaser shall provide payment for 1,000 board feet, 3,000 board feet and 9,000 board feet of private right of way timber at the purchaser's per mbf bid price. \$63,546.00 is due on day of sale. \$9.00 per MBF is due upon removal. These are in addition to the bid price.

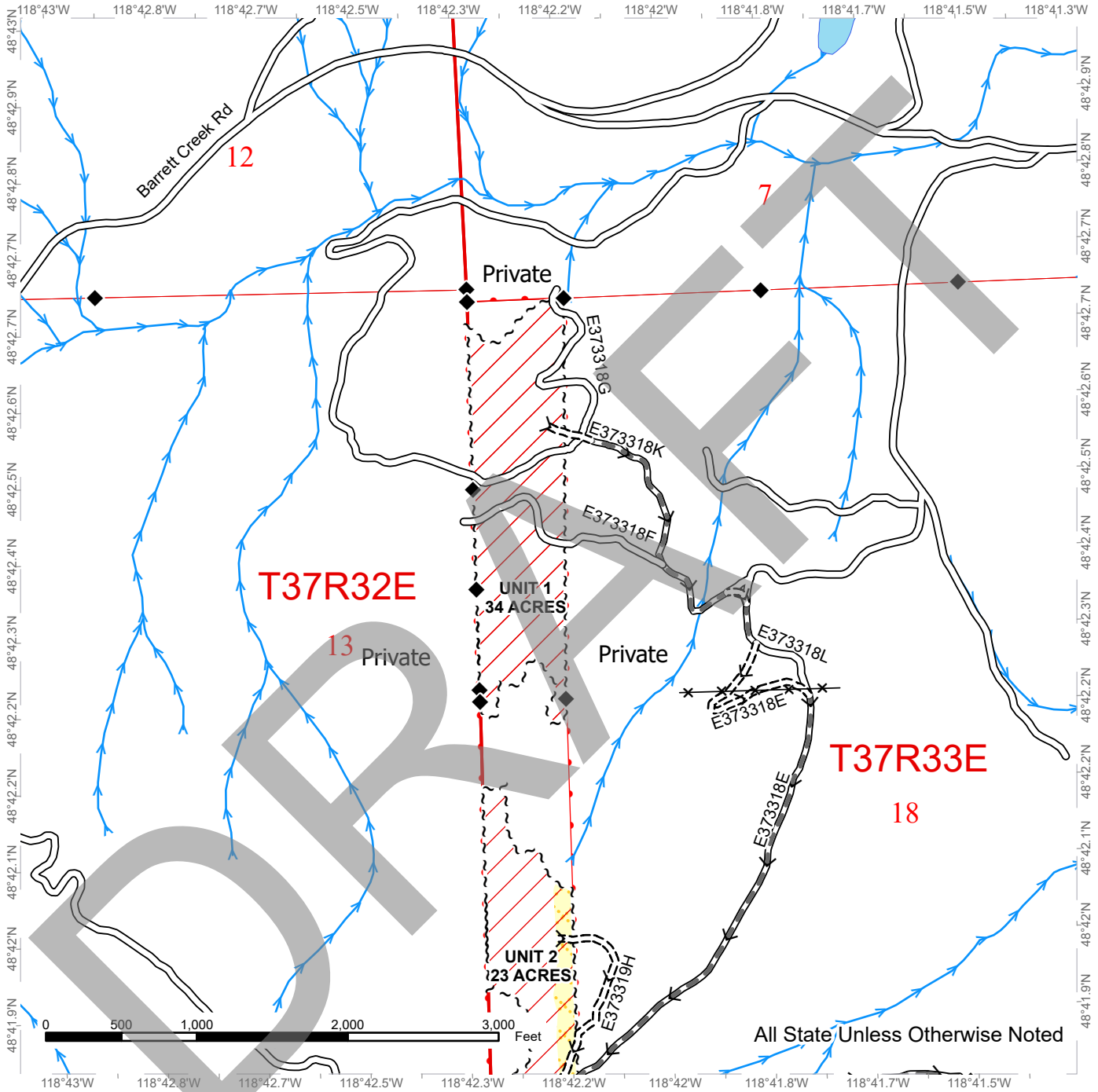
**SPECIAL REMARKS:** The ponderosa pine volume shown on the notice is right of way volume.

DRAFT

# TIMBER SALE MAP

**SALE NAME:** Q KLONDIKE  
**AGREEMENT #:** 30-106084  
**TOWNSHIP(S):** T37R32E, T37R33E  
**TRUST(S):** Common School and Indemnity (3)

**REGION:** Northeast Region  
**COUNTY(S):** Ferry  
**ELEVATION RGE:** 2840-3920



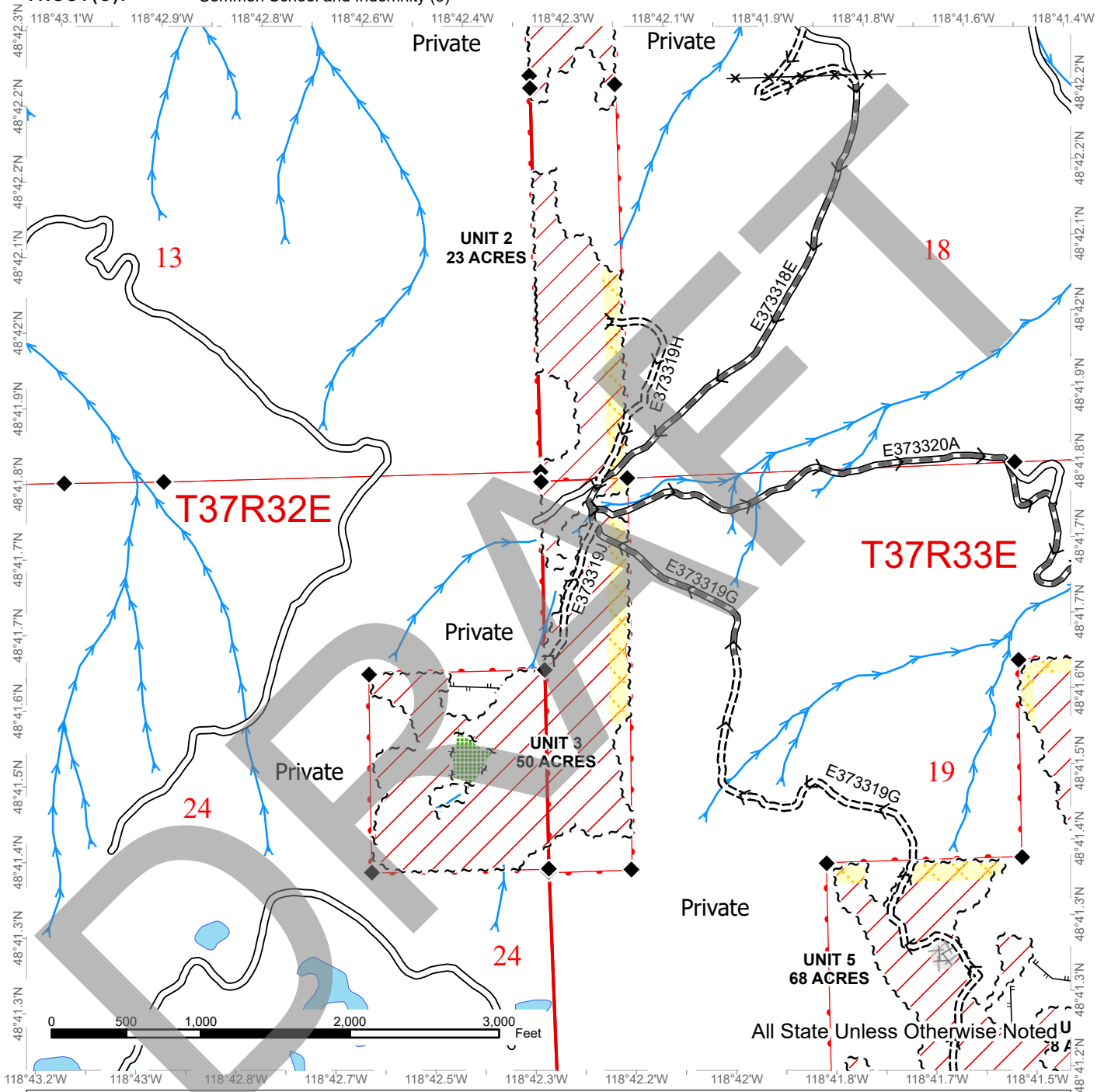
|                              |                               |                 |
|------------------------------|-------------------------------|-----------------|
| DNR Managed Lands            | No Whip Felling               | Streams         |
| Public Land Survey Sections  | Required Construction         | Survey Monument |
| Public Land Survey Townships | Existing Roads                | Haul Route      |
| Variable Retention Harvest   | Required Pre-Haul Maintenance |                 |
| Fence                        | Sale Boundary Tags            |                 |



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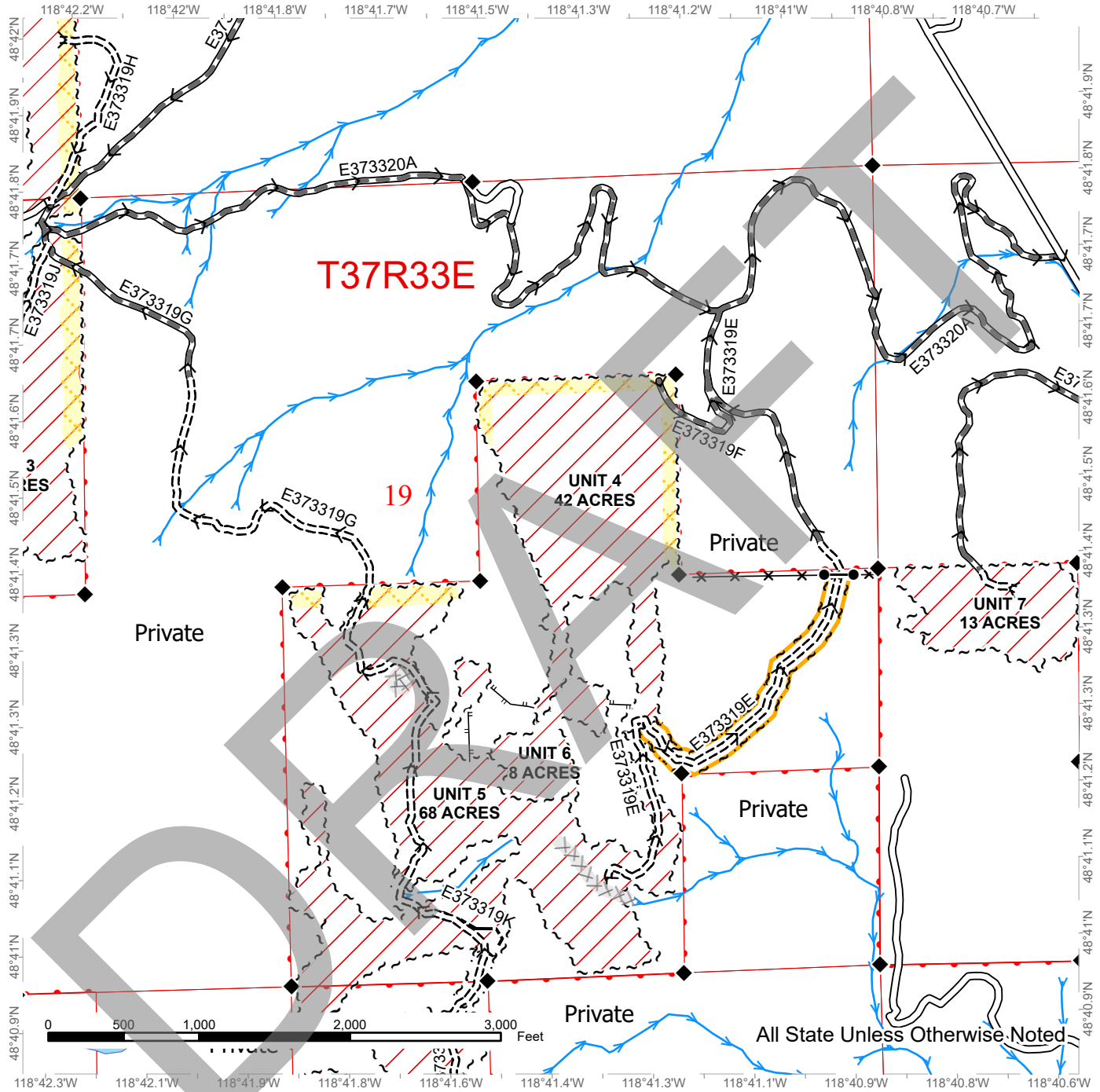


- |                              |                               |                    |
|------------------------------|-------------------------------|--------------------|
| DNR Managed Lands            | No Whip Felling               | Sale Boundary Tags |
| Public Land Survey Sections  | Leave Tree Area               | Leave Tree Tags    |
| Public Land Survey Townships | Required Construction         | Streams            |
| Variable Retention Harvest   | Existing Roads                | Survey Monument    |
| Fence                        | Required Pre-Haul Maintenance | Haul Route         |
| Equipment Limitation Zone    | Designated Skid Trail         |                    |

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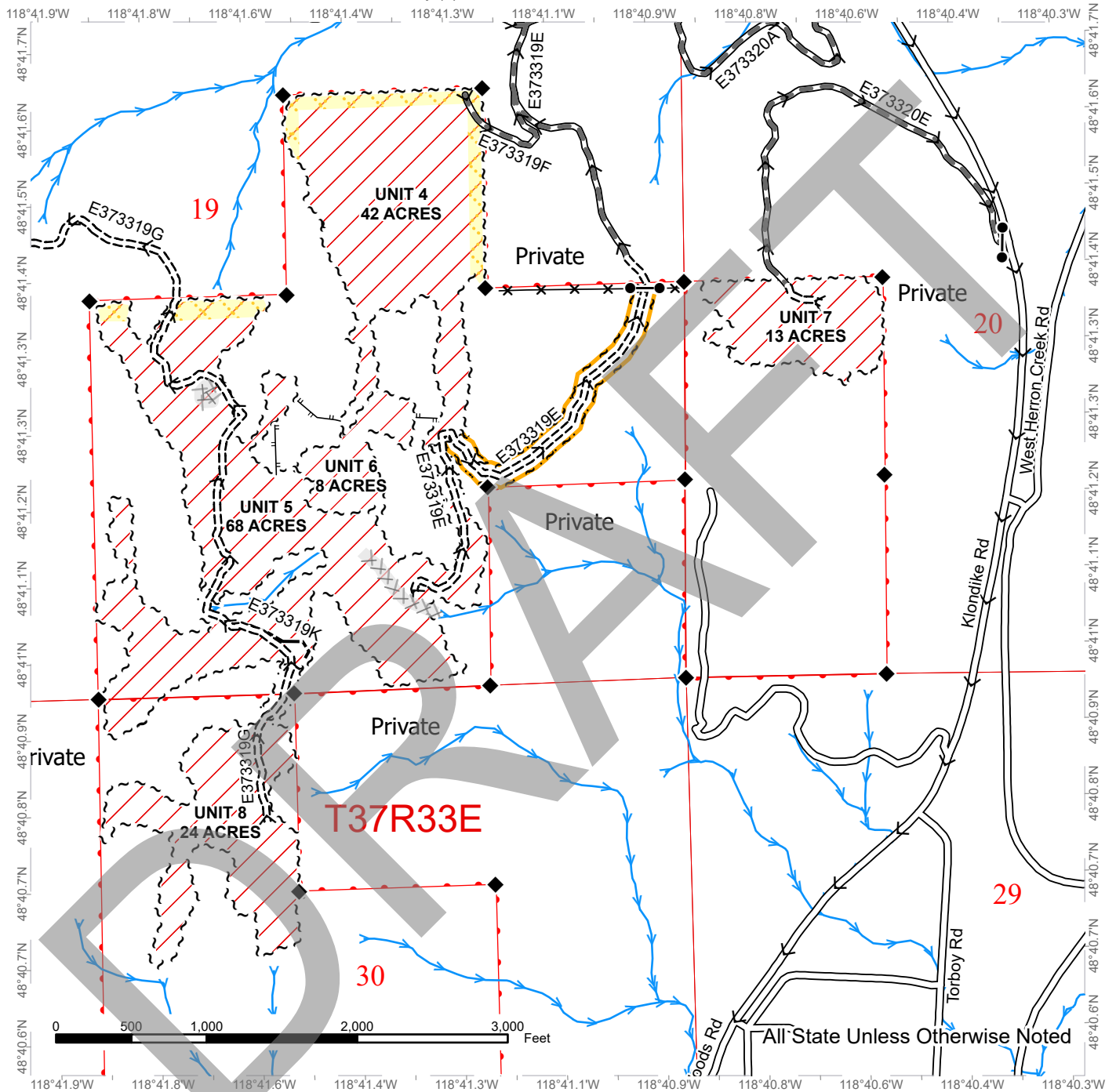
|                              |                               |                     |
|------------------------------|-------------------------------|---------------------|
| DNR Managed Lands            | Required Construction         | Scattered ROW Trees |
| Public Land Survey Sections  | Existing Roads                | Streams             |
| Public Land Survey Townships | Required Pre-Haul Maintenance | Gate                |
| Variable Retention Harvest   | Optional Construction         | Survey Monument     |
| Fence                        | Designated Skid Trail         | Haul Route          |
| Equipment Limitation Zone    | Sale Boundary Tags            |                     |
| No Whip Felling              | Right of Way Tags = 2 acres   |                     |



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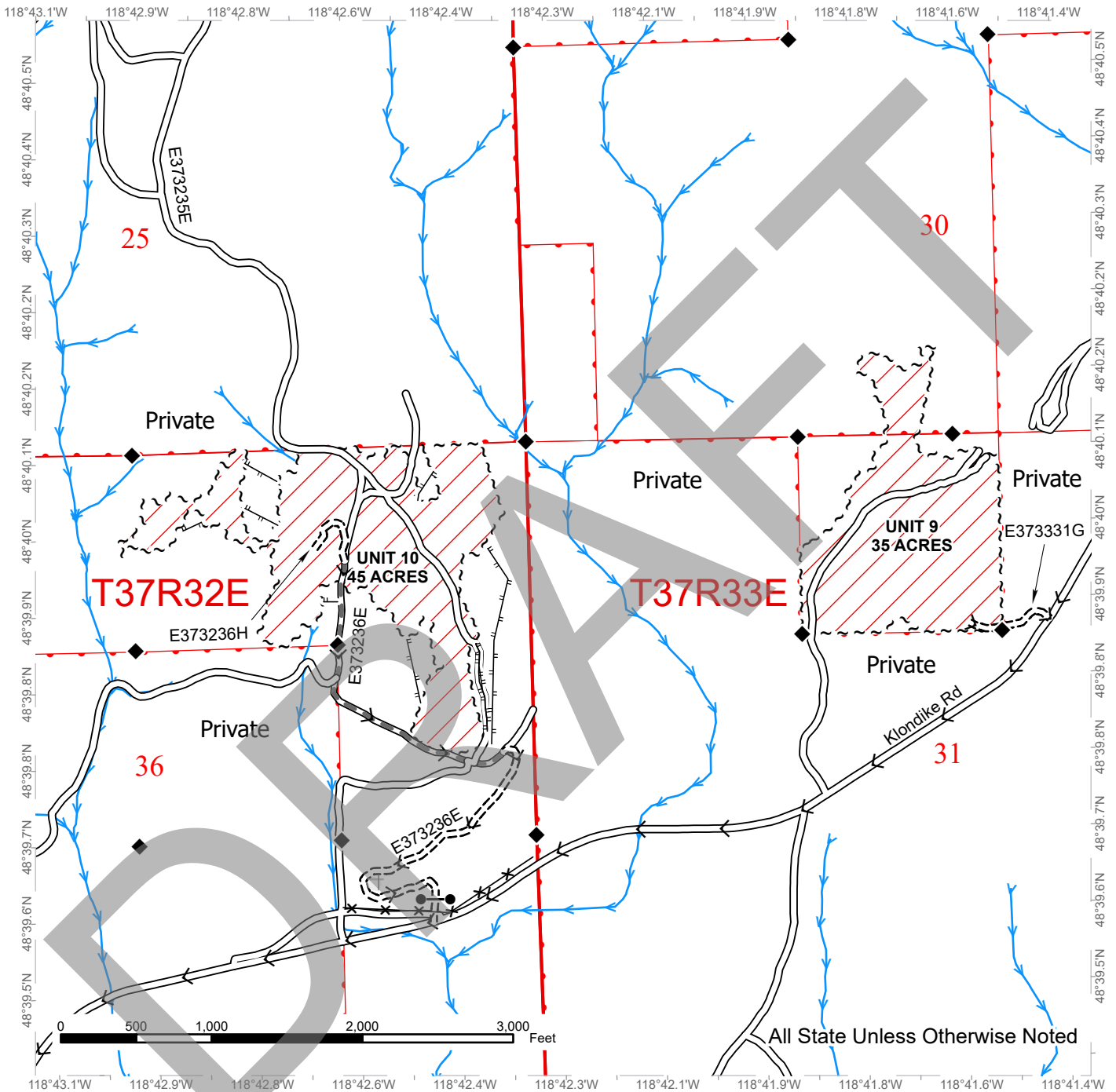
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All State Unless Otherwise Noted

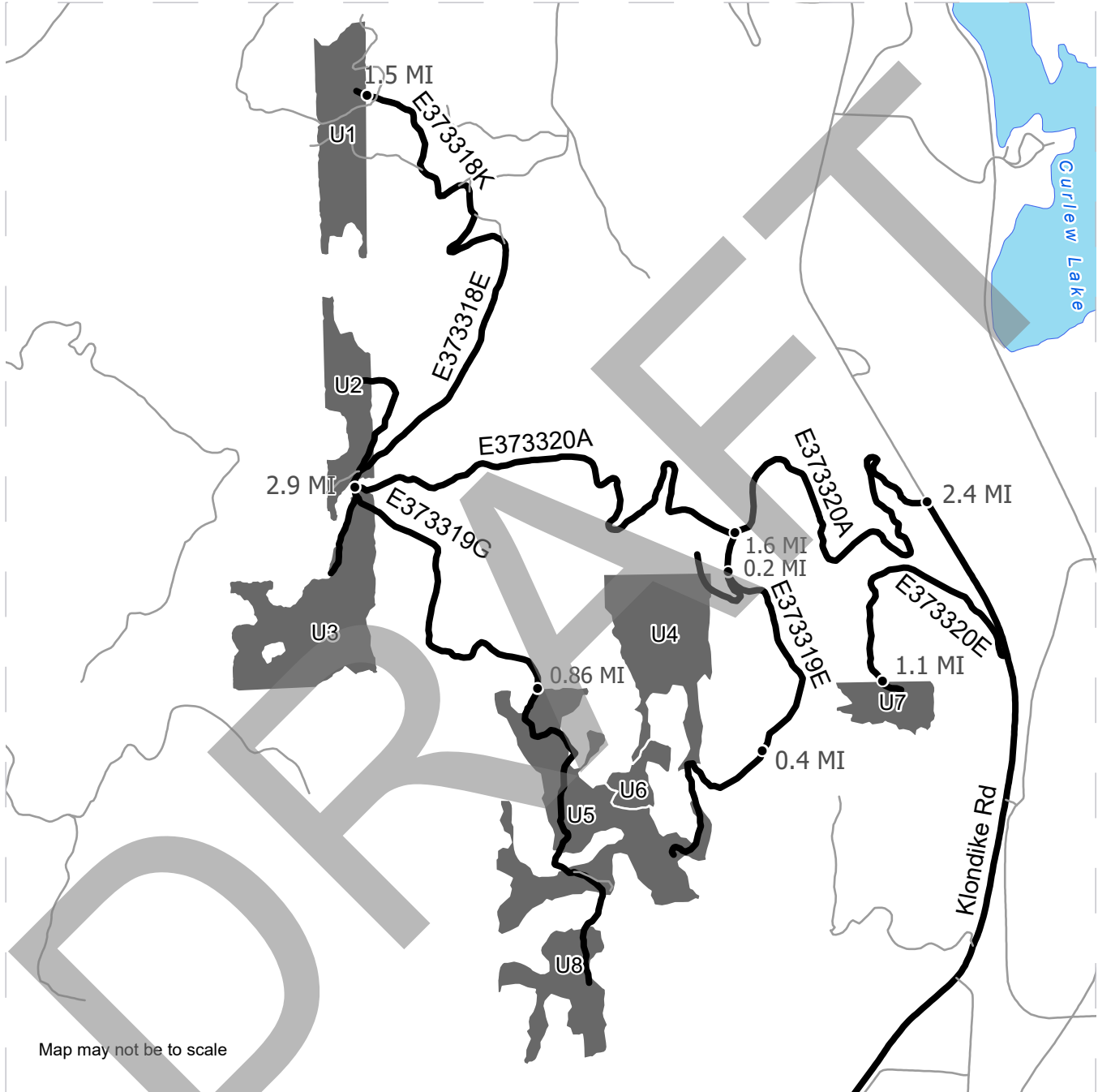
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# DRIVING MAP

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- Timber Sale Unit
- Haul Route
- Other Route
- Highway

**DRIVING DIRECTIONS:**

From the town of Republic travel 1.9 miles east on Klondike road to a turnout that is the hike in point for Unit 10. Travel another 0.9 miles on Klondike road to reach the hike in point for Unit 9. Travel another 2.4 miles and take a left onto E373320A for access to Units 1 through 8. To reach Units 2 and 3 stay on E373320A for 2.9 miles or continue for another 1.1 miles on the E373318E road to reach Unit 1.

To reach Units 4-8 from the intersection of Klondike road and E373320A travel 1.6 miles and take a left on E373319E. Travel 0.2 miles while staying right at the Y to reach Unit 4 or travel 0.4 miles while taking a left at the Y to reach the hike in point for Units 5, 6, 7, and 8.

