State of Alaska

Department of Natural Resources

Division of Forestry

Southeast Area - Haines State Forest

Forest Land Use Plan

BABY BROWN TIMBER SALE NSE – 1549 AMENDED

BABY BROWN/GLACIER SIDE SALE

NSE - 1594

January 2021

Table of Contents

I. Introduction

Project File Number: NSE - 1594

Division of Forestry Office: Haines
Haines Forester: Gregory J Palmieri
Forest Practices Geographic Region (AS 41.17.950): One

This Forest Land Use Plan (FLUP) describes proposed forest operations on approximately 1006 acres of land in the Haines State Forest some 37 miles northwest of Haines. It is intended to provide the best available information regarding the proposed harvest of timber, and management of other non-timber resources in compliance with AS 38.05.112 and AS 41.17.060.

This amended FLUP is for a timber sale which has been determined to be in the best interest of the State pursuant to AS 38.05.035 (e) and 38.05.945; Best Interest Finding (BIF), Baby Brown Timber Sale/NSE – 1549, March 15, 2015 and BIF/FLUP for the Glacier Side 2 Timber Sale/SE-717-H, March 16, 2006. The revised FLUP for the Baby Brown Timber Sale was adopted by the commissioner on February 15, 2018. The final decision BIF/FLUP for the Glacier Side 2 Timber Sale was signed March 16, 2006.

The prior public record for these two sales is kept in their respective files at the Haines DOF office.

This amended FLUP represents the combination of Glacier Side 2 with Baby Brown to offer as one sale. Combining these two sales into a single sale offering is consistent with the original intent of the timber sale and the agency/public review process that have been completed and does not alter the sales. The function of this document is to centralize the operational information for the purpose of clarity to aid the administration of the project.

This timber sale is designed to be consistent with the management intent of the following documents:

Haines State Forest Management Plan (Rev. 2002)

Chilkat Bald Eagle Preserve Management Plan (Rev. 2002)

Northern Southeast Area Plan (2002)

The administrative record for this sale is maintained at the Division of Forestry Southeast Area, Haines State Forest Office filed as NSE - 1594.

A. Legal Description (see also map in Appendix A): This proposed sale is found within portions of Sections 14, 15, 16, 21, 22, 23, 24, 25, 26, 27, & 36 within Township 28 South Range 53 East, and portions of Sections 19, 28, 29, 30, 31, 32, & 33 Township 28 South Range 54 East, Copper River Meridian. The USGS quadrangle map for this area is Skagway B4, 1:63,360.

B. Operational Period May 2021 to December 2026.

C. Timber Disposal

Timber will be sold and will have a contract administrated by the State.

D. Objectives and Summary

1. To follow the Department of Natural Resources (DNR) constitutional mandate to encourage the development of the State's renewable resources, making them available for maximum use consistent with the public interest. Sustain and promote a healthy**,** long-term timber industry in the state, through providing a secure source of timber for harvest while protecting other resources such as fish and wildlife.

2. To help the State's economy by providing royalties to the state in the form of stumpage receipts, as well as contributions to local economies through wages, purchases, jobs and business.

3. To improve forest growth and vigor by harvesting and replacing mature or over mature forest stands with regenerating stands, while protecting and maintaining other resource values. The actions authorized under this decision will follow the constitutional mandate of sustained yield and shall adhere to multiple use management as described in the Haines State Forest Management Plan (HSFMP).

4. The sale will provide road maintenance and repair which will provide continued recreation use.

II. Affected Land Owners/Jurisdictions

Activity on ownership:	Access	Harvest	Written Representative Approval
A. State			
[X] Haines State Forest	[ ]	[X]	[X]
[ ] Other state land managed by DNR	[ ]	[ ]	[ ]
[ ] University of Alaska	[ ]	[ ]	[ ]
[ ] Mental Health Trust	[ ]	[ ]	[ ]
[ ] School Trust	[ ]	[ ]	[ ]
B. ***Other Land Ownership***	[ ]	[ ]	[ ]

Land Owner: _____

Land Owner Representative: _____

III. Harvest Methods, Silvicultural Actions, and Management of Non-timber Resources

Forest operations will be designed to:

- Protect fish habitat and water quality in compliance with the best management practices in 11 AAC 95.260-.370,
- Manage for the other land uses and activities identified in AS 41.17.060 and the Best Interest Finding for this timber sale, and
- Result in the sustained yield of timber and maintenance of site productivity in compliance with AS 41.17.060(c) and 11 AAC 95 .375-.390.

Harvest and Silvicultural Methods:

The harvest and silvicultural methods are attached to this document in Appendix B.

A. Timber Stand Description and History

The timber is predominately composed of mature and over mature Hemlock/Spruce stands on productive sites within the Haines State Forest. The acres in this sale area have been identified as available for timber harvest as a primary use in the Haines State Forest Management Plan. Historically, some stands between Glacier and Porcupine Creeks in the sale area were harvested in the early 1900's as a result of development to support mining activity in that area. The harvest units addressed in this FLUP have timber ranging from 100 to 250 years old (HSF Inventories, 1965/1985/2012).

B. Timber Harvest Activities

Timber Harvest Activities are displayed in Table 1.

Table 1. Timber Harvest Activities

Unit ID	Acres	Topography	Silvicultural Action	Logging Method
01	52	Broken Hillside/Flat Areas	CC/Partial	Ground-based/Cable
02	79	Broken Hillside	CC/Partial	Ground-based/Cable
03	140	Flat Ridge Top/Hillside	CC/Partial	Ground-based/Cable
04	65	Ridge Top/Hillside	CC/Partial	Ground-based/Cable
05	69	Broken Hillside	CC/Partial	Ground-based/Cable
06	61	Broken Hillside	CC/Partial	Ground-based/Cable
07	34	Hillside	Clear Cut	Cable
08	76	Hillside	CC/Partial	Ground-based/Cable
09	45	Hillside	Clear Cut	Cable
10	149	Broken Hillside/Flat Areas	CC/Partial	Ground-based
11	86	Broken Hillside	CC/Partial	Cable
701	39	Broken Hillside	CC/Partial	Ground-based/Cable
702	112	Broken Hillside	CC/Partial	Ground-based/Cable

CC= Clear Cut

C. Site Preparation

Site preparation is a performance requirement of the logging contract. A separate site preparation will not be generally necessary in areas with sufficient soil disturbance by logging during the summer and in areas with sufficient residual stocking. If logging activity continues into winter months when more than 12 inches of snow coverage occurs across a harvest unit, subsequent scarification will be required in the absence of snow and frozen conditions. In the case that site preparation is required due to winter logging, the specification for that activity will be addressed in the Purchaser's Operating Plan.

[ ] Site preparation will be implemented and described in Table 2:

Table 2. Site Preparation

Unit	Acres	Site Preparation Method	Date of Completion

D. Reforestation

[X] Clear Cut

[X] Partial Harvest:

[ ] Region I: leaving more than 50% live basal area (11 AAC 95(b)(3))

[ ] Region II/III: Relying on residual trees to result in a stocking level that meets standards of 11 AAC 95.375 (b 4). Stocking levels will be calculated subject to the methods below:

Table 3. Stocking Level Requirements

Average DBH (Diameter at breast height)	Residual Trees (Trees / acre)	Minimum Stocking Standard (Trees/ acre)	Percent Stocking
> 9”		120	%
6” to 8”		170	%
1” to 5”		200	%
Total Residual Stocking			%

Seedlings Required:

Percentage Under stocked = 100 – Total Residual Stocking %

Percentage Under stocked = 100 –_____% =_____%

Seedlings/ Acre Required = Percentage Understocked/100 x 450

Seedlings/ Acre Required =_____% /100 x 450 = _____

[X] Natural regeneration

Reforestation requirements for these harvest units will be met through natural regeneration of Sitka Spruce and Western Hemlock. Based on prior harvest experience in the adjacent areas, reforestation meeting Region 1 standards is projected to naturally occur. If after five years from harvest completion these standards are found not to be successfully met, the DOF will initiate a planting program to ensure restocking requirements are met in a timely manner.

E. Slash Abatement

Potential for insect infestations caused by slash accumulations exists as harvest debris piles could provide available hosting material for Spruce bark beetles *(Dendroctonus rufipennis)* identified as damaging to live trees when present in high numbers. Slash abatement for controlling infestations will be implemented as required by 11AAC 95.370.

Lop and scatter slash from Sitka Spruce trees harvested; accumulations will be kept to less than 3 feet in height.

F. Timber Harvest—Surface Water Protection

There are no known anadromous classified streams in the harvest units or within 300 feet of the harvest units addressed in this FLUP.

[ ] There are no streams or lakes abutting or within a harvest unit.

