

Prince of Wales Landscape Level Analysis Project

Staney Cone Helicopter Timber Sale

Draft Unit Cards

Unit Card Introduction

The unit cards are presented in numerical order and include maps and narratives describing site-specific information about each unit, the silvicultural prescription and any unit-specific resource concerns and protection or mitigation measures related to those concerns. Resource concerns are mitigated by unit design and adherence to Forest Plan standards and guidelines and best management practices (BMPs).

All GIS layers are not snapped to each other. There are “slivers” shown on the unit card maps. Some GIS layers were based on orthophoto interpretation and have not been verified on the ground. Therefore, some layers may overlap other layers in GIS, but will be correct when implemented on the ground. As stated in the FEIS, there will be no harvest in Tongass Timber Reform Act (TTRA) buffers, Old Growth Reserves, or Inventoried Roadless Areas. So while some maps may show a sliver of harvest in one of these areas the layout crew will not place the unit in these areas.

The unit card narratives and maps, in combination with the Prince of Wales Landscape Level Analysis (POW LLA) Project Record of Decision (ROD), Final EIS, and GIS map layers, would be used during the implementation process to ensure that all aspects of the project are implemented within applicable standards and guidelines. Some adjustments to the prescription, logging system, or changes to unit boundaries can be expected during implementation as needed to better meet specific on-site resource management and protection objectives. During implementation additional resource concerns may be identified. Any adjustments and changes will follow the direction outlined in the Implementation Plan. This direction establishes guidance on how to document and review adjustments made from the submitted unit during a workshop and actual implementation design. The primary purpose of the process is to determine if actual implementation is still within the scope of the submitted unit. In the event that a unit needs to be changed because of on-the-ground conditions, the following criteria will be used to determine whether to defer the unit until the next workshop.

- Changes will be implemented if they do not require the location to be adjusted and result in similar or lesser impacts as what was analyzed and displayed for the proposal. Documentation of the review will be placed in the implementation record.
- If the location needs to be substantially adjusted, the design has a substantial change, or circumstances are discovered relevant to environmental concerns, then the Line Officer would defer the activity until the next workshop.

Any activity that is deferred until the next workshop will begin the implementation process over and will proceed through each step again.

The District Ranger will consider this interdisciplinary review and will make a recommendation to the Responsible Official on whether or not these adjustments represent: a substantial change or circumstances are discovered relevant to environmental concerns. The Responsible Official will evaluate the District Ranger’s documentation and recommendation and will then determine if the unit or proposal needs to be deferred until the next workshop.

The following text describes the layout of the unit cards and provides general information on the harvest treatments and resource components of the unit cards. This information is important to consider in conjunction with the more specific information provided on the cards. Additionally, this introduction to the unit cards is designed to provide specific direction regarding the implementation of the activity that pertains to certain circumstances that occur across multiple

units. Rather than repeat this information on each individual unit card, the direction for that circumstance is provided here.

Unit Card Header Information

Each unit card has a header block with information used to generally describe the unit's size, location, and volume proposed for harvest. Each header block contains the following information:

- **Unit Number:** This is the number assigned to identify the unit.
- **Total Harvest Unit Acres:** This is an estimate of harvest acres within the unit using aerial photos and GIS information. These numbers exclude areas within the overall unit boundary that have been set-aside to meet standards and guides or for other resource concerns. The numbers have been rounded. Final acres will be determined after all surveys and final traverse are completed.
- **Prescription:** The prescription code for the proposed treatment is UEA for uneven-aged management.
- **VCU Number:** The Value Comparison Unit (VCU) the proposed harvest area is within.
- **Harvest System:** The method by which the timber is planned to be removed or yarded from the unit. Final methods will be determined after all field surveys are completed.
- **Net Harvest Volume (MBF):** This is the estimated volume in thousand board feet (MBF), available for harvest in the unit as determined from field estimates and stand examination plots. Final volume amount in thousand board feet will be determined after all surveys and final cruise are completed.
- **Land Use Designation (LUD):** The Land Use Designation(s) the proposed harvest unit is within.

Harvest Treatments and Silvicultural Systems

Activities described here follow Forest Plan (2016) and POW LLA Project Record of Decision (ROD) direction. Forest Plan Land Use Designation (LUD) goals, objectives, and desired conditions set the basis for selecting appropriate general silvicultural systems. More specific project-level direction on prescription development comes from the implementation decision trees and activity cards described in the POW LLA Project ROD (2019). Activity decision trees follow through a set of existing conditions and are refined by Forest Plan direction and resource constraints and ultimately lead to a set of appropriate actions - or in some cases, inaction - to reach a desired condition. Activity cards describe silvicultural goals, objectives, and limitations that can occur on a variety of land types with a given set of existing conditions based on decision tree guidance.

Silvicultural systems refer to a complete set of treatments used to manage forest stands and forest landscapes over long periods of time. This process includes the harvest or regeneration of the stand, intermediate cuttings, and other treatments necessary for the development and replacement of the forest stand. Silvicultural systems are applied through prescriptions: the written records of the examination, diagnosis, and treatment regimens prescribed for the stand. The final prescriptions, including detailed sale layout and marking instructions for any harvest units, will be completed after field reviews are completed by specialists, public workshop, and Out-year Plan comment period.

Each unit card contains a narrative summarizing any concerns, responses, BMPs, and mitigations. The silviculture section contains a brief synopsis of the existing condition and the planned prescription to move the stand from the existing condition to the desired condition and any specific mitigation measures that are needed. The existing condition text documents stand-specific information such as stand structure; insect, disease and defect ratings; and windthrow risk. These ratings are for the unit as a whole.

Sometimes portions of the original logging systems transportation analysis (LSTA) polygon are not scheduled for harvest. These areas are typically where standards and guidelines exclude timber harvest because of specific ground conditions. This assures the conservation of certain resources within what would otherwise be areas available for harvest. Unsuitable soils and riparian management areas are examples. These areas must be excluded from harvest regardless, because they physically have been determined unsuitable for harvest. In other cases certain portions of the LSTA polygon are excluded from harvest to achieve management objectives required by Forest Plan direction, although there are no specific physical conditions making the area unsuitable for harvest. Visual buffers and some legacy areas are examples. Sometimes portions of the original LSTA polygon were found to have timber with volume and/or value that obviously would not support the cost of logging. These areas are usually muskeg inclusions or low-volume-high-defect cedar areas where poor drainage restricts tree growth. These areas typically have a merchantable sawlog volume of less than 8 MBF per acre, which is considered as unsuitable timber. In other instances, portions of the LSTA polygon have been deferred from harvest at this time to meet the specific design criteria or mitigations.

The intent of the Legacy Standard and Guideline is to ensure that sufficient residual trees, snags, and clumps of trees remain in timber harvest units within VCUs that have had concentrated past timber harvest activity and are at risk for not providing the full range of matrix functions in order to meet the intent of the conservation strategy while providing flexibility to address on-the-ground implementation issues (Forest Plan 4-86).

In harvest units with potential openings greater than 20 acres within Legacy VCUs, leave 30 percent of the entire unit (based on area) in legacy forest structure. Legacy forest structure should remain indefinitely after harvest and shall be tracked through the life of the next stand.

Legacy forest structure should be arranged primarily in clumps. The intent of leaving legacy is to provide structure within the opening; therefore, clumps should be left well inside the unit, compatible with logging system capabilities. Clumps may be placed along the external yarding boundaries within harvest units in situations where cable logging systems make leaving residual trees in other parts of the unit impractical due to operational or safety considerations. Structure left within units for other resources counts towards the 30 percent, provided it is representative of the existing old-growth stand characteristics, including age, size class, species composition, and structural components found within the original planned unit. Clumps and dispersed retention trees should include some of the largest, oldest, live trees; decadent or leaning trees; and hard snags occurring in the unit.

For the POW LLA Project the amount of legacy required by unit was determined based on the size of even-aged openings that might be created in combination with any adjacent LSTA polygon areas that were planned to be retained as legacy. Units planned for 20 acres of harvest or less do not have legacy requirements. Uneven-aged units (partial cuts) do not require legacy because no opening greater than 20 acres is created.

The required and currently mapped legacy acreage is stated in the silvicultural prescription prepared for each unit. Direction is also provided in the prescription regarding how legacy was placed. Legacy areas denoted may be adjusted as needed so long as the objective of the placement is met. For example, if legacy is planned to coincide with areas of unsuitable soils and those areas are further refined during implementation, the legacy areas should be adjusted so they encompass the change, so long as the new areas meet the stand structural requirements stated in the Forest Plan.

Desired Future Condition for Timber Production Stands in the Project Area

The desired condition for stand growth for timber production purposes in the Project Area is that they be as productive, healthy, and windfirm as possible, while still retaining residual trees as needed to meet direction in the Forest Plan. The majority of old growth stands in the project area contain trees that are over-mature and unhealthy with decay and weather damage that exceeds new growth. These stands do not currently meet the desired condition.

Uneven-aged Management – Single Tree Selection

Uneven-aged management is authorized by the Prince of Wales Landscape Level Analysis Project FEIS and ROD, and is described in Activity Card 14: Harvest of Old Growth using Uneven-aged Management (POW LLA Project ROD, Appendix 1, page 119). Unit cards display where helicopter harvest is proposed. The objective of uneven-aged management with single tree selection is to: 1) economically harvest a portion of the stand, 2) maintain old-growth structure in the stand, and 3) retain trees that will provide for economically viable and sustainable future entries. There is no final rotation age as in even-aged or two-aged systems but instead regular, periodic entries designed to maintain three or more distinct age classes and a range of diameter classes in a reasonably well dispersed manner across the stand. This results in a stand of high structural diversity due to the high variability in tree sizes and individual tree characteristics.

A cut-tree mark designates trees for removal in units. When implementing a cut-tree mark, safety or hazard trees may also be marked as required for safety purposes. Variability in the stand will result in variability in the mark, from scattered individual trees to groups where overstory removal is less than 2 acres in size. On average, approximately 66% of the pre-harvest basal area of standing live trees will be retained, with at least 75% remaining in portions of the unit where windthrow risk is high. Generally, the pre-harvest species composition will be maintained in the stand after harvest.