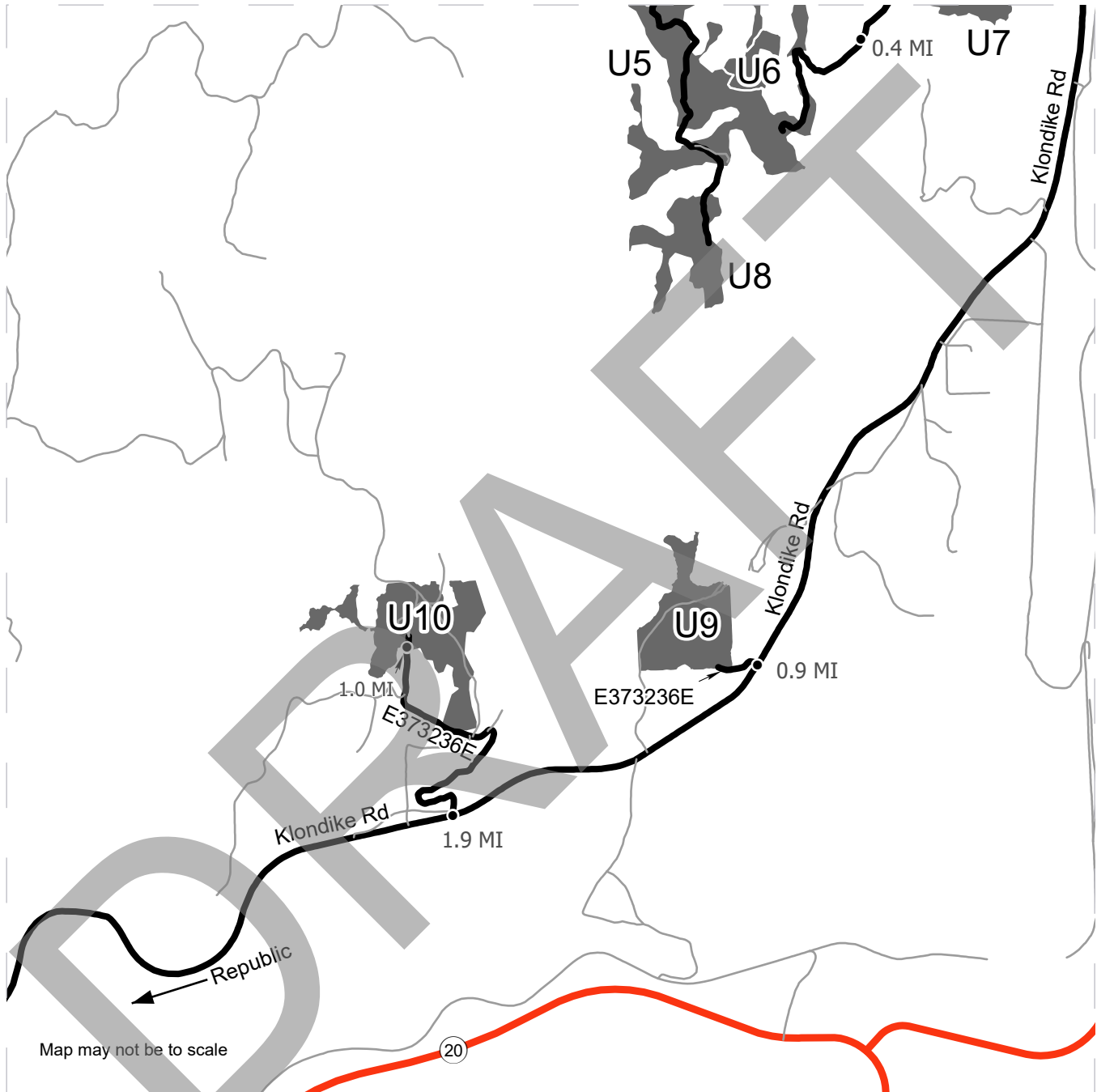




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Map may not be to scale

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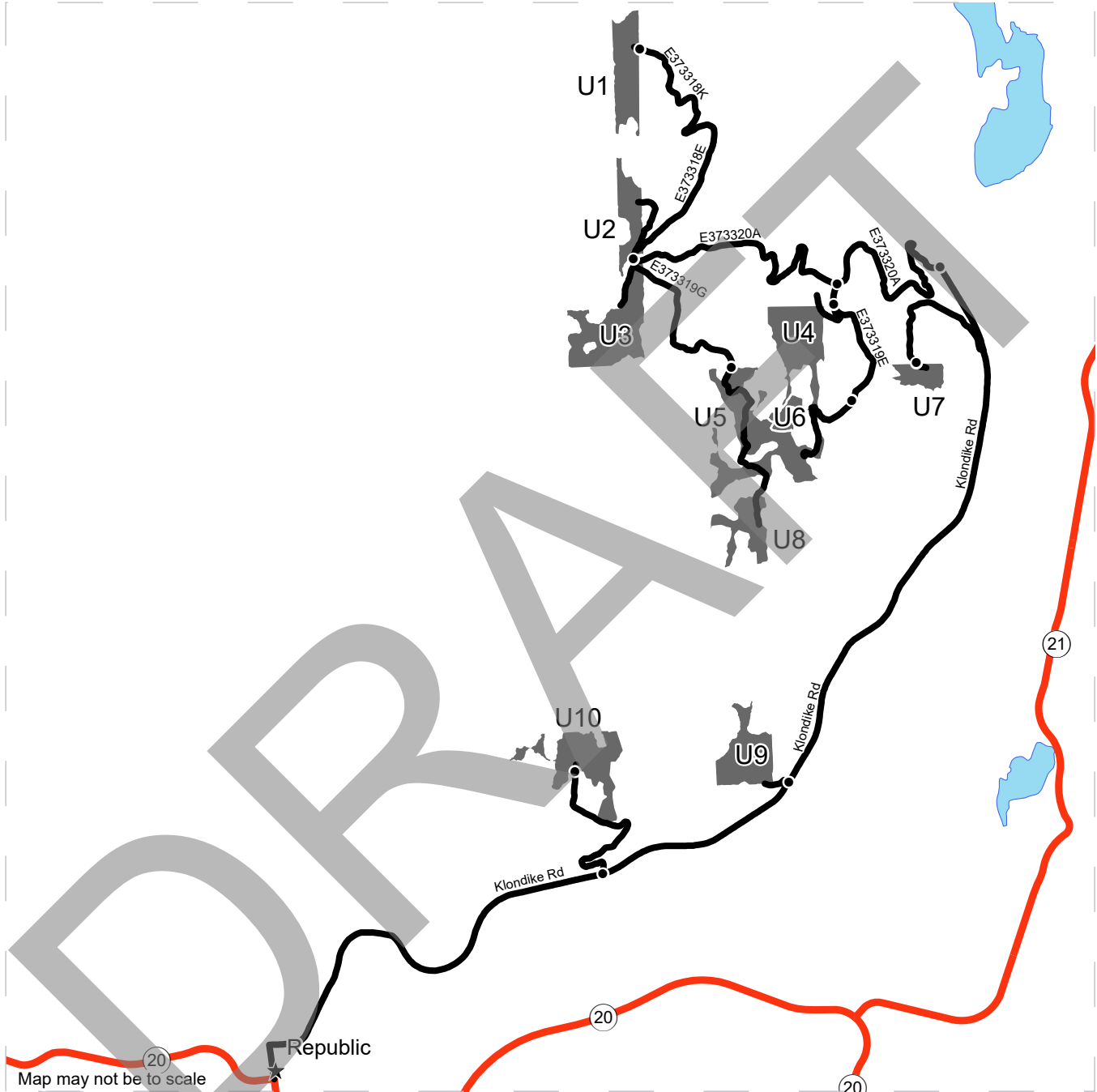
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## Timber Sale Cruise Report Klondike

**Sale Name:** Q KLONDIKE

**Sale Type:** LUMP SUM

**Region:** NORTHEAST

**District:** HIGHLANDS

**Lead Cruiser:** Jake Culp

**Other Cruisers:** Hailey Howard

**Cruise Narrative:**

**Location:**

Legal – Sections 24 and 36 of T37N R32E. Sections 18, 19, 20, 30, and 31 of T37N R33E.

General – Approx. 3.5 miles NE of Republic, WA in Ferry County.

Access – Units 1-8 accessed from Boulder Way via Klondike Rd. Unit 9 accessed directly from Klondike Rd. Unit 10 accessed from Cemetery Rd. via Klondike Rd.

**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 blue paint. Leave all ponderosa pine. Leave all trees within tagged and flagged "Leave Tree Areas".

**Cruise Acres determination:**

Net harvest unit acreages are used for cruise acreages.

**Stand composition:**

The stands are second growth, even aged Douglas fir with minor components of western larch and Engelmann spruce. Stocking levels throughout the sale are variable. Large residuals and Legacy trees can be found within the sale area.

**Timber quality:**

Timber to be harvested is comprised of domestic quality Douglas fir (89%), western larch (9%), and Engelmann spruce (2%) Most of the volume will come from 3 Saw DF.

**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. Some areas have heavy DF mortality. Mistletoe was observed in the DF and WL throughout the sale.

**Aspect:**

N, NE, E, SE, S

Elevation:  
2900'-3900'

Harvesting methods:  
100% ground based

Slope:  
Unit 1- Max 60%, Avg. 20%  
Unit 2- Max 40%, Avg. 15%  
Unit 3- Max 60%, Avg. 20%  
Unit 4- Max 50%, Avg. 20%  
Unit 5- Max 50%, Avg. 20%  
Unit 6- Max 50%, Avg. 10%  
Unit 7- Max 55%, Avg. 15%  
Unit 8- Max 40%, Avg. 15%  
Unit 9- Max 50%, Avg. 10%  
Unit 10- Max 35%, Avg. 10%

Other considerations/remarks:  
This sale has some areas with steep, 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 | 5 Saw |
| DF  | 14.4 |          |     | 3,324               | 882   | 1,973 | 469   |       |
| WL  | 15.6 |          |     | 349                 | 125   | 197   | 27    |       |
| ES  | 21.1 |          |     | 64                  | 56    | 8     |       |       |
| PP  | 16.1 |          |     | 1                   |       |       | 0     | 1     |
| ALL | 14.4 |          |     | 3,738               | 1,063 | 2,178 | 496   | 1     |

#### Timber Sale Notice Weight (tons)

| Sp  | Tons by Grade |       |        |       |       |
|-----|---------------|-------|--------|-------|-------|
|     | All           | 2 Saw | 3 Saw  | 4 Saw | 5 Saw |
| DF  | 23,254        | 5,473 | 14,412 | 3,368 |       |
| WL  | 2,049         | 647   | 1,229  | 173   |       |
| ES  | 312           | 265   | 47     |       |       |
| PP  | 8             |       |        | 1     | 6     |
| ALL | 25,623        | 6,385 | 15,689 | 3,542 | 6     |

**Timber Sale Overall Cruise Statistics**

| BA<br>(sq ft/acre) | BA SE<br>(%) | V-BAR<br>(bf/sq ft) | V-BAR SE<br>(%) | Net Vol<br>(bf/acre) | Vol SE<br>(%) |
|--------------------|--------------|---------------------|-----------------|----------------------|---------------|
| 85.0               | 4.0          | 123.8               | 2.1             | 10,880               | 4.7           |

**Timber Sale Unit Cruise Design**

| Unit            | Design   | Cruise<br>Acres | FMA<br>Acres | N<br>Plots | N Cruise<br>Plots | N Void<br>Plots |
|-----------------|--|-----------------|--------------|------------|-------------------|-----------------|
| KLONDIKE<br>U1  | B1C: VR, 1 BAF (33.61) Measure/<br>Count Plots, Sighting Ht = 4.5 ft | 33.9            | 34.2         | 18         | 6                 | 1               |
| KLONDIKE<br>U2  | B1C: VR, 1 BAF (25.15) Measure/<br>Count Plots, Sighting Ht = 4.5 ft | 22.7            | 22.8         | 22         | 8                 | 1               |
| KLONDIKE<br>U3  | B1C: VR, 1 BAF (33.61) Measure/<br>Count Plots, Sighting Ht = 4.5 ft | 50.4            | 53.2         | 34         | 11                | 3               |
| KLONDIKE<br>U4  | B1C: VR, 1 BAF (25.15) Measure/<br>Count Plots, Sighting Ht = 4.5 ft | 41.9            | 43.1         | 29         | 7                 | 3               |
| KLONDIKE<br>U5  | B1C: VR, 1 BAF (25.15) Measure/<br>Count Plots, Sighting Ht = 4.5 ft | 67.7            | 67.8         | 57         | 15                | 2               |
| KLONDIKE<br>U6  | B1: VR, 1 BAF (25.15) Measure All,<br>Sighting Ht = 4.5 ft           | 7.6             | 7.6          | 8          | 8                 | 1               |
| KLONDIKE<br>U7  | B1C: VR, 1 BAF (25.15) Measure/<br>Count Plots, Sighting Ht = 4.5 ft | 13.5            | 14.7         | 13         | 7                 | 1               |
| KLONDIKE<br>U8  | B1C: VR, 1 BAF (25.15) Measure/<br>Count Plots, Sighting Ht = 4.5 ft | 24.5            | 24.7         | 26         | 10                | 3               |
| KLONDIKE<br>U9  | B1C: VR, 1 BAF (25.15) Measure/<br>Count Plots, Sighting Ht = 4.5 ft | 34.9            | 36.0         | 36         | 10                | 8               |
| KLONDIKE<br>U10 | B1C: VR, 1 BAF (25.15) Measure/<br>Count Plots, Sighting Ht = 4.5 ft | 44.9            | 45.6         | 41         | 13                | 14              |
| KLONDIKE<br>ROW | B1: VR, 1 BAF (25.15) Measure All,<br>Sighting Ht = 4.5 ft           | 1.6             | 1.6          | 14         | 14                | 7               |
| All             |  | 343.6           | 351.1        | 298        | 109               | 44              |

**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 | 13.3 | 32  | 2,633    | 2,566  | 2.6      | 5,473.1  | 881.6   |
| DF | LIVE   | 3 SAW | Domestic | 7.9  | 32  | 5,842    | 5,744  | 1.7      | 14,412.4 | 1,973.4 |
| DF | LIVE   | 4 SAW | Domestic | 5.2  | 23  | 1,384    | 1,365  | 1.4      | 3,368.1  | 468.9   |
| ES | LIVE   | 2 SAW | Domestic | 13.0 | 32  | 164      | 164    | 0.0      | 264.9    | 56.3    |
| ES | LIVE   | 3 SAW | Domestic | 7.5  | 29  | 22       | 22     | 0.0      | 47.3     | 7.7     |
| PP | LIVE   | 4 SAW | Domestic | 13.7 | 32  | 1        | 1      | 0.0      | 1.4      | 0.3     |
| PP | LIVE   | 5 SAW | Domestic | 7.7  | 28  | 3        | 3      | 0.0      | 6.2      | 1.0     |

| Sp | Status | Grade | Sort     | Dia  | Len | BF Gross | BF Net | Defect % | Tons    | MBF Net |
|----|--------|-------|----------|------|-----|----------|--------|----------|---------|---------|
| WL | LIVE   | 2 SAW | Domestic | 13.5 | 32  | 365      | 365    | 0.0      | 647.1   | 125.4   |
| WL | LIVE   | 3 SAW | Domestic | 7.8  | 32  | 578      | 573    | 0.9      | 1,229.4 | 196.8   |
| WL | LIVE   | 4 SAW | Domestic | 5.4  | 23  | 78       | 78     | 0.0      | 173.0   | 26.6    |

### 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 | 6.1  | 27  | 4,292  | 0.5      | 10,911.8 | 1,474.7 |
| DF | 9 - 11  | LIVE   | Domestic | 9.7  | 32  | 2,728  | 1.3      | 6,535.5  | 937.2   |
| DF | 12 - 14 | LIVE   | Domestic | 12.9 | 32  | 1,934  | 3.4      | 4,312.2  | 664.6   |
| DF | 15 - 19 | LIVE   | Domestic | 15.9 | 32  | 683    | 8.2      | 1,431.2  | 234.6   |
| DF | 20+     | LIVE   | Domestic | 19.8 | 32  | 37     | 0.0      | 62.9     | 12.7    |
| ES | 5 - 8   | LIVE   | Domestic | 7.5  | 28  | 22     | 0.0      | 47.3     | 7.7     |
| ES | 12 - 14 | LIVE   | Domestic | 12.0 | 32  | 79     | 0.0      | 134.4    | 27.2    |
| ES | 15 - 19 | LIVE   | Domestic | 16.8 | 32  | 85     | 0.0      | 130.5    | 29.2    |
| PP | 5 - 8   | LIVE   | Domestic | 6.7  | 26  | 1      | 0.0      | 3.4      | 0.5     |
| PP | 9 - 11  | LIVE   | Domestic | 10.7 | 32  | 1      | 0.0      | 2.8      | 0.5     |
| PP | 12 - 14 | LIVE   | Domestic | 13.7 | 32  | 1      | 0.0      | 1.4      | 0.3     |
| WL | 5 - 8   | LIVE   | Domestic | 6.5  | 29  | 388    | 1.3      | 877.6    | 133.4   |
| WL | 9 - 11  | LIVE   | Domestic | 9.8  | 32  | 262    | 0.0      | 524.8    | 90.0    |
| WL | 12 - 14 | LIVE   | Domestic | 13.0 | 32  | 241    | 0.0      | 423.8    | 82.6    |
| WL | 15 - 19 | LIVE   | Domestic | 16.4 | 32  | 125    | 0.0      | 223.3    | 42.8    |

## Cruise Unit Report KLONDIKE U1

### Unit Sale Notice Volume (MBF): KLONDIKE U1

| Sp  | DBH  | Rings/In | Age | MBF Volume by Grade |       |       |       |
|-----|------|----------|-----|---------------------|-------|-------|-------|
|     |      |          |     | All                 | 2 Saw | 3 Saw | 4 Saw |
| DF  | 13.4 |          |     | 432                 | 104   | 272   | 57    |
| ES  | 22.5 |          |     | 47                  | 44    | 3     |       |
| WL  | 11.4 |          |     | 17                  |       | 12    | 5     |
| ALL | 13.5 |          |     | 496                 | 148   | 287   | 61    |

### Unit Cruise Design: KLONDIKE U1

| Design   | Cruise Acres | FMA Acres | N Plots | N Cruise Plots | N Void Plots |
|--|--------------|-----------|---------|----------------|--------------|
| B1C: VR, 1 BAF (33.61) Measure/Count Plots, Sighting Ht = 4.5 ft | 33.9         | 34.2      | 18      | 6              | 1            |

### Unit Cruise Summary: KLONDIKE U1

| Sp  | Cruised Trees | All Trees | Trees/Plot | Ring-Count Trees |
|-----|---------------|-----------|------------|------------------|
| DF  | 19            | 54        | 3.0        | 0                |
| ES  | 1             | 3         | 0.2        | 0                |
| WL  | 1             | 2         | 0.1        | 0                |
| ALL | 21            | 59        | 3.3        | 0                |

### Unit Cruise Statistics: KLONDIKE 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  | 100.8           | 54.8      | 12.9      | 126.4            | 28.3         | 6.5          | 12,748            | 61.7       | 14.5       |
| ES  | 5.6             | 424.3     | 100.0     | 246.6            | 0.0          | 0.0          | 1,381             | 424.3      | 100.0      |
| WL  | 3.7             | 291.0     | 68.6      | 134.0            | 0.0          | 0.0          | 501               | 291.0      | 68.6       |
| ALL | 110.2           | 46.6      | 11.0      | 132.8            | 32.3         | 7.1          | 14,630            | 56.7       | 13.0       |

### Unit Summary: KLONDIKE U1

| Sp | Status | Rx  | N  | D   | DBH  | BL | THT | BF Gross | BF Net | Defect % | TPA   | BA    | RD   | MBF Net |
|----|--------|-----|----|-----|------|----|-----|----------|--------|----------|-------|-------|------|---------|
| DF | LIVE   | CUT | 19 | ALL | 13.4 | 63 | 79  | 13,298   | 12,748 | 4.1      | 103.0 | 100.8 | 27.5 | 432.2   |
| ES | LIVE   | CUT | 1  | ALL | 22.5 | 89 | 114 | 1,381    | 1,381  | 0.0      | 2.0   | 5.6   | 1.2  | 46.8    |

| Sp  | Status | Rx  | N  | D   | DBH  | BL | THT | BF<br>Gross | BF<br>Net | Defect<br>% | TPA   | BA    | RD   | MBF<br>Net |
|-----|--------|-----|----|-----|------|----|-----|-------------|-----------|-------------|-------|-------|------|------------|
| WL  | LIVE   | CUT | 1  | ALL | 11.4 | 69 | 86  | 501         | 501       | 0.0         | 5.3   | 3.7   | 1.1  | 17.0       |
| ALL | LIVE   | CUT | 21 | ALL | 13.5 | 64 | 80  | 15,180      | 14,630    | 3.6         | 110.3 | 110.2 | 29.8 | 496.0      |
| ALL | ALL    | ALL | 21 | ALL | 13.5 | 64 | 80  | 15,180      | 14,630    | 3.6         | 110.3 | 110.2 | 29.8 | 496.0      |

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## Cruise Unit Report KLONDIKE U2

### Unit Sale Notice Volume (MBF): KLONDIKE U2

| Sp  | DBH  | Rings/In | Age | MBF Volume by Grade |       |       |       |
|-----|------|----------|-----|---------------------|-------|-------|-------|
|     |      |          |     | All                 | 2 Saw | 3 Saw | 4 Saw |
| DF  | 15.5 |          |     | 273                 | 123   | 122   | 27    |
| WL  | 14.2 |          |     | 8                   |       | 7     | 1     |
| ALL | 15.4 |          |     | 281                 | 123   | 129   | 28    |

### Unit Cruise Design: KLONDIKE 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 | 22.7         | 22.8      | 22      | 8              | 1            |

### Unit Cruise Summary: KLONDIKE U2

| Sp  | Cruised Trees | All Trees | Trees/Plot | Ring-Count Trees |
|-----|---------------|-----------|------------|------------------|
| DF  | 31            | 81        | 3.7        | 0                |
| WL  | 2             | 2         | 0.1        | 0                |
| ALL | 33            | 83        | 3.8        | 0                |

### Unit Cruise Statistics: KLONDIKE 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  | 92.6            | 55.8      | 11.9      | 129.9            | 25.0         | 4.5          | 12,032            | 61.2       | 12.7       |
| WL  | 2.3             | 323.7     | 69.0      | 146.7            | 1.1          | 0.8          | 335               | 323.7      | 69.0       |
| ALL | 94.9            | 53.6      | 11.4      | 130.3            | 24.3         | 4.2          | 12,367            | 58.9       | 12.2       |

### Unit Summary: KLONDIKE U2

| Sp  | Status | Rx  | N  | D   | DBH  | BL | THT | BF Gross | BF Net | Defect % | TPA  | BA   | RD   | MBF Net |
|-----|--------|-----|----|-----|------|----|-----|----------|--------|----------|------|------|------|---------|
| DF  | LIVE   | CUT | 31 | ALL | 15.5 | 64 | 80  | 12,324   | 12,032 | 2.4      | 70.7 | 92.6 | 23.5 | 273.1   |
| WL  | LIVE   | CUT | 2  | ALL | 14.2 | 71 | 89  | 335      | 335    | 0.0      | 2.1  | 2.3  | 0.6  | 7.6     |
| ALL | LIVE   | CUT | 33 | ALL | 15.5 | 64 | 80  | 12,659   | 12,367 | 2.3      | 72.8 | 94.9 | 24.1 | 280.7   |
| ALL | ALL    | ALL | 33 | ALL | 15.5 | 64 | 80  | 12,659   | 12,367 | 2.3      | 72.8 | 94.9 | 24.1 | 280.7   |

## Cruise Unit Report KLONDIKE U3

### Unit Sale Notice Volume (MBF): KLONDIKE U3

| Sp  | DBH  | Rings/In | Age | MBF Volume by Grade |       |       |       |
|-----|------|----------|-----|---------------------|-------|-------|-------|
|     |      |          |     | All                 | 2 Saw | 3 Saw | 4 Saw |
| DF  | 15.1 |          |     | 654                 | 212   | 380   | 62    |
| WL  | 17.5 |          |     | 128                 | 67    | 61    |       |
| ES  | 17.1 |          |     | 17                  | 12    | 5     |       |
| ALL | 15.3 |          |     | 799                 | 291   | 446   | 62    |

### Unit Cruise Design: KLONDIKE U3

| Design   | Cruise Acres | FMA Acres | N Plots | N Cruise Plots | N Void Plots |
|--|--------------|-----------|---------|----------------|--------------|
| B1C: VR, 1 BAF (33.61) Measure/Count Plots, Sighting Ht = 4.5 ft | 50.4         | 53.1      | 34      | 11             | 3            |

### Unit Cruise Summary: KLONDIKE U3

| Sp  | Cruised Trees | All Trees | Trees/Plot | Ring-Count Trees |
|-----|---------------|-----------|------------|------------------|
| DF  | 34            | 98        | 2.9        | 0                |
| WL  | 2             | 13        | 0.4        | 0                |
| ES  | 1             | 2         | 0.1        | 0                |
| ALL | 37            | 113       | 3.3        | 0                |

### Unit Cruise Statistics: KLONDIKE 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  | 96.9            | 65.5      | 11.2      | 133.9            | 29.2         | 5.0          | 12,971            | 71.7       | 12.3       |
| WL  | 12.9            | 213.7     | 36.6      | 197.3            | 29.2         | 20.7         | 2,535             | 215.7      | 42.1       |
| ES  | 2.0             | 583.1     | 100.0     | 172.4            | 0.0          | 0.0          | 341               | 583.1      | 100.0      |
| ALL | 111.7           | 57.2      | 9.8       | 141.9            | 29.4         | 4.8          | 15,847            | 64.3       | 10.9       |

### Unit Summary: KLONDIKE U3

| Sp | Status | Rx  | N  | D   | DBH  | BL | THT | BF Gross | BF Net | Defect % | TPA  | BA   | RD   | MBF Net |
|----|--------|-----|----|-----|------|----|-----|----------|--------|----------|------|------|------|---------|
| DF | LIVE   | CUT | 34 | ALL | 15.1 | 67 | 84  | 13,303   | 12,971 | 2.5      | 77.9 | 96.9 | 24.9 | 653.7   |
| ES | LIVE   | CUT | 1  | ALL | 17.1 | 76 | 96  | 341      | 341    | 0.0      | 1.2  | 2.0  | 0.5  | 17.2    |
| WL | LIVE   | CUT | 2  | ALL | 17.5 | 87 | 110 | 2,535    | 2,535  | 0.0      | 7.7  | 12.9 | 3.1  | 127.8   |

| Sp  | Status | Rx  | N  | D   | DBH  | BL | THT | BF Gross | BF Net | Defect % | TPA  | BA    | RD   | MBF Net |
|-----|--------|-----|----|-----|------|----|-----|----------|--------|----------|------|-------|------|---------|
| ALL | LIVE   | CUT | 37 | ALL | 15.4 | 69 | 87  | 16,179   | 15,847 | 2.1      | 86.8 | 111.7 | 28.5 | 798.7   |
| ALL | ALL    | ALL | 37 | ALL | 15.4 | 69 | 87  | 16,179   | 15,847 | 2.1      | 86.8 | 111.7 | 28.5 | 798.7   |

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## Cruise Unit Report KLONDIKE U4

### Unit Sale Notice Volume (MBF): KLONDIKE U4

| Sp  | DBH  | Rings/In | Age | MBF Volume by Grade |       |       |       |
|-----|------|----------|-----|---------------------|-------|-------|-------|
|     |      |          |     | All                 | 2 Saw | 3 Saw | 4 Saw |
| DF  | 13.6 |          |     | 624                 | 166   | 350   | 108   |
| WL  | 14.9 |          |     | 41                  | 17    | 19    | 5     |
| ALL | 13.8 |          |     | 665                 | 183   | 369   | 114   |

### Unit Cruise Design: KLONDIKE 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 | 41.9         | 43.1      | 29      | 7              | 3            |

### Unit Cruise Summary: KLONDIKE U4

| Sp  | Cruised Trees | All Trees | Trees/Plot | Ring-Count Trees |
|-----|---------------|-----------|------------|------------------|
| DF  | 19            | 131       | 4.5        | 0                |
| WL  | 2             | 8         | 0.3        | 0                |
| ALL | 21            | 139       | 4.8        | 0                |

### Unit Cruise Statistics: KLONDIKE 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  | 113.6           | 71.9      | 13.3      | 131.1            | 39.7         | 9.1          | 14,893            | 82.1       | 16.2       |
| WL  | 6.9             | 191.2     | 35.5      | 141.0            | 47.0         | 33.2         | 978               | 196.9      | 48.6       |
| ALL | 120.5           | 67.0      | 12.4      | 131.7            | 39.2         | 8.6          | 15,872            | 77.6       | 15.1       |

### Unit Summary: KLONDIKE U4

| Sp  | Status | Rx  | N  | D   | DBH  | BL | THT | BF Gross | BF Net | Defect % | TPA   | BA    | RD   | MBF Net |
|-----|--------|-----|----|-----|------|----|-----|----------|--------|----------|-------|-------|------|---------|
| DF  | LIVE   | CUT | 19 | ALL | 13.6 | 65 | 81  | 15,040   | 14,893 | 1.0      | 112.6 | 113.6 | 30.8 | 624.0   |
| WL  | LIVE   | CUT | 2  | ALL | 14.9 | 71 | 90  | 978      | 978    | 0.0      | 5.7   | 6.9   | 1.8  | 41.0    |
| ALL | LIVE   | CUT | 21 | ALL | 13.7 | 65 | 82  | 16,018   | 15,872 | 0.9      | 118.3 | 120.5 | 32.6 | 665.0   |
| ALL | ALL    | ALL | 21 | ALL | 13.7 | 65 | 82  | 16,018   | 15,872 | 0.9      | 118.3 | 120.5 | 32.6 | 665.0   |

## Cruise Unit Report KLONDIKE U5

### Unit Sale Notice Volume (MBF): KLONDIKE U5

| Sp  | DBH  | Rings/In | Age | MBF Volume by Grade |       |       |       |
|-----|------|----------|-----|---------------------|-------|-------|-------|
|     |      |          |     | All                 | 2 Saw | 3 Saw | 4 Saw |
| DF  | 15.3 |          |     | 546                 | 167   | 325   | 54    |
| WL  | 14.1 |          |     | 87                  | 19    | 59    | 9     |
| ALL | 15.0 |          |     | 633                 | 186   | 384   | 63    |

### Unit Cruise Design: KLONDIKE U5

| Design  | Cruise Acres | FMA Acres | N Plots | N Cruise Plots | N Void Plots |
|---|--------------|-----------|---------|----------------|--------------|
| B1C: VR, 1 BAF (25.15) Measure/Count Plots,<br>Sighting Ht = 4.5 ft | 67.7         | 67.8      | 57      | 15             | 2            |

### Unit Cruise Summary: KLONDIKE U5

| Sp  | Cruised Trees | All Trees | Trees/Plot | Ring-Count Trees |
|-----|---------------|-----------|------------|------------------|
| DF  | 27            | 152       | 2.7        | 0                |
| WL  | 7             | 23        | 0.4        | 0                |
| ALL | 34            | 175       | 3.1        | 0                |

### Unit Cruise Statistics: KLONDIKE U5

| Sp  | BA<br>(sq ft/acre) | BA CV<br>(%) | BA SE<br>(%) | V-BAR<br>(bf/sq ft) | V-BAR CV<br>(%) | V-BAR SE<br>(%) | Net Vol<br>(bf/acre) | Vol CV<br>(%) | Vol SE<br>(%) |
|-----|--------------------|--------------|--------------|---------------------|-----------------|-----------------|----------------------|---------------|---------------|
| DF  | 67.1               | 58.2         | 7.7          | 120.2               | 25.4            | 4.9             | 8,061                | 63.5          | 9.1           |
| WL  | 10.1               | 203.4        | 26.9         | 126.4               | 22.7            | 8.6             | 1,282                | 204.7         | 28.3          |
| ALL | 77.2               | 50.7         | 6.7          | 121.0               | 24.7            | 4.2             | 9,343                | 56.4          | 7.9           |

### Unit Summary: KLONDIKE U5

| Sp  | Status | Rx  | N  | D   | DBH  | BL | THT | BF Gross | BF Net | Defect % | TPA  | BA   | RD   | MBF Net |
|-----|--------|-----|----|-----|------|----|-----|----------|--------|----------|------|------|------|---------|
| DF  | LIVE   | CUT | 27 | ALL | 15.3 | 64 | 80  | 8,098    | 8,061  | 0.5      | 52.5 | 67.1 | 17.1 | 545.7   |
| WL  | LIVE   | CUT | 7  | ALL | 14.1 | 78 | 98  | 1,309    | 1,282  | 2.0      | 9.4  | 10.1 | 2.7  | 86.8    |
| ALL | LIVE   | CUT | 34 | ALL | 15.1 | 66 | 83  | 9,407    | 9,343  | 0.7      | 61.9 | 77.2 | 19.8 | 632.5   |
| ALL | ALL    | ALL | 34 | ALL | 15.1 | 66 | 83  | 9,407    | 9,343  | 0.7      | 61.9 | 77.2 | 19.8 | 632.5   |

## Cruise Unit Report KLONDIKE U6

### Unit Sale Notice Volume (MBF): KLONDIKE U6

| Sp  | DBH  | Rings/In | Age | MBF Volume by Grade |       |       |       |
|-----|------|----------|-----|---------------------|-------|-------|-------|
|     |      |          |     | All                 | 2 Saw | 3 Saw | 4 Saw |
| DF  | 14.1 |          |     | 48                  | 3     | 38    | 7     |
| WL  | 13.6 |          |     | 17                  |       | 15    | 2     |
| ALL | 13.9 |          |     | 65                  | 3     | 53    | 9     |