[X] Known surface waters and protection measures are described in Table 4 below.
Locations are included in the operational map in the Appendices

Table 4. Protection for Known Surface Waters

Unit	Waterbody Name	AS 41.17.950 Classification	ADF&G AWC #	Required Riparian Protection	Site-specific actions to minimize impacts on riparian area
All	All	Non-classified surface waters	None	None	Implement FRPA and Regulations, including actions such as: full suspension, split yarding, directional falling, will not buck or limb in or over surface waters, clear logging slash in surface waters as yarding occurs, minimize the introduction of logging debris in and adjacent to waters through preplanning with the purchaser, coordinate cutting activity, and ensure operator is aware of surface water location.
1/8/10/ 11/701	Several and Unnamed	Tributary to Anadromous	None	Directional falling	Site specific logging plan by purchaser approved by DOF*

*The site specific operating plan will have as its prime objective the maintenance of existing water quality by retaining bank stability and, to the maximum extent feasible, the avoidance of instream activity to minimize the introduction of soil, debris, slash and petroleum products directly and indirectly into the classified waters.

Surface waters were reviewed by the Department of Fish and Game:

[X] During the timber sale planning process

[X] During the agency review conducted for the Best Interest Finding for this sale

[X] During the drafting of this Forest Land Use Plan

[ ] Stream Crossings (Title 16) Permits are needed per ADF&G Division of Habitat

Surface waters listed were reviewed by the Department of Environmental Conservation:
[ ] During the timber sale planning process
[X] During the agency review conducted for the Best Interest Finding for this sale
[X] During the drafting of this Forest Land Use Plan
Non-classified surface waters are subject to applicable BMPs in 11 AAC 95.

G. Wildlife Habitat

[ ] Wildlife species and allowances for their important habitats were addressed in writing by the Department of Fish & Game during the Best Interest Finding review.

[X] Wildlife species and allowances for their important habitats were addressed in writing by the Department of Fish & Game during the drafting of this Forest Land Use Plan.

Silvicultural practices to be applied to minimize impacts to wildlife habitat or wildlife management:
[X] Timber retention - concentrations of timber surrounding harvest units, or interspersed within harvest units will provide cover.
[X] Snag Retention- snags or isolated trees left for cavity nesting species.
[ ] Large Woody Debris – concentrations of downed timber or logging debris interspersed within harvest units to provide cover left on site.
[ ] Other actions

H. Cultural and Historical Resource Protection

[X] This project was reviewed by the State Historic and Preservation Office (SHPO).
[X] No artifacts have been reported within the project area(s).
[ ] Known or likely sites have been identified and a mitigation plan is in place. (Describe the mitigation actions.)

I. Other Resources Affected by Timber Harvest and Management

During the Public Review Process of the Baby Brown timber sale Preliminary BIF the DOF received comments referring to the possible view of harvest areas from the Haines Highway. Taking public comment into consideration during the preparation of the BIF a visibility analysis from three observation points along the Haines Highway concluded that approximately 80% of the proposed harvest areas would be visible from those positions. This FLUP presents the final design of the harvest units including a harvest plan that further considers the scenic impacts from the same three observation points along the Haines Highway.

The new analysis of the potential view of all the harvest units designed in this sale concludes that no more than 64% of harvest activities would be visible from any of the three observation points along the Haines Highway.

The harvest plan designed for this sale combines clear cutting with selective harvest of

timber that will additionally contribute to the reduction of the visibility of harvest activity from the Haines Highway viewpoints.

The DOF has reviewed the Alaska Department of Transportation planning documents for the Haines Highway improvement project, the Haines Borough Comprehensive Plan, and the Haines Highway Corridor Cooperative Management Plan for identification of scenic value related to the Haines Highway corridor and the potential impacts from the proposed timber harvest on the Haines Highway view shed. The DOF harvest plan prepared for this sale represents a strategic effort to diminish the potential for harvest activities to be visible from the Haines Highway according to the management guidelines and intent described in the Haines State Forest Management Plan (rev. 2002).

Table 5. Other Affected Resources/ Areas of Concern.

Impacted Resource	Reviewing Agency	Impact/ Mitigation Actions
Scenic	DOF	Retention of standing trees in units and distribution of remaining timber around designated units.

IV. Roads and Crossing Structures

A. Road Design, Construction, and Maintenance

Roads will be designed, constructed, and maintained to prevent significant adverse impacts on water quality and fish habitat (AS 41.17.060(b) (5)), and site productivity (AS 41.17.060(c) (5)). Roads will comply with the best management practices in the Forest Resources and Practices Regulations (11 AAC 95.285 – 95.335)

Road construction will follow guidelines described in the contract and HSFMP. Region One forest road construction standards will be used (See Appendix B2).

Roads or other means required for the access and removal of this timber from the harvest areas or units are listed in Table 6.

Table 6. Road Construction and Use

Road ID	Harvest Unit	Road Miles	Road Type	Maximum Grade	Constructed by	Maintained by
Main Haul "Porcupine Road"	Units 701/702/8/9/ 10/11	Glacier Creek crossing structure (60ft MSB)	Primary	5%	Installed by Purchaser	Purchaser

Road ID	Harvest Unit	Road Miles	Road Type	Maximum Grade	Constructed by	Maintained by
Main Haul "East Glacier Creek Road"	Unit 1	1.25	Primary	10%	Existing	Purchaser Constantine Metals
Spur A	Unit 1	0.3	Spur	10%	Purchaser	Purchaser
Main Haul 1100 Road	Unit 2 - 5	2.76	Spur	15%	Purchaser	Purchaser
Spur 1110	Unit 2	0.06	Spur	5%	Purchaser	Purchaser
Spur 1120	Unit 3	0.4	Spur	12%	Purchaser	Purchaser
Main Haul 1200 Road	Unit 6 - 7	0.94	Spur	10%	Purchaser	Purchaser
Spur 1210	Unit 6	0.09	Spur	15%	Purchaser	Purchaser
Main Haul Reconstruction 1400 Road	Unit 8 - 9	2.64	Primary	5%	Purchaser	Purchaser
Spur 1305	Unit 8	0.59	Spur	15%	Purchaser	Purchaser
Spur 1410	Unit 9	0.13	Spur	12%	Purchaser	Purchaser
Main Haul 1400 Road	Unit 10 – 11	1.39	Primary	10%	Purchaser	Purchaser
Spur 1420	Unit 10	0.3	Spur	10%	Purchaser	Purchaser
Spur 1430	Unit 11	0.55	Spur	12%	Purchaser	Purchaser
Main Haul 1405 Road	Unit 701-702	1.45	Primary	12%	Purchaser	Purchaser

**Note: Roads must be less than 20% grade per 8 AAC 61.1060 Additional Logging Standards*

**Note: Maximum road grade shall be based on DOF road class unless otherwise specified.*

B. Side Slopes / Mass Wasting

For slopes over 50%, identify indicators of unstable areas (landslide scars, jack-straw trees, gullied or dissected slopes, high density of streams or zero-order basins, or evidence of soil creep. Attach location specific road design that potentially mitigates identified areas of unstable soils.

Maximum percent side slopes: 67%
[ ] There are no slopes >50%
[ ] There are no indicators of unstable areas where roads will be constructed
[X] Indicators of unstable areas were identified and will be mitigated by actions indicated below.
[X] Full benching will be constructed to help ensure slope stability
[ ] Full benching is not required for roads in this project
[X] End hauling will be implemented to help ensure slope stability
[ ] End hauling is not necessary for roads in this project.

Gullied/dissected slopes greater than 50% were located along the Main Haul Road construction between Unit 3 and Unit 4 from station 87+52 to 92+32. Full Bench construction with end haul of excavated material will be required through this 480-foot section to maintain slope stability.

Are you removing or replacing drainage structures? [X] YES [ ] NO

Two drainage structures are scheduled to be replaced along the reconstructed segment of road west of Glacier Creek required in this sale. The first drainage structure replaces a 20' log bridge at station 52+40 and the second replaces a 40' log bridge at station 102+08 respectively along the segment.