This prescription is based on the concept of three basic tree types being present after harvest to meet the future objectives for the stand. These tree types are: 1) healthy young **crop trees** that promote economic future entries, 2) older **wildlife trees** with low timber value but high value to wildlife, and 3) **advanced or new regeneration** that will comprise the next age class in the stand. Additional marking guidelines account for not impeding wildlife movement in the stand, protecting pockets of regeneration, creating openings for adjacent desirable seed sources, windfirmness of the residual trees, defect and decay, disease, and insects. Marking guidelines developed for single tree selection must be followed. The Silviculturist will establish inspection plots to ensure marking guidelines are adhered to and objectives are met for the unit.

The canopy gaps and disturbance created by single tree selection harvest would promote new tree regeneration to facilitate future harvest entries as well as promote the growth of understory plants important for wildlife. Future entries would continue the process of developing additional age

classes. The next entry would likely occur in 50 to 100 years. This would allow retained young trees to mature. The silvicultural prescription would maximize the flexibility of helicopter yarding to allow for the removal of a higher percentage of more economically valuable trees, while retaining a higher percentage of trees that have higher value for wildlife, or trees that would be more economically valuable for timber in the future.

Issues that are addressed by this system:

1. Effectively addresses minor disease or insect issues.
2. Addresses wildlife habitat concerns.
3. Addresses visual constraints.
4. Addresses soil concerns.
5. Addresses wind risk concerns in the stand.

Timber/Yarding

This section of the unit card identifies the yarding system(s) proposed for the unit. It also identifies the roads to be used to access the unit. Proposed and existing system roads are identified by road numbers shown on the unit card maps.

Log yarding practices are based on slope stability, soil disturbance, channel type, and stream class. Additional measures are taken to protect RMAs from possible disturbance associated with tree felling and yarding. Harvest activities near Class I, Class II, and Class III streams require that trees are felled away from the stream buffer, are yarded across Class III stream courses, and where applicable, are fully suspended to minimize the exposure of mineral soil. Trees near Class IV streams are felled away from the stream whenever feasible and logging debris introduced into Class IV streams is removed. Class IV streams are treated as part of the hillside, under slope stability standards and guidelines. Suspension requirements are used to minimize soil erosion, mass movement, and formation of new channels.

Engineering/Roads

This section identifies the landing locations along the existing NFS roads or proposed temporary roads.

Road construction and maintenance will follow applicable BMPs. Adhere to the following BMPs: 12.17, 13.11, 14.2, 14.3, 14.5, 14.6, 14.7, 14.8, 14.9, 14.10, 14.12, 14.17, 14.18, and 14.20. The National Core BMPs will be implemented in this project. The crosswalk between the National Core BMPs and the Region 10 BMPs are in the project record.

Best Management Practices

The following BMPs would be applied in order to protect water quality in the project area as specified in the Forest Plan. These BMPs apply whenever the situation warrants them. For example, BMP 12.5 applies to any units or roads that involve wetlands; BMPs 12.6, 12.6a, and 13.16 apply to any units and road activities involving streams; BMPs 13.2, 13.9, 13.10 apply to all timber harvest units and log landings; BMPs 14.1, 14.2, 14.3, 14.5, 14.6, 14.7, 14.8, 14.9, 14.10, 14.11, 14.12, 14.15, 14.17, 14.18, 14.19, 14.20, 14.22, and 14.24 apply to road construction, maintenance, and other activities, including quarries (as appropriate); BMPs 14.26 and 14.27 apply to activities at existing LTFs; and BMPs 12.8, 12.17, 13.1, 13.3, 13.4, 13.5,

13.11, 13.12, 13.14, 13.17, and 13.18 apply in general to all timber sale planning and implementation activities. Many of the most relevant BMPs are cited on the unit cards or elsewhere in this introduction, as appropriate.

Watershed Management

BMP 12.5 (Wetland Identification, Evaluation, and Protection): To identify wetland functions and value, and provide appropriate protection measures designed to avoid adverse hydrologic impacts.

BMP 12.6 (Riparian Area Designation and Protection): To identify riparian areas and their associated management activities.

BMP 12.6a (Buffer Design and Layout): To design streamside buffers to meet objectives defined during the implementation of BMP 12.6.

BMP 12.8 (Oil Pollution Prevention and Servicing/Refueling Operations): To prevent contamination of surface and subsurface soil and water resources from spills of petroleum products.

BMP 12.17 (Revegetation of Disturbed Areas): To provide ground cover to minimize soil erosion.

Timber Management

BMP 13.1 (Timber Sale Planning): To incorporate soil and water resource considerations into timber sale planning.

BMP 13.2 (Timber Harvest Design): To incorporate site-specific soil and water resource considerations into integrated timber harvest unit design criteria.

BMP 13.3 (Designating Water Quality Protection Needs on Sale Area/Unit Release Maps): Delineate the location of protection areas and ensure their recognition, proper consideration, and protection on the ground.

BMP 13.4 (Timber Sale Operating Schedule): To ensure that erosion control and timing responsibilities are incorporated into the Operating Schedule.

BMP 13.5 (Identification and Avoidance of Unstable Areas): To avoid triggering mass movements and resultant erosion and sedimentation by excluding unstable areas from timber harvest.

BMP 13.9 (Determining Guidelines for Yarding Operations): To select appropriate yarding systems and guidelines for protecting soil and water resources.

BMP 13.10 (Log Landing Location and Design): To design and construct landings to minimize soil erosion and water quality degradation.

BMP 13.11 (Scheduling and Enforcement of Erosion Control Measures during Timber Sale Operations): To ensure that the Purchasers operations are conducted according to the Timber Sale Contract with respect to soil and water resource protection.

BMP 13.12 (Site Preparation): Maintain sufficient ground cover to minimize soil erosion.

BMP 13.14 (Completion of Erosion Control for Unit Acceptance and Sale Closure): To assure that the required erosion control work is completed before unit acceptance.

BMP 13.16 (Stream Channel Protection – Implementation and Enforcement): To provide the site-specific stream protection prescriptions consistent with objectives identified under BMPs 12.6 and 12.6a. Objectives may include the following:

- ◆ Maintain the natural flow regime.
- ◆ Provide for unobstructed passage of storm flows.
- ◆ Maintain integrity of the riparian buffer to filter sediment and other pollutants.
- ◆ Restore the natural course of any stream that has been diverted as soon as practicable.
- ◆ Maintain natural channel integrity to protect aquatic habitat and other beneficial uses.
- ◆ Prevent adverse changes to the natural stream temperature regime.

BMP 13.17 (Nonrecurring "C" Provisions For Soil and Water Quality Protection): To insert nonrecurring (Special) "C" provisions into the Timber Sale Contract to protect soil and water resources, where standard "B" or "C" provisions do not apply or are inadequate to protect watershed values.

BMP 13.18 (Modification of the Timber Sale Contract): To seek an Environmental Modification of the Timber Sale Contract if new circumstances or conditions indicate that the timber sale will cause irreparable damage to soil, water, or watershed values.

Transportation and Other Facilities Management

BMP 14.1 (Transportation Planning): To assure soil and water resources are considered in transportation planning activities.

BMP 14.2 (Location of Transportation Facilities): To assure water resources protection measures are considered when locating roads and trails.

BMP 14.3 (Design of Transportation Facilities): To incorporate site-specific soil and water resource protection measures into the design of roads and trails.

BMP 14.5 (Road and Trail Erosion Control Plan): Develop erosion control plans for road or trail projects to minimize or mitigate erosion, sedimentation, and resulting water quality degradation prior to the initiation of construction and maintenance activities. Ensure compliance through effective contract administration and timely implementation of erosion control measures.

BMP 14.6 (Timing Restrictions for Construction Activities): Minimize erosion potential by restricting the operating schedule and conducting operations during lower risk periods.

BMP 14.7 (Measures to Minimize Mass Failures): Minimize the chance and extent of road-related mass failures, including landslides and embankment slumps.

BMP 14.8 (Measures to Minimize Surface Erosion): Minimize the erosion from cutslopes, fillslopes, and the road surface, and consequently reduce the risk of sediment production.

BMP 14.9 (Drainage Control to Minimize Erosion and Sedimentation): Minimize the erosive effects of concentrated water flows from transportation facilities and the resulting degradation of water quality through proper design and construction of drainage control systems.

BMP 14.10 (Pioneer Road Construction): Minimize sediment production associated with pioneer road construction.

BMP 14.11 (Timely Erosion Control Measures for Incomplete Projects): Minimize erosion of and sedimentation from disturbed ground on incomplete projects by completing erosion control work prior to seasonal or extended shutdowns.

BMP 14.12 (Control of Excavation and Sidecast Material): Minimize sedimentation from unconsolidated excavated and sidecast material caused by road construction, reconstruction, or maintenance.

BMP 14.14 (Control of In-channel Operations): Minimize stream channel disturbances and related sediment production.

BMP 14.15 (Diversion of Flows around Construction Sites): Identify and implement diversion and de-watering requirements at construction sites to protect water quality and downstream uses.

BMP 14.17 (Bridge and Culvert Design and Installation): Minimize adverse impacts on water quality, stream courses, and fisheries resources from the installation of bridges, culverts, or other stream crossings.

BMP 14.18 (Development and Rehabilitation of Gravel Sources and Quarries): To minimize sediment from borrow pits, gravel sources, and quarries, and to limit channel disturbance from gravel sources permitted for development within floodplains.

BMP 14.19 (Disposal of Construction Slash and Stumps): To ensure that debris generated during construction is prevented from obstructing channels or encroaching on stream, and sensitive karst features.

BMP 14.20 (Road Maintenance): Maintain all roads in a manner which provides for soil and water resources protection by minimizing rutting, road prism failures, sidecasting, and blockage of drainage facilities.