### Unit Cruise Design: KLONDIKE U6

| Design   | Cruise Acres | FMA Acres | N Plots | N Cruise Plots | N Void Plots |
|--|--------------|-----------|---------|----------------|--------------|
| B1: VR, 1 BAF (25.15) Measure All, Sighting<br>Ht = 4.5 ft | 7.6          | 7.6       | 8       | 8              | 1            |

### Unit Cruise Summary: KLONDIKE U6

| Sp  | Cruised Trees | All Trees | Trees/Plot | Ring-Count Trees |
|-----|---------------|-----------|------------|------------------|
| DF  | 16            | 16        | 2.0        | 0                |
| WL  | 6             | 6         | 0.8        | 0                |
| ALL | 22            | 22        | 2.8        | 0                |

### Unit Cruise Statistics: KLONDIKE U6

| Sp  | BA<br>(sq ft/acre) | BA CV<br>(%) | BA SE<br>(%) | V-BAR<br>(bf/sq ft) | V-BAR CV<br>(%) | V-BAR SE<br>(%) | Net Vol<br>(bf/acre) | Vol CV<br>(%) | Vol SE<br>(%) |
|-----|--------------------|--------------|--------------|---------------------|-----------------|-----------------|----------------------|---------------|---------------|
| DF  | 50.3               | 53.5         | 18.9         | 126.3               | 15.5            | 3.9             | 6,352                | 55.7          | 19.3          |
| WL  | 18.9               | 138.0        | 48.8         | 115.4               | 26.5            | 10.8            | 2,177                | 140.5         | 50.0          |
| ALL | 69.2               | 60.7         | 21.5         | 123.3               | 18.5            | 3.9             | 8,529                | 63.4          | 21.8          |

### Unit Summary: KLONDIKE U6

| Sp  | Status | Rx  | N  | D   | DBH  | BL | THT | BF Gross | BF Net | Defect % | TPA  | BA   | RD   | MBF Net |
|-----|--------|-----|----|-----|------|----|-----|----------|--------|----------|------|------|------|---------|
| DF  | LIVE   | CUT | 16 | ALL | 14.1 | 74 | 93  | 6,420    | 6,352  | 1.1      | 46.4 | 50.3 | 13.4 | 48.3    |
| WL  | LIVE   | CUT | 6  | ALL | 13.6 | 72 | 90  | 2,177    | 2,177  | 0.0      | 18.7 | 18.9 | 5.1  | 16.5    |
| ALL | LIVE   | CUT | 22 | ALL | 14.0 | 73 | 92  | 8,598    | 8,529  | 0.8      | 65.1 | 69.2 | 18.5 | 64.8    |
| ALL | ALL    | ALL | 22 | ALL | 14.0 | 73 | 92  | 8,598    | 8,529  | 0.8      | 65.1 | 69.2 | 18.5 | 64.8    |

## Cruise Unit Report KLONDIKE U7

### Unit Sale Notice Volume (MBF): KLONDIKE U7

| Sp  | DBH  | Rings/In | Age | MBF Volume by Grade |       |       |       |
|-----|------|----------|-----|---------------------|-------|-------|-------|
|     |      |          |     | All                 | 2 Saw | 3 Saw | 4 Saw |
| DF  | 14.7 |          |     | 133                 | 36    | 85    | 12    |
| WL  | 14.3 |          |     | 9                   | 5     | 3     | 1     |
| ALL | 14.6 |          |     | 142                 | 41    | 88    | 13    |

### Unit Cruise Design: KLONDIKE U7

| Design  | Cruise Acres | FMA Acres | N Plots | N Cruise Plots | N Void Plots |
|---|--------------|-----------|---------|----------------|--------------|
| B1C: VR, 1 BAF (25.15) Measure/Count Plots,<br>Sighting Ht = 4.5 ft | 13.5         | 14.7      | 13      | 7              | 1            |

### Unit Cruise Summary: KLONDIKE U7

| Sp  | Cruised Trees | All Trees | Trees/Plot | Ring-Count Trees |
|-----|---------------|-----------|------------|------------------|
| DF  | 22            | 42        | 3.2        | 0                |
| WL  | 2             | 2         | 0.2        | 0                |
| ALL | 24            | 44        | 3.4        | 0                |

### Unit Cruise Statistics: KLONDIKE U7

| Sp  | BA<br>(sq ft/acre) | BA CV<br>(%) | BA SE<br>(%) | V-BAR<br>(bf/sq ft) | V-BAR CV<br>(%) | V-BAR SE<br>(%) | Net Vol<br>(bf/acre) | Vol CV<br>(%) | Vol SE<br>(%) |
|-----|--------------------|--------------|--------------|---------------------|-----------------|-----------------|----------------------|---------------|---------------|
| DF  | 81.3               | 60.8         | 16.9         | 121.5               | 35.1            | 7.5             | 9,874                | 70.2          | 18.5          |
| WL  | 3.9                | 244.1        | 67.7         | 166.7               | 37.9            | 26.8            | 645                  | 247.0         | 72.8          |
| ALL | 85.1               | 58.5         | 16.2         | 123.6               | 36.2            | 7.4             | 10,519               | 68.8          | 17.8          |

### Unit Summary: KLONDIKE U7

| Sp  | Status | Rx  | N  | D   | DBH  | BL | THT | BF Gross | BF Net | Defect % | TPA  | BA   | RD   | MBF Net |
|-----|--------|-----|----|-----|------|----|-----|----------|--------|----------|------|------|------|---------|
| DF  | LIVE   | CUT | 22 | ALL | 14.7 | 64 | 80  | 10,002   | 9,874  | 1.3      | 68.9 | 81.3 | 21.2 | 133.3   |
| WL  | LIVE   | CUT | 2  | ALL | 14.3 | 75 | 95  | 645      | 645    | 0.0      | 3.5  | 3.9  | 1.0  | 8.7     |
| ALL | LIVE   | CUT | 24 | ALL | 14.7 | 65 | 81  | 10,647   | 10,519 | 1.2      | 72.4 | 85.1 | 22.2 | 142.0   |
| ALL | ALL    | ALL | 24 | ALL | 14.7 | 65 | 81  | 10,647   | 10,519 | 1.2      | 72.4 | 85.1 | 22.2 | 142.0   |

## Cruise Unit Report KLONDIKE U8

### Unit Sale Notice Volume (MBF): KLONDIKE U8

| Sp  | DBH  | Rings/In | Age | MBF Volume by Grade |       |       |       |
|-----|------|----------|-----|---------------------|-------|-------|-------|
|     |      |          |     | All                 | 2 Saw | 3 Saw | 4 Saw |
| DF  | 14.7 |          |     | 250                 | 41    | 162   | 47    |
| WL  | 16.3 |          |     | 43                  | 17    | 22    | 4     |
| ALL | 14.9 |          |     | 293                 | 58    | 184   | 50    |

### Unit Cruise Design: KLONDIKE U8

| 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 | 24.5         | 24.7      | 26      | 10             | 3            |

### Unit Cruise Summary: KLONDIKE U8

| Sp  | Cruised Trees | All Trees | Trees/Plot | Ring-Count Trees |
|-----|---------------|-----------|------------|------------------|
| DF  | 22            | 86        | 3.3        | 0                |
| WL  | 3             | 9         | 0.3        | 0                |
| ALL | 25            | 95        | 3.7        | 0                |

### Unit Cruise Statistics: KLONDIKE 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  | 83.2            | 68.8      | 13.5      | 122.4            | 33.7         | 7.2          | 10,184            | 76.6       | 15.3       |
| WL  | 8.7             | 230.3     | 45.2      | 203.6            | 5.5          | 3.2          | 1,772             | 230.3      | 45.3       |
| ALL | 91.9            | 65.2      | 12.8      | 130.1            | 36.2         | 7.2          | 11,957            | 74.6       | 14.7       |

### Unit Summary: KLONDIKE U8

| Sp  | Status | Rx  | N  | D   | DBH  | BL | THT | BF Gross | BF Net | Defect % | TPA  | BA   | RD   | MBF Net |
|-----|--------|-----|----|-----|------|----|-----|----------|--------|----------|------|------|------|---------|
| DF  | LIVE   | CUT | 22 | ALL | 14.7 | 62 | 77  | 10,547   | 10,184 | 3.4      | 70.6 | 83.2 | 21.7 | 249.5   |
| WL  | LIVE   | CUT | 3  | ALL | 16.3 | 89 | 113 | 1,772    | 1,772  | 0.0      | 6.0  | 8.7  | 2.2  | 43.4    |
| ALL | LIVE   | CUT | 25 | ALL | 14.8 | 64 | 80  | 12,320   | 11,957 | 2.9      | 76.6 | 91.9 | 23.9 | 292.9   |
| ALL | ALL    | ALL | 25 | ALL | 14.8 | 64 | 80  | 12,320   | 11,957 | 2.9      | 76.6 | 91.9 | 23.9 | 292.9   |



## Cruise Unit Report KLONDIKE U9

### Unit Sale Notice Volume (MBF): KLONDIKE U9

| Sp  | DBH  | Rings/In | Age | MBF Volume by Grade |       |       |       |
|-----|------|----------|-----|---------------------|-------|-------|-------|
|     |      |          |     | All                 | 2 Saw | 3 Saw | 4 Saw |
| DF  | 12.9 |          |     | 204                 | 23    | 130   | 51    |
| ALL | 12.9 |          |     | 204                 | 23    | 130   | 51    |

### Unit Cruise Design: KLONDIKE U9

| 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 | 34.9         | 36.0      | 36      | 10             | 8            |

### Unit Cruise Summary: KLONDIKE U9

| Sp  | Cruised Trees | All Trees | Trees/Plot | Ring-Count Trees |
|-----|---------------|-----------|------------|------------------|
| DF  | 16            | 76        | 2.1        | 0                |
| ALL | 16            | 76        | 2.1        | 0                |

### Unit Cruise Statistics: KLONDIKE 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  | 53.1            | 101.8     | 17.0      | 109.9            | 29.9         | 7.5          | 5,836             | 106.1      | 18.5       |
| ALL | 53.1            | 101.8     | 17.0      | 109.9            | 29.9         | 7.5          | 5,836             | 106.1      | 18.5       |

### Unit Summary: KLONDIKE U9

| 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 | 57 | 70  | 5,867    | 5,836  | 0.5      | 58.5 | 53.1 | 14.8 | 203.7   |
| ALL | LIVE   | CUT | 16 | ALL | 12.9 | 57 | 70  | 5,867    | 5,836  | 0.5      | 58.5 | 53.1 | 14.8 | 203.7   |
| ALL | ALL    | ALL | 16 | ALL | 12.9 | 57 | 70  | 5,867    | 5,836  | 0.5      | 58.5 | 53.1 | 14.8 | 203.7   |

## Cruise Unit Report KLONDIKE U10

### Unit Sale Notice Volume (MBF): KLONDIKE U10

| Sp  | DBH  | Rings/In | Age | MBF Volume by Grade |       |       |       |
|-----|------|----------|-----|---------------------|-------|-------|-------|
|     |      |          |     | All                 | 2 Saw | 3 Saw | 4 Saw |
| DF  | 13.2 |          |     | 158                 | 7     | 107   | 43    |
| ALL | 13.2 |          |     | 158                 | 7     | 107   | 43    |

### Unit Cruise Design: KLONDIKE U10

| 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 | 44.9         | 45.6      | 41      | 13             | 14           |

### Unit Cruise Summary: KLONDIKE U10

| Sp  | Cruised Trees | All Trees | Trees/Plot | Ring-Count Trees |
|-----|---------------|-----------|------------|------------------|
| DF  | 19            | 58        | 1.4        | 0                |
| ALL | 19            | 58        | 1.4        | 0                |

### Unit Cruise Statistics: KLONDIKE U10

| 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  | 35.6            | 99.9      | 15.6      | 98.6             | 24.3         | 5.6          | 3,510             | 102.9      | 16.6       |
| ALL | 35.6            | 99.9      | 15.6      | 98.6             | 24.3         | 5.6          | 3,510             | 102.9      | 16.6       |

### Unit Summary: KLONDIKE U10

| Sp  | Status | Rx  | N  | D   | DBH  | BL | THT | BF Gross | BF Net | Defect % | TPA  | BA   | RD  | MBF Net |
|-----|--------|-----|----|-----|------|----|-----|----------|--------|----------|------|------|-----|---------|
| DF  | LIVE   | CUT | 19 | ALL | 13.2 | 57 | 70  | 3,524    | 3,510  | 0.4      | 37.4 | 35.6 | 9.8 | 157.6   |
| ALL | LIVE   | CUT | 19 | ALL | 13.2 | 57 | 70  | 3,524    | 3,510  | 0.4      | 37.4 | 35.6 | 9.8 | 157.6   |
| ALL | ALL    | ALL | 19 | ALL | 13.2 | 57 | 70  | 3,524    | 3,510  | 0.4      | 37.4 | 35.6 | 9.8 | 157.6   |

## Cruise Unit Report KLONDIKE ROW

### Unit Sale Notice Volume (MBF): KLONDIKE ROW

| Sp  | DBH  | Rings/In | Age | MBF Volume by Grade |       |       |       |       |
|-----|------|----------|-----|---------------------|-------|-------|-------|-------|
|     |      |          |     | All                 | 2 Saw | 3 Saw | 4 Saw | 5 Saw |
| DF  | 14.6 |          |     | 3                   | 0     | 2     | 1     |       |
| PP  | 16.1 |          |     | 1                   |       |       | 0     | 1     |
| ALL | 15.1 |          |     | 4                   | 0     | 2     | 1     | 1     |

### Unit Cruise Design: KLONDIKE ROW

| Design   | Cruise Acres | FMA Acres | N Plots | N Cruise Plots | N Void Plots |
|--|--------------|-----------|---------|----------------|--------------|
| B1: VR, 1 BAF (25.15) Measure All, Sighting<br>Ht = 4.5 ft | 1.6          | 1.6       | 14      | 14             | 7            |

### Unit Cruise Summary: KLONDIKE ROW

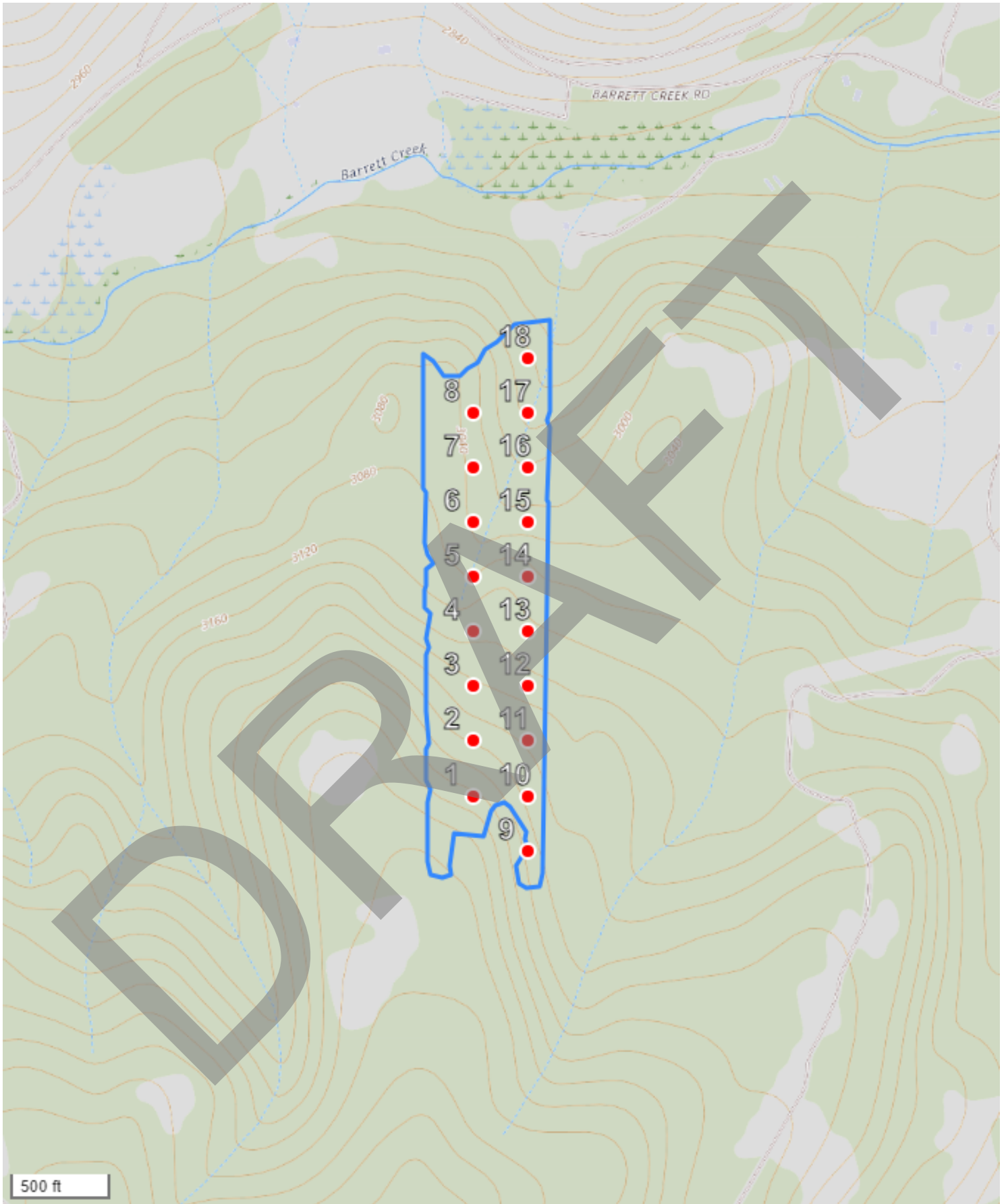
| Sp  | Cruised Trees | All Trees | Trees/Plot | Ring-Count Trees |
|-----|---------------|-----------|------------|------------------|
| DF  | 8             | 8         | 0.6        | 0                |
| PP  | 5             | 5         | 0.4        | 0                |
| ALL | 13            | 13        | 0.9        | 0                |

### Unit Cruise Statistics: KLONDIKE ROW

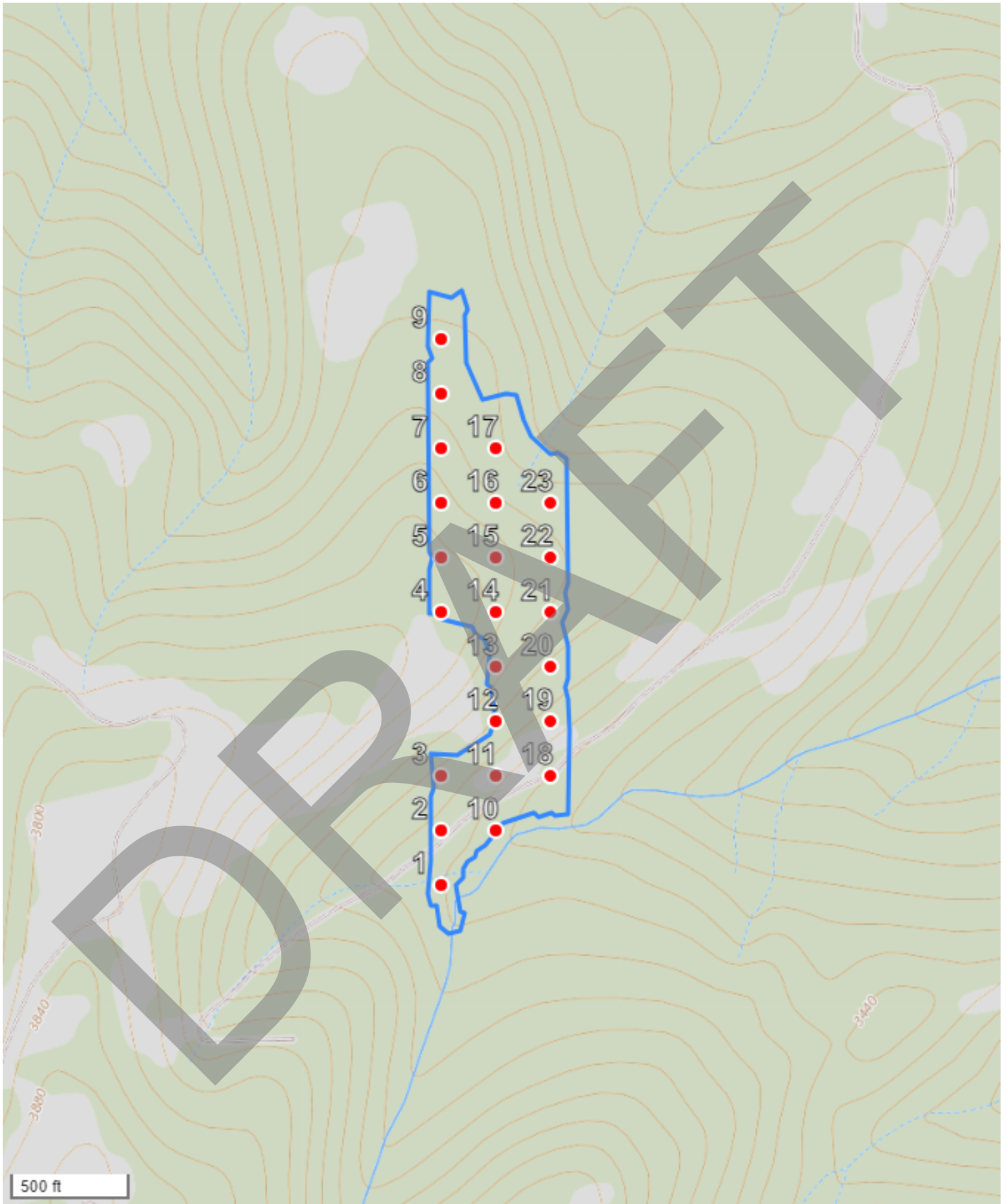
| Sp  | BA<br>(sq ft/acre) | BA CV<br>(%) | BA SE<br>(%) | V-BAR<br>(bf/sq ft) | V-BAR CV<br>(%) | V-BAR SE<br>(%) | Net Vol<br>(bf/acre) | Vol CV<br>(%) | Vol SE<br>(%) |
|-----|--------------------|--------------|--------------|---------------------|-----------------|-----------------|----------------------|---------------|---------------|
| DF  | 14.4               | 164.1        | 43.9         | 120.7               | 33.8            | 11.9            | 1,735                | 167.5         | 45.5          |
| PP  | 9.0                | 177.3        | 47.4         | 92.1                | 53.8            | 24.1            | 827                  | 185.3         | 53.2          |
| ALL | 23.4               | 136.6        | 36.5         | 109.7               | 40.7            | 11.3            | 2,562                | 142.6         | 38.2          |

### Unit Summary: KLONDIKE ROW

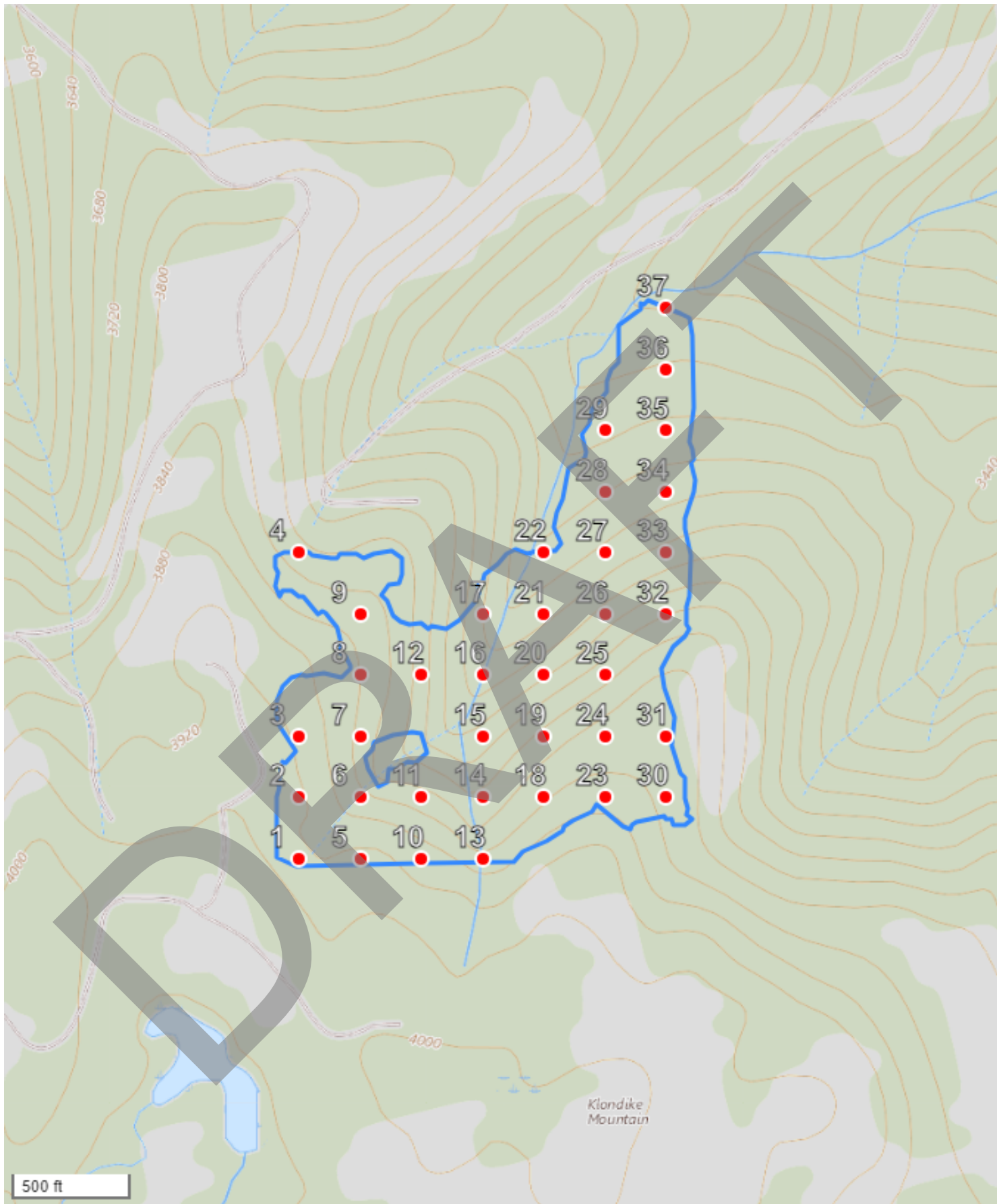
| Sp  | Status | Rx  | N  | D   | DBH  | BL | THT | BF Gross | BF Net | Defect % | TPA  | BA   | RD  | MBF Net |
|-----|--------|-----|----|-----|------|----|-----|----------|--------|----------|------|------|-----|---------|
| DF  | LIVE   | CUT | 8  | ALL | 14.6 | 58 | 72  | 1,735    | 1,735  | 0.0      | 12.4 | 14.4 | 3.8 | 2.7     |
| PP  | LIVE   | CUT | 5  | ALL | 16.1 | 51 | 66  | 827      | 827    | 0.0      | 6.4  | 9.0  | 2.2 | 1.3     |
| ALL | LIVE   | CUT | 13 | ALL | 15.1 | 56 | 70  | 2,562    | 2,562  | 0.0      | 18.8 | 23.4 | 6.0 | 4.0     |
| ALL | ALL    | ALL | 13 | ALL | 15.1 | 56 | 70  | 2,562    | 2,562  | 0.0      | 18.8 | 23.4 | 6.0 | 4.0     |



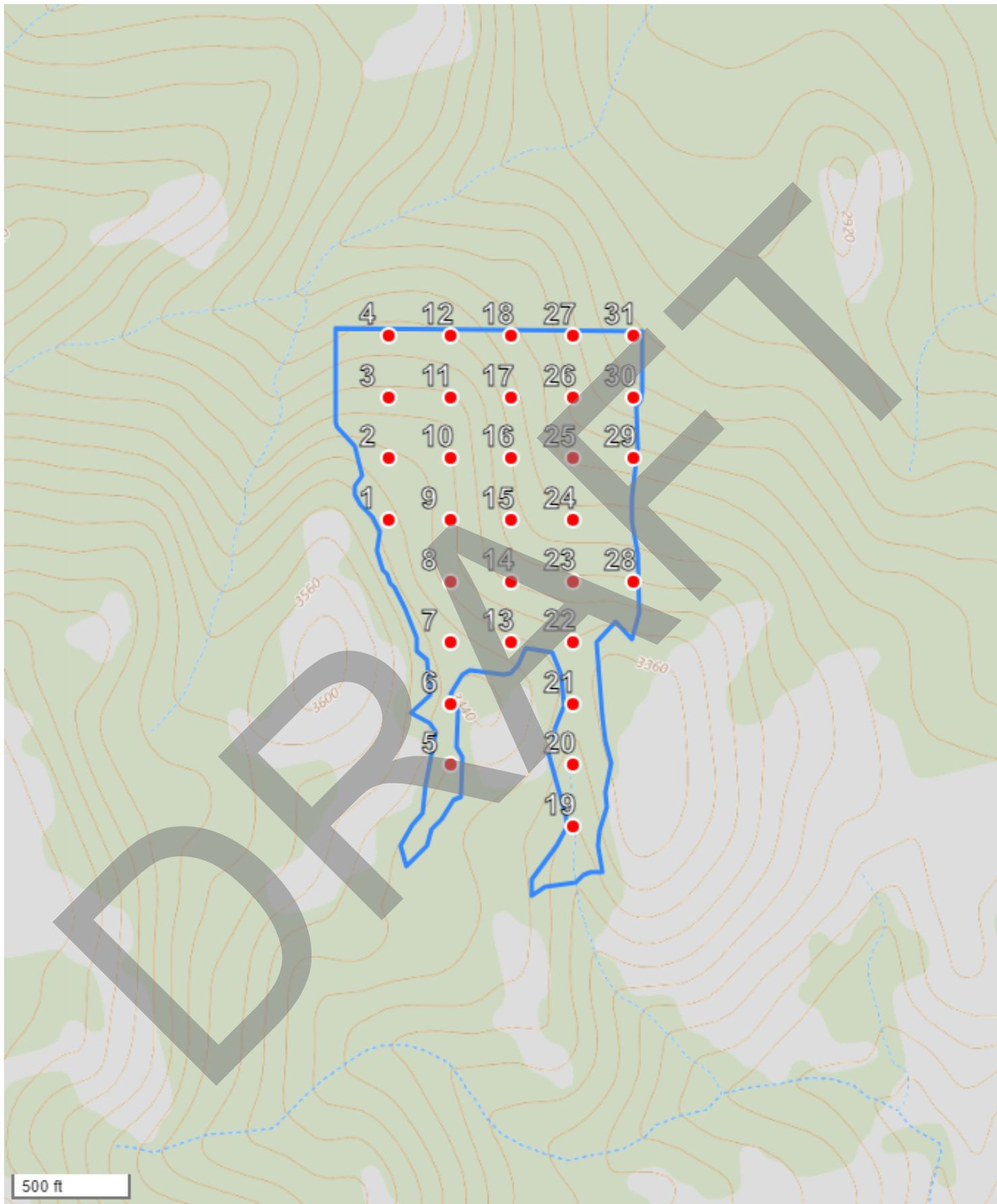
|                            |                     |                        |
|----------------------------|---------------------|------------------------|
| FMA Name: KLONDIKE U1      | N Plots: 18         | Plot Spacing: 271.1 ft |
| Grid Name: KLONDIKE U1 - 1 | Acres Treated: 33.9 | Main Azimuth: 0 deg    |