General Erosion Control:
[X] grass seeding [ ] erosion control mats [ ] wattle [X] Other: Water bars and out sloping of spur roads
[ ] not applicable

C. Crossing Structures

[ ] No crossing structures are needed within the project area.
[X] Crossing structures will be placed along access roads as described in the table below:

Table 7. Required Drainage and Crossing Structures on Known Surface Waters

Road	Mile / Station	Diameter Culvert	Bridge Type: -Log Stringer -Fabricated -Ice	AS 41.17.950 Stream Classification	Road POB/length	Duration of crossing structure in place
Porcupine	Glacier Creek		60ft MSB	Unclassified		Permanent
U – 1 Spur A	11+42	18”		Ditch Relief	45+95 EGlacier/.3mi	Setting Access
U2 –U5 Main Haul 1100Rd	0+00	18”		Ditch Relief	16+00 EGlacier/2.76mi	Permanent (all)
	3+20	18”		Unclassified		
	13+78	18”		Unclassified		
	47+48	18”		Ditch Relief		
	56+32	18”		Ditch Relief		
	68+40	18”		Ditch Relief		
	96+70	18”		Ditch Relief		
	106+62	18”		Unclassified		
	116+76	18”		Unclassified		
	128+60	18”		Unclassified		
	140+20	18”		Ditch Relief		
U3 Spur 1120Rd	14+00	18”		Ditch Relief	63+14 1100Rd/.4mi	Setting Access
U6–U7 Main Haul 1200Rd	6+18	60”		Unclassified	119+35 1100Rd/.9mi	Permanent (all)
	13+17	18”		Ditch Relief		
	18+60	18”		Ditch Relief		
	35+30	18”		Ditch Relief		
	43+15	18”		Ditch Relief		

Road	Mile / Station	Diameter Culvert	Bridge Type: -Log Stringer -Fabricated -Ice	AS 41.17.950 Stream Classification	Road POB/length	Duration of crossing structure in place
U8-U9 Main Haul Reconst. 1400Rd	25+72	18”		Ditch Relief	Glacier Creek/2.8mi	Permanent (all)
	42+90	18”		Ditch Relief		
	52+40	60”	Replace – Log Culvert	Unclassified		
	91+42	18”		Ditch Relief		
	102+08		Replace - 40’ Bridge	Type I-D		
U8 Spur 1305Rd	14+20	18”		Unclassified	17+71 WGlacier/.6mi	Setting Access
U10-U11 Main Haul 1400Rd	15+25	36”		Unclassified	147+84 EndReconstruct 1400/1.4mi	Permanent (all)
	21+14	36”		Unclassified		
	26+12	18”		Unclassified		
	36+92	18”		Ditch Relief		
	50+48	18”		Unclassified		
	53+60	60”		Unclassified		
	58+89	18”		Unclassified		
	63+40	18”		Unclassified		
	69+45	18”		Unclassified		

Road	Mile / Station	Diameter Culvert	Bridge Type: -Log Stringer -Fabricated -Ice	AS 41.17.950 Stream Classification	Road POB/length	Duration of crossing structure in place
U10 Spur 1420Rd	4+25	18”		Unclassified	22+35 New Constr 1400/.3mi	Setting Access
	12+62	18”		Unclassified		Setting Access
U11 Spur 1430Rd	9+64	18”		Unclassified	39+43 New Constr/.6mi	Setting Access
	13+32	60”		Unclassified		Setting Access
	24+16	24”		Unclassified		Setting Access
U701 702 Main Haul 1405Rd	7+58	18”		Unclassified	5+33 Reconstr 1400rd/1.4mi	Permanent
	20+40		60’ Log stringer bridge	Unclassified		Setting/Unit Access
	22+87	18”		Unclassified		Setting Access
	31+67	18”		Unclassified		Setting Access
	42+84	18”		Unclassified		Setting Access
	62+63	18”		Unclassified		Setting Access
	67+30	18”		Unclassified		Setting Access
	69+10	24”		Unclassified		Setting Access

D. Road Closure

Roads constructed for the timber sale that are left open will be subject to maintenance standards under 11 AAC 95.315. Otherwise, roads constructed for the timber sale will be closed, subject to standards under 11 AAC 95.320.

Table 8. Road Closures

Road ID	Units	All Season/Winter	Estimated Closure Date	Projected Road Use after Timber Harvest
Main Haul	1 – 11, 701/702	All season	None	Silviculture
Spurs	All	All season	At completion of harvest or December 2025	Silviculture

E. Material Extraction

[ ] There will be no material extraction sites in the project area.
[X] Material extraction for road construction and associated overburden disposal will be located outside of riparian areas and muskegs except as approved in the Glacier Creek flood plain. Material extraction and disposal sites will be located by the purchaser operating plan, in a manner that prevents runoff from entering surface waters and will be approved by DOF prior to use. Material sites will be incidental and adjacent to the road construction. Pit sites are projected to be less than one acre and will be stabilized upon completion of road building operations.
[X] Other: The flood plain of Glacier Creek adjacent to the bridge crossing site is designated as a material source location for road construction. Material extraction from this area will follow DOF specifications as approved by ADF&G.

F. Other Resources Affected by Roads or Material Extraction

List resources other than water, habitat or cultural resources potentially impacted by road construction, and indicate how impacts will be mitigated. Other affected resources could be, but are not limited to mining claims, scenic areas, recreational trails, etc.

Table 9. Other Affected Resources

Impacted Resource	Reviewing Agency	Impact/ Mitigation Actions
Scenic	DOF	Location and Design

The DOF has identified road locations for the harvest of timber throughout this sale with consideration of potential visual impacts from the Haines Highway. The majority of harvest road related activity will be shielded from view by remaining standing timber not included in this sale. The harvest design will further reduce the visibility of road development from the Haines Highway.

V. Approvals

This Final Forest Land Use Plan has been reviewed by the Division of Forestry and provides the information necessary to be adopted by the Department of Natural Resources as required by 38.05.112.