BMP 14.22 (Access and Travel Management): Control access and manage road use to reduce the risk of erosion and sedimentation from road surface disturbance, especially during the higher risk periods associated with high runoff and spring thaw conditions.

BMP 14.24 (Road Obliteration): Reduce sediment generated from temporary or short-term roads and return the land to production by obliterating roads at the completion of their intended use.

BMP 14.26 (Daily LTF Cleanup): Assure cleanup of bark, debris, or other solid materials daily when accumulations are present. Dispose of the materials in an acceptable manner, to prevent water quality degradation.

BMP 14.27 (Log Storage/Sort Yard Erosion Control): To avoid generation of fine particles, and control the overland flow of particles carrying hazardous materials into waterways.

Botany

Forest Plan Standards and Guidelines (page 4-39) direct that adverse impacts of management activities on sensitive and rare plant populations be avoided, minimized, or mitigated. When rare or sensitive plant species are identified in or near a harvest unit, road, or other activity area, a Forest Service botanist will assess the potential impacts on sensitive/rare plants and if necessary, recommend mitigation measures to protect the population. Mitigation measures may include, but are not limited to, avoiding known sensitive/rare plant populations during project activities, directional falling and yarding of trees away from sensitive/rare plants, and partial retention of

forest structure (25 to 50 percent of the basal area) in the area around sensitive/rare plants in forested habitats. Where it is necessary to protect sensitive/rare plant species or communities from a proposed harvest, a Monitoring and Evaluation Plan will be implemented, including a review of the implementation and effectiveness of conservation actions, and the application of adaptive management principles.

All known sensitive or rare plant populations located either within units or within 50 meters (164 feet) of the unit are noted on the unit cards. Unit cards may also include specific actions taken to avoid or mitigate effects to populations. The sensitive/rare plant species potentially affected by one or more unit and listed on the cards include:

Sensitive Plants

None

Rare Plants

Pacific ninebark

Physocarpus capitatus

Field surveys have not been completed for all the units but will be required in some areas because habitat capable of supporting the following sensitive plant species has been identified: Alaska rein orchid (*Platanthera unalascensis*), lesser round-leaved orchid (*Platanthera orbiculata*), lesser yellow lady's slipper (*Cypripedium parviflorum*). Field surveys to identify any of these suspected Region 10 Sensitive Plants will be done during the appropriate growing season. If sensitive plants are found, the botanist will evaluate the survey results for consistency with the determination of effects in the EIS and all resource-specific information, protections, and mitigations will be determined before harvest activities are implemented.

Invasive Species

Non-native and invasive plant species have been identified, during a GIS review of existing databases, to occur at 11 of the 46 proposed helicopter landings. Most of the plant infestations currently identified at these locations are non-native plants commonly located on the Prince of Wales Island Ranger District in the disturbed areas associated with roadsides and have a low invasiveness rank as determined by the Alaska Natural Heritage Program (more information see the POWLLA Invasive Plant Risk Assessment). Reed canarygrass (*Phalaris arundinaceae*) is the only non-native plant known to occur in the project area that has a high invasiveness rank. Reed canarygrass is generally not a target for management due to its widespread distribution on the district along the connected portions of the Prince of Wales Island road system, where these infestations are located.

Further review will be conducted to identify any additional high priority invasive plant infestations in the project area. If any previously undocumented high-priority invasive species are encountered at any time prior to or during implementation, a botanist or ecologist will be consulted. The Forest Service botanist or ecologist that is notified will evaluate the risk of spread from the new invasive population and recommend additional avoidance or mitigation measures following Forest Plan direction and the Tongass National Forest's Weed Best Management Practices.

Fisheries

All known streams are presented in the draft unit cards. Changes to stream location and type are anticipated as additional surveys are completed. These streams, and any additional streams found

during layout, will be protected by the appropriate BMPs and Forest Plan Riparian Standards and Guidelines. Specific stream characteristics and related protections are summarized below. The type and level of stream protection and mitigation is based mainly on designated stream class and channel process group.

The streams in the unit card maps come from the Forest Service geographic information system (GIS) stream layer, which was last updated in October 2019. The unit cards also include descriptions of all streams that are within 200 feet of a given unit. Streams were assigned unique numbers in the field during surveys. Those numbers are used as labels on the maps and to differentiate streams in the unit card narratives. The map labels may also include a letter prefix in front of the stream number, but narratives of stream protections for each unit card will not include that letter prefix (example: a stream is called W_507_2.0 on the map, but is called 507_2.0 in the narrative section). The unit card maps have reference grids so that the general location on the map can be provided if a stream number label is not available, or if a stream is not yet mapped in the GIS stream layer.

For each stream the unit card text identifies the stream class, channel type, protection category, flagging color, RMA buffer size, and any other concern. The criteria for buffer size comes from the Forest Plan Standards and Guidelines for Riparian Management Areas (RMAs), and are described below.

Riparian Management Areas

Forest Plan Standards and Guidelines direct the design of RMAs associated with each stream in the project area.

The RMAs vary in width from the edge of the stream channel according to channel type (Table A11) and stream value class. All Class I and Class II streams are protected from commercial timber harvest within a minimum horizontal distance of 100 feet from the bankfull margins. Depending on the channel type and the extent of riparian soils and vegetation, RMA widths can be 140 feet wide or wider on either side of some Class I, Class II, and Class III streams. RMAs adjacent to Class III streams are protected from commercial timber harvest except along palustrine channel types. The RMA widths on Class III streams are topographically delineated along channel types with steep side-slopes and are measured to set distances along other channel types.

Each unit card briefly lists the channel process group, stream class, and corresponding buffer prescription for streams found within 200 feet of the unit. Unit card maps show the location of all streams and the associated RMAs. RMA widths for each Class I, Class II, and Class III streams are prescribed in the unit card narratives.

Unit card narratives also identify those streams where tree blowdown is a concern and RAW buffer reviews are necessary; the RAW buffer will be identified by the interdisciplinary team during layout.

Specific concerns are also briefly listed such as blowdown, karst streams, or erosion occurring within the unit boundaries.

Process Groups and Channel Types

The Tongass National Forest defines stream channel types according to the Channel Type User Guide (Paustian et al.1992, Paustian and Kelliher 2010), the foundation upon which aquatic

habitat management prescriptions are developed. Channel types are defined within the context of fluvial process groups that describe the interrelationship between watershed runoff, landform relief, geology, and glacial or tidal influences on fluvial erosion and deposition processes. Individual channel type classifications are defined by physical attributes such as channel gradient, channel width, channel pattern, stream bank incision and containment. Table A1-1 shows the Forest Plan codes used on the unit card narratives.

See the Forest Plan, Figure D-1 (page D-4) for a visual representation of the typical distribution of channel process groups. Each unit card summarizes the protection for a particular unit. Only the channel types found in proposed timber harvest units are listed.

Table A1-1. Channel Types In or Adjacent to Proposed Harvest Units

Process Group	Channel Type (C-Type) Code	Channel Type Description
Alluvial Fan	AFM	Moderate Gradient Alluvial Fan
	AFH	High Gradient Alluvial Cone
Floodplain	FPS	Small Flood Plain
	FPM	Medium Flood Plain
	FPL	Large Flood Plain
High Gradient Contained	HCLw	High Gradient Low Incision, wetland phase
	HCL	High Gradient Low Incision
	HCV	High Gradient Upper Valley
	HCDw	High Gradient Deep Incision, wetland phase
	HCM	High Gradient Moderate Incision
	HCD	High Gradient Deep Incision
Moderate Gradient Contained	MCS	Small Moderate Gradient Contained
	MCM	Medium Moderate Gradient Contained
	MCL	Large Moderate Gradient Contained
Moderate Gradient Mixed Control	MMS	Small Moderate Gradient Mixed Control
	MMM	Medium Moderate Gradient Mixed Control
Low Gradient Contained	LCS	Small Low Gradient Contained
	LCM	Medium Low Gradient Contained
Palustrine	PAS	Small Palustrine
	PAM	Medium Palustrine
	PAB	Beaver Dam/Pond

Stream Value Classes

The stream value class designations in the Tongass National Forest are based primarily on presence or absence of fish and fish type, and secondarily on stream morphology. The Forest Plan recognizes four stream classes based on the following criteria:

Class I: Streams and lakes with anadromous or adfluvial fish or fish habitat; or high quality resident fish waters, or habitat above fish migration barriers known to be reasonable enhancement opportunities for anadromous fish.

Class II: Streams and lakes with resident fish or fish habitat and generally steep (6-25 percent or higher) gradient (can also include streams with a 0-6 percent gradient) where no anadromous fish occur, and otherwise not meeting Class I criteria.

Class III: Streams are perennial and intermittent streams that have no fish populations or fish habitat, but have sufficient flow or sediment and debris transport to directly influence downstream water quality or fish habitat capability. For streams less than 30 percent gradient, special care is needed to determine if resident fish are present.

Class IV: Other intermittent, ephemeral, and small perennial channels with insufficient flow or sediment transport capabilities to have immediate influence on downstream water quality or fish habitat capability. Class IV streams do not have the characteristics of Class I, II, or III streams and have a bankfull width of at least 0.3 meter (1 foot).

Stream Protection and Mitigation Actions by Stream Category

The following protection and mitigation will be applied by stream category as defined in BMP 13.3 to all streams designated by each category by harvest unit.

Category A: These stream reaches are flagged with blue and white (B/W) candy striped flagging. Under the TTRA timber harvest shall not be within 100 feet of the stream channel and a Stream Course Protection Plan will be developed for that buffer. Additional Aquatic Habitat Management Handbook (AHMU) buffers and selective harvest buffers may apply as specified in the specific Unit Card. Total no cut buffer is the sum of the no commercial and no programmed commercial harvest buffers.

Category B: These stream reaches are flagged with orange and white (O/W) candy striped flagging. Trees shall be felled in such a manner so that the direction of fall is away from the stream course. Trees or products shall not be hauled or yarded across the stream course unless fully suspended. Debris entering streams from harvest activities shall be removed. Additional AHMU buffers and selective harvest buffers may apply as specified in the Unit Card. Total no cut buffer equals the no programmed commercial harvest buffers.