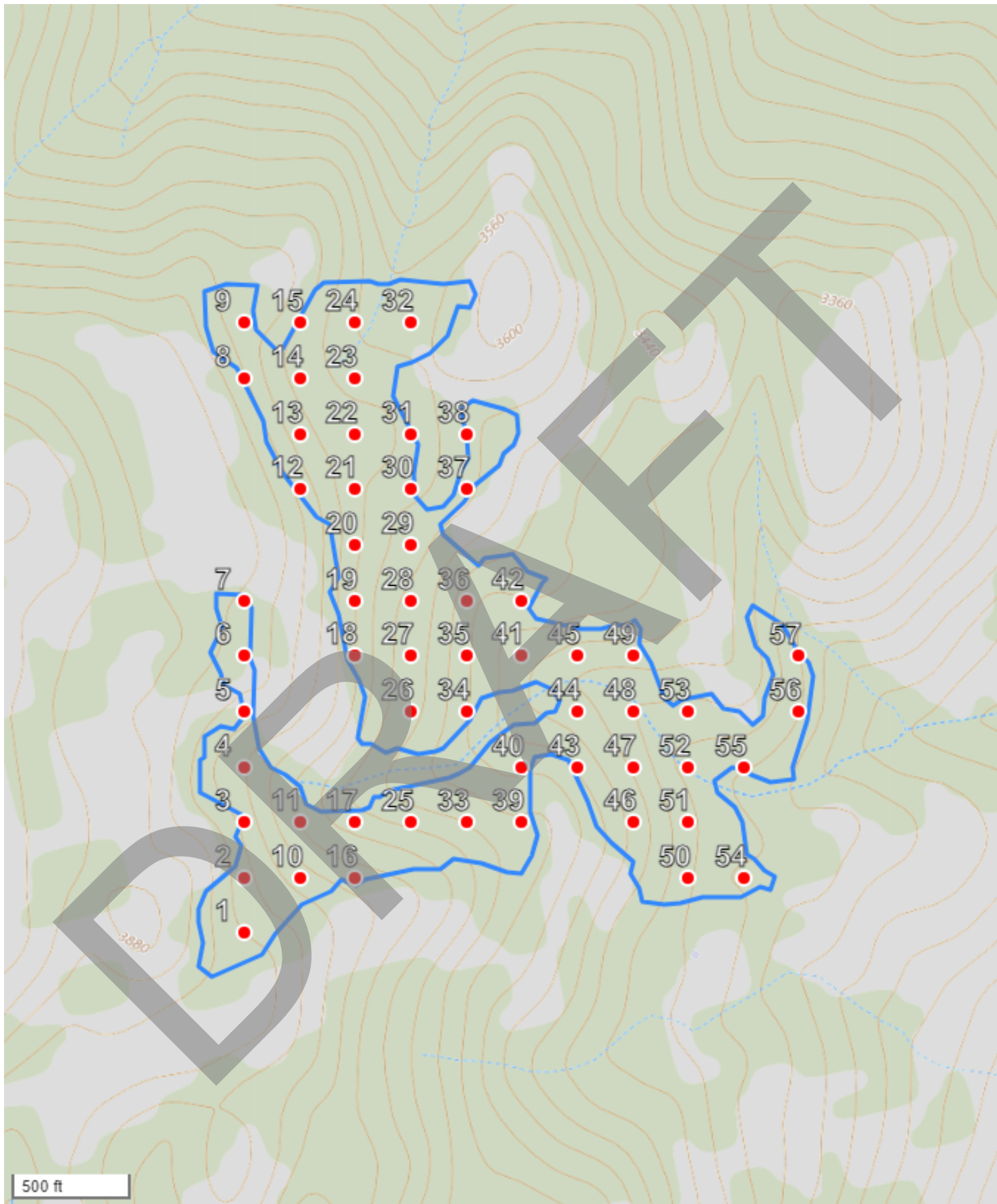
|                            |                     |                        |
|----------------------------|---------------------|------------------------|
| FMA Name: KLONDIKE U2      | N Plots: 23         | Plot Spacing: 227.7 ft |
| Grid Name: KLONDIKE U2 - 1 | Acres Treated: 22.7 | Main Azimuth: 0 deg    |



|                            |                     |                        |
|----------------------------|---------------------|------------------------|
| FMA Name: KLONDIKE U3      | N Plots: 37         | Plot Spacing: 254.8 ft |
| Grid Name: KLONDIKE U3 - 1 | Acres Treated: 50.4 | Main Azimuth: 0 deg    |

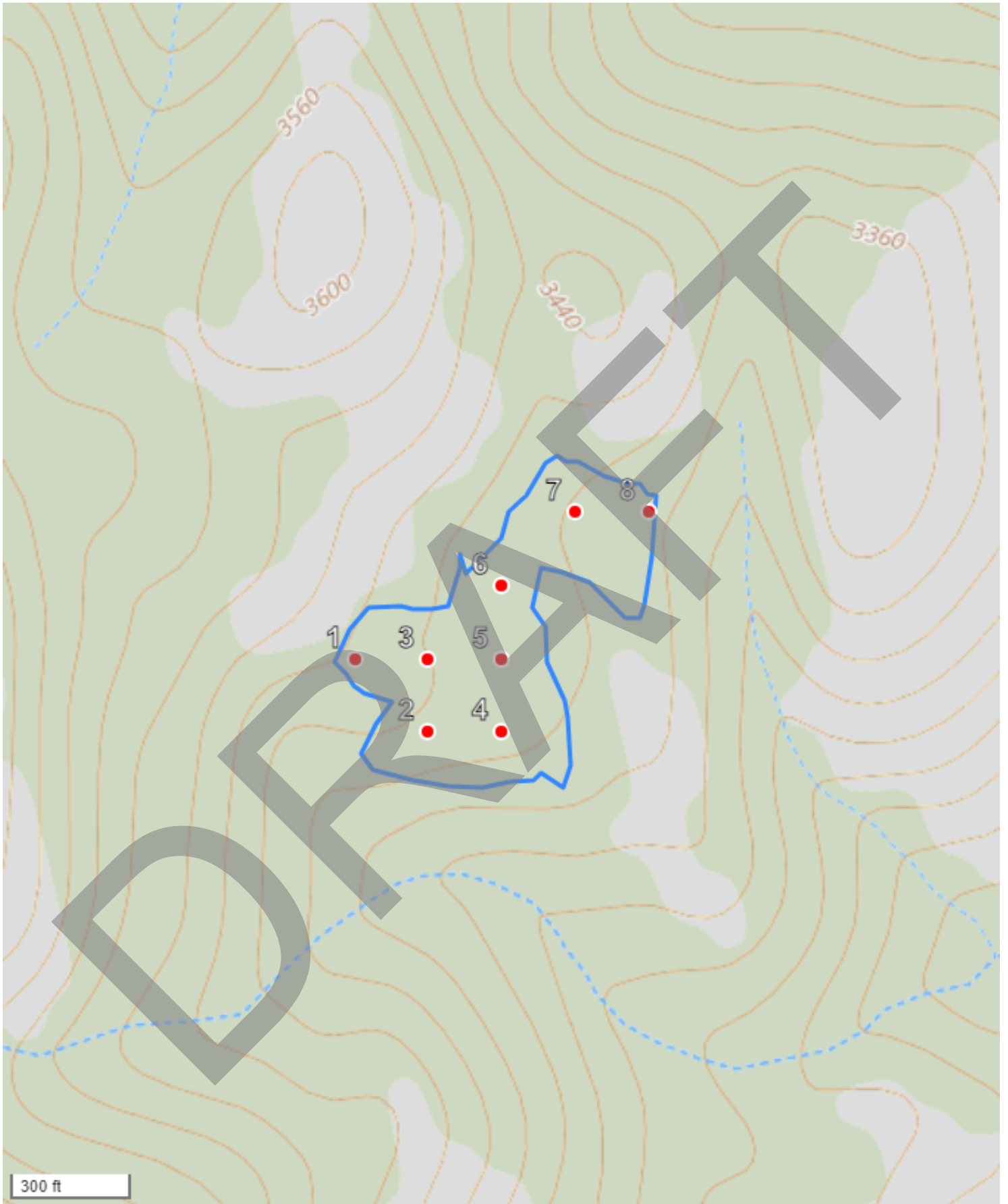


|                            |                     |                        |
|----------------------------|---------------------|------------------------|
| FMA Name: KLONDIKE U4      | N Plots: 31         | Plot Spacing: 255.2 ft |
| Grid Name: KLONDIKE U4 - 1 | Acres Treated: 41.9 | Main Azimuth: 0 deg    |

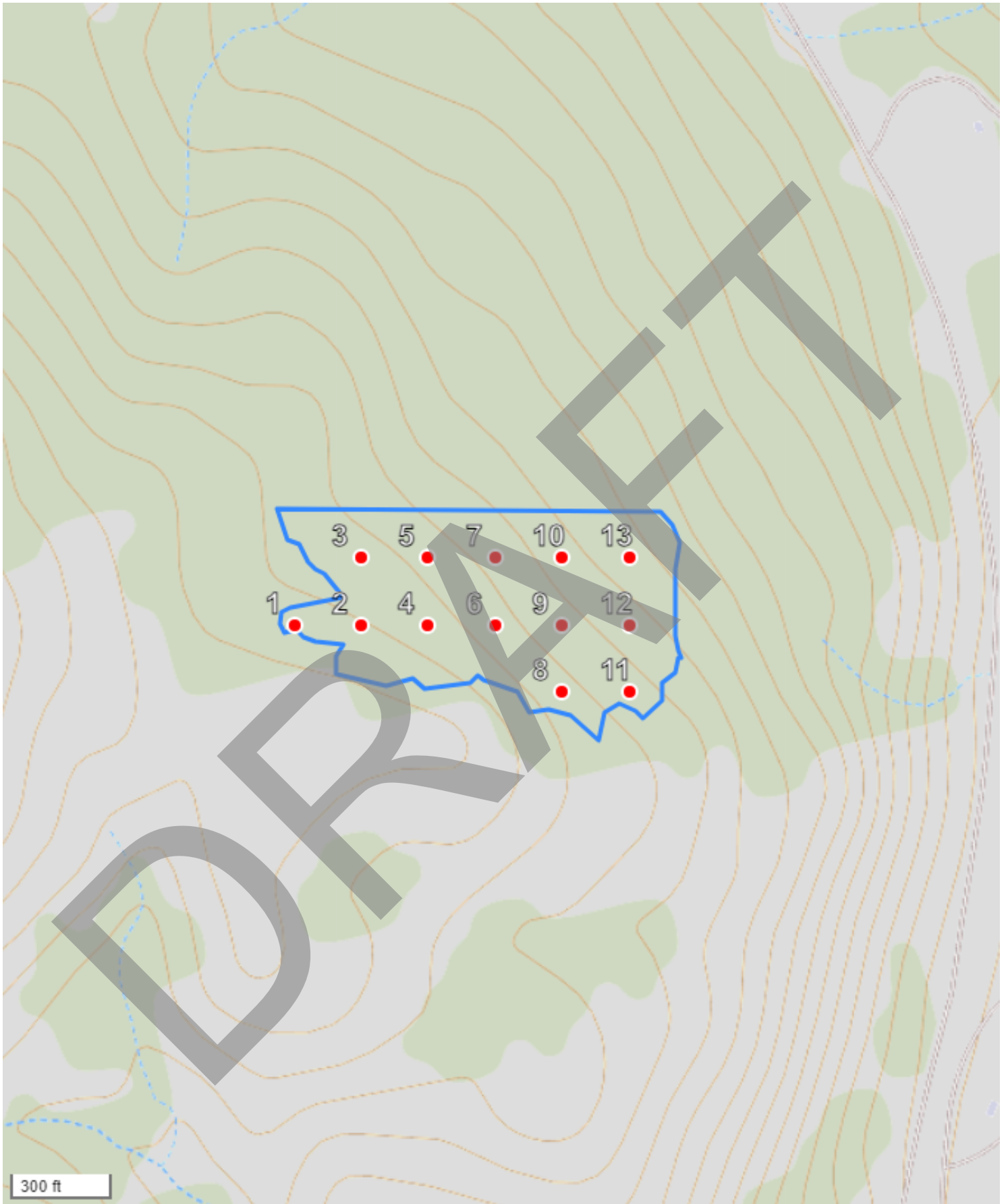


|                            |                     |                        |
|----------------------------|---------------------|------------------------|
| FMA Name: KLONDIKE U5      | N Plots: 57         | Plot Spacing: 231.2 ft |
| Grid Name: KLONDIKE U5 - 1 | Acres Treated: 67.7 | Main Azimuth: 0 deg    |

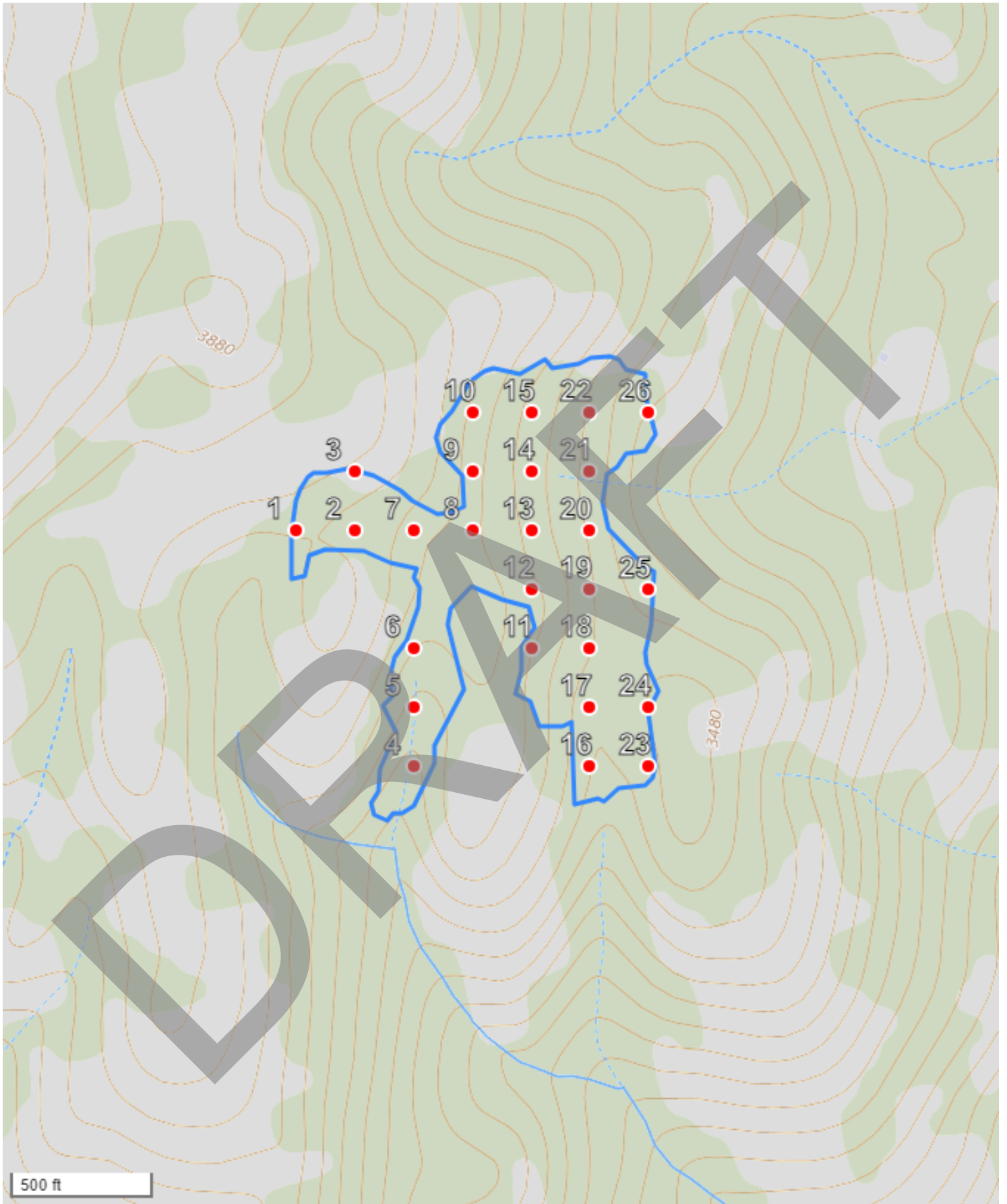




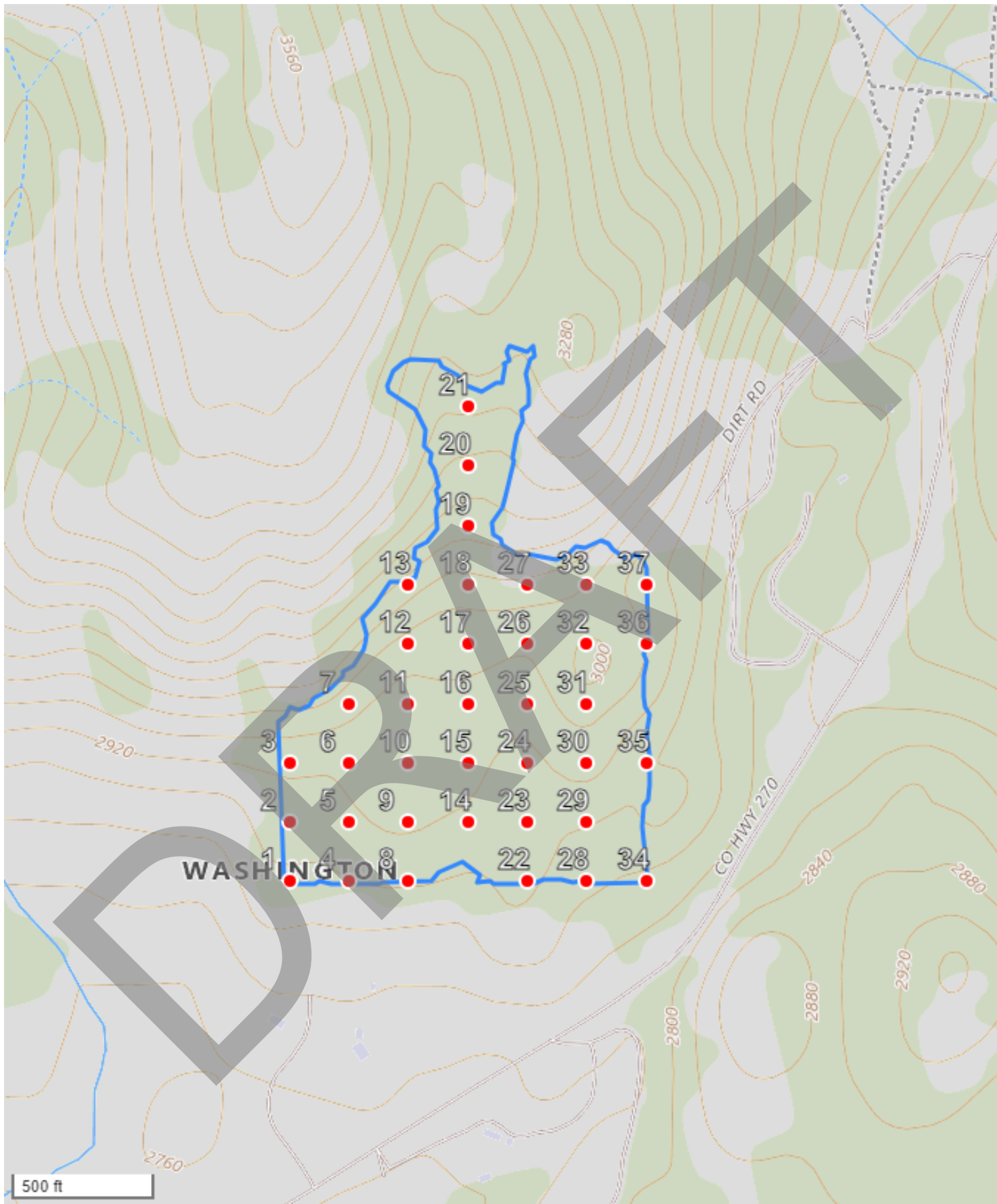
|                            |                    |                        |
|----------------------------|--------------------|------------------------|
| FMA Name: KLONDIKE U6      | N Plots: 8         | Plot Spacing: 181.8 ft |
| Grid Name: KLONDIKE U6 - 1 | Acres Treated: 7.6 | Main Azimuth: 0 deg    |



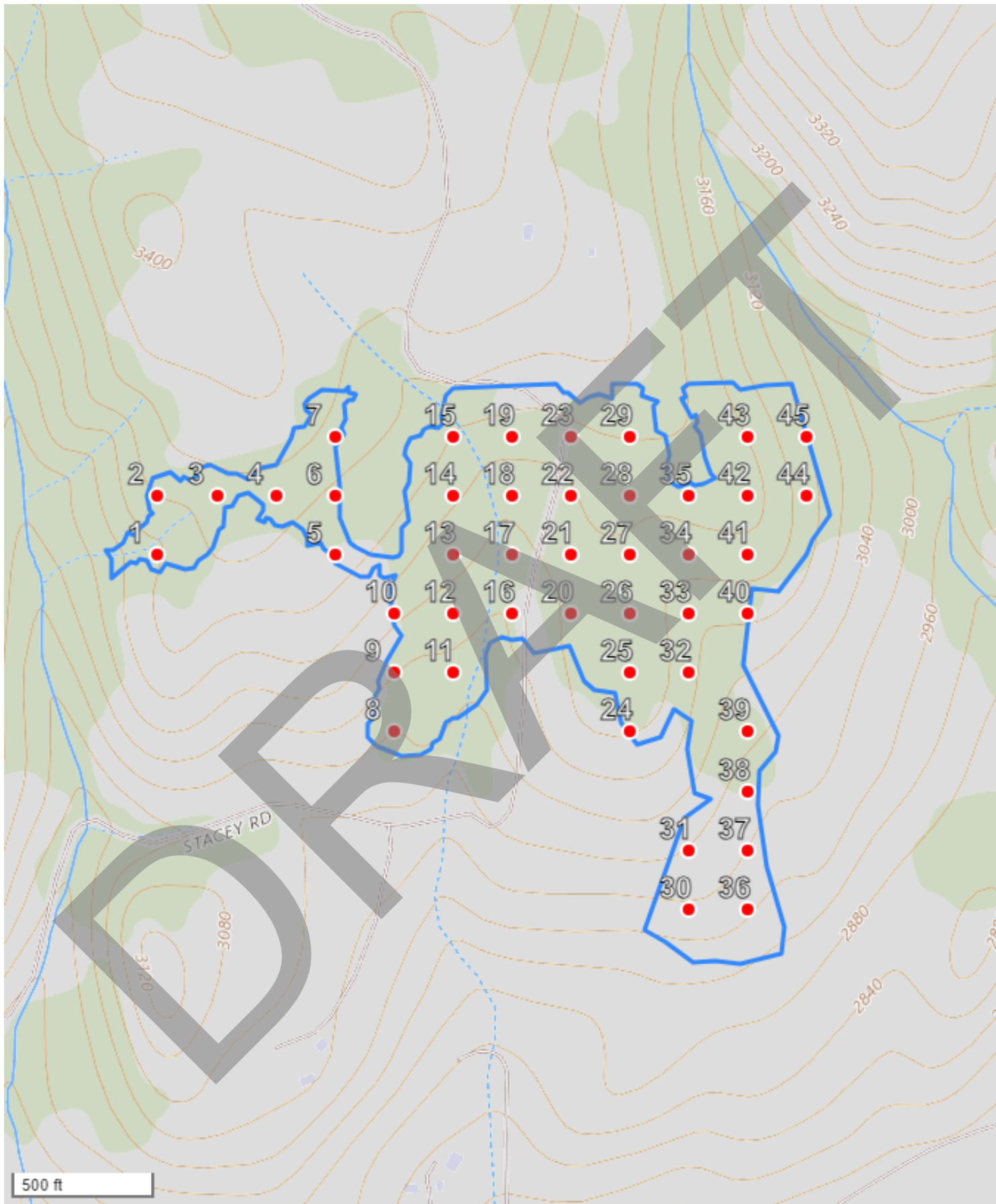
|                            |                     |                        |
|----------------------------|---------------------|------------------------|
| FMA Name: KLONDIKE U7      | N Plots: 13         | Plot Spacing: 197.3 ft |
| Grid Name: KLONDIKE U7 - 1 | Acres Treated: 13.5 | Main Azimuth: 0 deg    |



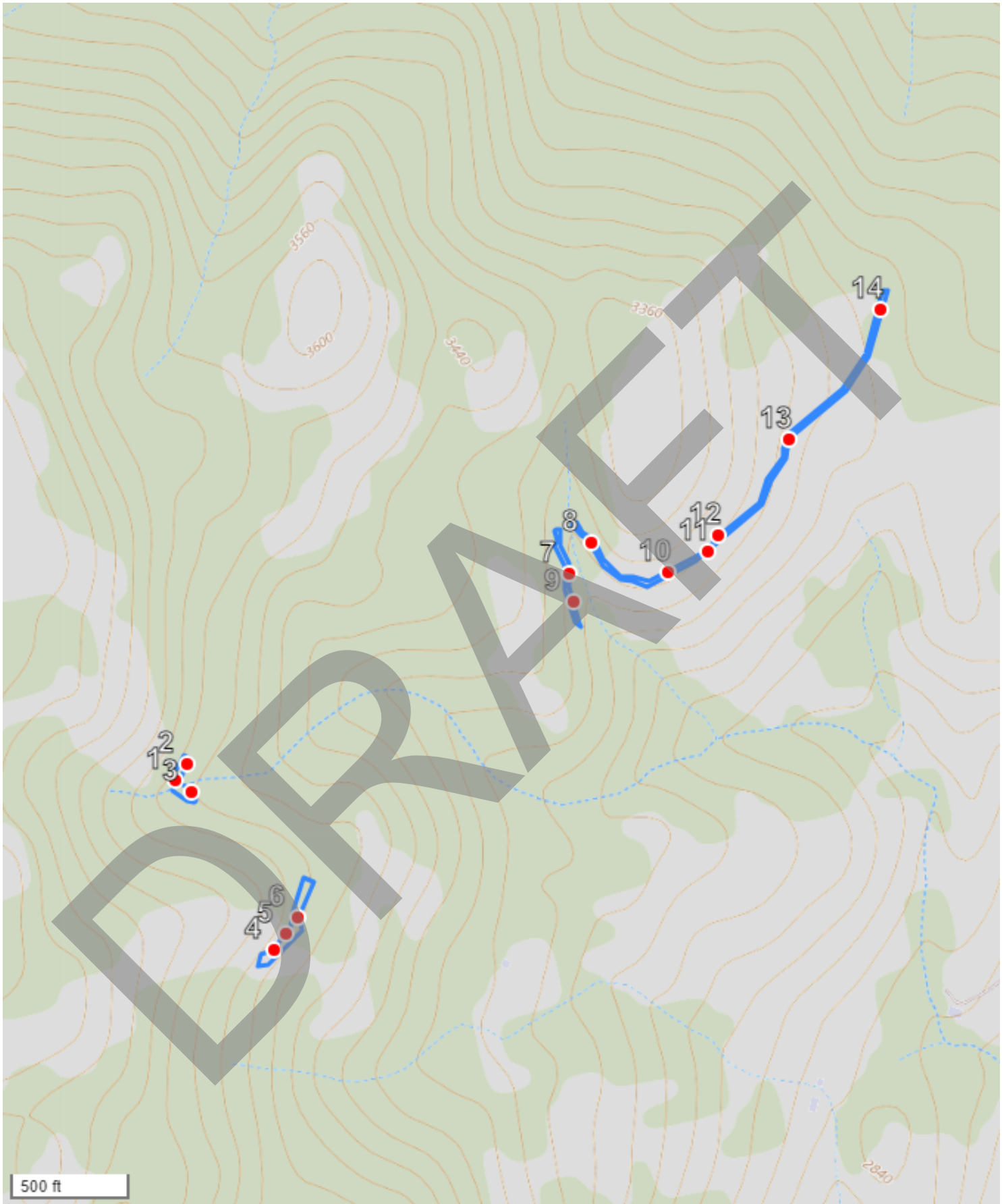
|                            |                     |                        |
|----------------------------|---------------------|------------------------|
| FMA Name: KLONDIKE U8      | N Plots: 26         | Plot Spacing: 206.4 ft |
| Grid Name: KLONDIKE U8 - 1 | Acres Treated: 24.5 | Main Azimuth: 0 deg    |



|                            |                     |                        |
|----------------------------|---------------------|------------------------|
| FMA Name: KLONDIKE U9      | N Plots: 37         | Plot Spacing: 208.3 ft |
| Grid Name: KLONDIKE U9 - 1 | Acres Treated: 34.9 | Main Azimuth: 0 deg    |



|                             |                     |                        |
|-----------------------------|---------------------|------------------------|
| FMA Name: KLONDIKE U10      | N Plots: 45         | Plot Spacing: 207.1 ft |
| Grid Name: KLONDIKE U10 - 1 | Acres Treated: 44.9 | Main Azimuth: 0 deg    |