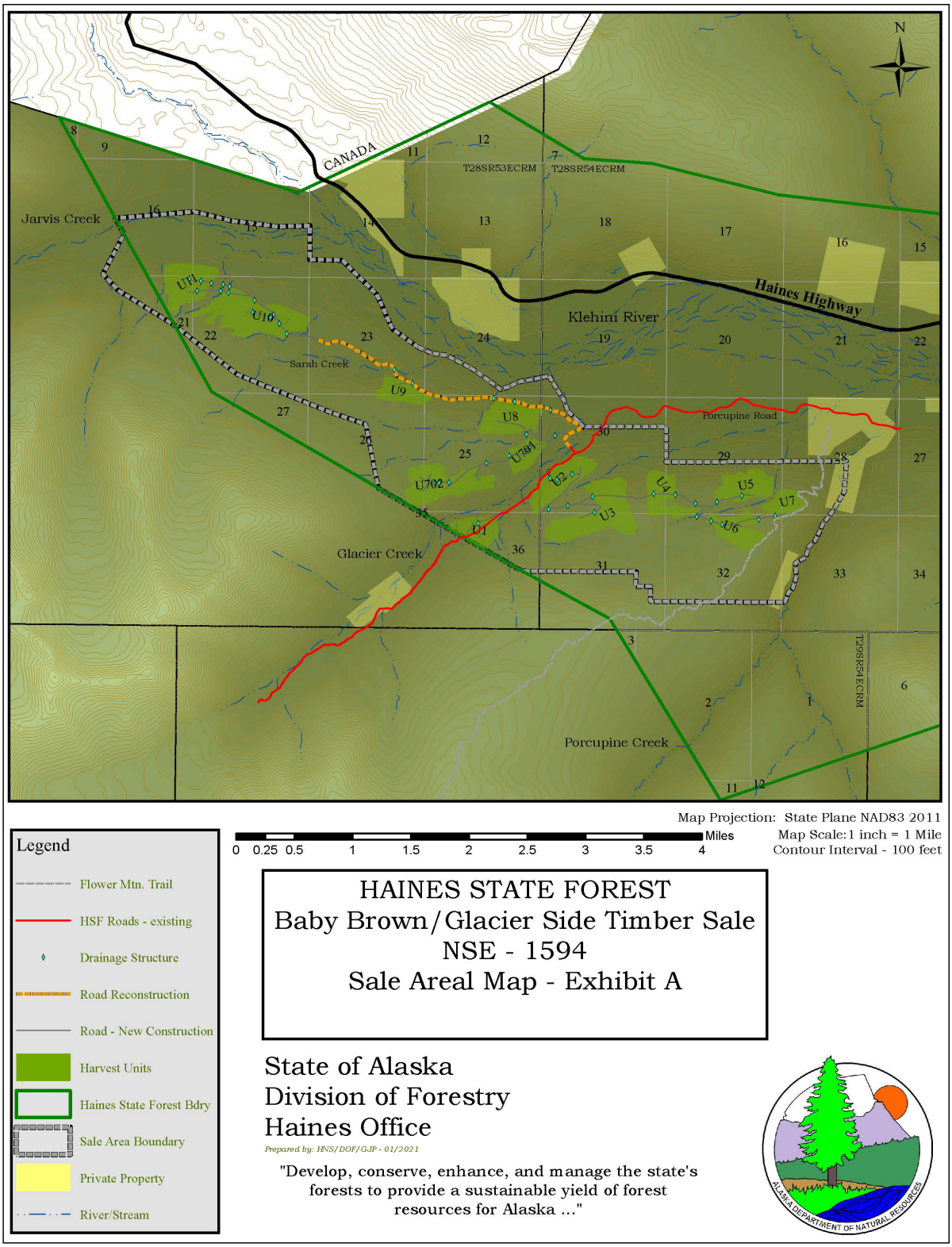
_____ _____

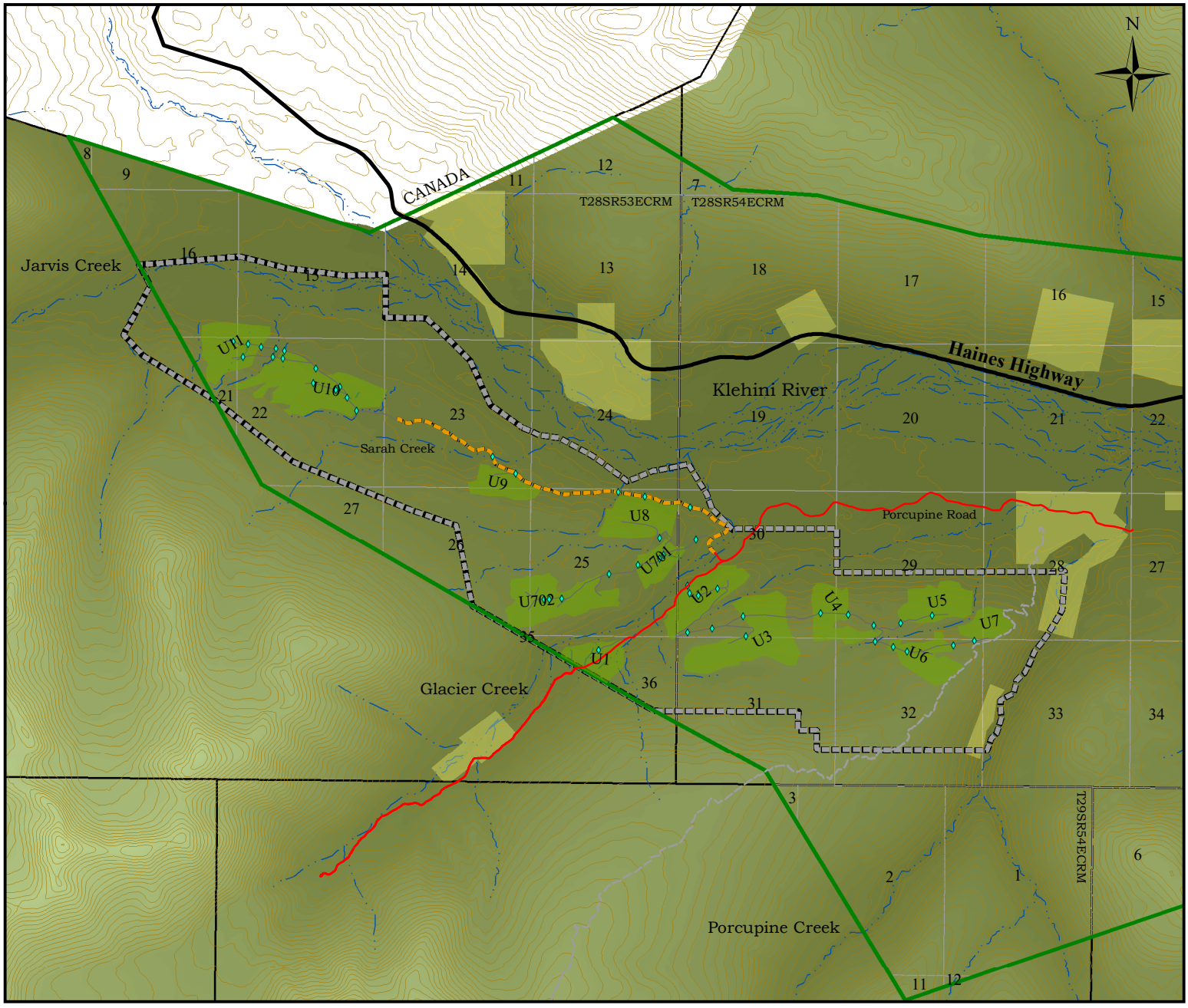
Area Forester **Date**

Greg Staunton

Digitally signed by Greg Staunton
Date: 2021.02.01 15:02:23 -09'00'

Appendix A: Timber Sale Maps





Map Projection: State Plane NAD83 2011
Map Scale:1 inch = 1 Mile
Contour Interval - 100 feet

0 0.25 0.5 1 1.5 2 2.5 3 3.5 4 Miles

Legend

- Flower Mtn. Trail
- HSF Roads - existing
- Drainage Structure
- Road Reconstruction
- Road - New Construction
- Harvest Units
- Haines State Forest Bdry
- Sale Area Boundary
- Private Property
- River/Stream

HAINES STATE FOREST
Baby Brown/Glacier Side Timber Sale
NSE - 1594
Sale Areal Map - Exhibit A

State of Alaska
Division of Forestry
Haines Office

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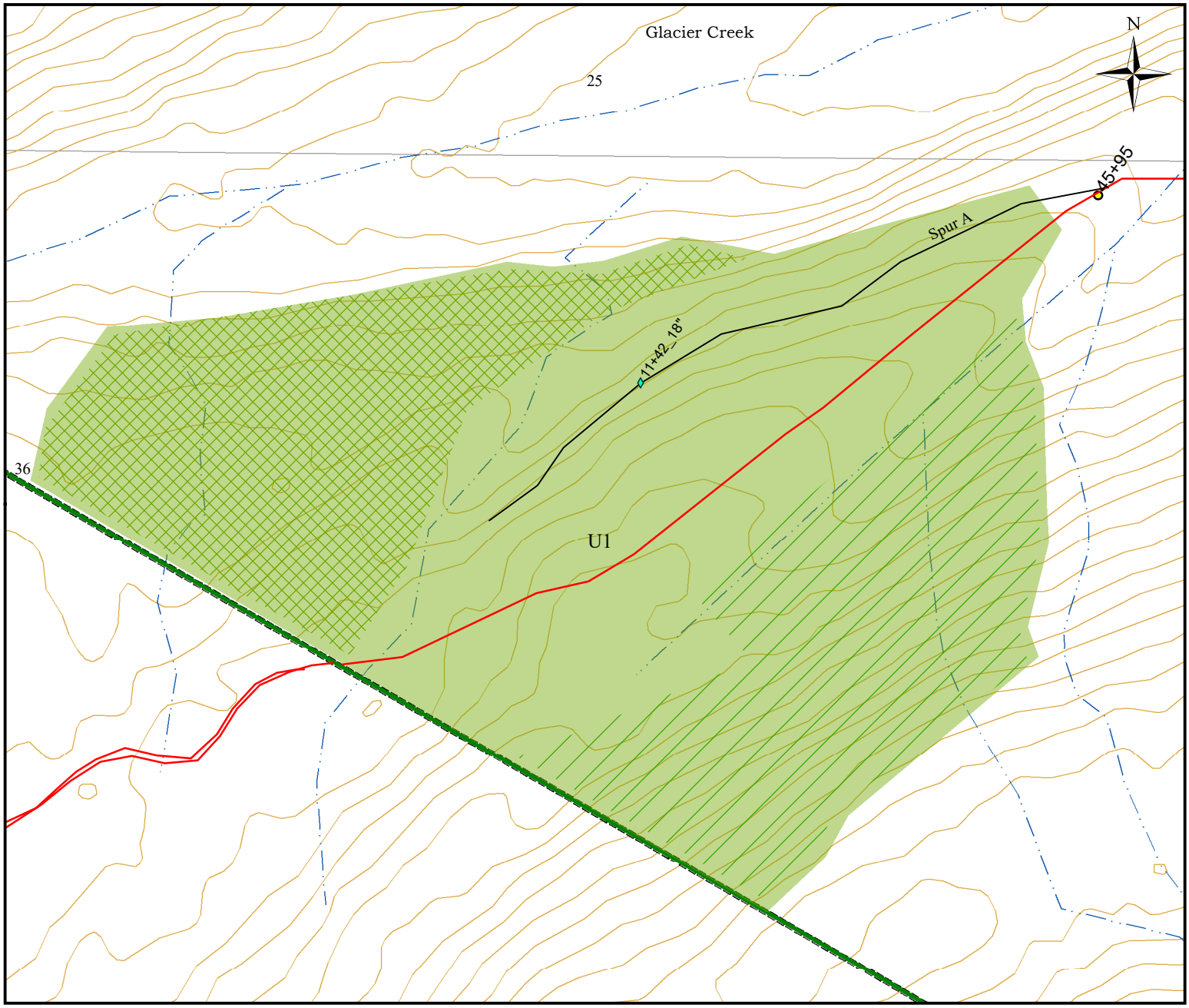
ALASKA DEPARTMENT OF NATURAL RESOURCES



Legend

- Haines State Forest Bdry
- Harvest Units

Logging Method

Harvest System Design

- Ground
- Cable
- HSF Roads - existing
- Road Reconstruction
- Road - New Construction
- Drainage Structure
- River/Stream

0 330 660 1,320 Feet

Map Projection: State Plane NAD83 2011
Map Scale:1 inch = 330 feet
Contour Interval - 25 feet

HAINES STATE FOREST
Baby Brown/Glacier Side Timber Sale
NSE - 1594
Harvest Detail Map - Exhibit A1
Unit 1