Category C: These stream reaches are flagged with green and white (G/W) candy striped flagging. In so far as practicable, trees will be felled and yarded away from the stream course. Debris that enters the stream channel that may affect water quality or have potential for debris flows will be removed from the stream course.

Category A, B and C: All stream categories will implement BMPs 12.6, 12.6a, 13.9, 13.14, and 13.16. In addition to road crossings, for all units with shovel logging, equipment crossing of streams must comply with BMP 13.9 and 13.16.

Scenery

The effects of timber harvest upon scenic integrity within these planned units of the POW LLA project are expected to be in compliance with the 2016 Forest Plan components for Scenery. If impacts to scenic integrity are expected to result in a unit not meeting the 2016 Forest Plan, it will be noted in the unit card. During layout, changes to unit sizes of more than a 25 percent increase

will require review by a scenery specialist. Changes to logging system plans that will result in more scenic impact than originally planned will also require review by a scenery specialist.

Karst and Cave Resources

The major focus and intent of the Tongass National Forest karst management strategy is to identify and protect karst systems and the caves and associated resources contained within, as per the requirements of the Federal Cave Resources Protection Act of 1988 (FCRPA). The FCRPA is the primary U.S. law affecting caves. It requires protection of significant caves on federal lands. A cave must possess one or more of the criteria outlined in 36 CFR Part 290.3 to be determined "significant". Though "non-significant" caves may exist on the Forest, most meet the criteria for "significant". The intent of this Act is to protect cave resources not karst resources. However, it is important to recognize that caves and associated features and resources are an integral part of the karst landscape. Karst must be managed as an ecological unit to ensure protection of the associated cave resources. In practice, the Forest gives equal protection to important karst features, sinking or losing streams, springs, and caves. A Forest-wide treatment of karst and cave resources may be found in Chapter 4 of the Forest Plan, Karst and Cave Resources, Forest-wide Standards and Guidelines, pages 4-23 to 4-25 and Appendix H, pages H-1 to H-10.

Complete a Karst Landscape Assessment. This is a four-step process. 1) Identify potential karst lands, 2) Inventory the karst and cave resources, 3) Delineate the karst hydrologic system and catchment area(s), and 4) Assess the vulnerability of the karst terrain to the proposed management activity. The vulnerability categories and their criteria are as follows:

1. **Low Vulnerability Karstlands.** Low vulnerability karst lands are those areas where resource damage threats associated with land management activities are negligible from a karst management perspective. No special provision for the protection of karst values is considered necessary. It is possible that karst areas with high vulnerability will be found within and adjacent to areas found to be of low vulnerability. Along such boundaries or margins, apply guidelines for protecting these high vulnerability areas outlined under "Moderate Vulnerability Karstlands" below. See Appendix H for additional guidance.
2. **Moderate Vulnerability Karstlands.** The moderate vulnerability karst lands are those areas where resource damage threats associated with land management activities in the areas are appreciably greater than those posed by similar activities on low vulnerability karst lands adjacent to areas of high vulnerability. Management objectives on these lands should provide for other land uses while taking into account function and biological significance of the karst and cave resources within the landscape. Timber harvest and related activities could be conducted in such areas under more restrictive guidelines than normally employed on lands underlain by insoluble bedrock. To protect the fragile soils found here, as a minimum, the yarding system selected may be required to achieve partial suspension. It is probable that individual features or areas with high vulnerability will be found within and adjacent to areas found to be of moderate vulnerability. Along such boundaries or margins, following guidelines apply. See Appendix H for additional guidance.
 - a. **Road Construction.** Existing roads will be utilized in preference to the construction of new ones. Roads should avoid sinkholes and other collapse features and sinking or losing streams. Roads should not divert water to or from karst features. Measures shall be taken to reduce erosion and sediment transport from the road surface and cut slopes. Assess the need for ditches and culverts. Sediment traps, cut and fill slope revegetation, and road closure and revegetation may be appropriate. Because subsurface drainage networks may be more open to the surface in moderate

vulnerability areas, additional design criteria may be required. Such criteria may relate to road construction methods, blasting, culvert placement and density, and sediment retention and erosion prevention. Road construction restrictions described below under “high-vulnerability prescriptions” may be required for these areas.

- b. Quarries. Existing quarries will be utilized in preference to the construction of new ones. No quarry shall be developed atop karst without adequate site survey and design. Quarries should be properly closed after abandonment.
- c. Karst Feature Buffers It is probable that individual features or areas with high vulnerability will be found within and adjacent to areas found to be of moderate vulnerability. Along such boundaries or margins the following guidelines shall apply:
 - i. No surface disturbing activity such as timber harvest, road construction, and/or quarry development shall occur within a minimum of 100 feet of the edge of a cave, sinkhole, collapse channel, doline field, or other collapse karst feature. Manage an appropriate distance beyond the no-harvest zone to provide for a reasonable assurance of windfirmness (RAW) of that zone. It is suggested that the specific design of the buffers be an IDT recommendation working with the karst management specialist during the planning process for any given project. Not all features will require the RAW buffer considering the specific characteristics of each. It is not intended that this level of protection would be applied for relatively minor, isolated features (i.e., where explicit or special management measures would not normally be required). Appropriate protection measures for minor features should be designed on a case-by-case basis as field assessed by a karst management specialist. It is suggested that the specific design of the buffers be an IDT recommendation working with the karst management specialist during the planning process for any given project. Not all features will require the RAW buffer considering the specific characteristics of each.
 - ii. No surface disturbing activity such as timber harvest, road construction, and/or quarry development will occur on lands that overlie a known "significant" cave. "Overlie" is defined here as the area between lines projected from the outside walls of the cave passage at a 45-degree angle to the surface.
 - iii. As cave discoveries are made and those caves are mapped and inventoried, it is quite probable that very significant cave systems will be discovered. These might contain significant paleontological, cultural, or biologic resources or the system is of a particular size to warrant an extra level of protection. Cave systems such as El Capitan Cave on Prince of Wales Island, Arabica and associated caves on Heceta Island, Solstice Cave on Chichagof Island, and the Calamity Creek Caves on Revillagigedo, Island are examples. It is suggested that on a case-by-case basis for such caves, a Geologic Special Area be defined and managed as such to protect these systems.
 - iv. Require protection of all sinking or losing streams and their tributaries irrespective of whether the channels carry perennial, ephemeral, or intermittent flows. A non-harvest buffer is required of a minimum of 100 feet from the edge of a sinking or losing stream within no less than ¼ mile (1320 feet) upstream of their swallow hole or loss point. Additional protection beyond this point may be needed and should take into consideration parameters such as gradient, channel type, soil characteristics, and susceptibility to mass wasting and erosion along the stream's or tributary's course or within the watershed. The karst management specialist should work in conjunction with hydrologists and soil scientists to design

additional stream protection if needed. Manage an appropriate distance beyond the no-harvest zone to provide for a reasonable assurance of windfirmness of that zone. In the event that the stream is less than 1/4 mile long, the stream will be buffered to the stream's source.

- v. The area surrounding resurgences should be protected to maintain the environment surrounding the springs and the quality of the waters flowing from them. Resurgences can however be classified as moderate or high vulnerability dependent upon their size, the habitat they provide, and the level of atmospheric connectivity between the resurgence and the underground karst system. Minor resurgences which seep out of the ground between gravels with almost no connectivity between the open atmosphere and the underground system will be classified moderate vulnerability. Appropriate protection measures for moderate vulnerability resurgences and springs should be designed on a case-by-case basis by a karst management specialist. All other resurgences will be classified as high vulnerability and protected as described in "Karst Feature Buffers" above. Special consideration should be given to the area immediately surrounding the springs to protect the flora and fauna often associated with the spring when considering the vulnerability.
3. High Vulnerability Karstlands. The high vulnerability karst lands are those areas where resource damage threats associated with land management activities are appreciably greater than those posed by similar activities on low or moderate vulnerability karst lands. These areas shall be managed to insure conservation of karst values through the implementation of a high level of protection. Timber management and related activities should be excluded from these lands. Limited recreational development may be appropriate. Recreational facilities and trails would have to consider karst resource values and objectives discussed above, particularly with respect to reducing disturbance of significant epikarst features and sensitive soils and use of construction methods that avoid erosion and diversion of natural drainage waters into karst features. Roads are considered inappropriate with the following exception if no other route or option is available. Small expanses of these areas may be crossed by roads to access areas where harvest is appropriate, i.e. low or moderate vulnerability karst lands and non-carbonate areas. If roads must be built across areas of high vulnerability the following guidelines apply. See Appendix H for additional guidance. Karst lands found to be of high vulnerability shall be identified and removed from the commercial forestlands suitable land base.
 - a. Minimize clearing limits and grubbing. Flush cut stumps to the ground. Do not deck logs pioneered from the road clearing limits outside the clearing limits.
 - b. Use a fill-type construction rather than a balanced cut and fill design. This most likely will be possible since the slope gradient of these areas are generally >15%.
 - c. Utilize log stringer bridges or similar structures to span across collapse features if necessary. Geotextile should be used to keep aggregate overlay from falling into the collapse feature.
 - d. Sediment traps and erosion control measures will be needed in most cases.
 - e. Same-season re-vegetation of the cut and fill slopes should be required to minimize sediment production potential.
 - f. A "plan-in-hand" review by the karst management specialist of the proposed road construction prior to actual construction is required.
 - g. The karst management specialist needs to work closely with engineering to carefully design these roads coordinating efforts with the planning team.
 - h. No quarry development would be allowed on these lands.