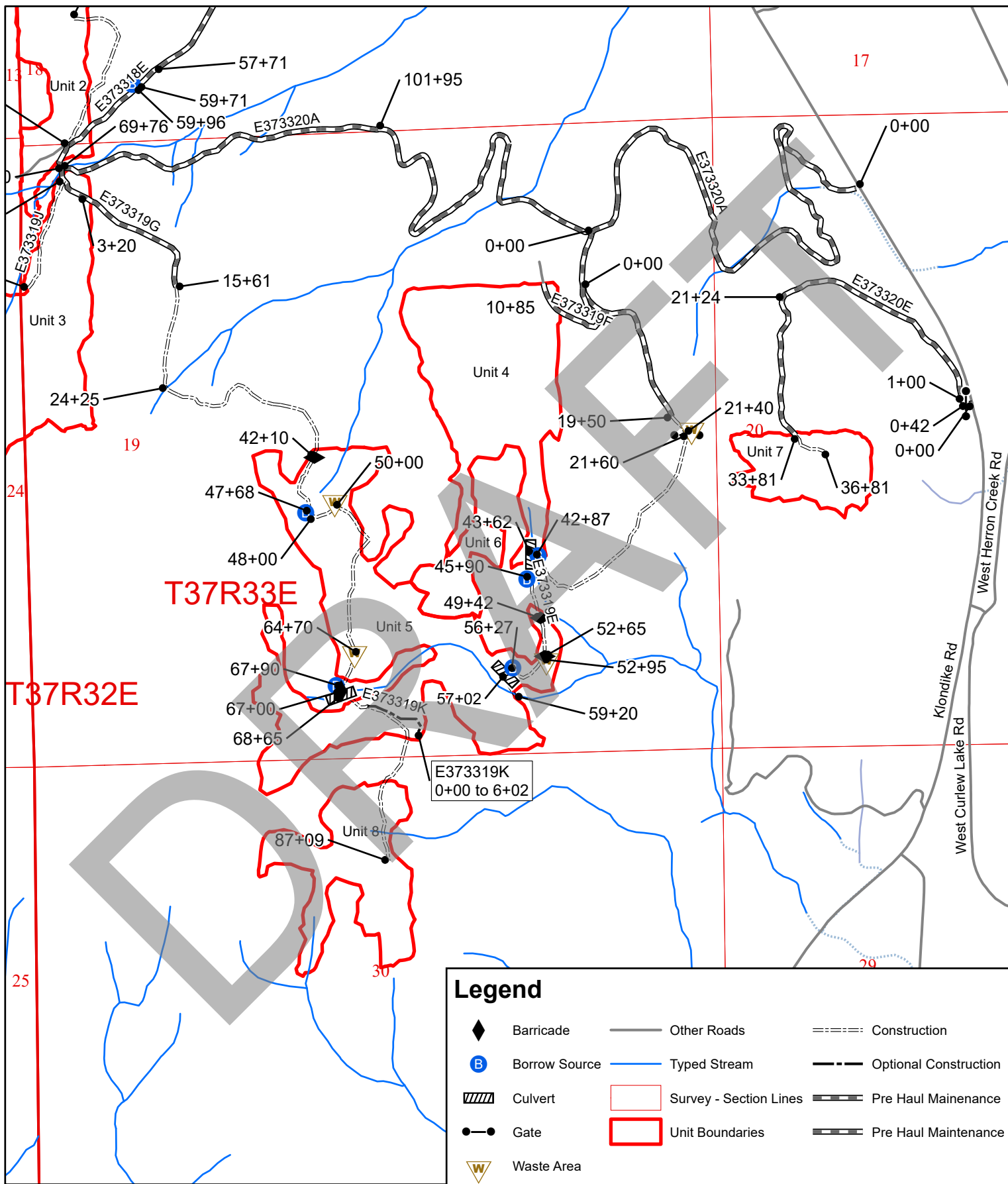
|                             |                     |                        |
|-----------------------------|---------------------|------------------------|
| FMA Name: KLONDIKE ROW      | N Plots: 14         | Plot Spacing: 82.7 ft  |
| Grid Name: KLONDIKE ROW - 1 | Acres Treated: 1.57 | Main Azimuth: 35.7 deg |

# Washington State Department of Natural Resources

Sale Name: Klondike  
 Contract No.: 30-106084

Road Plan Map  
 Page 1 of 3

Region: Northeast  
 County: Ferry



Drawn By: M. Karnstein  
 10-5-23

1 inch = 1,072.06 feet

0 550 1,100 2,200 Feet

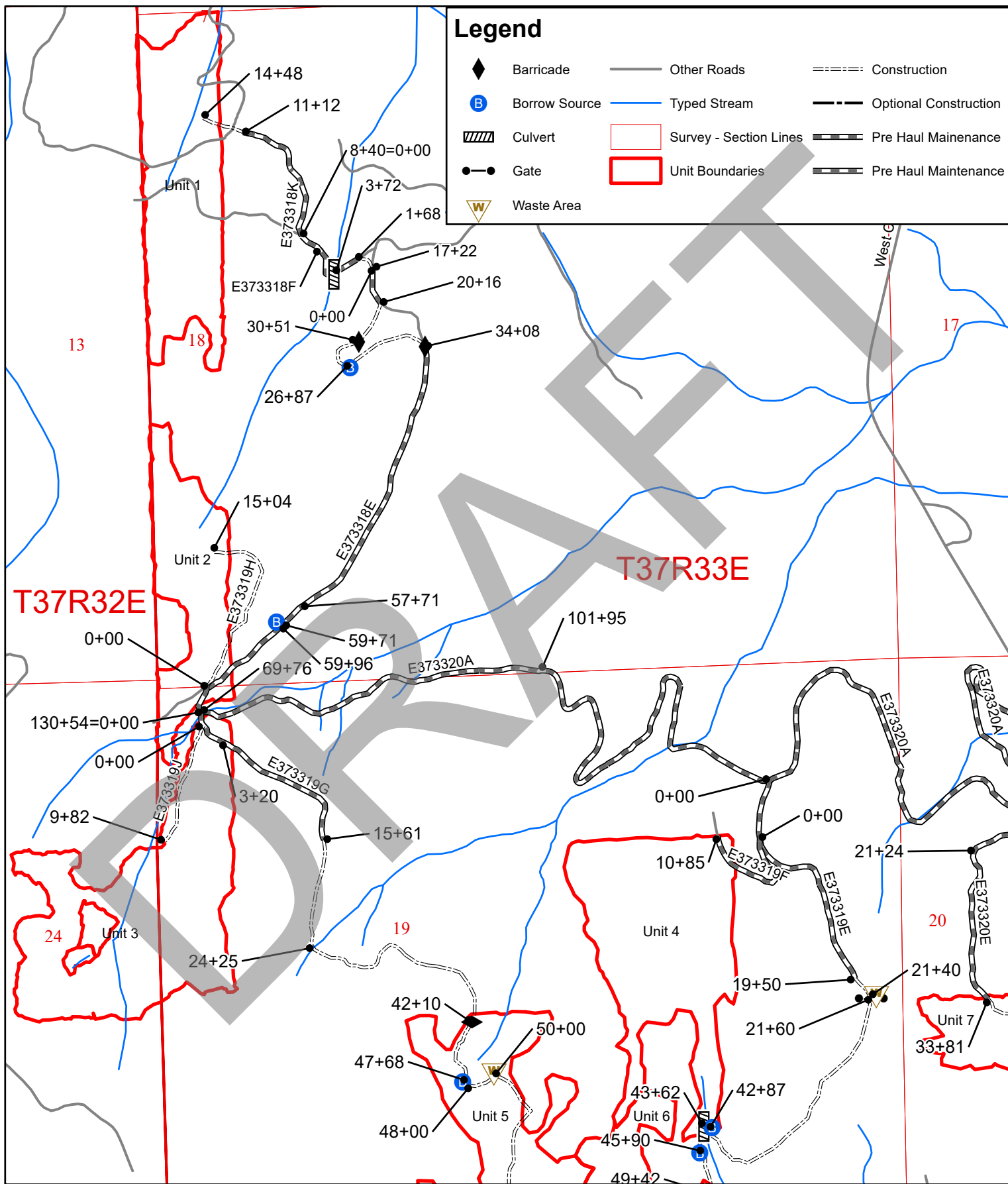


# Washington State Department of Natural Resources

Sale Name: Klondike  
 Contract No.: 30-106084

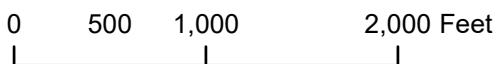
Road Plan Map  
 Page 2 of 3

Region: Northeast  
 County: Ferry



Drawn By: M. Karnstein  
 10-5-23

1 inch = 1,000 feet



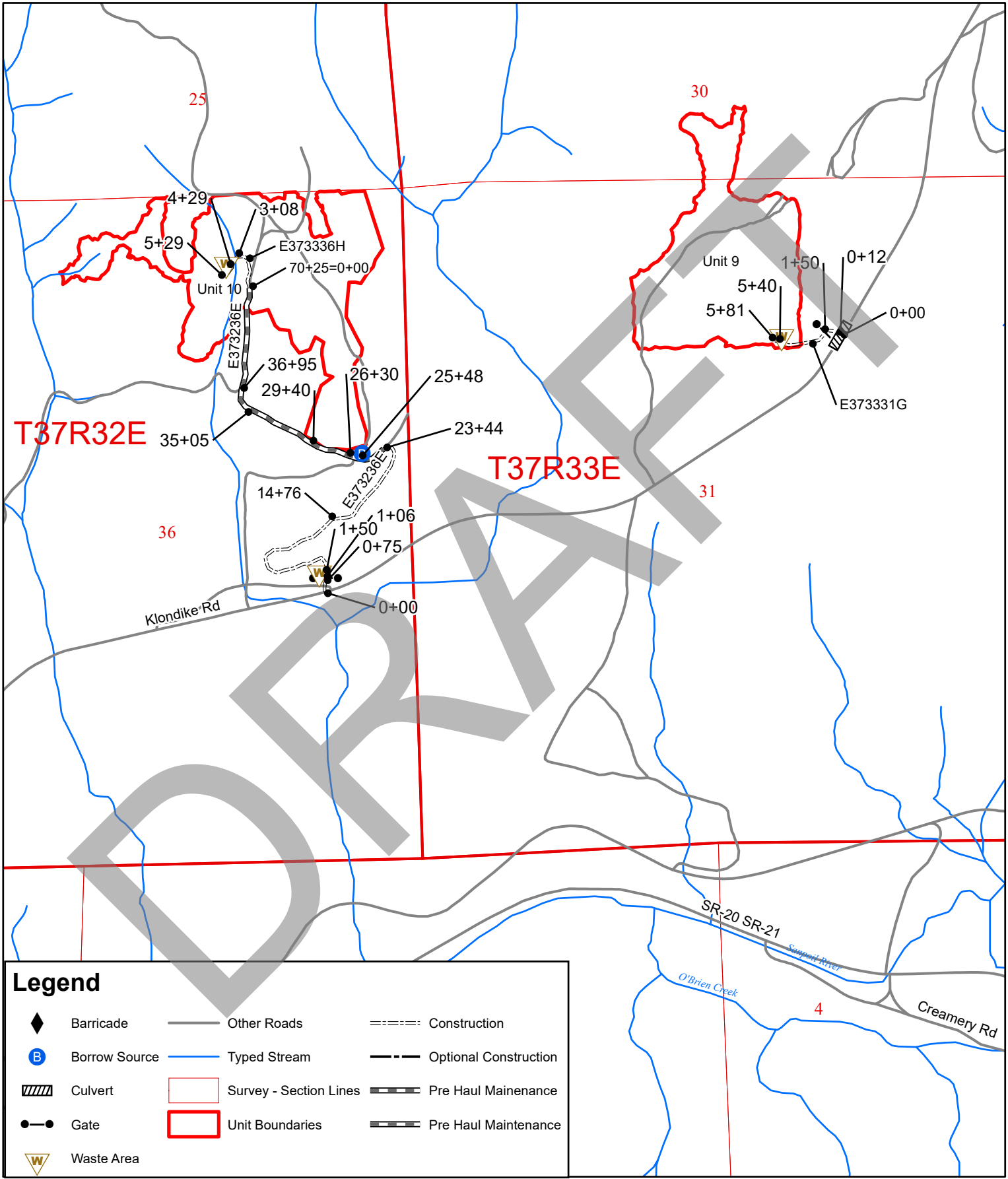


# Washington State Department of Natural Resources

Sale Name: Klondike  
 Contract No.: 30-106084

Road Plan Map  
 Page 3 of 3

Region: Northeast  
 County: Ferry

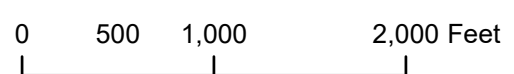


## Legend

- |  |               |  |                        |  |                       |
|--|---------------|--|------------------------|--|-----------------------|
|  | Barricade     |  | Other Roads            |  | Construction          |
|  | Borrow Source |  | Typed Stream           |  | Optional Construction |
|  | Culvert       |  | Survey - Section Lines |  | Pre Haul Maintenance  |
|  | Gate          |  | Unit Boundaries        |  | Pre Haul Maintenance  |
|  | Waste Area    |  |                        |  |                       |

Drawn By: M. Karnstein  
 10-5-23

1 inch = 1,000 feet



STATE OF WASHINGTON  
DEPARTMENT OF NATURAL RESOURCES

KLONDIKE TIMBER SALE ROAD PLAN  
FERRY COUNTY  
HIGHLANDS DISTRICT  
NORTHEAST REGION

AGREEMENT NO.: 30-106084

STAFF ENGINEER: MACKENZIE KARNSTEIN

DATE: 10/05/2023

DRAWN & COMPILED BY: MACKENZIE KARNSTEIN

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>          |
|-------------|-----------------|----------------------|
| E373236E    | 23.44           | Construction         |
| E373236E    | 46.81           | Pre Haul Maintenance |
| E373236H    | 5.29            | Construction         |
| E373318E    | 13.92           | Construction         |
| E373318E    | 38.62           | Pre Haul Maintenance |
| E373318F    | 1.68            | Construction         |
| E373318F    | 6.72            | Pre Haul Maintenance |
| E373318K    | 11.12           | Pre Haul Maintenance |
| E373318K    | 3.36            | Construction         |
| E373319E    | 19.50           | Pre Haul Maintenance |
| E373319E    | 39.70           | Construction         |
| E373319F    | 10.85           | Pre Haul Maintenance |
| E373319G    | 15.61           | Pre Haul Maintenance |
| E373319G    | 71.48           | Construction         |
| E373319H    | 15.04           | Construction         |
| E373319J    | 9.82            | Construction         |
| E373320A    | 130.54          | Pre Haul Maintenance |
| E373320E    | 33.81           | Pre Haul Maintenance |
| E373320E    | 3.00            | Construction         |
| E373331G    | 5.81            | Construction         |

**0-3 OPTIONAL ROADS**

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

| <u>Road</u> | <u>Stations</u> | <u>Type</u>           |
|-------------|-----------------|-----------------------|
| E373319K    | 0+00 to 6+02    | Optional 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, 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. Construction requirements are further described in 3, 4, and 5.

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

| <u>Road</u> | <u>Stations</u> | <u>Requirements</u>       |
|-------------|-----------------|---------------------------|
| E373236E    | 0+00 to 23+44   | See sections 3, 4, and 5. |
| E373236H    | 0+00 to 5+29    | See sections 3, 4, and 5. |
| E373318E    | 20+16 to 34+08  | See sections 3, 4, and 5. |
| E373318F    | 0+00 to 1+68    | See sections 3, 4, and 5. |
| E373318K    | 11+12 to 14+48  | See sections 3, 4, and 5. |
| E373319E    | 19+50 to 59+20  | See sections 3, 4, and 5. |
| E373319G    | 15+61 to 87+09  | See sections 3, 4, and 5. |
| E373319H    | 0+00 to 15+04   | See sections 3, 4, and 5. |
| E373319J    | 0+00 to 9+82    | See sections 3, 4, and 5. |
| E373320E    | 33+81 to 36+81  | See sections 3, 4, and 5. |
| E373331G    | 0+00 to 5+81    | See sections 3, 4, and 5. |

**0-6 PRE-HAUL MAINTENANCE**

Maintenance includes, but is not limited to brushing, grubbing, 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. Maintenance requirements are further described in sections 3, 4, and 5.

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

| <u>Road</u> | <u>Stations</u> | <u>Requirements</u>       |
|-------------|-----------------|---------------------------|
| E373236E    | 23+44 to 70+25  | See sections 3, 4, and 5. |
| E373318E    | 17+22 to 20+16  | See sections 3, 4, and 5. |

|          |                |                           |
|----------|----------------|---------------------------|
| E373318E | 34+08 to 69+76 | See sections 3, 4, and 5. |
| E373318F | 1+68 to 8+40   | See sections 3, 4, and 5. |
| E373318K | 0+00 to 11+12  | See sections 3, 4, and 5. |
| E373319E | 0+00 to 19+50  | See sections 3, 4, and 5. |
| E373319F | 0+00 to 10+85  | See sections 3, 4, and 5. |
| E373319G | 0+00 to 15+61  | See sections 3, 4, and 5. |
| E373320A | 0+00 to 130+54 | See sections 3, 4, and 5. |
| E373320E | 0+00 to 33+81  | See sections 3, 4, and 5. |

**0-7 POST-HAUL MAINTENANCE**

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

**0-9 DECOMMISSIONING**

This project includes decommissioning listed in Clause 9-20 ROAD DECOMMISSIONING.

**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 or design data (plan, profile, and cross-sections).

**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.
7. Road Plan maps.

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**

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

**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.

**1-10 WSDOT STANDARD SPECIFICATION REFERENCE**

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

**1-15 ROAD MARKING**

Purchaser shall perform road work in accordance with the state’s marked location. All road work is marked with stakes and/or orange flagging.

**1-20 COMPLETE BY DATE**

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

**1-21 HAUL APPROVAL**

Purchaser shall not use roads under this road plan for any hauling other than rock haul, without written approval from the Contract Administrator.

**1-22 WORK NOTIFICATIONS**

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

**1-23 ROAD WORK PHASE APPROVAL**

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

- Subgrade construction
- Drainage installation

**1-25 ACTIVITY TIMING RESTRICTION**

The operation of road construction equipment is not allowed on weekends or state recognized holidays, unless authorized in writing by the Contract Administrator.

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

| <u>Road</u>      | <u>Activity</u>                   | <u>Closure Period</u> |
|------------------|-----------------------------------|-----------------------|
| All Roads        | Transportation of heavy equipment | March 15 to June 1    |
| All Construction | Construction                      | December 1 to June 1  |

**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.

**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 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.
- 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, to be prepared by the Purchaser. The plan is subject to written approval by the Contract Administrator before any snow plowing operations. 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.

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

Requirements for the Klondike Road road approaches:

Purchaser shall build up approaches to allow a smooth grade transition between the E373331G and Klondike Road. The top of the E373331G road surfacing must be kept level with the surface of the Klondike Road at all times. The surface of the E373331G approach must slope down from the edge of the Klondike Road at the rate of -2.00%, for approximately 2 inch(es) vertical for a total distance of 8 feet. Then the surface of the E373331G approach must slope up Klondike Road at the rate of +2.00%, for approximately 3 inch(es) vertical for a total distance of 12 feet. Paved road approaches

must be in accordance with the approach permit, to be provided by the Contract Administrator upon request.

**1-42 UTILITY ACCESS ROAD**

The following road(s) intersect(s) existing utility access roads. Purchaser shall conduct road work on the intersecting roads so that the utility access roads are accessible at all times.

| <u>Road</u> | <u>Stations</u> |
|-------------|-----------------|
| E373236E    | 0+00 to 70+25   |

**1-43 ROAD WORK AROUND UTILITIES**

Road work is in close proximity to utilities. It is the Purchaser’s responsibility to identify any utilities. Purchaser shall work in accordance with all applicable laws or rules concerning utilities. Purchaser is responsible for all notification, including “call before you dig”, and liabilities associated with the utilities and their rights-of-way.

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 road(s) in a condition that will allow the passage of light administrative vehicles.

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

Purchaser shall use a grader to shape the existing surface before the haul of timber. Purchaser shall accomplish all grading using a motor grader with a minimum of 175 horsepower.

**2-6 CLEANING CULVERTS**

Purchaser shall clean the inlets and outlets of all culverts and shall obtain written approval from the Contract Administrator before timber haul.

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

Purchaser shall clean ditches, headwalls, and catchbasins. Work must be completed before haul of timber and must be done in accordance with the TYPICAL SECTION SHEET and CULVERT AND DRAINAGE SPECIFICATIONS DETAIL.



## SECTION 3 – CLEARING, GRUBBING, AND DISPOSAL

### 3-1 BRUSHING

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

### 3-2 BRUSHING RESTRICTION

Pulling, digging, pushing over, and other non-cutting methods used for vegetation removal may not be used for brushing. Purchaser shall 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 may not be used for brushing unless otherwise approved in writing by the Contract Administrator.

### 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 and within waste and debris areas, or if not marked in the field, between the clearing limits specified on the TYPICAL SECTION SHEET. Clearing must be completed before starting excavation and embankment.

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

Purchaser shall deck all right-of-way timber. Decks must be parallel to the road centerline and placed within the cleared right-of-way. Decks must 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

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

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

### 3-10 GRUBBING

Purchaser shall remove all stumps between the grubbing limits specified on the TYPICAL SECTION SHEET and within waste and debris areas. Purchaser shall also remove stumps with undercut roots outside the grubbing limits. Purchaser shall remove stumps using a

hydraulic mounted excavator unless authorized in writing by the Contract Administrator. Stumps over 22 inches diameter must be split. Stumps over 40 inches must be quartered. Grubbing must be completed before starting excavation and embankment.

**3-12 STUMP PLACEMENT**

Purchaser shall place grubbed stumps 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 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 grubbing 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 approval of final maintenance.

**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 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 40%.
- Within the operational area for cable landings where debris may shift or roll.
- On locations where brush can fall into the ditch or onto the road surface.
- Against standing timber.

**3-24 BURYING ORGANIC DEBRIS RESTRICTED**

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

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

Purchaser shall scatter organic debris in natural openings unless otherwise detailed in this road plan. 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**

Purchaser shall not use dozer blades for the piling of organic debris.

### **3-31 PILING**

Purchaser shall pile organic debris no closer than 20 feet from standing timber and no higher than 10 feet in areas specified in Clause 3-22 DESIGNATED WASTE AREA FOR ORGANIC DEBRIS. Debris piles shall be made to be burnable, clean, tight, and free of rock or soil.

### **3-32 END HAULING ORGANIC DEBRIS**

On slopes greater than 45%, Purchaser shall end haul or push organic debris to the designated waste areas specified in Clause 3-22 DESIGNATED WASTE AREA FOR ORGANIC DEBRIS or to a waste area located by the Contract Administrator.

## **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 1000 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 60 feet at centerline.
- Maximum grade change for sag vertical curves is 6% in 100 feet.
- Maximum grade change for crest vertical curves is 6% 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:

| <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

Purchaser shall construct embankment slopes 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.

**4-10 WIDEN THE EXISTING SUBGRADE**

Purchaser shall widen the subgrade and fill slopes to the dimensions shown on the TYPICAL SECTION SHEET. If necessary, Purchaser shall reconstruct excavation slopes to provide sufficient width for the road surface and any ditches. Pulling excavation material across the road or mixing in with the existing road surface is not allowed.

| <u>Road</u> | <u>Stations</u> | <u>Widening</u> |
|-------------|-----------------|-----------------|
| E373318E    | 19+66 to 20+16  | 20 feet         |

**4-12 FULL BENCH CONSTRUCTION**

Where side slopes exceed 50%, Purchaser shall use full bench construction for the entire subgrade width. Purchaser shall end haul waste material to the location specified in Clause 4-37 WASTE AREA LOCATION.

| <u>Road</u> | <u>Full Bench Location</u> |
|-------------|----------------------------|
| E373319E    | 39+75 to 40+85             |
| E373319E    | 45+90 to 49+42             |
| E373319G    | 39+29 to 42+10             |
| E373319G    | 66+08 to 68+65             |
| E373319G    | 75+24 to 80+71             |
| E373331G    | 3+79 to 5+40               |

**4-16 ROAD CUT AND FILL SLOPE IMPROVEMENT**

At the following location(s), Purchaser shall excavate the cut slope and apply Common Borrow to the embankment slope to meet the requirements of Clause 4-5 CUT SLOPE RATIO and Clause 4-6 EMBANKMENT SLOPE RATIO. The road subgrade should be compacted using a vibratory compactor. Completion of repair work shall be subject to the written approval of the Contract Administrator.

| <u>Road</u> | <u>Stations</u>  |
|-------------|------------------|
| E373318E    | 59+96 to 69+76   |
| E3733820A   | 101+95 to 130+54 |

**4-20 SUBGRADE DIMENSIONS FOR INTERSECTIONS**

On the following road(s), Purchaser shall construct the subgrade to the dimensions shown on the INTERSECTION DETAIL.

| <u>Road</u> | <u>Stations</u> |
|-------------|-----------------|
| E373236H    | 0+00 to 0+50    |
| E373319H    | 0+00 to 0+50    |
| E373319J    | 0+00 to 0+50    |

**4-21 TURNOUTS**

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

**4-22 TURNAROUNDS**

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

**4-25 DITCH CONSTRUCTION AND RECONSTRUCTION**

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

**4-27 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 where side slopes are less than 45%. On side slopes greater than 45%, excavated material must be end hauled to the location specified in Clause 4-37 WASTE AREA LOCATION.

**4-28 DITCH DRAINAGE**

Ditches must drain to cross-drain culverts or ditchouts. Ditches shall not drain into streams or stream culverts.

**4-29 DITCHOUTS**

Purchaser shall construct ditchouts as identified in the CULVERT & DRAINAGE LIST, 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 45% if the waste material is compacted and free of organic debris. On side slopes greater than 55%, 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 the listed designated areas. Additional waste areas may also be identified or approved by the Contract Administrator. The amount of material allowed in a waste area is at the discretion of the Contract Administrator.

| <u>Road</u> | <u>Waste Area Location</u> | <u>Comments</u> |
|-------------|----------------------------|-----------------|
| E373236E    | 1+50                       | Left Side       |
| E373236H    | 4+29                       | Right Side      |
| E373319E    | 21+40                      | Left Side       |
| E373319E    | 52+95                      | Left Side       |
| E373319G    | 50+00                      | Left Side       |
| E373319G    | 64+70                      | Right Side      |
| E373331G    | 5+40                       | Right Side      |

**4-38 PROHIBITED WASTE DISPOSAL AREAS**

Purchaser shall not deposit waste material in the following areas:

- Within 50 feet of a cross drain culvert.
- Within 100 feet of a live stream or wetland.
- Within a riparian management zone.
- Within a wetland management zone.
- On side slopes steeper than 45%.
- In locations that interfere with the construction of the road prism.
- In locations that impede drainage.
- Within the operational area for cable landings.
- Against standing timber.
- Outside the clearing limits.

**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.

#### 4-49 BORROW SOURCE

Purchaser shall obtain borrow material from the listed borrow source(s) or borrow sources identified or approved by the Contract Administrator. Development of the borrow source must be in accordance with a written BORROW SOURCE DEVELOPMENT PLAN to be submitted by the Purchaser and approved in writing by the Contract Administrator.

| <u>Source</u> | <u>Location</u> | <u>Notes</u> |
|---------------|-----------------|--------------|
| E373236E      | 25+48           | Right Side   |
| E373319E      | 42+87           | Right Side   |
| E373319E      | 45+90           | Right Side   |
| E373319E      | 56+27           | Right Side   |
| E373319G      | 47+68           | Right Side   |
| E373319G      | 67+90           | Right Side   |
| E373318E      | 26+87           | Right Side   |
| E373318E      | 59+96           | Right Side   |

#### 4-50 BORROW APPLICATION

Purchaser shall apply borrow in accordance with quantities shown below. Borrow must be spread, shaped, and compacted full width concurrent with hauling operations.

| <u>Road</u> | <u>Stations</u> | <u>Cubic Yards<br/>(Compacted)</u> | <u>Notes</u>                                   |
|-------------|-----------------|------------------------------------|--|
| E373236E    | 26+30           | 10                                 | Level road out                                 |
| E373236E    | 29+40           | 20                                 | Repair failed water bar                        |
| E373236E    | 35+05           | 30                                 |  |
| E373319G    | 3+20            | 50                                 | Raise road prism 2 feet to reduce slope to 14% |

#### 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. Purchaser shall accomplish all shaping 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**

Purchaser shall compact all embankment and waste material. 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. A plate compactor must be used for areas specifically requiring keyed embankment construction and for embankment segments too narrow to accommodate equipment. Waste material may be placed by end-dumping or sidecasting until sufficiently wide enough to support the 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**

Purchaser shall compact constructed and reconstructed subgrades by routing equipment over the entire width except ditch. Purchaser shall obtain written approval from the Contract Administrator for subgrade compaction before 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**

Purchaser shall remove berms from road shoulders. The construction of ditchouts is required where ponding could result from the effects of sidecast debris.