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Division of Forestry
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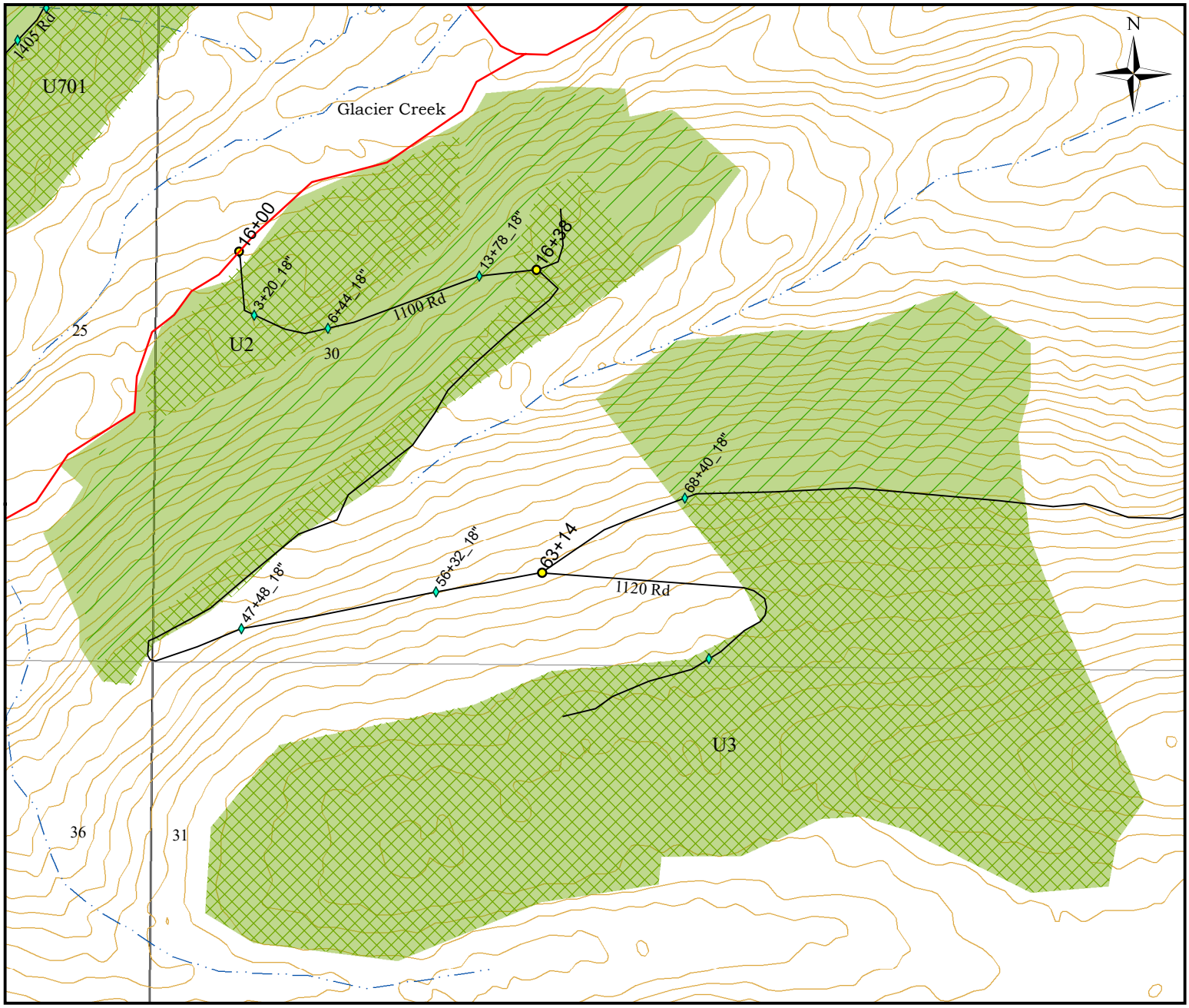

Map Projection: State Plane NAD83 2011
Map Scale: 1 inch = 660 feet
Contour Interval - 25 feet

0 330 660 1,320 1,980 2,640 Feet

Legend

- Haines State Forest Bdry
- Harvest Units

Logging Method

Harvest System Design

- Ground
- Cable
- HSF Roads - existing
- Road Reconstruction
- Road - New Construction
- Drainage Structure
- River/Stream

HAINES STATE FOREST
Baby Brown/Glacier Side Timber Sale
NSE - 1594
Harvest Detail Map - Exhibit A2
Units 2 & 3

State of Alaska
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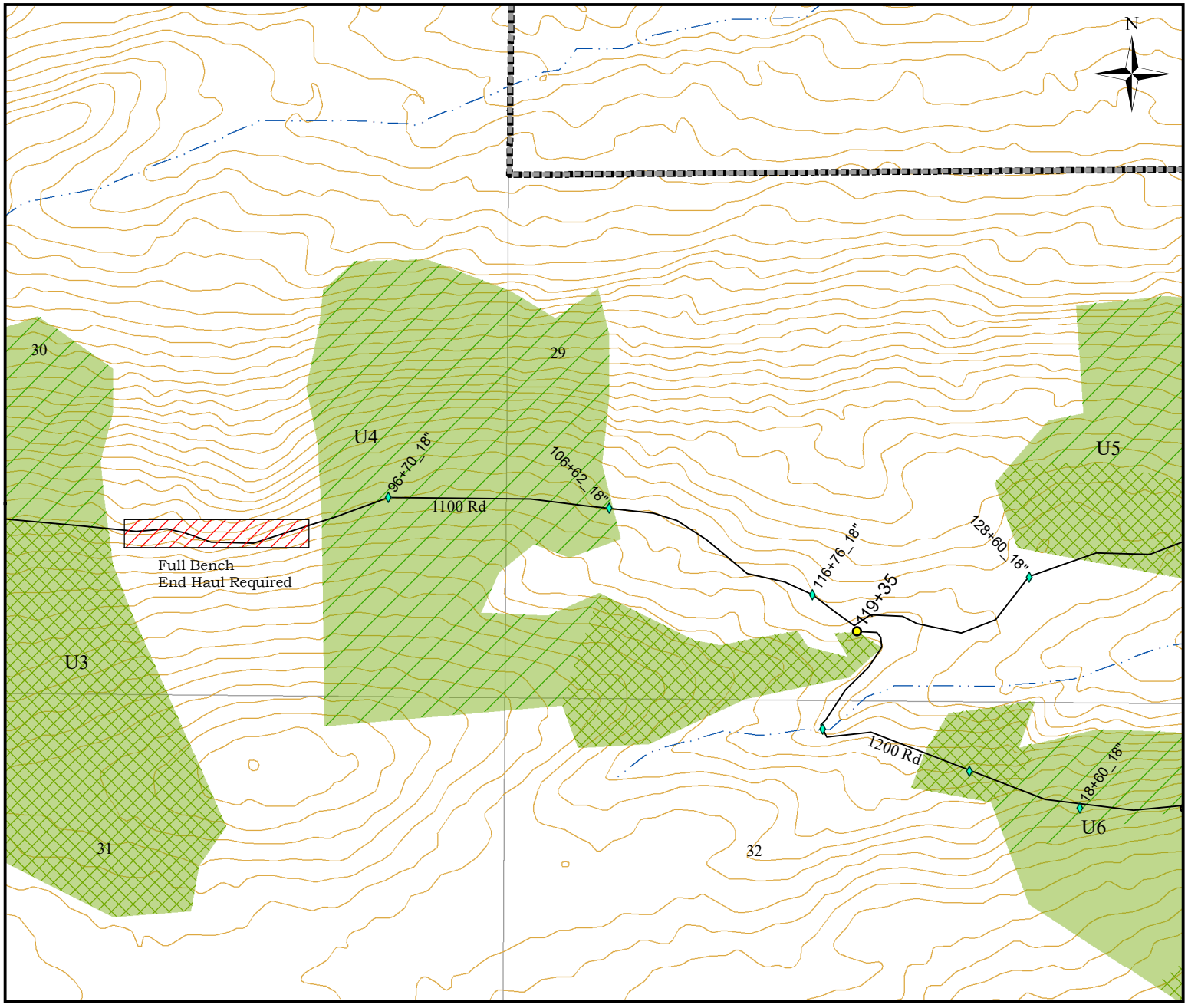

Map Projection: State Plane NAD83 2011
Map Scale:1 inch = 660 feet
Contour Interval - 25 feet

0 330 660 1,320 1,980 2,640 Feet

Legend

- Sale Area Boundary
- Harvest Units

Logging Method

Harvest System Design

- Ground
- Cable
- HSF Roads - existing
- Road - New Construction
- Drainage Structure
- River/Stream

HAINES STATE FOREST
Baby Brown/Glacier Side Timber Sale
NSE - 1594
Harvest Detail Map - Exhibit A3
Unit 4