Heritage Resources

All units comply with required Forest Plan Heritage Standards and Guidelines. Section 106 process were not concluded with the signing of the ROD, therefore, Heritage Professionals followed the guidelines set forth in FSM 2363 and FSH 2309.12 Chapter 30 to identify, evaluate, and allocate Heritage resources to a management category. The direction contained within FSH 2309.12 Chapter 30 applies to all POW LLA activities regardless of whether they are conducted under Section 106 or Section 110 (§ 306101-306107 and 306109 306114) of the National Historic Preservation Act (NHPA), or Archaeological Resources Protection Act (ARPA) (16 USC 470aa et seq.) or other authorities. Appropriate identification and evaluation research was carried out to the degree required to make decisions regarding the historic properties that may be affected by the proposed Staney Cone Helicopter Timber Sale. Known Heritage resources identified within a unit's area of potential effect (APE) were evaluated for the National Register of Historic Places (NRHP) or were not evaluated but treated as eligible per FSM 2363.22 and the provisions at Section II.c. Evaluation of Historic Properties. Heritage resource information is proprietary and is protected under provisions of the NHPA and ARPA and as such, it is not shown on unit card maps. The layout crew was given information on which areas to buffer so as to avoid inadvertently disturbing Heritage resources.

Soils/Wetlands

Unit design are heavily influenced by the project area's soil resources. For instance, factors such as RMA buffers protect riparian soils and efforts to avoid slopes greater than 72 percent often determine the location of unit boundaries and helicopter landings.

Factors that can influence unit design are areas designated as unsuitable for harvest due to very high landslide potential, colluvial activity, MMI4 soils, slopes steeper than 72 percent, and unstable drainages. Slopes greater than 72 percent that remain within units have been determined to be suitable for harvest with a minimum of partial suspension or full suspension yarding. These factors that influence unit design and define whether slopes greater than 72 percent are suitable for harvest are addressed in the unit cards.

All units have a minimum of partial suspension required unless otherwise stated within the unit card text. Some units have areas where full suspension is required. Consult the unit card text for details on locations (BMP 13.9).

Wildlife

All units comply with required Forest Plan Wildlife Standards and Guidelines. Any nests/animal dens discovered at any time will receive the necessary standard and guideline applications. See the description of legacy forest structure and direction in the General Direction Regarding the Implementation of the Legacy Forest Structure Standard and Guideline above and in the Forest Plan p. 4-86 and 87.

Wolves: The Forest Plan requires a 1,200-foot buffer be applied to all known wolf den sites in the project area (Forest Plan p. 4-91). Where known den site buffers overlapped proposed harvest units; the portions of units overlapping the buffers are removed from the unit pool. Actual den locations and buffers are not displayed on unit cards maps at the request of the Alaska Department of Fish and Game (ADF&G).

Black bears: The Forest Plan does not require buffers for black bear dens. Black bear den sites will be protected under the Forest Plan standard and guideline for snag and cavity nesting habitat (Forest Plan p. 4-87). Black bear dens are frequently in snags or cavities in trees and can be protected under this standard and guideline. Actual den locations and buffers are not displayed on unit card maps at the request of ADF&G.

Goshawks: The Forest Plan requires a 100-acre buffer on all known active goshawk nests. This buffer will be applied to all active and probable goshawk nest sites (Forest Plan p. 4-95).

Sitka black-tailed deer: Uneven-aged harvest and commercial thinning will help maintain or enhance black-tailed deer habitat over the long-term. Reduction of habitat, especially winter habitat, and fragmentation were also an important component of maintaining deer habitat. Where practical, corridors are planned to facilitate movement of deer across the landscape (Forest Plan p. 4-88).

Various treatments, including thinning, girdling, pruning, and slash treatments, may be used to improve wildlife habitat in young-growth stands. Treatments will be prioritized in deep snow winter habitat (south-facing stands below 800 feet in elevation) when consistent with stand objectives and desired future conditions. That is, as funding becomes available, deep snow habitat areas (especially in wildlife analysis areas (WAAs) with deep snow habitat concerns) would receive priority consideration for treatments, but the treatments would be consistent with stand objectives and desired future conditions.

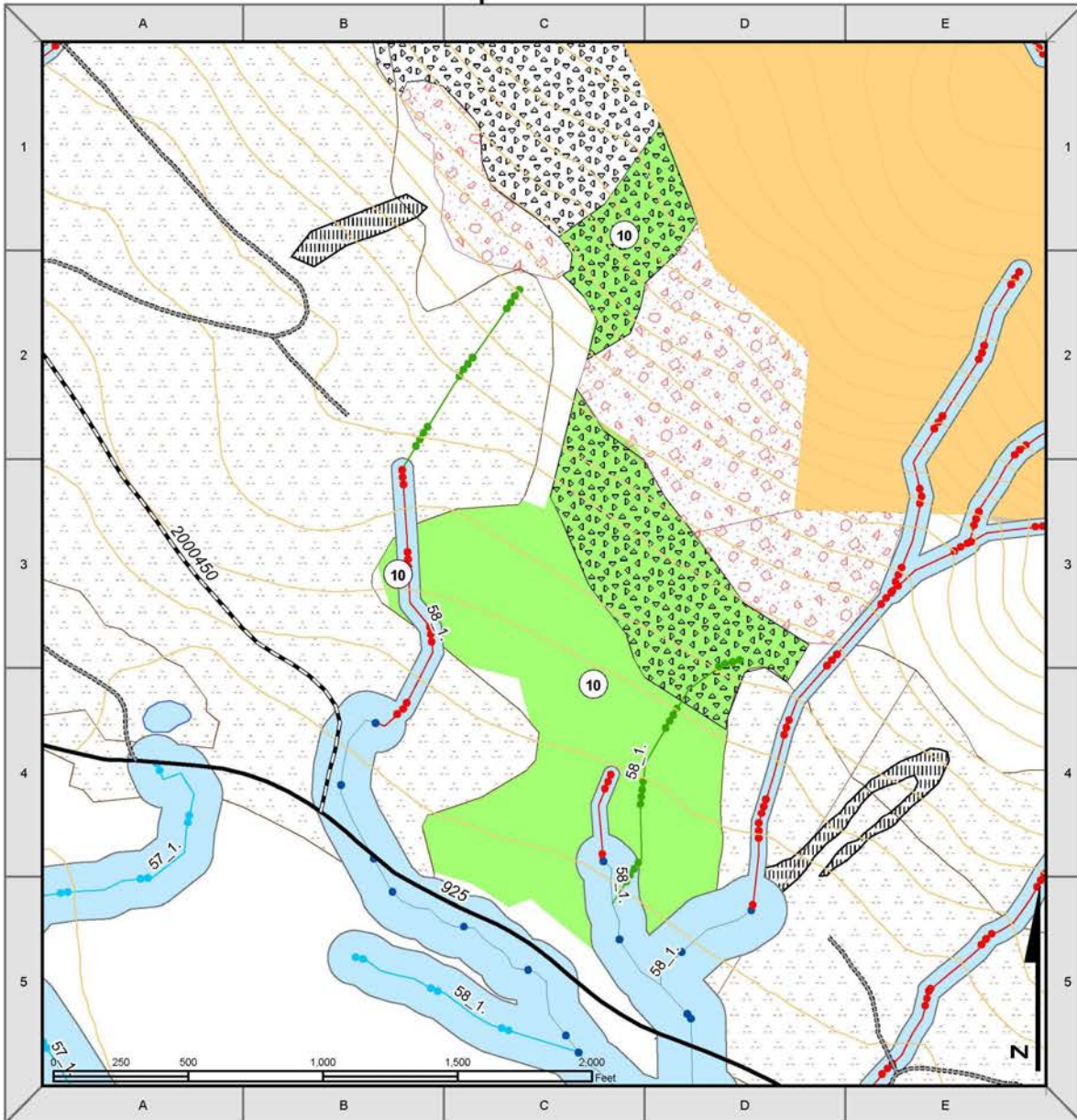
Bald Eagle: All laws and regulations regarding bald eagles will be followed (Forest Plan p. 4-88).

Heron and Raptor: Protect active rookeries and raptor nests. Active nests will be protected with a forested 600-foot windfirm buffer, where available. Road construction through the buffer is discouraged. Prevent disturbance during the active nesting season (generally March 1 to July 31) (Forest Plan p. 4-90).

Marbled Murrelet: If nests are found during project implementation, maintain a 600-foot, generally circular, radius of undisturbed forest habitat surrounding identified murrelet nests, where available. Minimize disturbance activities within this buffer during the nesting season (May 1 to August 15). Maintain the buffer zone and monitor the site for nesting activity for not less than two nesting seasons after nest discovery. Maintain the buffer if the nest site is active during the monitoring period. Buffer protection may be removed if the site remains inactive for two consecutive nesting seasons (Forest Plan p. 4-92).

Marine Mammals: Ensure that Forest Service authorized or approved activities are conducted in a manner consistent with the Marine Mammal Protection Act, Endangered Species Act, and National Marine Fisheries Service guidelines (Forest Plan p. 4-89).