**5-2 PUNCHEON REPLACEMENT**

On the following road(s), Purchaser shall remove puncheons and replace them with a culvert as specified on the CULVERT & DRAINAGE LIST.

| <u>Road</u> | <u>Stations</u> |
|-------------|-----------------|
| E373318F    | 3+72            |

**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 the CULVERT AND DRAINAGE LIST. Culvert, downspout, and flume lengths may be adjusted to fit as-built conditions and may not terminate directly on unprotected soil. Culverts meet the specifications in Clauses 10-15 through 10-24.

**5-6 CULVERT TYPE**

Purchaser shall install culverts made of steel in accordance with Clauses 10-15 through 10-24.

**5-7 USED CULVERT MATERIAL**

On temporary 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. Culverts must meet the specifications in Clauses 10-15 through 10-24.

**5-12 UNUSED MATERIALS STATE PROPERTY**

On required roads, any materials listed on the CULVERT AND DRAINAGE 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 SPECIFICATIONS DETAIL and the National Corrugated Metal Pipe Association's "Installation Manual for Corrugated Steel Drainage Structures". Culverts 18" diameter and over shall be banded using lengths of no less than 10 feet, and no more than one length less than 16 feet. Shorter section of banded culvert shall be installed at the inlet end.

**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**

All 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 specified in the CULVERT AND DRAINAGE SPECIFICATIONS DETAIL and 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 SPECIFICATIONS DETAIL. Energy dissipater installation is subject to approval by the Contract Administrator. The type of energy dissipater and the amount of material must be consistent with the specifications listed on the CULVERT AND DRAINAGE SPECIFICATIONS DETAIL. Rock used for energy dissipaters must be Light Loose Rip Rap. Placement must with a zero-drop-height only. No placement by end dumping or dropping of rock is allowed.

**5-25 CATCH BASINS**

Purchaser shall construct catch basins in accordance with CULVERT AND DRAINAGE SPECIFICATIONS 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**

Purchaser shall construct headwalls in accordance with the CULVERT AND DRAINAGE SPECIFICATIONS DETAIL at all cross drain culvert, except for temporary culverts. Rock used for headwalls must meet the specifications for Light Loose Rip Rap. Rock must 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 may not restrict the flow of water into culvert inlets or catch basins. Placement must be with a zero-drop-height only. No placement by end dumping or dropping of rock is allowed.

**5-27 ARMORING FOR CULVERTS**

Purchaser shall place Light Loose Rip Rap in conjunction with or immediately following construction of the embankment. Rock must be placed on shoulders, slopes, and around culvert inlets and outlets as designated on the CULVERT & DRAINAGE LIST and CULVERT AND DRAINAGE SPECIFICATIONS DETAIL. Rock may not restrict the flow of water into culvert inlets or catch basins. Placement must be with a zero-drop-height only. No placement by end dumping or dropping of rock is allowed. Light Loose Rip Rap must meet the specifications in Clause 6-50 LIGHT LOOSE RIP RAP.

**5-28 ARMORING FOR ARMORED DIPS**

At the following locations, Purchaser shall place Light Loose Rip Rap in accordance with the ARMORED ROLLING DIP DETAIL. Placement must be with a zero-drop-height only. No placement by end dumping or dropping of rock is allowed. Light loose rip rap shall meet the specifications in Clause 6-50 LIGHT LOOSE RIP RAP.

| <u>Road</u> | <u>Stations</u> | <u>Rock Type</u> | <u>Volume (CY)*</u> |
|-------------|-----------------|------------------|---------------------|
| E373236H    | 3+08            | 4-Inch In-Place  | 10                  |
| E373319G    | 24+25           | 4-Inch In-Place  | 10                  |
| E373319G    | 48+00           | 4-Inch In-Place  | 10                  |

\*Quantity refers to compacted volume.

**5-30 DRIVABLE WATERBAR CONSTRUCTION**

Purchaser shall construct drivable waterbars in accordance with the DRIVABLE WATERBAR DETAIL. Minimum frequency of drivable waterbars shall be at a maximum spacing of 300 feet horizontal or one for every 10 feet of vertical change. Where grade exceeds 15% slope, minimum frequency of drivable waterbars shall be at a maximum spacing of 150 feet horizontal.

Purchaser shall not install water bars on any portions of the following roads that contain rock surfacing, unless directed by the Contract Administrator.

| <u>Road</u> | <u>Stations</u> |
|-------------|-----------------|
| E373318E    | 34+08 to 69+76  |
| E373319E    | 0+00 to 19+50   |
| E373319F    | 0+00 to 10+85   |
| E373319G    | 0+00 to 15+61   |
| E373319H    | 0+00 to 15+04   |
| E373320A    | 0+00 to 130+54  |

**5-31 ROLLING DIP CONSTRUCTION**

Purchaser shall construct rolling dips in accordance with the ROLLING DIP DETAIL and as specified on the CULVERT AND DRAINAGE LIST. Rolling dips must be installed concurrently with construction of the subgrade and must be maintained in an operable condition.

**5-33 NATIVE SURFACE ROADS**

If overwintered, native surface roads must be waterbarred by November 1. Purchaser shall construct waterbars according to the attached DRIVABLE WATERBAR DETAIL at a maximum spacing that will produce a vertical distance of no more than 10 feet between waterbars or between natural drainage paths, and with a maximum spacing of 300 feet. Where grade exceeds 15% slope, minimum frequency of drivable waterbars shall be at a maximum spacing of 150 feet horizontal.

**SECTION 6 – ROCK AND SURFACING**

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

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

plan must be developed. All parties shall follow this plan. Purchaser shall notify the Contract Administrator a minimum of 3 calendar days before starting any operations in the listed locations.

| <u>Source</u> | <u>Location</u>      | <u>Rock Type</u>  |
|---------------|----------------------|-------------------|
| E373236E      | STA 0+50, Right Side | 3-Inch Minus Rock |

**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 are subject to written approval by the Contract Administrator before their use.

| <u>Possible Source</u> | <u>Location</u>                                |
|------------------------|--|
| Bolder Operations, LLC | 16330 N Highway 21,<br>Republic, WA 99166-9623 |

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

Purchaser shall conduct rock source development and use at the following sources, in accordance with a written ROCK SOURCE DEVELOPMENT PLAN to be prepared by the Purchaser. The plan is subject to written approval by the Contract Administrator before any rock source operations. Upon completion of operations, the rock source must be left in the condition specified in the ROCK SOURCE DEVELOPMENT PLAN, and approved in writing by the Contract Administrator. Purchaser shall notify the Contract Administrator a minimum of 3 calendar days before starting any operations in the rock source.

| <u>Source</u> | <u>Location</u>      | <u>Rock Type</u>     |
|---------------|----------------------|----------------------|
| E373236E      | STA 0+50, Right Side | 4-Inch In-Place Rock |

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

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

**6-12 ROCK SOURCE SPECIFICATIONS**

Rock sources must be in accordance with the following specifications:

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

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

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

#### **6-21 IN-PLACE PROCESSING**

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-specified in Clause 6-38 4-INCH IN-PLACE ROCK. Purchaser shall use in-place processing, such as a grid roller, mobile linear crusher, or other method of in-place processing to produce 4-inch in-place rock. Rock must meet the surfacing size specified in Clause 6-38 4-INCH IN-PLACE ROCK. Purchaser shall remove any existing organic debris before the start of in-place crushing operations. 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 must have at least one fractured face. Coarse aggregate is the material greater than 1/4-inch in size.

#### **6-23 ROCK GRADATION TYPES**

Purchaser shall provide or manufacture rock in accordance with the types and amounts listed in the ROCK LIST. Rock must meet the following specifications for gradation and

uniform quality. The exact point of evaluation for conformance to specifications will be determined by the Contract Administrator.

**6-38 4-INCH IN-PLACE ROCK**

4-inch in-place rock must have a minimum of 90 percent of the top 4 inches of the running surface pass a 4-inch square opening.

In-place rock may not contain organic debris and trash. No more than 50 percent of rock may be larger than 6 inches in any dimension and no rock may be larger than 8 inches in any dimension.

**6-41 SELECT PIT RUN ROCK**

No more than 50 percent of the rock may be larger than 6 inches in any dimension and no rock may be larger than 8 inches in any dimension. Select Pit Run rock may not contain organic debris, dirt, and trash. Rock may require processing to meet this specification.

**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")    |

**6-55 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 for 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. Road surfaces must be compacted 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.

**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 as directed by the Contract Administrator.

**SECTION 7 – STRUCTURES**

**7-5 STRUCTURE DEBRIS**

Purchaser shall not allow debris from the installation or removal of structures to enter any stream. Components removed from existing structures(s) must be removed from state land. Purchaser shall maintain a clean jobsite, with all materials stored away from the high water mark or other area presenting a risk of the materials entering a stream. Debris entering any stream must be removed immediately, and placed in the site(s) designated for stockpiling or. Purchaser shall retrieve all material carried downstream from the jobsite.

**7-6 STREAM CROSSING INSTALLATION**

Purchaser shall install stream crossing structures in accordance with the manufacturer's requirements.

**7-7 BANK PROTECTION FOR STREAM CROSSING STRUCTURES**

Purchaser must construct bank protection in accordance with the stream crossing, design, specifications, and details.

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

Purchaser shall install steel pipe, pipe arches, and structural plate culverts in accordance with the National Corrugated Steel Pipe Association "Installation Manual for Corrugated Steel Pipe, Pipe Arches, and Structural Plate." Installation is subject to the inspection and approval of the Contract Administrator before placement and backfill. The latest edition of the NCSA Installation Manual can be found at [www.ncspa.org](http://www.ncspa.org).

**7-57 CULVERT SHAPE CONTROL**

Purchaser shall monitor the culvert shape during backfill and compaction. Special attention 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**

Purchaser shall keep metal gates closed and locked except during periods of haul. Purchaser shall keep 4-wire gates closed during periods of haul except for passing vehicles, unless approved by the 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>Type</u> |
|-------------|----------------|-------------|
| E373236E    | 1+06           | 4-Wire Gate |
| E373319E    | 21+60          | Metal Gate  |
| E373320E    | 0+42           | 4-Wire Gate |
| E373331G    | 1+35           | Metal Gate  |

**7-76 GATE INSTALLATION**

Purchaser shall install the listed gate(s). Gate installations must be completed before timber haul.

| <u>Road</u> | <u>Station</u> | <u>Type</u> | <u>Provided by</u> |
|-------------|----------------|-------------|--------------------|
| E373319E    | 21+60          | Stock Gate  | State              |
| E373331G    | 1+35           | Stock Gate  | State              |

Stock gate installation(s) must be in accordance with the STOCK GATE (TUBE GATE) DETAIL.

The gate must be installed plumb and aligned to ensure all mating components match with precision. Each post must be poured-in-place concrete. The gate must be installed with a post and locking device to allow the gate to be locked in an open position. The Contract Administrator will provide Purchaser with a padlock.

If Purchaser wishes to install an alternate design, detailed plans for the construction of the gate must be submitted to the Contract Administrator. Purchaser shall obtain written approval for the plans from the Contract Administrator or their designee, before gate installation begins.

**7-77 GATE SUPPLIED BY STATE**

Gates will be located at Fire Camp Road, Loomis, WA, 98827 . After arranging with the Contract Administrator, Purchaser shall transport the gates and tie-back posts to the installation sites.

**7-78 TEMPORARY GATE INSTALLATION**

Purchaser shall install the listed gate(s). Gate installations must be completed before timber haul.

| <u>Road</u> | <u>Station</u> | <u>Type</u> | <u>Provided by</u> |
|-------------|----------------|-------------|--------------------|
| E373318E    | 34+08          | Stock Gate  | State              |

Stock gate installation(s) must be in accordance with the STOCK GATE (TUBE GATE) DETAIL with the exception of the concrete.

The gate must be installed plumb and aligned to ensure all mating components match with precision. Each post must be barried to depth but there will be no concrete. The gate must be installed with a post and locking device to allow the gate to be locked in an open position. The Contract Administrator will provide Purchaser with a padlock.

If Purchaser wishes to install an alternate design, detailed plans for the construction of the gate must be submitted to the Contract Administrator. Purchaser shall obtain written approval for the plans from the Contract Administrator or their designee, before gate installation begins.

The gate will be removed at the end of use and returned to Highlands Camp at the expense of the Purchaser.

**7-80 FENCE INSTALLATION**

At the following location(s), Purchaser shall provide and install a wood or steel-post fence in accordance with the 4 STRAND STANDARD POST AND WIRE FENCE DETAIL at the end of haul as determined by the Contract Administrator. New construction and replacement of fencing must tie into any existing fences and gates near required construction.

| <u>Road</u> | <u>Stations</u> |
|-------------|-----------------|
| E373318E    | 34+08           |

**7-81 4-WIRE GATE RECONSTRUCTION**

Purchaser shall reconstruct the following existing gate(s) in accordance with the 4 STRAND WIRE GATE AND GATE BRACE DETAIL.

| <u>Road</u> | <u>Stations</u> |
|-------------|-----------------|
| E373320E    | 0+42            |

**7-82 4-WIRE GATE INSTALLATION**

On the following road(s), Purchaser shall provide and install 4-wire gates in accordance with the 4 STRAND WIRE GATE AND GATE BRACE DETAIL. Gates must be installed to connect into the existing fencing.

| <u>Road</u> | <u>Stations</u> |
|-------------|-----------------|
| E373236E    | 1+06            |

**SECTION 9 – POST-HAUL ROAD WORK**

**9-1 EARTHEN BARRICADES**

Purchaser shall construct barricades in accordance with the SPOILS BERM DETAIL. Barricades shall be constructed on the following roads after the completion of timber haul and before the termination of this contract.

| <u>Road</u> | <u>Stations</u> |
|-------------|-----------------|
| E373318E    | 30+51           |
| E373318E    | 34+08           |
| E373319E    | 49+42, 52+65    |
| E373319G    | 42+10           |
| E373319G    | 67+00           |

**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, to the approval, in writing of the Contract Administrator.

**9-11 LANDING EMBANKMENT**

Purchaser shall slope landing embankments to the original construction specifications.

**9-20 ROAD DECOMMISSIONING**

Purchaser shall decommission the following roads before the termination of this contract.

| <u>Road</u> | <u>Stations</u> | <u>Type</u> |
|-------------|-----------------|-------------|
|-------------|-----------------|-------------|

|          |                |                       |
|----------|----------------|-----------------------|
| E373319E | 49+42 to 59+20 | Light Decommissioning |
| E373319G | 42+10 to 87+09 | Light Decommissioning |

**9-22 LIGHT DECOMMISSIONING**

- Remove road shoulder berms except as directed.
- Construct drivable waterbars according to the attached DRIVABLE WATERBAR DETAIL at a maximum spacing that will produce a vertical drop of no more than 10 feet between waterbars or between natural drainage paths and with a maximum spacing of 100 feet, or as marked in the field.
- 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.
- Block roads with earthen barricades in accordance with the attached SPOILS BERM DETAIL.

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).

**10-21 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.

**10-24 GAUGE AND CORRUGATION**

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

| <u>Diameter</u> | <u>Gauge</u> | <u>Corrugation</u> |
|-----------------|--------------|--------------------|
| 18"-36"         | 16 (0.064")  | 2 2/3" X 1/2"      |
| 48"             | 14 (0.079")  | 2 2/3" X 1/2"      |
| 54" to 96"      | 12 (0.109")  | 3" X 1"            |

**FOREST ROAD ACCESS**  
Road Maintenance Specifications

Prior to Acceptance of Contract or Acceptance on Timber Sale

**A. Cuts and Fills**

- (1) Maintain slope lines as constructed. Remove slides from the ditches and roadway. Replace fills to 1 ½:1 slopes with selected material or as directed. Remove overhanging material from cut slopes.
- (2) Material from slides or other sources requiring removal must not be deposited in streams or at locations where it will erode into streams or water courses.
- (3) Undesirable slide materials and debris must not be allowed to contaminate or mix with surface material.

**B. Roadway Surfaces**

- (1) Grade and shape road surface, turnouts and shoulder to original crown, inslope or outslope as directed to provide suitable traveled surface and surface water runoff in an even, unconcentrated manner.
- (2) Blading must not undercut backslopes at bottom of cut slopes.
- (3) Watering may be required to control dust and to retain fine surface rock.
- (4) Desirable surface material shall not be bladed off roadway.
- (5) Replace surface material lost or worn away.
- (6) Remove berms except as otherwise directed by the State.

**C. Drainage**

- (1) Keep ditches and drainage channels at outlets and inlets of culverts clear of obstructions.
- (2) Inspect and clean culverts at least monthly, with additional inspection during storms and periods of high runoff. This must be done even during periods of inactivity.
- (3) Place non erodable material or rock at drainage outfalls.
- (4) Keep silt bearing surface runoff from contaminating live streams.

**D. Structures**

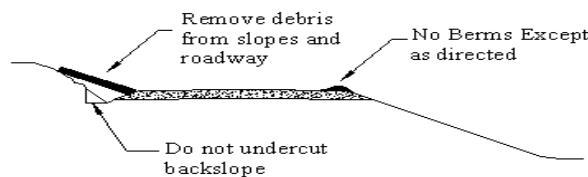
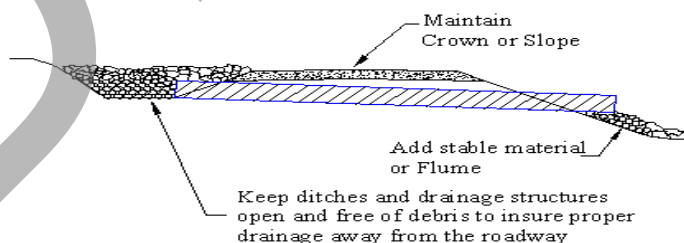
- (1) Repair bridges, culverts, cattle guards, fences and other road structures to conditions required by construction specifications.

**E. Termination of Use, or End of Season**

- (1) Do maintenance work to minimize damage from the elements such as blading to insure correct runoff, ditch and culvert clearing and water bars.

**F. Debris**

- (1) Remove fallen timber, limbs, stumps from slopes and roadway, ditchlines and culvert inlets.

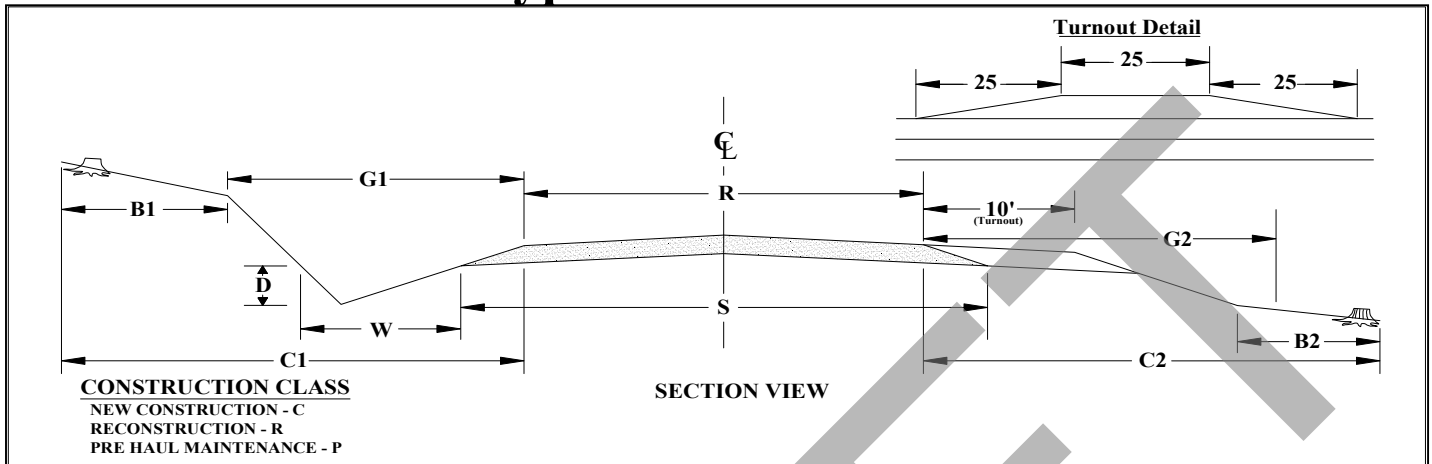


State of Washington  
Department of Natural Resources

Application No. : 30-106084

Name of Sale: Klondike

## 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 (B) | ROAD FILL CLEARING (B) | R/W CUT CLEARING (C1) | R/W FILL CLEARING (C2) |
|-----------|---------------|-------------|--------------------|--------------------|----------------|----------------|-----------------|---------------|-----------------|-----------------|---------------|-----------------------|------------------------|-----------------------|------------------------|-----------------------|------------------------|
| E373236E  | 0+00          | 23+44       | C                  | 14                 |                |                | 4               |               |                 |                 |               |                       |                        | 6                     | 6                      |                       |                        |
| E373236E  | 23+44         | 70+25       | P                  |                    | 12             |                | 4               |               |                 |                 |               | 3                     | 3                      |                       |                        | 6                     | 6                      |
| E373236H  | 0+00          | 5+29        | C                  | 14                 |                |                | 4               |               |                 |                 |               |                       |                        | 6                     | 6                      |                       |                        |
| E373318E  | 17+22         | 20+16       | P                  |                    | 12             |                | 4               |               |                 |                 |               | 3                     | 3                      |                       |                        | 6                     | 6                      |
| E373318E  | 20+16         | 34+08       | C                  | 14                 |                |                | 4               |               |                 |                 |               |                       |                        | 6                     | 6                      |                       |                        |
| E373318E  | 34+08         | 69+76       | P                  |                    | 12             |                | 4               |               |                 |                 |               | 3                     | 3                      |                       |                        | 6                     | 6                      |
| E373318F  | 0+00          | 1+68        | C                  | 14                 |                |                | 4               |               |                 |                 |               |                       |                        | 6                     | 6                      |                       |                        |
| E373318F  | 1+68          | 3+22        | P                  |                    | 12             |                | 4               |               |                 |                 |               | 3                     | 3                      |                       |                        | 6                     | 6                      |
| E373318F  | 3+22          | 4+22        | P                  |                    | 12             |                |                 | 3             | 3               | 1               |               | 3                     | 3                      |                       |                        | 6                     | 6                      |
| E373318F  | 4+22          | 8+40        | P                  |                    | 12             |                | 4               |               |                 |                 |               | 3                     | 3                      |                       |                        | 6                     | 6                      |
| E373318K  | 0+00          | 11+12       | P                  |                    | 12             |                | 4               |               |                 |                 |               | 3                     | 3                      |                       |                        | 6                     | 6                      |
| E373318K  | 11+12         | 14+48       | C                  | 14                 |                |                | 4               |               |                 |                 |               |                       |                        | 6                     | 6                      |                       |                        |
| E373319E  | 0+00          | 19+50       | P                  |                    | 12             |                | 4               |               |                 |                 |               | 3                     | 3                      |                       |                        | 6                     | 6                      |
| E373319E  | 19+50         | 43+12       | C                  | 14                 |                |                | 4               |               |                 |                 |               |                       |                        | 6                     | 6                      |                       |                        |
| E373319E  | 43+12         | 44+12       | C                  | 14                 |                |                |                 | 3             | 3               | 1               |               |                       |                        | 6                     | 6                      |                       |                        |
| E373319E  | 44+12         | 56+52       | C                  | 14                 |                |                | 4               |               |                 |                 |               |                       |                        | 6                     | 6                      |                       |                        |
| E373319E  | 56+52         | 57+52       | C                  | 14                 |                |                |                 | 3             | 3               | 1               |               |                       |                        | 6                     | 6                      |                       |                        |
| E373319E  | 57+52         | 59+20       | C                  | 14                 |                |                | 4               |               |                 |                 |               |                       |                        | 6                     | 6                      |                       |                        |
| E373319F  | 0+00          | 10+85       | P                  |                    | 12             |                | 4               |               |                 |                 |               | 3                     | 3                      |                       |                        | 6                     | 6                      |
| E373319G  | 0+00          | 15+61       | P                  |                    | 12             |                | 4               |               |                 |                 |               | 3                     | 3                      |                       |                        | 6                     | 6                      |
| E373319G  | 15+61         | 47+50       | C                  | 14                 |                |                | 4               |               |                 |                 |               |                       |                        | 6                     | 6                      |                       |                        |
| E373319G  | 47+50         | 48+50       | C                  | 14                 |                |                |                 | 3             | 3               | 1               |               |                       |                        | 6                     | 6                      |                       |                        |
| E373319G  | 48+50         | 68+15       | C                  | 14                 |                |                | 4               |               |                 |                 |               |                       |                        | 6                     | 6                      |                       |                        |

\*= Optional

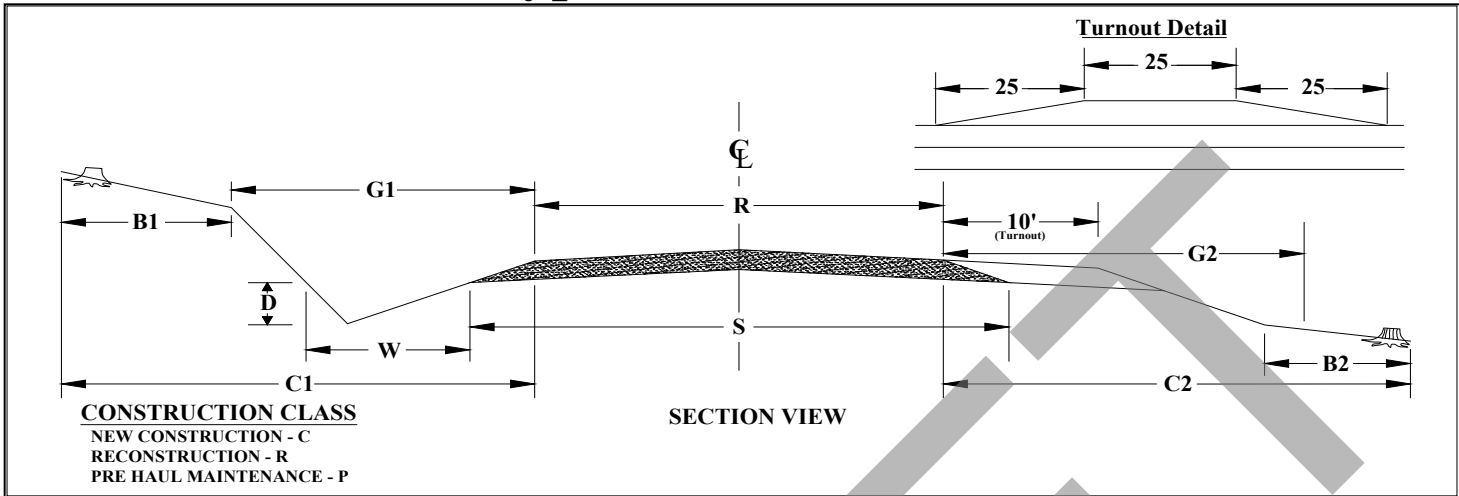
Date: 10-05-2023

State of Washington  
Department of Natural Resources

Application No. : 30-106084

Name of Sale: Klondike

# 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 (G1) | GRUBBING FILL TOE (G2) | ROAD CUT CLEARING (B1) | ROAD FILL CLEARING (B2) | R/W CUT CLEARING (C1) | R/W FILL CLEARING (C2) |
|-----------|---------------|-------------|--------------------|--------------------|----------------|----------------|-----------------|---------------|-----------------|-----------------|---------------|--|---|------------------------|------------------------|------------------------|-------------------------|-----------------------|------------------------|
| E373319G  | 68+15         | 69+15       | C                  | 14                 |                |                |                 | 3             | 3               | 1               |               |  |   |                        |                        | 6                      | 6                       |                       |                        |
| E373319G  | 69+15         | 87+09       | C                  | 14                 |                |                | 4               |               |                 |                 |               |  |   |                        |                        | 6                      | 6                       |                       |                        |
| E373319H  | 0+00          | 15+04       | C                  | 14                 |                |                | 4               |               |                 |                 |               |  |   |                        |                        | 6                      | 6                       |                       |                        |
| E373319J  | 0+00          | 9+82        | C                  | 14                 |                |                | 4               |               |                 |                 |               |  |   |                        |                        | 6                      | 6                       |                       |                        |
| E373319K  | 0+00          | 6+02        | C*                 | 14                 |                |                | 4               |               |                 |                 |               |  |   |                        |                        | 6                      | 6                       |                       |                        |
| E373320A  | 0+00          | 130+54      | P                  |                    | 12             |                | 4               |               |                 |                 |               |  | 3 | 3                      |                        |                        |                         | 6                     | 6                      |
| E373320E  | 0+00          | 33+81       | P                  |                    | 12             |                | 4               |               |                 |                 |               |  | 3 | 3                      |                        |                        |                         | 6                     | 6                      |
| E373320E  | 33+81         | 36+81       | C                  | 14                 |                |                | 4               |               |                 |                 |               |  |   |                        |                        | 6                      | 6                       |                       |                        |
| E373331G  | 0+00          | 5+81        | C                  | 14                 |                |                | 4               |               |                 |                 |               |  |   |                        |                        | 6                      | 6                       |                       |                        |