State of Alaska
Division of Forestry
Haines Office

Prepared by: HNS/DOF/GJP - 01/2021

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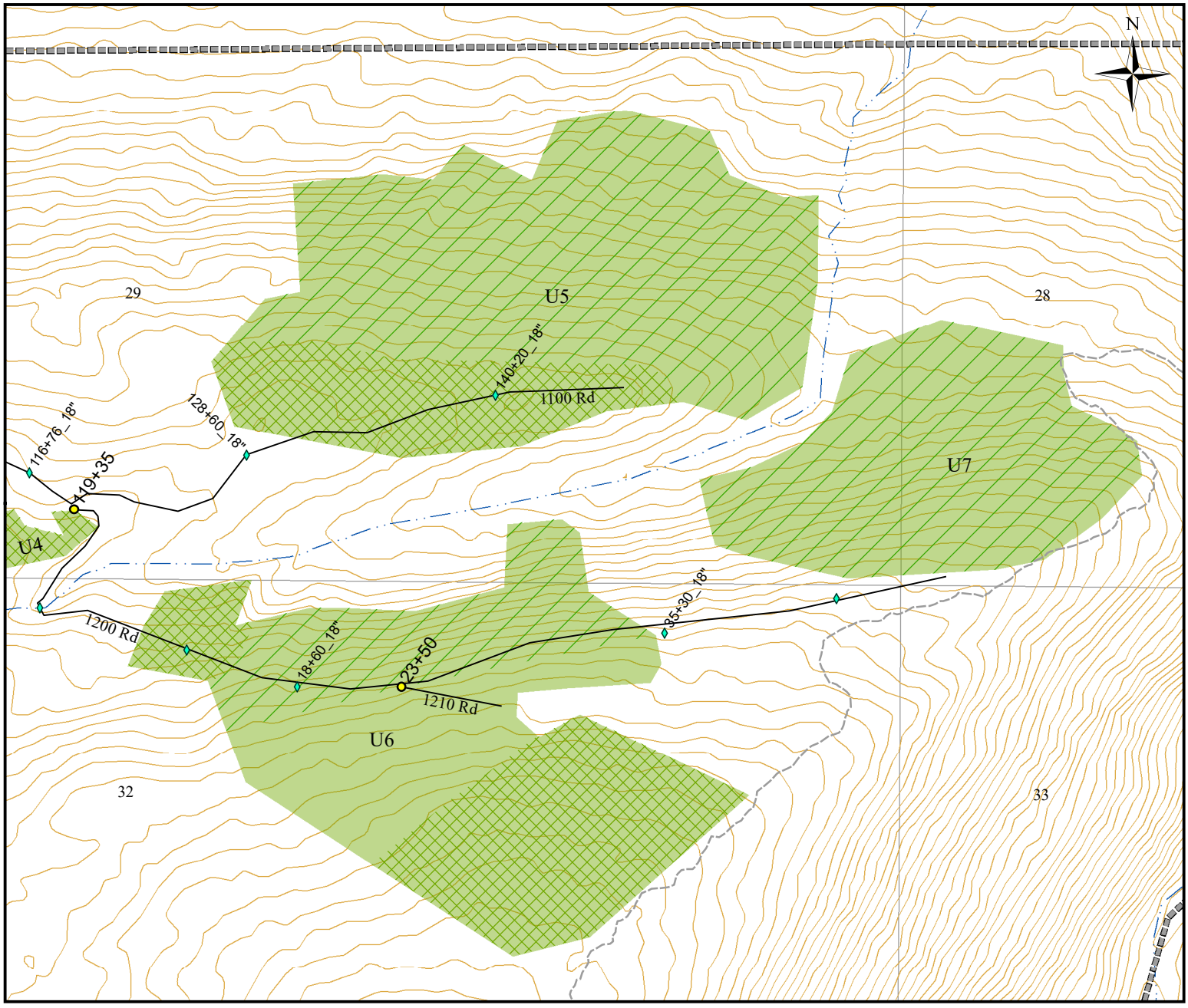
ALASKA DEPARTMENT OF NATURAL RESOURCES



Map Projection: State Plane NAD83 2011
Map Scale:1 inch = 660 feet
Contour Interval - 25 feet

0 330 660 1,320 1,980 2,640 Feet

Legend

- Sale Area Boundary
- Harvest Units

Logging Method

Harvest System Design

- Ground
- Cable
- HSF Roads - existing
- Road - New Construction
- Drainage Structure
- Flower Mtn. Trail
- River/Stream

HAINES STATE FOREST
Baby Brown/Glacier Side Timber Sale
NSE - 1594
Harvest Detail Map - Exhibit A4
Units 5, 6, & 7

State of Alaska
Division of Forestry
Haines Office

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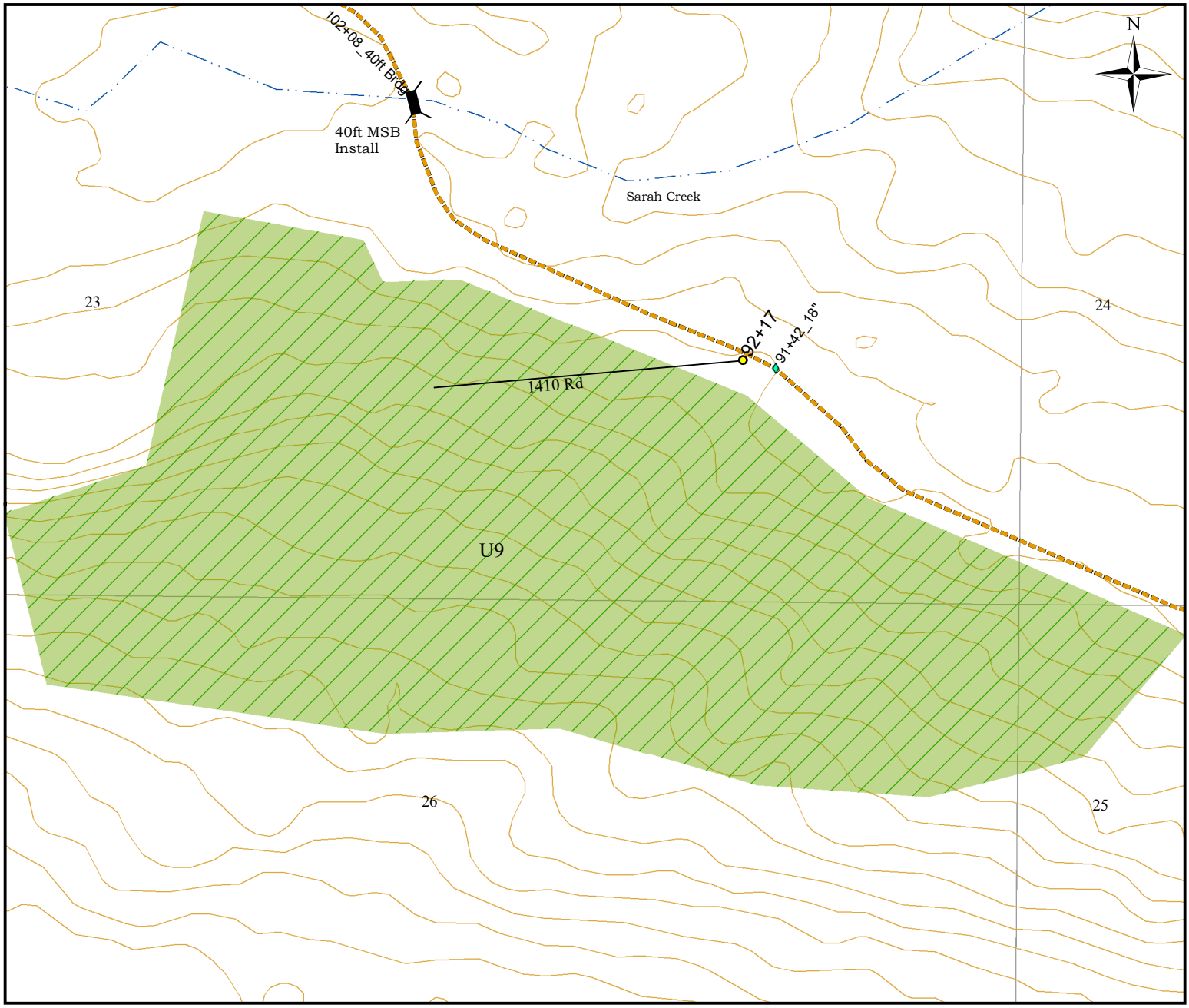
ALASKA DEPARTMENT OF NATURAL RESOURCES



Map Projection: State Plane NAD83 2011
Map Scale:1 inch = 330 feet
Contour Interval - 25 feet

0 330 660 1,320 Feet

Legend

- Sale Area Boundary
- Harvest Units

Logging Method

Harvest System Design

- Ground
- Cable
- HSF Roads - existing
- Road Reconstruction
- Road - New Construction
- Drainage Structure
- River/Stream

HAINES STATE FOREST
Baby Brown/Glacier Side Timber Sale
NSE - 1594
Harvest Detail Map - Exhibit A7
Unit 9