Helicopter Unit: 10



Units	Great Blue Heron	Stream Class III	Past Harvest
Roadless Rule	Bear Den	Stream Class IV	NonDevelopment LUDs
Contour 100ft	Proposed Temporary Roads	Riparian Management Area	Old-Growth LUD
High Vulnerability Karst	Existing NFS Roads	T77/Audubon Watersheds	Legacy
USFWS Eagle Buffer	Existing Temporary Roads	Community Use 5-Mile Zone	NonForest Service Lands
Goshawk Nest Buffer	Non-NFS Roads	Unsuitable Soils	Saltwater
Wildlife Buffers	Lakes	Full Suspension Soils	
Marbled Murrelet	Stream Class I	Beach Buffers Max High Water	
Raptor	Stream Class II	Landslides	

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Unit 10							
Unit Number:	10	Total Harvest Unit Acres	40	Prescription:	UEA	Harvest System:	Helicopter
VCU Number:	5900	LUD:	Timber Production	Net Harvest Volume (MBF):		165	
Summary of Concerns, Responses, BMPs, and Mitigations							
SILVICULTURE							
<p>Old-growth stands tend to already exhibit uneven-aged structure to varying degrees. The objective of uneven-aged management is to: 1) economically harvest a portion of the stand, 2) maintain old-growth structure in the stand, and 3) retain trees that will provide for economically viable and sustainable future entries. Uneven-aged management in this unit will be done by single tree selection using a helicopter logging system. When doing a cut-tree mark to designate removals, safety or hazard trees may also be marked as required for safety purposes. Variability in the stand will result in variability in the mark, from scattered individual trees to groups where overstory removal cannot exceed 2 acres in size. On average, retain approximately 66% of the pre-harvest basal area of standing live trees, and retain at least 75% in portions of the unit where windthrow risk is high. Generally maintain pre-harvest species composition after harvest. Retain: 1) healthy young 'crop' trees that promote economic future entries, 2) older trees with low timber value but high wildlife value, 3) advanced and new regeneration trees. The Silviculturist will establish inspection plots to ensure marking guidelines are adhered to and objectives are met for the unit.</p>							
TIMBER/LOGGING							
This unit is planned for Helicopter yarding to landings located on temporary road at milepost 20.5 along State Highway 925.							
ENGINEERING/SYSTEM ROADS							
Decommissioned road to be rebuilt 0.2 miles for helicopter landing, BMP 14.2, 14.5, 14.20, Road-5, Road 6.							
BOTANY							
Surveys have not been completed but will be required due to identified moderate potential habitat for <i>Platanthera orbiculata</i> (Lesser round-leaved orchid), within the southeast corner of the unit and along streams within the unit. All resource-specific information, protections and mitigations will be determined before harvest activities are implemented.							
INVASIVE SPECIES							
Helicopter Landings will need to be surveyed for invasive plants. If plants are found, BMPs (Krosse 2017) are followed to avoid spread or introduction of weeds to the area due to project actions.							
FISHERIES							
<p>Stream Num: 58_1.0 Stream Class: I, IV Channel Type: PAB, HCL Protection: Category A and C Flagging: B/W, G/W Buffer (RMA): Class I for PAB - 100 feet or to the extent of the flood plain, riparian vegetation or soils, or riparian associated wetland fens; whichever is greater. Class I for HCL - 100 feet or to the top of the side-slope break; whichever is greater. Class IV for HCL - No buffer Concerns: Stream edits needed</p>							
<p>Stream Num: Map Location C-4 (58_1.1R) Stream Class: I, III, IV Channel Type: MMS, HCO, HCM Protection: Category A, B, and C Flagging: B/W, O/W, G/W Buffer (RMA): Class I for MMS - 120 feet or to the extent of the flood plain, riparian vegetation or soils, or riparian associated wetland fens; whichever is greater. Class I for HCO - 100 feet or to the top of the side-slope break; whichever is greater. Class III for HCM - To the top of the side-slope break Class IV for HCO - No buffer Concerns: Stream edits needed, moderate blowdown</p>							
<p>Stream Num: Map Location D-5 (58_1.1R.1R) Stream Class: I, III, IV</p>							

Unit 10

Channel Type: HCO, HCOK
Protection: Category A, B, and C
Flagging: B/W, O/W, G/W
Buffer (RMA):

Class I for HCO - 100 feet or to the top of the side-slope break; whichever is greater.

Class III for HCOK - To the top of the side-slope break

Class IV for HCO - No buffer

Concerns: Stream edits needed, karst features found

Stream Num: Map Location C-4 (58_1.1R.2R)

Stream Class: I, IV

Channel Type: MMO, HCO

Protection: Category A and C

Flagging: B/W, G/W

Buffer (RMA):

Class I for MMO - 120 feet or to the extent of the flood plain, riparian vegetation or soils, or riparian associated wetland fens; whichever is greater.

Class IV for HCO - No buffer

Concerns: Stream edits needed, extreme blowdown

Stream Num: Map Location C-4 (58_1.1R.3R)

Stream Class: IV

Channel Type: HCO

Protection: Category C

Flagging: G/W

Buffer (RMA):

Class IV for HCO - No buffer

Concerns: Stream edits needed, high blowdown

Stream Num: Map Location C-4 (58_1.1R.1L)

Stream Class: IV

Channel Type: HCO

Protection: Category C

Flagging: G/W

Buffer (RMA):

Class IV for HCO - No buffer

Concerns: Stream edits needed, moderate blowdown

Stream Num: Map Location B-4 (58_1.2R)

Stream Class: II

Channel Type: HCL

Protection: Category A

Flagging: B/W

Buffer (RMA):

Class II for HCL - 100 feet or to the top of the side-slope break; whichever is greater.

Concerns: Stream edits needed

Proposed helicopter landings will need stream reviews prior to final Unit Cards and implementation.

All Streams Protection/Mitigation Actions by Category:

All Categories implement BMPs

Category A reaches flagged B/W: Under the TTRA timber harvest shall not be within 100 feet of the stream channel and a Stream course Protection Plan will be developed for that buffer. Additional AHMU buffers and selective harvest buffers may apply as specified above. Total no cut buffer is the sum of the no commercial and no programmed commercial harvest buffers.

Category B reaches flagged O/W: Trees shall be felled in such a manner so that the direction of fall is away from the stream course. Trees or products shall not be hauled or yarded across the stream course unless fully suspended. Debris entering streams from harvest activities shall be removed. Additional AHMU buffers and selective harvest buffers may apply as specified above. Total no cut buffer equals the no programmed commercial harvest buffers.

Unit 10

Category C reaches flagged G/W: In so far as practicable, trees will be felled and yarded away from the stream course. Debris that enters the stream channel that may affect water quality or have potential for debris flows will be removed from the stream course.

ROAD/STREAM CROSSING SUMMARY

Log landings and system road re-opening needs are discussed in the Engineering/System Roads section above. Should road/stream crossing structures be installed or re-installed the hydrologist will be consulted.

GEOLOGY/KARST

Unit has been reviewed for karst and cave resources. There is no known karst or cave resource concerns.

HERITAGE RESOURCES

A finding of "No historic properties affected" (36 CFR 800.4(d)(1) or "No adverse effect" (36 CFR 800.5(d)(1) has been applied. Project activities may proceed as planned; however the Heritage Professional shall be consulted if new discoveries or unanticipated effects are identified during the project's implementation phase. All activities in the vicinity of the discovery shall cease and reasonable efforts shall be taken to avoid or minimize harm to the resource.

SCENERY

No scenery concerns.

RECREATION

No recreation concerns.

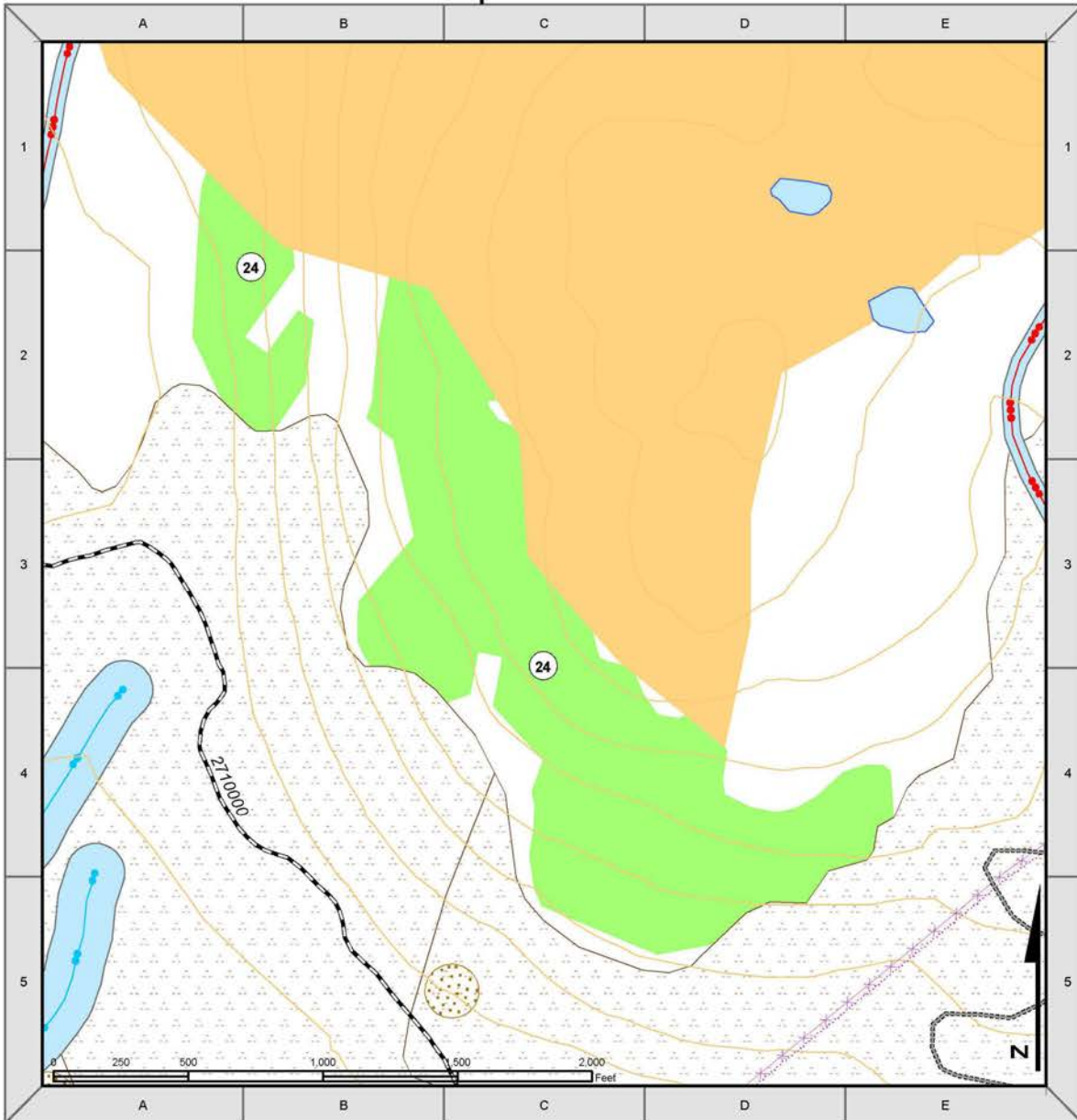
SOILS/WETLANDS

Slopes range from 30 to greater than 72%. Approximately 23 acres of unsuitable soils are excluded from harvest consideration due to very high MMI 4 soils, cliffs, and landslide prone terrain. About 16 acres of the remainder of the unit is only suitable with full suspension requirements. Helicopter logging will meet all soil and wetland resource concerns. Wetlands were not identified during field recon. Apply R10 BMPs 12.5, 13.5, and 13.9 and National Core BMPs Plan-2, AqEco-2, AqEco-4, Veg-1, Veg-2, Veg-5, and Veg-6.