\*= Optional

STATE OF WASHINGTON

DEPARTMENT OF NATURAL RESOURCES

Application No.: 30-106084

Name of Sale: Klondike

Date: 10/05/2023

CULVERT & DRAINAGE LIST

| Road Name | Station | CULVERT       |       |      |              | LENGTH    |       |            | RIPRAP      |  | Catchbasin | Ditch | Staked | Rolling Dip | Notes       |
|-----------|---------|---------------|-------|------|--------------|-----------|-------|------------|-------------|--|------------|-------|--------|-------------|-------------|
|           |         | Diameter (in) | Gauge | Skew | Culvert (ft) | Downspout | Flume | Inlet C.Y. | Outlet C.Y. |  |            |       |        |             |             |
| E373236E  | 14+76   |               |       |      |              |           |       |            |             |  |            |       |        | Y           | 9           |
| E373236H  | 3+08    |               |       |      |              |           |       |            |             |  |            |       |        | Y           | 12          |
| E373318F  | 3+72    | 24            | 16    |      | 34           |           | 1     | 1          | 1           |  |            |       |        |             | 1,2,6,10,11 |
| E373319E  | 43+62   | 24            | 16    |      | 40           |           | 1     | 1          | 1           |  |            |       |        |             | 1,2,6,10,11 |
| E373319E  | 57+02   | 30            | 16    |      | 44           |           | 1     | 1          | 1           |  |            |       |        | Y           | 12          |
| E373319G  | 24+25   |               |       |      |              |           |       |            |             |  |            |       |        | Y           | 12          |
| E373319G  | 48+00   |               |       |      |              |           |       |            |             |  |            |       |        | Y           | 12          |
| E373319G  | 68+65   | 30            | 16    |      | 56           |           | 1     | 1          | 1           |  |            |       |        |             | 1,2,6,10,11 |
| E373320E  | 1+00    |               |       |      |              |           |       |            |             |  |            |       |        | Y           | 9           |
| E373320E  | 21+24   |               |       |      |              |           |       |            |             |  |            |       |        |             | 13          |
| E373331G  | 0+12    | 18            | 16    |      | 40           |           | 1     | 1          | 1           |  |            |       |        |             | 1,2,6,10,11 |
|           |         |               |       |      |              |           |       |            |             |  |            |       |        |             |             |
|           |         |               |       |      |              |           |       |            |             |  |            |       |        |             |             |
|           |         |               |       |      |              |           |       |            |             |  |            |       |        |             |             |
|           |         |               |       |      |              |           |       |            |             |  |            |       |        |             |             |

**STRUCTURE NOTES**

1. Install Headwall - See Detail D1
2. Install Catchbasin - See Detail D1
3. Armor Catchbasin - See Detail D1
4. Armor Ditch
5. Heavy Loose RipRap
6. Light Loose RipRap
7. Step Bevel Pipe Ends
8. Remove Existing Pipe
9. See Rolling Dip Detail D5
10. See Pipe Installation Detail D1
11. Install Energy dissipator - See D1
12. Install Armored Dip- See D6
13. Install ditch out

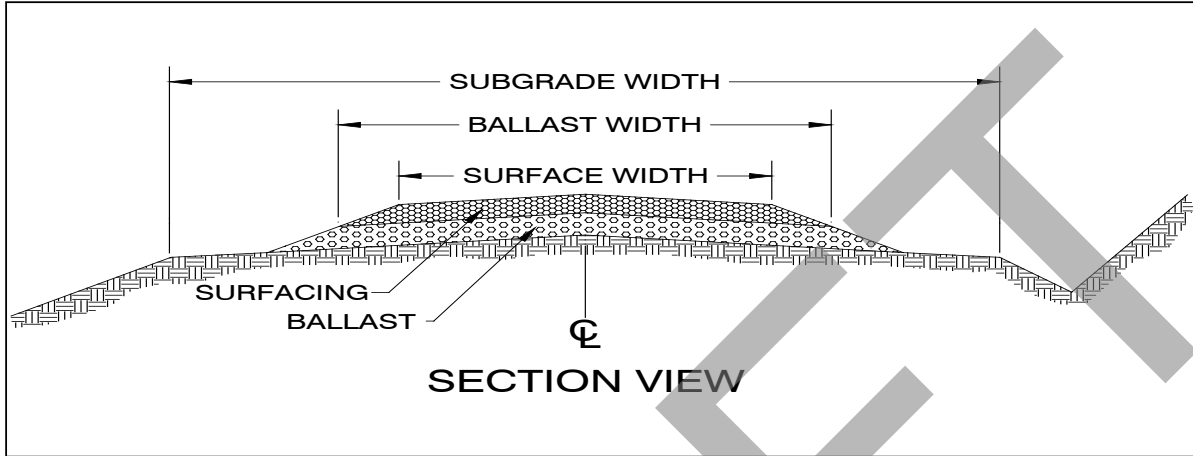


STATE OF WASHINGTON  
DEPARTMENT OF NATURAL RESOURCES

Application No.: 30-106084

Name of Sale: Klondike

# ROCK LIST

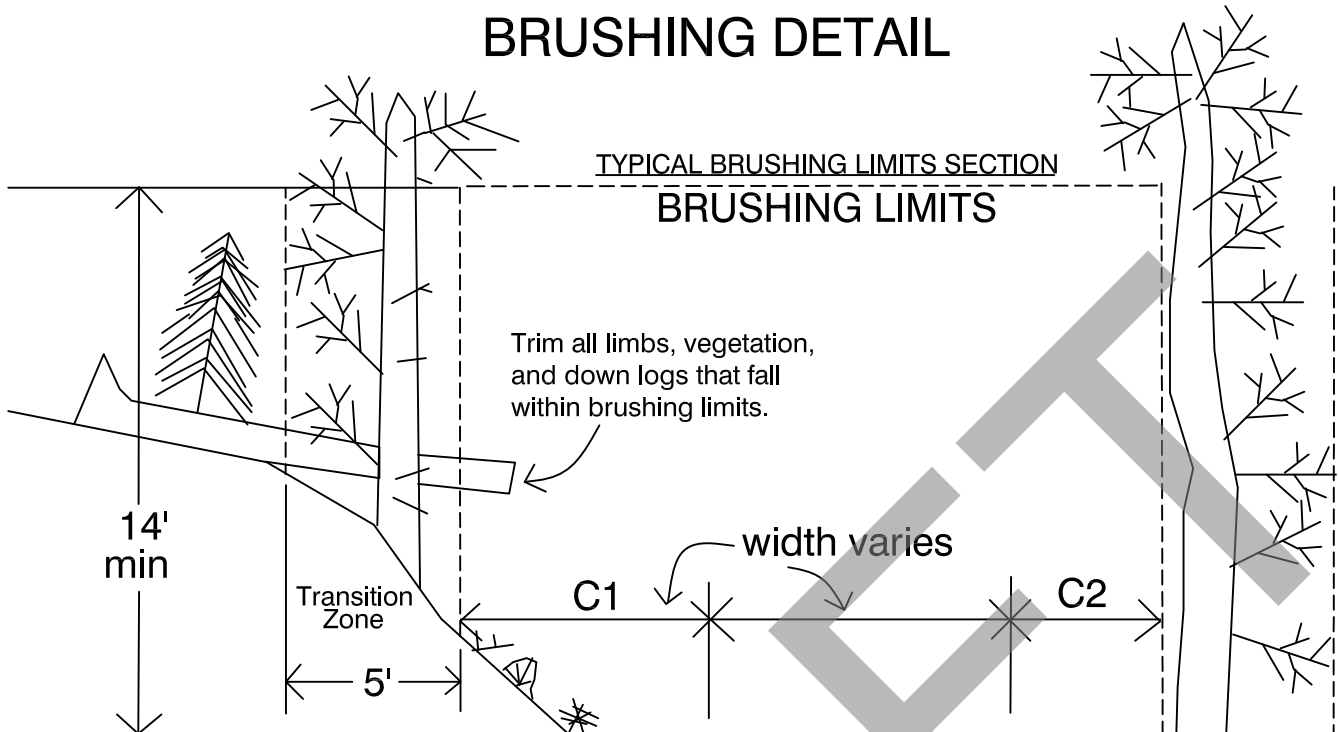


1. ROCK DEPTHS ARE DEFINED AS COMPACTED DEPTHS.
2. LOOSE YARD QUANTITIES ARE DEPENDANT ON SOURCE.
3. ROCK SLOPES SHALL BE 1.5(H) : 1(V).
4. ALL ROCK SOURCES ARE SUBJECT TO APPROVAL BY THE CONTRACT ADMINISTRATOR.

| ROAD NAME | START STATION | END STATION | SUBGRADE WIDTH (ft) | BALLAST SOURCE | BALLAST WIDTH (ft) | BALLAST DEPTH (in) | BALLAST QTY (cu.yd./sta) | SURFACE SOURCE | SURFACE WIDTH (ft) | SURFACE DEPTH (in) | SURFACE QTY (cu.yd./sta) | SURFACE QTY (cu.yd. total) | Type | FABRIC WIDTH (ft) |
|-----------|---------------|-------------|---------------------|----------------|--------------------|--------------------|--------------------------|----------------|--------------------|--------------------|--------------------------|----------------------------|------|-------------------|
| E373318F  | 3+22          | 4+22        | 14                  |                |                    |                    | 0                        |                | 12                 | 4                  | 15.4                     | 15.4                       | A    |                   |
| E373319E  | 43+12         | 53+12       | 14                  |                |                    |                    | 0                        |                | 12                 | 4                  | 15.4                     | 15.4                       | A    |                   |
| E373319E  | 56+52         | 57+52       | 14                  |                |                    |                    | 0                        |                | 12                 | 4                  | 15.4                     | 15.4                       | A    |                   |
| E373319G  | 68+15         | 69+15       | 14                  |                |                    |                    | 0                        |                | 12                 | 4                  | 15.4                     | 15.4                       | A    |                   |
| E373331G  | 0+12          | 1+35        | 14                  |                |                    |                    | 0                        |                | 12                 | 4                  | 15.4                     | 19.0                       | B    |                   |
|           |               |             |                     |                |                    |                    |                          |                |                    |                    |                          |                            |      |                   |
|           |               |             |                     |                |                    |                    |                          |                |                    |                    |                          |                            |      |                   |
|           |               |             |                     |                |                    |                    |                          |                |                    |                    |                          |                            |      |                   |
|           |               |             |                     |                |                    |                    |                          |                |                    |                    |                          |                            |      |                   |
|           |               |             |                     |                |                    |                    |                          |                |                    |                    |                          |                            |      |                   |
|           |               |             |                     |                |                    |                    |                          |                |                    |                    |                          |                            |      |                   |
|           |               |             |                     |                |                    |                    |                          |                |                    |                    |                          |                            |      |                   |
|           |               |             |                     |                |                    |                    |                          |                |                    |                    |                          |                            |      |                   |
|           |               |             |                     |                |                    |                    |                          |                |                    |                    |                          |                            |      |                   |
|           |               |             |                     |                |                    |                    |                          |                |                    |                    |                          |                            |      |                   |
|           |               |             |                     |                |                    |                    |                          |                |                    |                    |                          |                            |      |                   |
|           |               |             |                     |                |                    |                    |                          |                |                    |                    |                          |                            |      |                   |
|           |               |             |                     |                |                    |                    |                          |                |                    |                    |                          |                            |      |                   |
|           |               |             |                     |                |                    |                    |                          |                |                    |                    |                          |                            |      |                   |
|           |               |             |                     |                |                    |                    |                          |                |                    |                    |                          |                            |      |                   |
|           |               |             |                     |                |                    |                    |                          |                |                    |                    |                          |                            |      |                   |
|           |               |             |                     |                |                    |                    |                          |                |                    |                    |                          |                            |      |                   |

A= 4-Inch In-Place Rock  
 B= Select Pit Run Rock  
 DATE: 10-05-2023

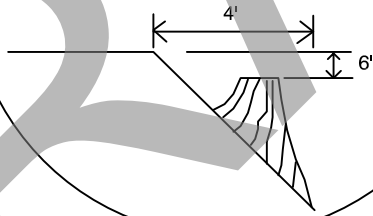
# BRUSHING DETAIL



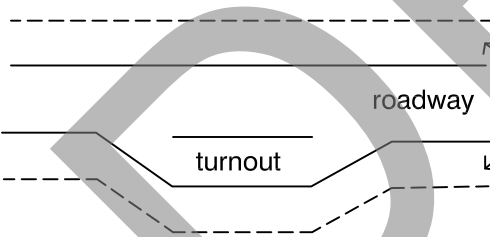
All limbs on standing trees that extend into the brushing limits shall be trimmed within 6" of the stem

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.

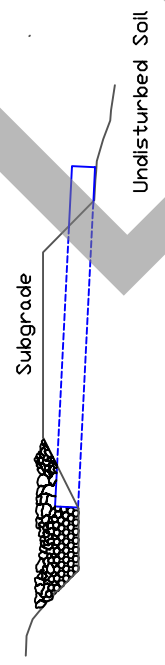
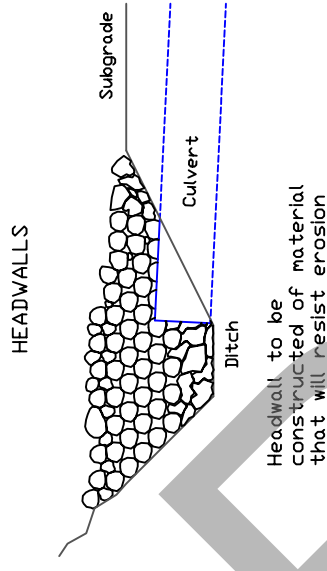
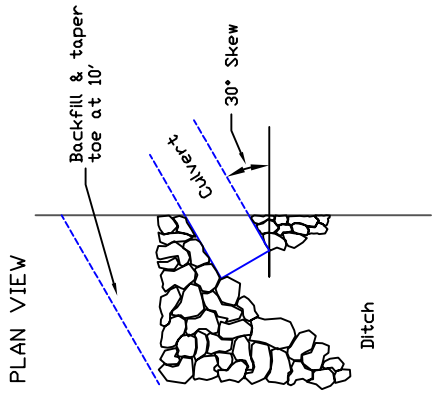
Brushing limits as shown on typical section

50' taper

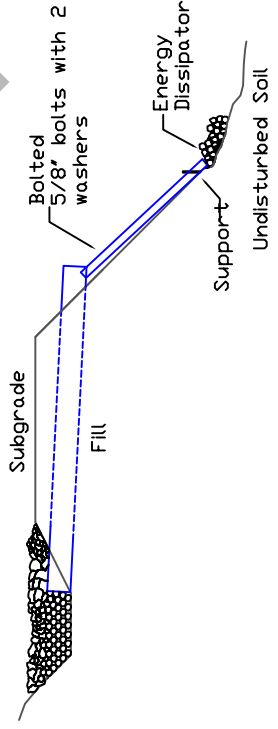
extra 4' brushing limits on inside of curve.

50' taper

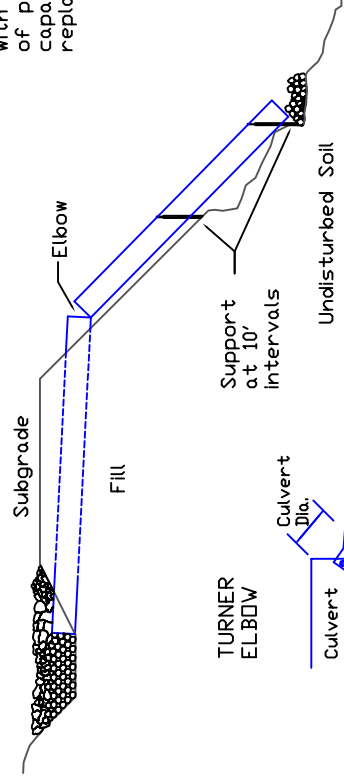
# CULVERT AND DRAINAGE SPECIFICATIONS DETAIL - D1



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



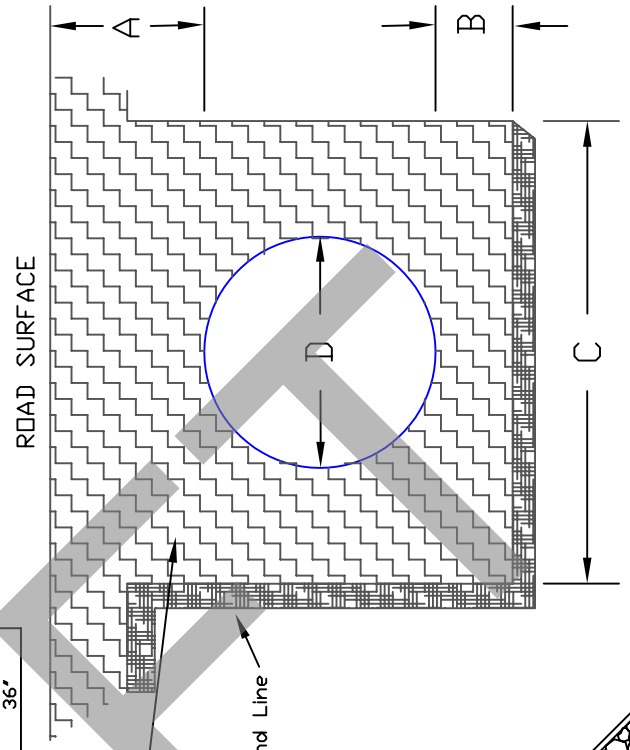
**DOWNSPOUT**  
Use where ground conditions are irregular.



**TURNER ELBOW**  
Culvert Dia.  
Culvert  
Bolted 5/8" bolts with bridge washers on both sides

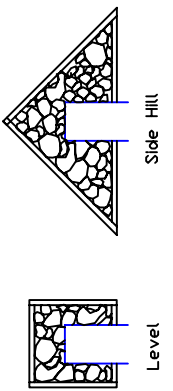
| Minimum Cover | A   | Minimum Bed Depth | B   | Min. Trench Width | C   | Nominal Diameter | D   |
|---------------|-----|-------------------|-----|-------------------|-----|------------------|-----|
| 12"           | 12" | 6'                | 36" | 36"               | 36" | 18"              | 18"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

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



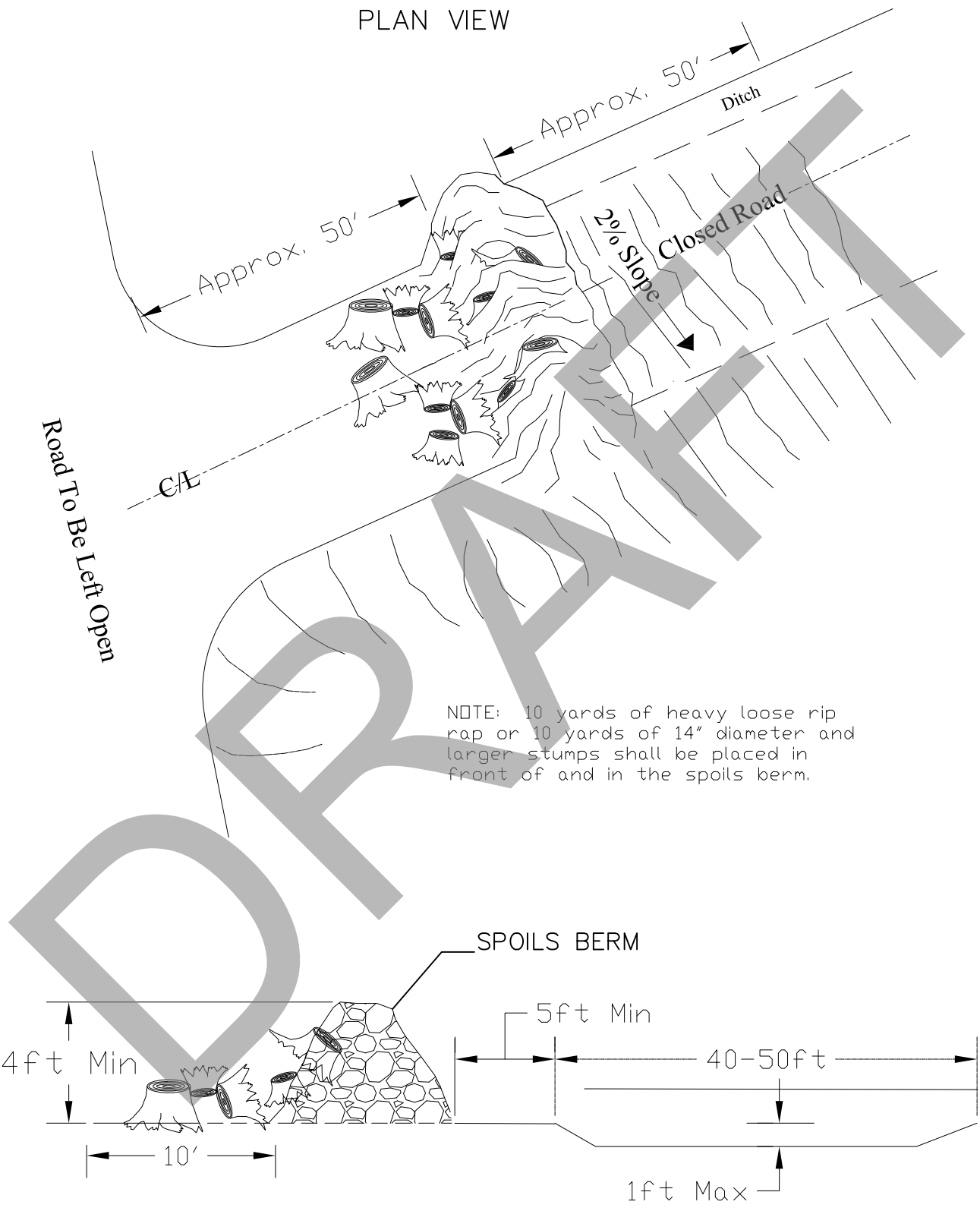
**BEDDING MATERIAL:**  
Use granular material - 3' minus. Large rocks shall be replaced with suitable material. Materials of poor or non-uniform bearing capacity shall be removed and replaced with suitable fill.

**DISSIPATOR SPEC'S**  
Size in Culvert Diameters  
Area 2 X 2  
Depth 1  
Aggregate 1/3



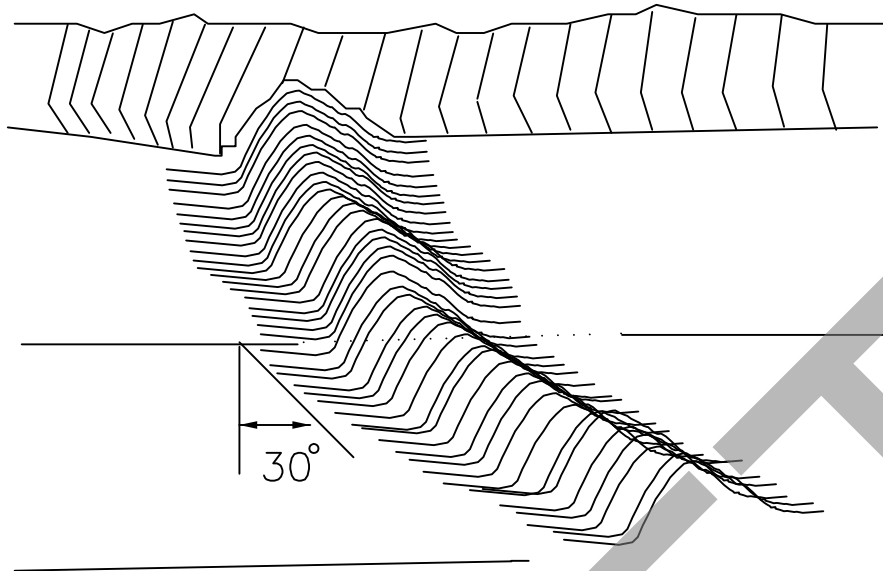
# SPOILS BERM DETAIL-D8

## PLAN VIEW

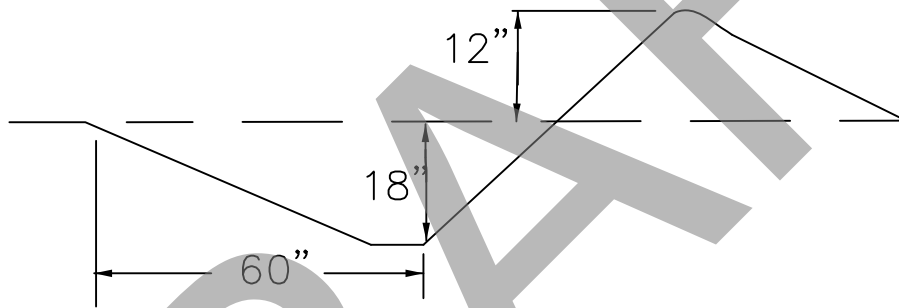


Note:  $\frac{1}{3}$  of stumps or rip rap shall be partially buried in the spoils berm and/or road surface.

Top View

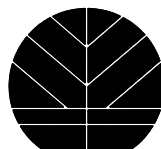


Side View



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

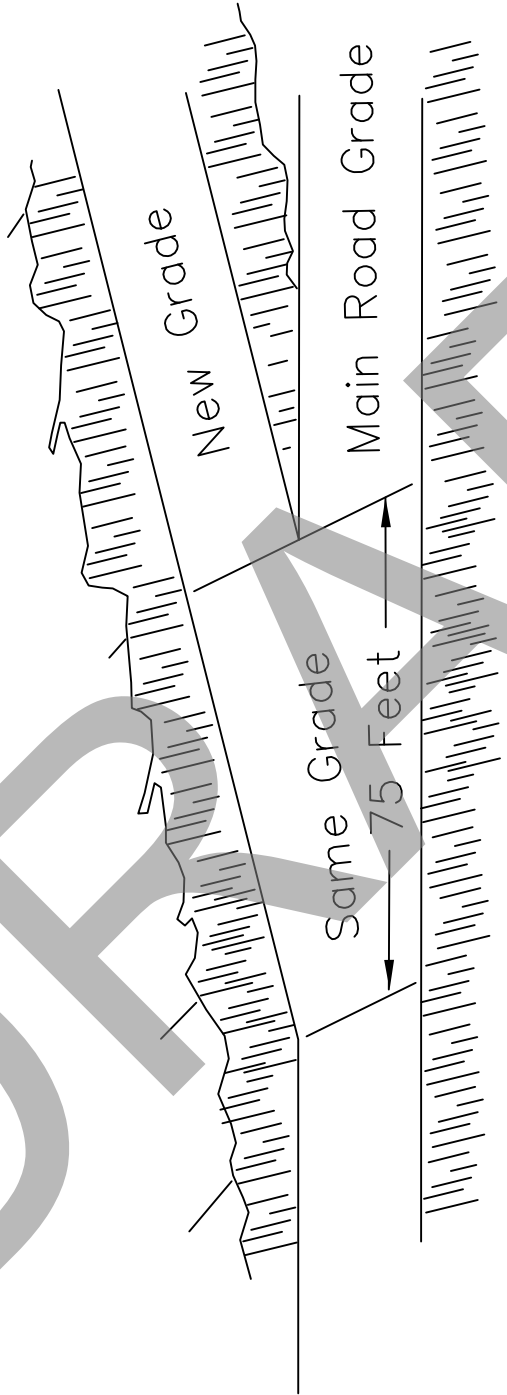
Designed By: Stash Slabinski 9/06/05

Drawn By: Stash Slabinski 9/06/05

Revised:

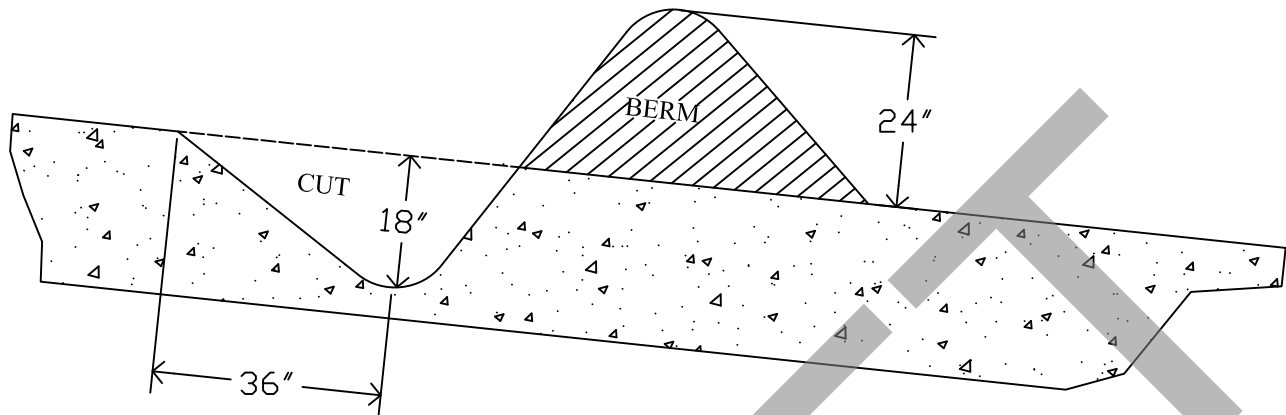
1 OF 1

# Intersection Detail



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

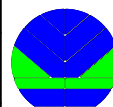
# Non-Driveable Water Bar Detail



## 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

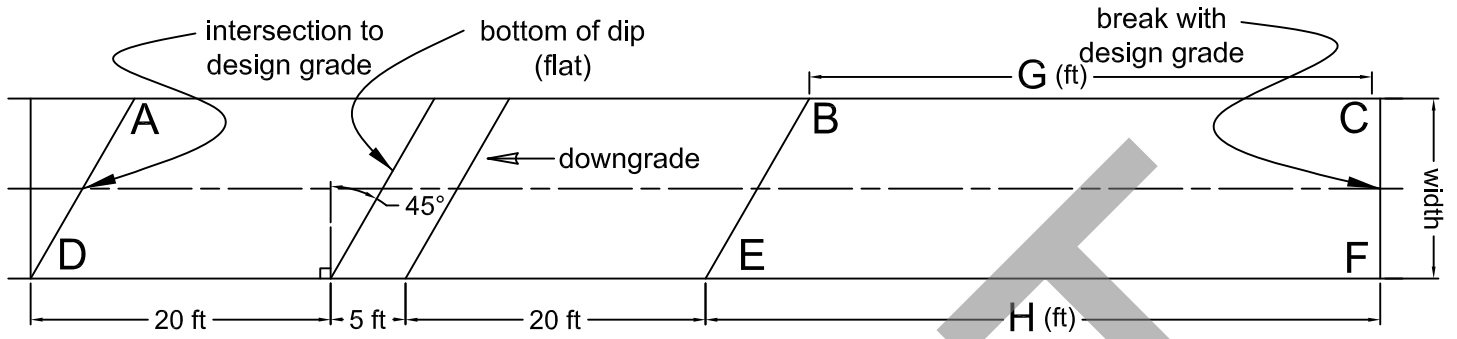
|  |                 |         |
|--|-----------------|---------|
| Northeast Region<br>Colville, Washington |                 |         |
| Designed By:                             | Stash Slabinski | 4/21/05 |
| Drawn By:                                | Stash Slabinski | 4/21/05 |