State of Alaska
Division of Forestry
Haines Office

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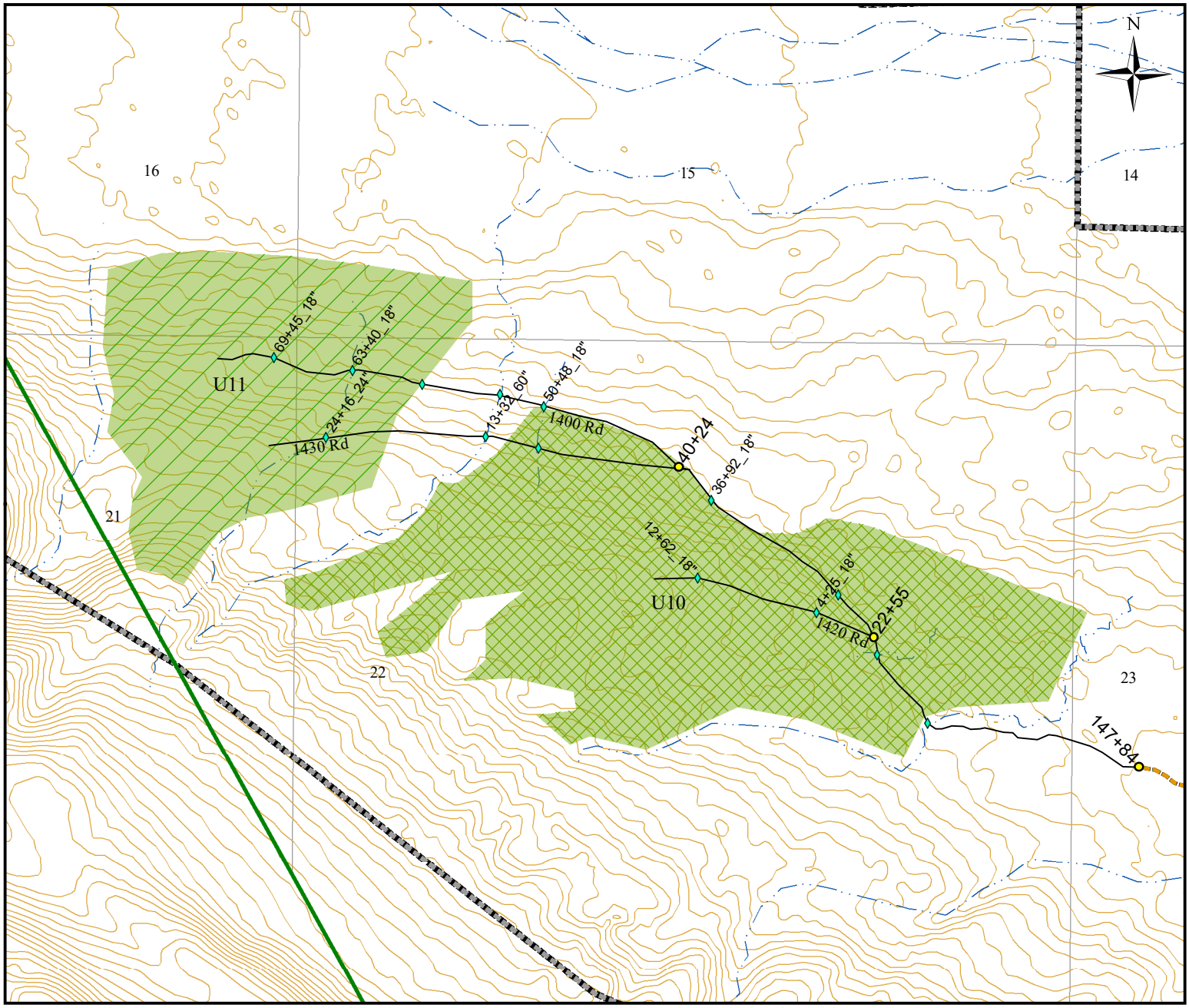

Map Projection: State Plane NAD83 2011
Map Scale:1 inch = 1000 feet
Contour Interval - 25 feet

0 330 660 1,320 1,980 2,640 3,300 3,960 Feet

Legend

- Sale Area Boundary
- Harvest Units

Logging Method

Harvest System Design

- Ground
- Cable
- HSF Roads - existing
- Road Reconstruction
- Road - New Construction
- Drainage Structure
- River/Stream

HAINES STATE FOREST
Baby Brown/Glacier Side Timber Sale
NSE - 1594
Harvest Detail Map - Exhibit A8
Units 10 & 11

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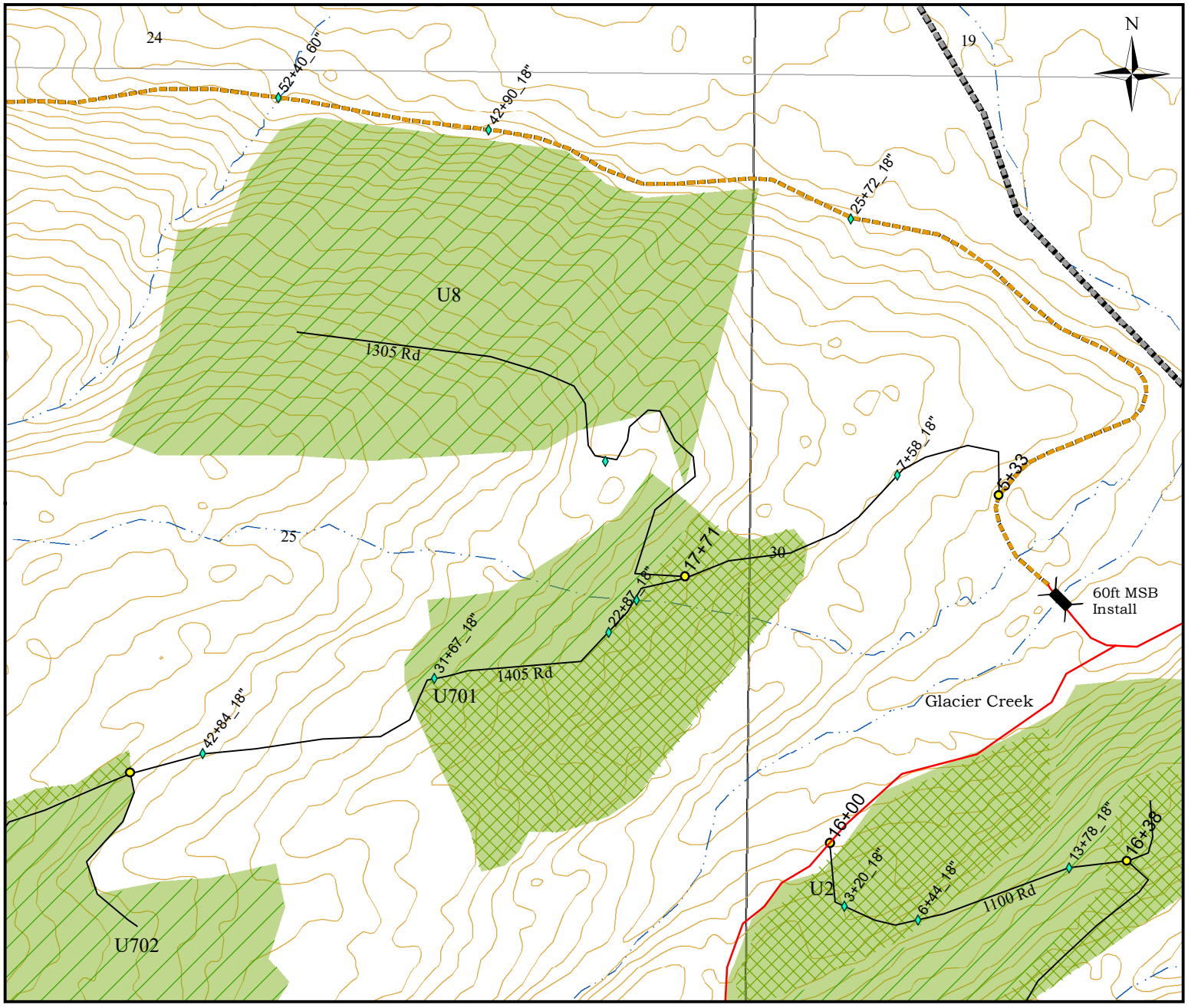
ALASKA DEPARTMENT OF NATURAL RESOURCES



Map Projection: State Plane NAD83 2011
Map Scale: 1 inch = 660 feet
Contour Interval - 25 feet

0 330 660 1,320 1,980 2,640 Feet

Legend

- Sale Area Boundary
- Harvest Units

Logging Method

Harvest System Design

- Ground
- Cable
- HSF Roads - existing
- Road Reconstruction
- Road - New Construction
- Drainage Structure
- River/Stream

HAINES STATE FOREST
Baby Brown/Glacier Side Timber Sale
NSE - 1594
Harvest Detail Map - Exhibit A5
Units 701 & 8