WILDLIFE

Portion of unit that is below 1000 feet in elevation has been surveyed. No goshawks detected. This unit is one of the last remaining elevational corridors in the area. Wildlife recommends minimal harvest to maintain corridor.

Helicopter Unit: 24



Units	Great Blue Heron	Stream Class III	Past Harvest
Roadless Rule	Bear Den	Stream Class IV	NonDevelopment LUDs
Contour 100ft	Proposed Temporary Roads	Riparian Management Area	Old-Growth LUD
High Vulnerability Karst	Existing NFS Roads	T77/Audubon Watersheds	Legacy
USFWS Eagle Buffer	Existing Temporary Roads	Community Use 5-Mile Zone	NonForest Service Lands
Goshawk Nest Buffer	Non-NFS Roads	Unsuitable Soils	Saltwater
Wildlife Buffers	Lakes	Full Suspension Soils	
Marbled Murrelet	Stream Class I	Beach Buffers Max High Water	
Raptor	Stream Class II	Landslides	

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Unit 24							
Unit Number:	24	Total Harvest Unit Acres	43.2	Prescription:	UEA	Harvest System:	Helicopter
VCU Number:	5380	LUD:	Timber Production	Net Harvest Volume (MBF):		210	
Summary of Concerns, Responses, BMPs, and Mitigations							
SILVICULTURE							
<p>Old-growth stands tend to already exhibit uneven-aged structure to varying degrees. The objective of uneven-aged management is to: 1) economically harvest a portion of the stand, 2) maintain old-growth structure in the stand, and 3) retain trees that will provide for economically viable and sustainable future entries. Uneven-aged management in this unit will be done by single tree selection using a helicopter logging system. When doing a cut-tree mark to designate removals, safety or hazard trees may also be marked as required for safety purposes. Variability in the stand will result in variability in the mark, from scattered individual trees to groups where overstory removal cannot exceed 2 acres in size. On average, retain approximately 66% of the pre-harvest basal area of standing live trees, and retain at least 75% in portions of the unit where windthrow risk is high. Generally maintain pre-harvest species composition after harvest. Retain: 1) healthy young 'crop' trees that promote economic future entries, 2) older trees with low timber value but high wildlife value, 3) advanced and new regeneration trees. The Silviculturist will establish inspection plots to ensure marking guidelines are adhered to and objectives are met for the unit.</p>							
TIMBER/LOGGING							
This unit is planned for Helicopter yarding to landings located on road 2000780.							
ENGINEERING/SYSTEM ROADS							
Landings on NFS road 2000780. 2000780 is a closed road and will require maintenance upgrades to meet haul standards (BMP 14.20, Road-4). Road is listed as State jurisdiction and permit from DNR will be required.							
BOTANY							
Surveys have not been completed but will be required due to identified high potential habitat for <i>Cypripedium parviflorum var. pubescens</i> (Large yellow lady's slipper) and others within the central portion of the unit. All resource-specific information, protections and mitigations will be determined before harvest activities are implemented.							
INVASIVE SPECIES							
Helicopter Landings will need to be surveyed for invasive plants. If plants are found, BMPs (Krosse 2017) are followed to avoid spread or introduction of weeds to the area due to project actions.							
FISHERIES							
There are currently no mapped streams within 200ft of this unit. Notify the Fish Biologist or Hydrologist if new streams are discovered. Proposed helicopter landings will need stream reviews prior to final Unit Cards and implementation.							
<p>All Streams Protection/Mitigation Actions by Category: All Categories implement BMPs Category A reaches flagged B/W: Under the TTRA timber harvest shall not be within 100 feet of the stream channel and a Stream course Protection Plan will be developed for that buffer. Additional AHMU buffers and selective harvest buffers may apply as specified above. Total no cut buffer is the sum of the no commercial and no programmed commercial harvest buffers.</p> <p>Category B reaches flagged O/W: Trees shall be felled in such a manner so that the direction of fall is away from the stream course. Trees or products shall not be hauled or yarded across the stream course unless fully suspended. Debris entering streams from harvest activities shall be removed. Additional AHMU buffers and selective harvest buffers may apply as specified above. Total no cut buffer equals the no programmed commercial harvest buffers.</p> <p>Category C reaches flagged G/W: In so far as practicable, trees will be felled and yarded away from the stream course. Debris that enters the stream channel that may affect water quality or have potential for debris flows will be removed from the stream course.</p>							
ROAD/STREAM CROSSING SUMMARY							
Log landings and system road re-opening needs are discussed in the Engineering/System Roads section above. Should road/stream crossing structures be installed or re-installed the hydrologist will be consulted.							
GEOLOGY/KARST							
Unit has been reviewed for karst and cave resources. There is no known karst or cave resource concerns.							
HERITAGE RESOURCES							
A finding of "No historic properties affected" (36 CFR 800.4(d)(1) or "No adverse effect" (36 CFR 800.5(d)(1) has been applied. Project activities may proceed as planned; however the Heritage Professional shall be consulted if							

Unit 24

new discoveries or unanticipated effects are identified during the project's implementation phase. All activities in the vicinity of the discovery shall cease and reasonable efforts shall be taken to avoid or minimize harm to the resource.

SCENERY

No scenery concerns.

RECREATION

No recreation concerns.

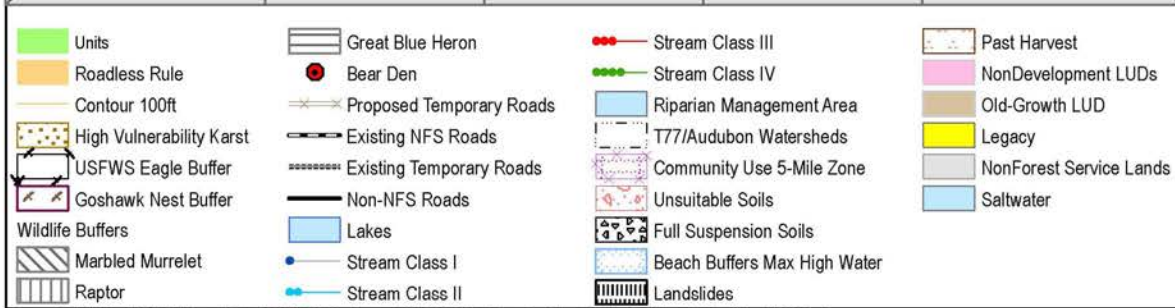
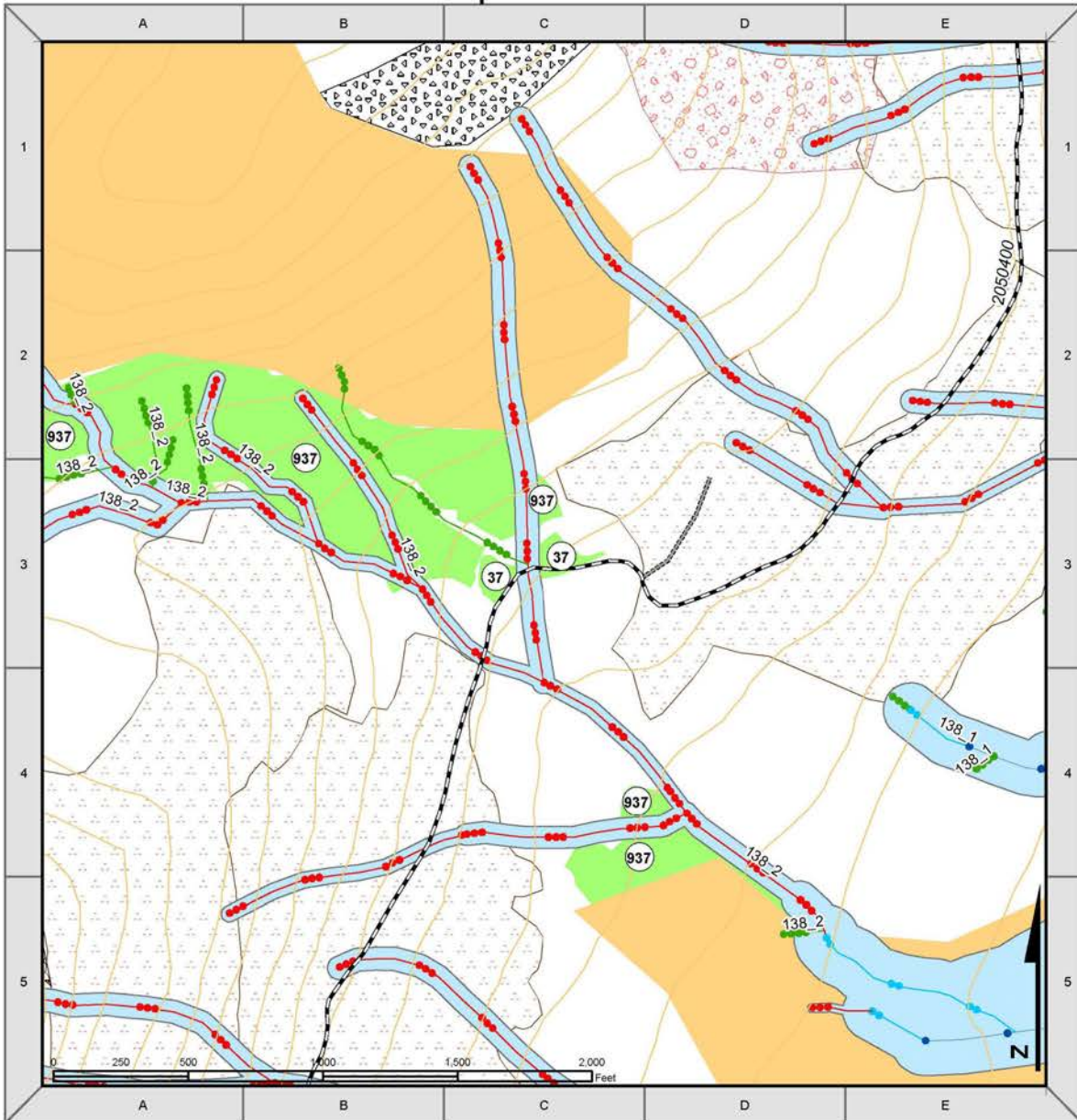
SOILS/WETLANDS

A slope stability investigation is still needed for this unit and will be conducted prior to implementation.