Revised:

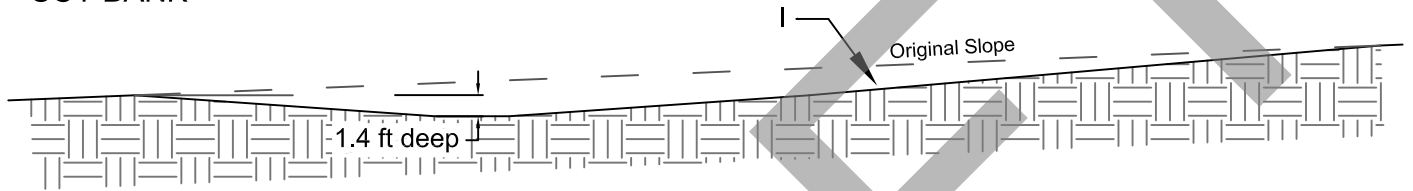
1 OF 1

# STANDARD 45° ROLLING DIP

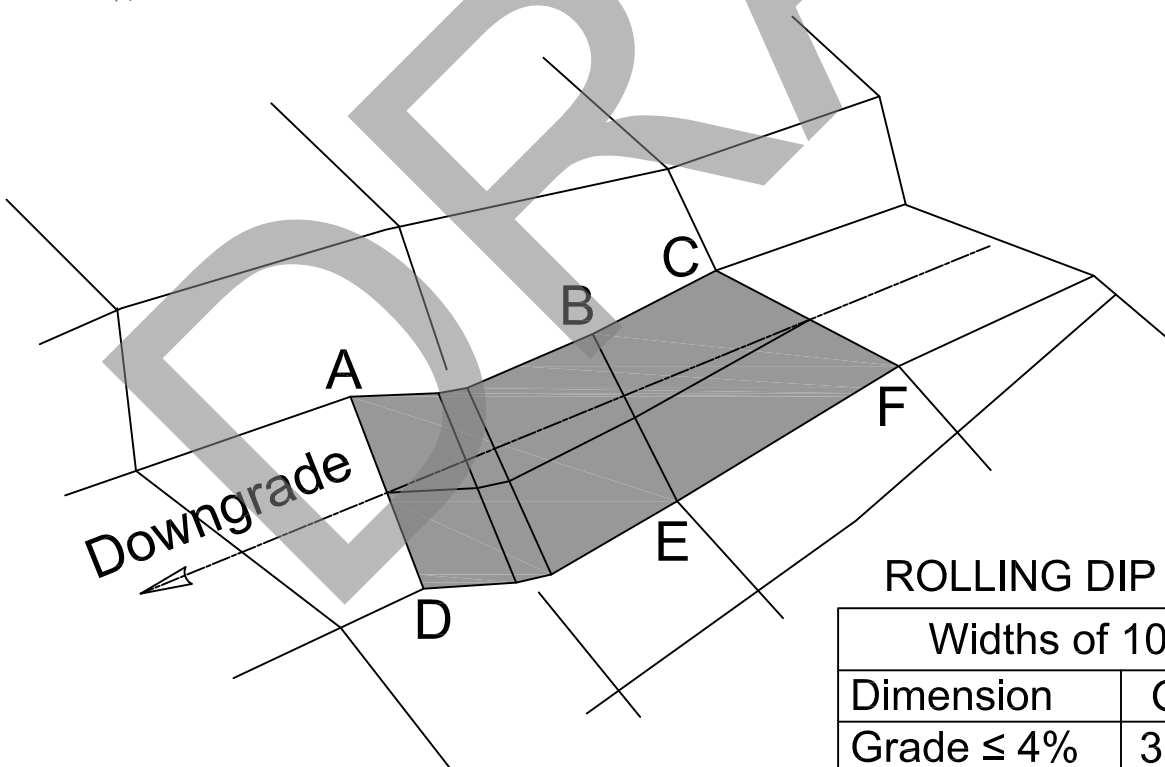
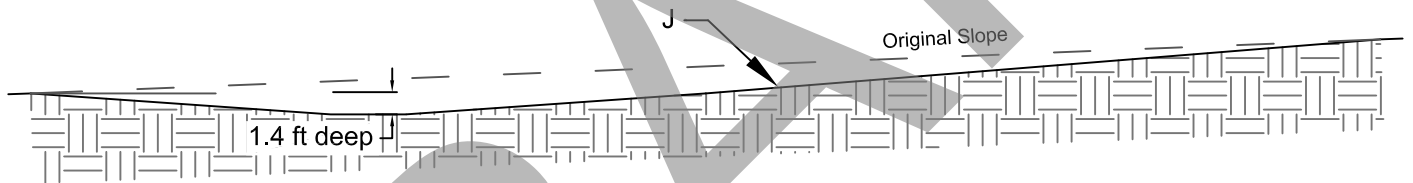
## PLAN OF ROLLING DIP



## CUT BANK



## FILL SLOPE

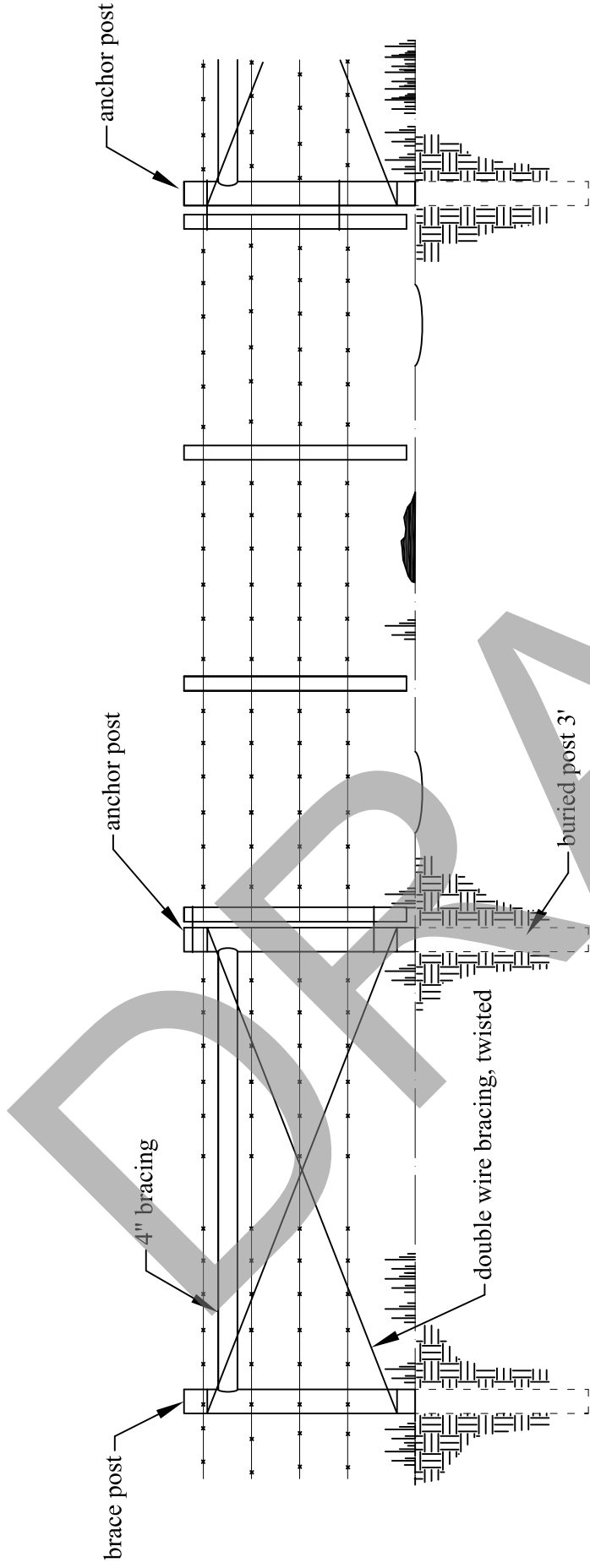


## ROLLING DIP DEMENSIONS

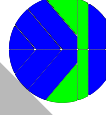
| Widths of 10' through 14' |     |     |     |     |
|---------------------------|-----|-----|-----|-----|
| Dimension                 | G   | H   | I   | J   |
| Grade $\leq$ 4%           | 38' | 45' | 9%  | 8%  |
| Grade = 6%                | 48' | 55' | 11% | 11% |
| Grade = 8%                | 58'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



# 4 Strand Wire Gate and Gate Brace Detail



1. First wire from ground must be 14" high.
2. Subsequent wires must be no less than 10" apart.
3. Double wrap all bracing.
4. All brace posts must be 7' long, 5" in diameter, and embedded 3'.
5. Dap braces into posts.
6. Spike braces to posts.
7. There must be 8' on center between anchor post and brace post.
8. The gate stays must be no less than 5' apart and 1 1/2" in diameter.
9. Barbed wire must be 12 1/2 gauge conventional or 15 1/2 gauge high-tension. 2 twisted strands with 14 gauge or heavier two-point barbs on approx. 5 in centers. Class 1 (min. or equivalent) zinc-coating as per ASTM A-121.
10. There must be a gate brace at both ends of the gate.



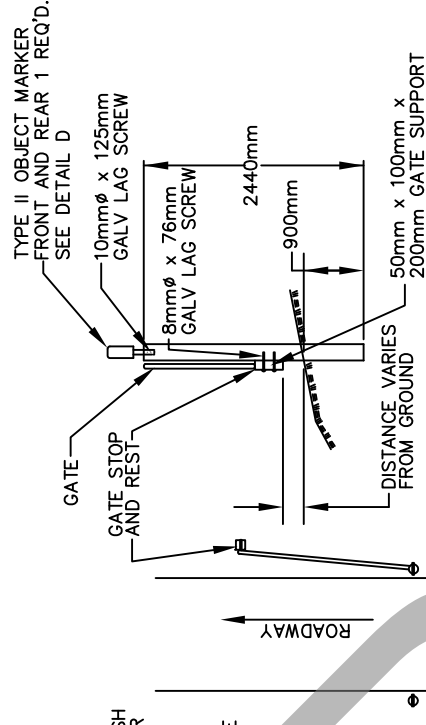
Washington State Department of  
Natural Resources

Northeast Region  
Colville, Washington

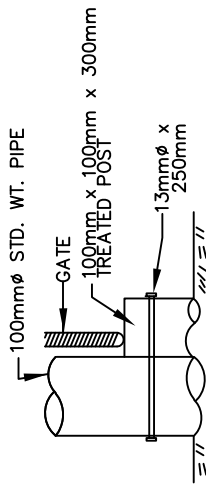
Drawn by: Jason Bauer  
Revised: 10/06/2009

# STOCK GATE (TUBE GATE) – OPTION 1

1. THE GATE SHALL BE STOCKYARD TYPE OR ITS EQUIVALENT. THE GATE FRAME SHALL BE FABRICATED FROM 32mm HIGH STRENGTH STEEL TUBING (450MPa MIN. YIELD STRENGTH) THE VERTICAL STAYS SHALL BE HIGH STRENGTH PRESS FORMED 76mm x 300mm GAUGE STEEL (OR EQUAL) ON BOTH FACES. FINISH ON THE GATE AND THE TWO GATE POSTS SHALL CONSIST OF AT LEAST ONE PRIMER COAT AND ONE COAT OF DARK GREEN SURFACE PAINT.
2. ALL BOLTS AND LAG SCREWS SHOWN INCLUDE WASHERS AND NUTS.
3. BARRICADE MARKER PANELS SHALL BE ALUMINUM OVERLAIN WITH "3 M" REFLECTIVE SHEETING WIDE ANGLE FLATTOP PRESSURE SENSITIVE NO. 3280 IMPERIAL WHITE TRANSPARENT "STOP SIGN RED" CODE NO. 712 SHALL BE APPLIED BY SILK SCREEN PROCESSING, AIR BRUSHING OR SPRAYING TO PRODUCE STRIPING, EQUAL PRODUCTS AND PROCESSES MAY BE APPROVED.
4. WOODEN POST AND WOODEN GATE REST SHALL BE TREATED WITH PENTA CHLOROPHENAL WITH MINIMUM NET RETENTION OF 8 kg/m<sup>3</sup> (DRY CRYSTAL).
5. CONCRETE SHALL CONFORM TO SECTION 602–METHOD A, B or C.
6. ALL STEEL MEMBERS EXCEPT LAG SCREWS, CHAIN, GATE, FRAME, REBAR, AND BOLTS SHALL BE A-36.

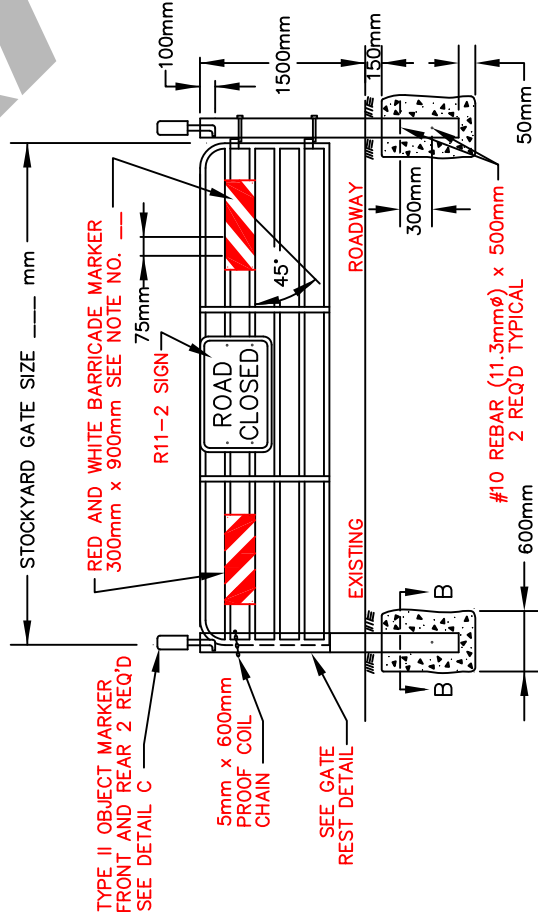


DETAIL C  
STRAP IRON  
DETAIL D



GATE REST DETAIL

#10 REBAR (11.3mm $\phi$ ) x 500mm  
2 REQ'D TYPICAL

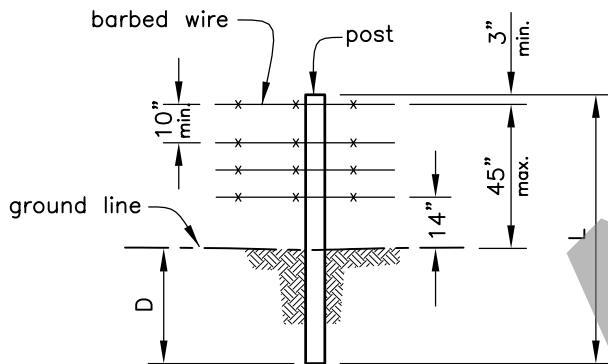
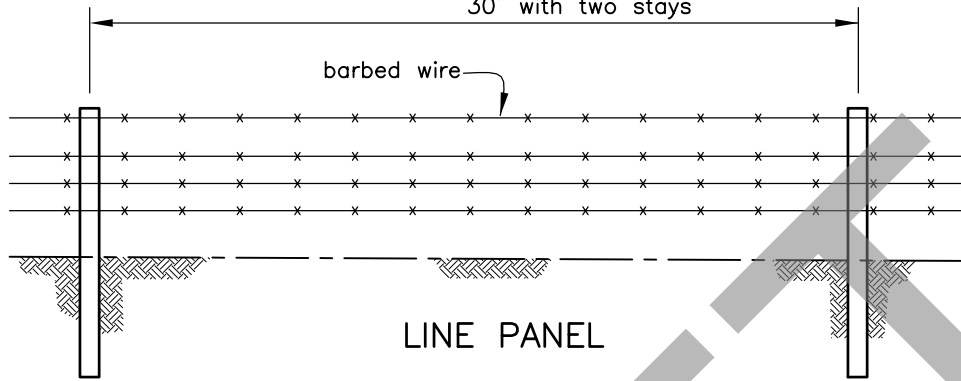


SECTION B-B

| ITEM         | DESCRIPTION                                      | QUANTITY     |
|--------------|--|--------------|
| BOLT         | 13mm $\phi$ x 250mm – FOR GATE REST              | 1 EA.        |
| BOLTS        | 8mm $\phi$ x 64mm – FOR SIGNS                    | 12 EA.       |
| CHAIN        | 5mm PROOF COIL CHAIN 600mm LONG                  | 1 EA.        |
| GATE         | STOCKYARD TYPE                                   | 1 EA.        |
| GATE POSTS   | 100mm $\phi$ STANDARD WEIGHT PIPE                | 2 EA.        |
| REBARS       | #10 REBAR (11.3mm $\phi$ ) x 500mm long          | 4 EA.        |
| SIGN         | TYPE II OBJECT MARKER                            | 3 EA.        |
| SIGN         | RED AND WHITE BARRICADE MARKER                   | 2 EA.        |
| SIGN         | R 11-2   | 1 EA.        |
| TREATED POST | 100mm x 100mm x 2440mm TREATED POST              | 1 EA.        |
| TREATED POST | 100mm x 100mm x 300mm TREATED POST               | 1 EA.        |
| CONCRETE     | FOOTINGS   | 0.6CU. Meter |
| LAG SCREW    | 10mm $\phi$ x 125mm LONG GALV.                   | 2 EA.        |
| LAG SCREW    | 8mm $\phi$ x 76mm LONG GALV.                     | 2 EA.        |
| FIR BLOCK    | 50mm x 100mm x 200mm GATE SUPPORT                | 1 EA.        |
| STRAP IRON   | 64mm x 6mm x 500mm TYPE II SIGN MOUNTING BRACKET | 3 EA.        |

4 STRAND STANDARD POST AND WIRE FENCE

max. spacing = 20' without stay  
25' with one stay  
30' with two stays



BARBED WIRE 12 1/2 gauge conventional or 15 1/2 gauge high-tension

2 twisted strands with 14 gauge or heavier two-point barbs on approx. 5 inch centers.

Class 1 (min. or equiv.) zinc-coating as per ASTM A-121.

BARBED WIRE DETAIL

|                |  |  |
|----------------|--|--|
| LINE           | Plastic: L = 6 ft. min.<br>D = 24 in. min.<br>Dia. = 3-3/8 in. min.  | Fiberglass: L = 6 ft. min.<br>D = 24 in. min.<br>Dia. = 1-1/4 in. min.   |
|                | Wood: L = 6 ft. min.<br>D = 24 in. min.<br>Dia. = 3 in. min.   | Steel: L = 5-1/2 ft. min.<br>D = 18 in. min.<br>Standard "T" or "U"; > 1.25 lbs/ft of length                                     |
| CORNER OR GATE | Wood: L = 7 ft. min.<br>D = 3 ft. min.<br>Dia. = 5 in. min.  | Steel: L = 7 ft. min.<br>D = 3 ft. min. (set in conc.)<br>Dia. = Round 2-3/8 in. O.D. or<br>Angle iron 2-1/2 x 2-1/2 x 1/4 (in.) |
| STAYS          | Wood: 1-1/2 in. dia. min. of durable wood<br>Fiberglass: Any manufactured for this purpose<br>Wire: 9 1/2 gauge, zinc coated, twisted, manufactured for this purpose |  |

SPECIES for all wood: \_\_\_\_\_

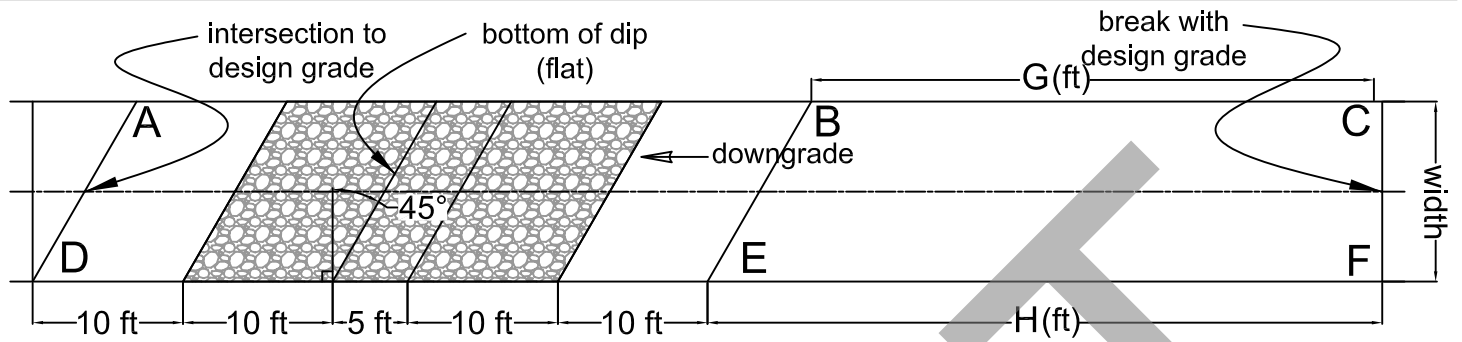
SPECIAL INSTRUCTIONS  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Drawing not to scale. Standardized drawing must be adapted to the specific site.

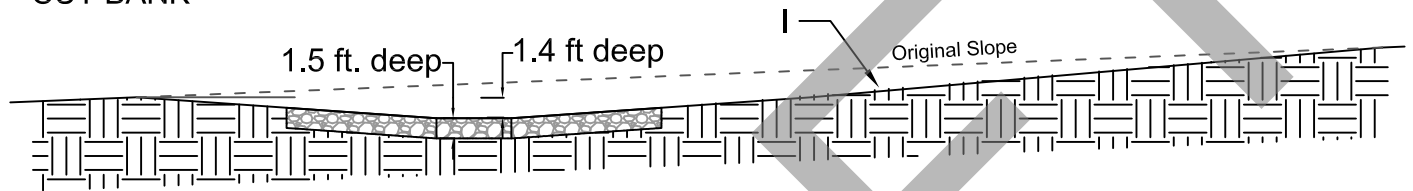
|                              |                |
|------------------------------|----------------|
| JOB CLASS                    | Date           |
| CAD FILE NO.<br>LSK-0010.DWG | Designed _____ |
| SHEET OF                     | Drawn _____    |
|                              | Checked _____  |
|                              | Approved _____ |

# ARMORED ROLLING DIP - D6

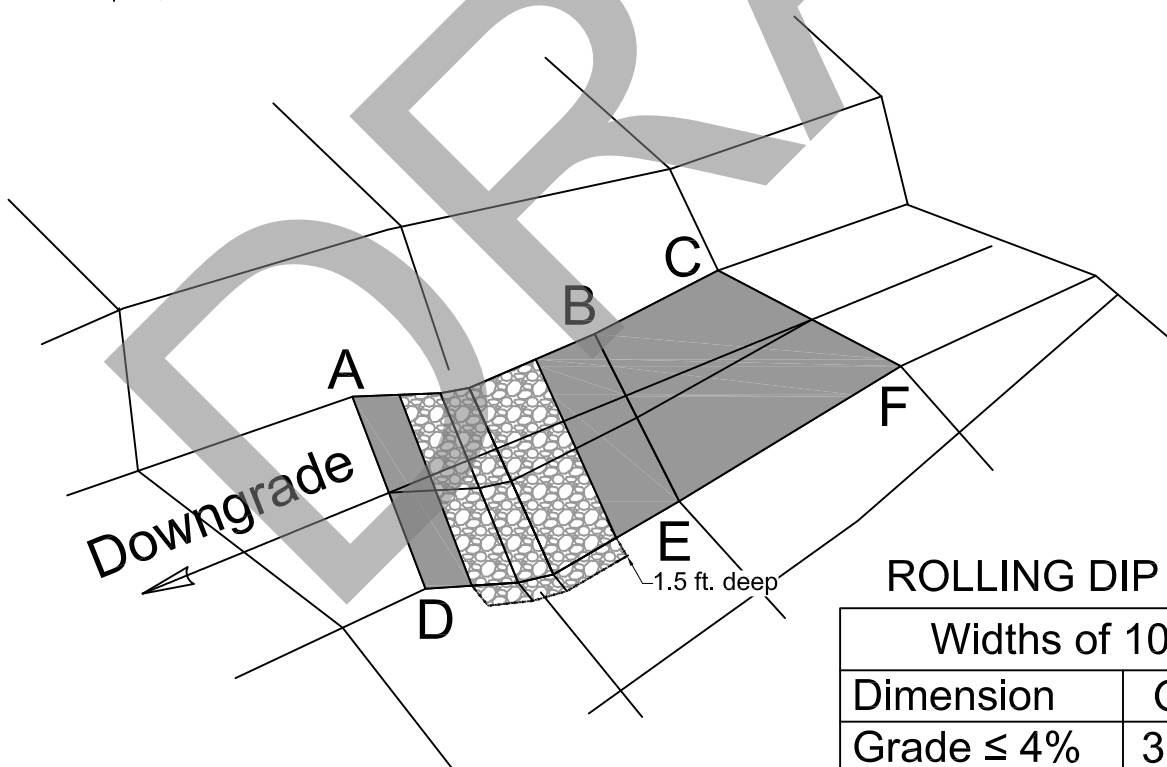
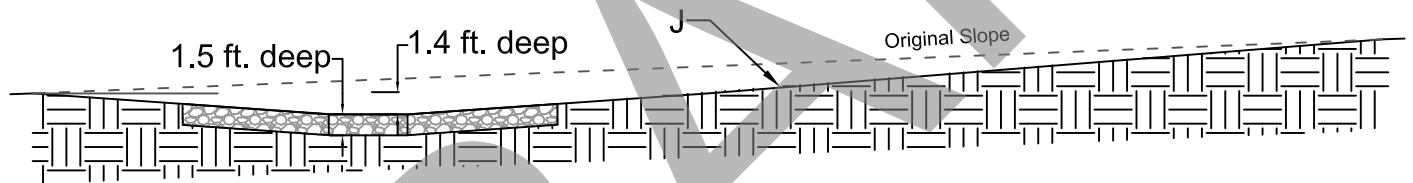
## PLAN OF ARMORED ROLLING DIP



### 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% |

# KLONDIKE - Road Development Costs

REGION: Northeast  
DISTRICT: Highlands

CONTRACT: Klondike

ENGINEER: Mackenzie Karnstein

DATE: 2-26-

Oct-23

| ROAD NUMBERS:            | Construction   | Optional Construction | Maintenance  | Abandonment  | Decommission         |
|--------------------------|--|-----------------------|--|--------------|----------------------|
|                          | E373236E<br>E373236H<br>E373318E<br>E373318F<br>E373318K<br>E373319E<br>E373319G<br>E373319H<br>E373319J<br>E373320E<br>E373331G | E373319K              | E373236E<br>E373318E<br>E373318F<br>E373318K<br>E373319E<br>E373319F<br>E373319G<br>E373320A<br>E373320E |              | E373319E<br>E373319G |
| ROAD STANDARD:           | Construction   | Optional Construction | Maintenance  | Deactivation | Decommission         |
| NUMBER OF STATIONS:      | 192.54   | 6.02                  | 313.58   | 0.00         | 54.77                |
| CLEARING & GRUBBING:     | \$0.00   | \$ -                  | \$ 18,565.68   |              |                      |
| EXCAVATION AND FILL:     | \$ 116,234.51  | \$ 2,778.77           | \$ 12,195.24   |              |                      |
| MISC. MAINTENANCE:       | \$ 43,997.00   | \$ 182.95             | \$ 42,029.67   | \$ -         | \$ 750.00            |
| ROAD ROCK:               | \$ 2,354.46  | \$ -                  | \$ 431.75  |              |                      |
| ADDITIONAL ROCK:         |  |                       |  |              |                      |
| CULVERTS AND FLUMES:     | \$12,110   | \$0                   | \$2,193  |              |                      |
| STRUCTURES/MATERIALS     | \$ -   | \$0                   | \$0  |              |                      |
| <b>TOTAL COSTS:</b>      | \$174,696  | \$2,962               | \$75,416   | \$ -         | \$ 750.00            |
| <i>COST PER STATION:</i> | <i>\$907</i>   | <i>\$492</i>          | <i>\$240</i>   | <i>\$0</i>   | <i>\$14</i>          |

| MOBILIZATION: | \$/per move | # of moves | Total   |
|---------------|-------------|------------|---------|
|               |             |            | \$4,248 |

TOTAL (All Roads) = \$258,071  
 SALE VOLUME mbf = 3,738.00  
 TOTAL \$/MBF = \$69