State of Alaska
Division of Forestry
Haines Office

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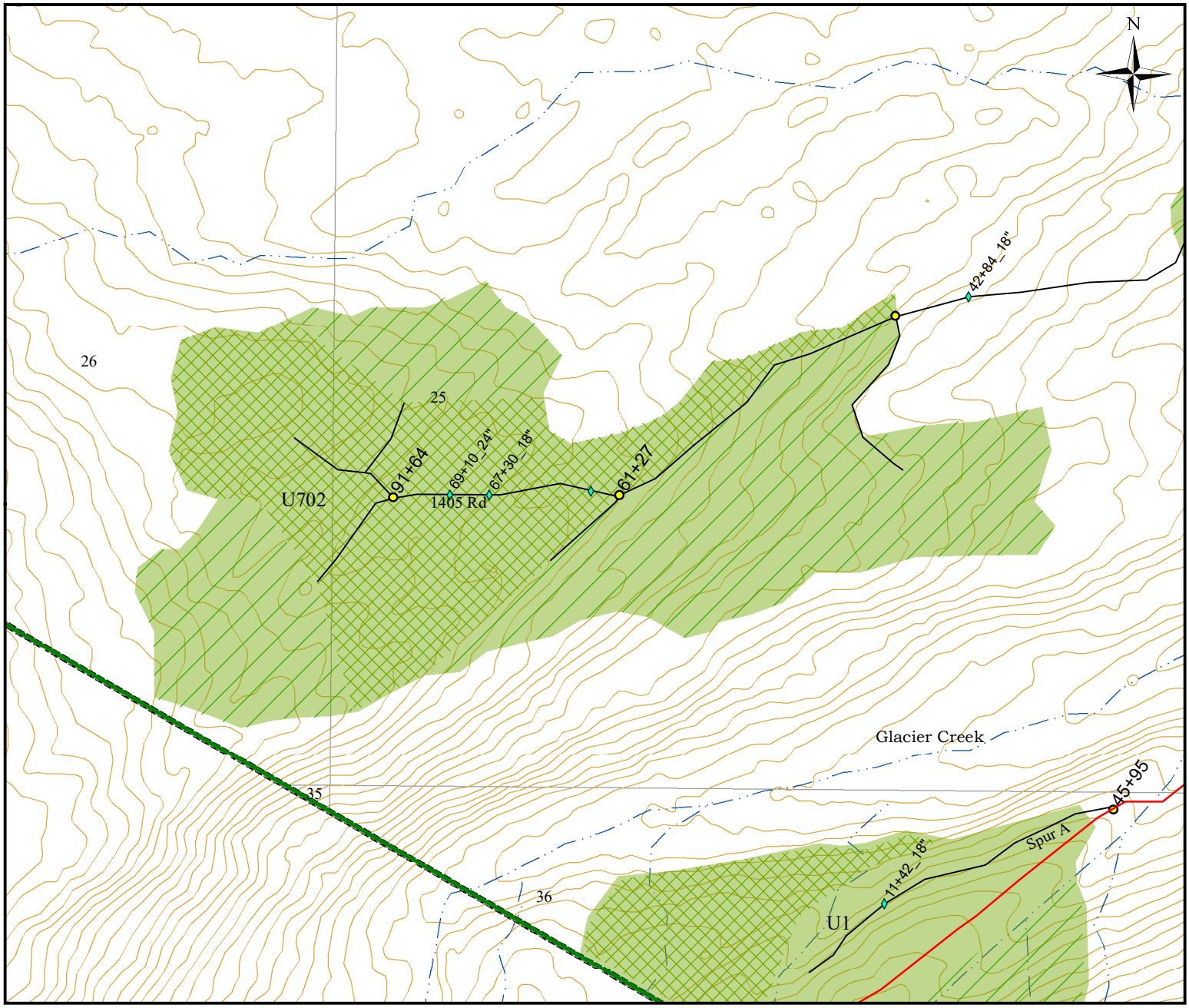

Legend

- Sale Area Boundary
- Harvest Units

Logging Method

Harvest System Design

- Ground
- Cable
- HSF Roads - existing
- Road Reconstruction
- Road - New Construction
- Drainage Structure
- River/Stream

0 330 660 1,320 1,980 2,640 Feet

Map Projection: State Plane NAD83 2011
Map Scale:1 inch = 660 feet
Contour Interval - 25 feet

HAINES STATE FOREST
Baby Brown/Glacier Side Timber Sale
NSE - 1594
Harvest Detail Map - Exhibit A6
Unit 702

State of Alaska
Division of Forestry
Haines Office

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ALASKA DEPARTMENT OF NATURAL RESOURCES

Appendix B: Supporting Information

B1: Silvicultural/Timber Stand Information

HARVEST AND SILVICULTURE METHODS

The silvicultural design for this sale will be a partial cut method retaining standing timber in groups and selectively dispersed across areas within or adjacent to clear cut areas. This approach is intended to produce smaller clear-cut openings and structural diversity within the harvest unit. The design application of this method will be applied within each harvest unit under the administration of the State.

Harvest Design Goals

1. Standing Timber in small groups and timber selectively dispersed within areas of a unit.
    a. Provide visual structural diversity of larger clear-cut areas.
    b. Provide habitat diversity within units by retention of large mature trees exhibiting clear signs of significant decay and smaller non-merchantable trees.
    c. Improve economic viability of the timber sale.
    d. Provide soil retention and stability by reducing the change in hydrological flow through the harvest area immediately following harvest.
2. Standing Timber selectively dispersed within areas of a unit.
    a. Provide visual structural diversity of larger clear-cut areas.
    b. Provide soil stability by reducing potential initial water flow impacts resulting from timber removal.
3. Clear Cut areas within unit.
    a. Provide openings within units rather than clearing the entire unit to reduce visual impacts of timber harvest.
    b. Provide beneficial even age management characteristics on the harvest unit such as:
        1. solar penetration to the forest floor enhancing natural regeneration and
        2. soil disturbance that increases the volume of seedling, orb and browse species development.

Harvest Design Objectives

1. Standing Timber in groups.
    a. Minimize the visual impact of harvest areas.
    b. Mitigates habitat removal in areas suitable for small mammals and birds (presence of decay trees provide cavity potential) and protection from heavy snow accumulation for larger mammals within harvest areas.

c. Reduce potential soil structure impacts through retention of trees within units.
d. Maintain soil water use characteristics preventing an initial increase in flow through a unit following harvest activities.

2. Standing Timber selectively dispersed within areas of a unit.
    a. Address visual impacts of larger clear cut harvest areas.
    b. Reduce potential soil structure impacts through retention of trees within units.
    c. Maintain soil water use characteristics preventing an initial increase in flow through a unit following harvest activities.
3. Clear Cut areas within unit.
    a. Addresses visual impact of harvest activities by reducing the size of clear cut areas from the entire unit to portions of the unit.
    b. Enhance the quality and quantity of natural regeneration for the next forest rotation.
    c. Increase the square foot leaf mass of small forbs and brush components across the area during the stand initiation phase of development following harvest.

Implementation of this concept will be affected by the natural distribution of merchantable timber and the two mechanical elements of the harvest systems deployed by a potential contractor for the sale; ground systems and cable systems. Each system of harvest creates an opportunity to apply the concept.

In a unit harvested by ground systems the objective will be achieved by focusing the harvest of timber on individual trees leaving groups distributed in a non-uniform manner across the harvest area. These groups will consist of large mature trees, small non-merchantable trees and/or groups that contain both large mature and small non-merchantable trees. The group size may range from one tree to a dozen or more. Direction from the DOF will be on distribution of what is residual and its potential for mitigating visual impacts of the mechanical system.

In a unit harvested by cable systems the harvest concept will be achieved by creating clear cut openings with individual trees potentially dispersed across the area depending on the operators' ability to selectively harvest in a cable setting. The direction from DOF will be to keep clear cut areas to small portions of a harvest unit with residual trees distributed logically according to each setting's topographic limitation. This typically is achieved with yarding corridors and lateral yarding capabilities.

In either system, the results proposed are diverse and are not restricted to a "trees per acre" count or a minimum number of small groups or a size category. The objectives of this harvest concept will be met by working with the purchaser on distribution residual trees that will be random. Success will be achieved by the economic harvest resulting in a diverse remnant stand with an emphasis on addressing the dominant public concern of visual impact of the harvest activities with other secondary benefits of uneven management.

Appendix B Supporting Information:

B2: DOF Standards

Alaska Forest Practices and Regulations.
http://forestry.alaska.gov/forestpractices

Forest Road and Bridge Standards.
http://forestry.alaska.gov/Assets/uploads/DNRPublic/forestry/pdfs/resources/forest_road_standard_design_20151231.pdf

http://forestry.alaska.gov/Assets/uploads/DNRPublic/forestry/pdfs/resources/forest_bridge_standard_design_20150128.pdf

B3: Required Permits

Note: None required.