WILDLIFE

Unit is above 1000 feet in elevation. No goshawk surveys required.

Helicopter Unit: 37



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Unit 37							
Unit Number:	37	Total Harvest Unit Acres	.8	Prescription:	UEA	Harvest System:	Helicopter
VCU Number:	5880	LUD:	Timber Production	Net Harvest Volume (MBF):		6	
Summary of Concerns, Responses, BMPs, and Mitigations							
SILVICULTURE							
<p>Old-growth stands tend to already exhibit uneven-aged structure to varying degrees. The objective of uneven-aged management is to: 1) economically harvest a portion of the stand, 2) maintain old-growth structure in the stand, and 3) retain trees that will provide for economically viable and sustainable future entries. Uneven-aged management in this unit will be done by single tree selection using a helicopter logging system. When doing a cut-tree mark to designate removals, safety or hazard trees may also be marked as required for safety purposes. Variability in the stand will result in variability in the mark, from scattered individual trees to groups where overstory removal cannot exceed 2 acres in size. On average, retain approximately 66% of the pre-harvest basal area of standing live trees, and retain at least 75% in portions of the unit where windthrow risk is high. Generally maintain pre-harvest species composition after harvest. Retain: 1) healthy young 'crop' trees that promote economic future entries, 2) older trees with low timber value but high wildlife value, 3) advanced and new regeneration trees. The Silviculturist will establish inspection plots to ensure marking guidelines are adhered to and objectives are met for the unit.</p>							
TIMBER/LOGGING							
This unit is planned for Helicopter yarding to landings located 2050300.							
ENGINEERING/SYSTEM ROADS							
Landings on NFS road 2050300 (BMP 14.20, Road-4). Road is open and maintained.							
BOTANY							
Surveys have not been completed but will be required due to identified moderate potential habitat for <i>Piperia unalascensis</i> (Alaska rein orchid) and <i>Platanthera orbiculata</i> (Lesser round-leaved orchid) in the identified riparian habitat within and adjacent to the unit. All resource-specific information, protections and mitigations will be determined before harvest activities are implemented.							
INVASIVE SPECIES							
Helicopter Landings will need to be surveyed for invasive plants. If plants are found, BMPs (Krosse 2017) are followed to avoid spread or introduction of weeds to the area due to project actions.							
FISHERIES							
<p>Stream Num: Map Location C-2 / C-3 Stream Class: IV Channel Type: HCO Protection: Category C Flagging: G/W Buffer (RMA): Class IV for HCO – No buffer Concerns: Stream mapped as HCD class III but is HCO class IV.</p> <p>Stream Num: 138_2.0 Stream Class: III Channel Type: HCM Protection: Category B Flagging: O/W Buffer (RMA): Class III for HCM - To the top of the side-slope break Concerns: N/A</p> <p>Stream Num: Map Location C-3 / B-2 Stream Class: IV Channel Type: HCO Protection: Category C Flagging: G/W Buffer (RMA): Class IV for HCO - No buffer Concerns: N/A</p> <p>Stream Num: Map Location C-3 / B-3</p>							

Unit 37

Stream Class: IV
Channel Type: HCO
Protection: Category C
Flagging: G/W
Buffer (RMA):
Class IV for HCO - No buffer
Concerns: Needs stream edits

Proposed helicopter landings will need stream reviews prior to final Unit Cards and implementation.

All Streams Protection/Mitigation Actions by Category:

All Categories implement BMPs

Category A reaches flagged B/W: Under the TTRA timber harvest shall not be within 100 feet of the stream channel and a Stream course Protection Plan will be developed for that buffer. Additional AHMU buffers and selective harvest buffers may apply as specified above. Total no cut buffer is the sum of the no commercial and no programmed commercial harvest buffers.

Category B reaches flagged O/W: Trees shall be felled in such a manner so that the direction of fall is away from the stream course. Trees or products shall not be hauled or yarded across the stream course unless fully suspended. Debris entering streams from harvest activities shall be removed. Additional AHMU buffers and selective harvest buffers may apply as specified above. Total no cut buffer equals the no programmed commercial harvest buffers.

Category C reaches flagged G/W: In so far as practicable, trees will be felled and yarded away from the stream course. Debris that enters the stream channel that may affect water quality or have potential for debris flows will be removed from the stream course.

ROAD/STREAM CROSSING SUMMARY

Log landings and system road re-opening needs are discussed in the Engineering/System Roads section above. Should road/stream crossing structures be installed or re-installed the hydrologist will be consulted.

GEOLOGY/KARST

Unit has been reviewed for karst and cave resources. There is no known karst or cave resource concerns.

HERITAGE RESOURCES

A finding of "No historic properties affected" (36 CFR 800.4(d)(1) or "No adverse effect" (36 CFR 800.5(d)(1) has been applied. Project activities may proceed as planned; however the Heritage Professional shall be consulted if new discoveries or unanticipated effects are identified during the project's implementation phase. All activities in the vicinity of the discovery shall cease and reasonable efforts shall be taken to avoid or minimize harm to the resource.

SCENERY

No scenery concerns.

RECREATION

No recreation concerns

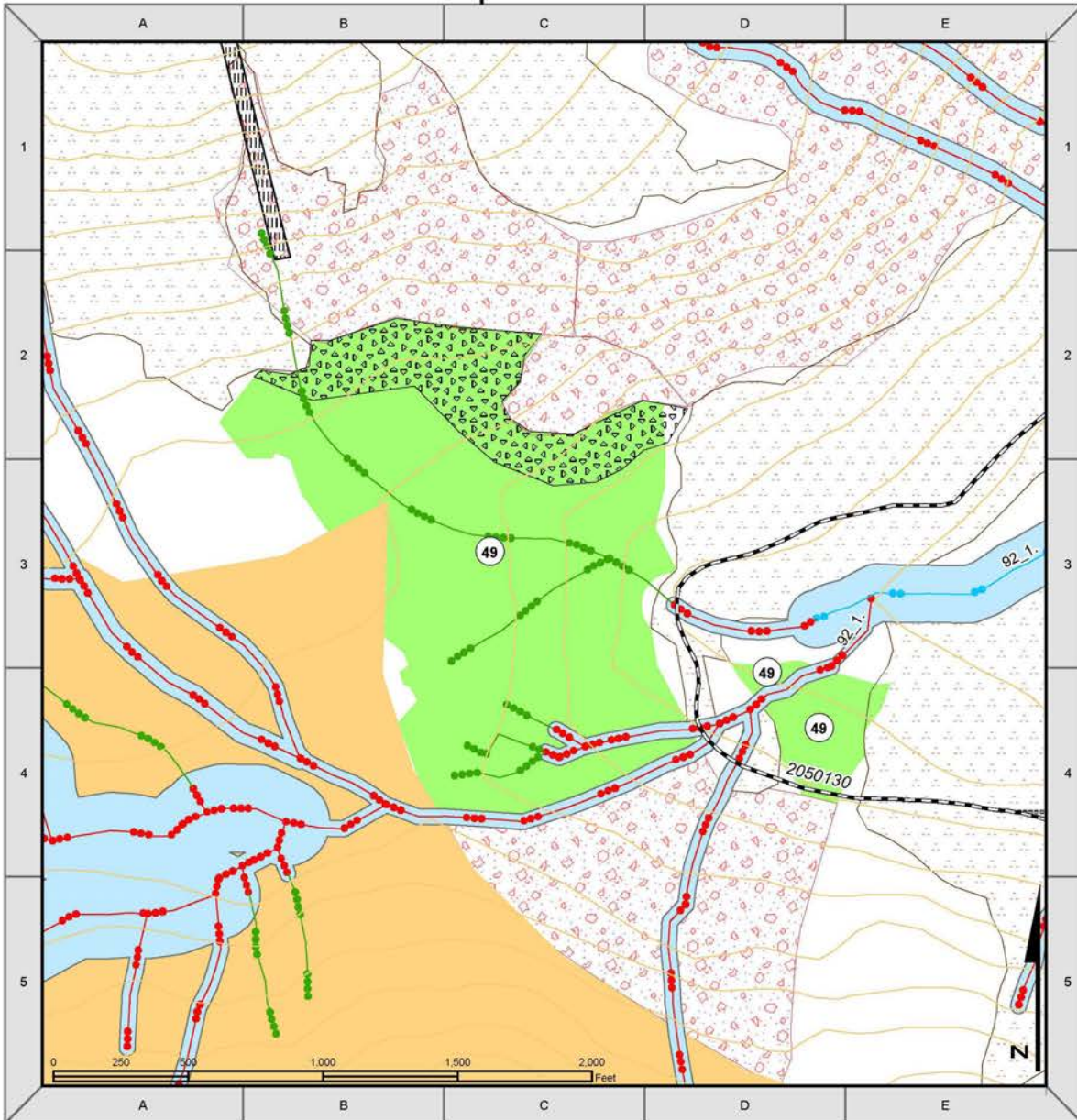
SOILS/WETLANDS

Slopes range from 25 to 55%. All slopes are suitable for harvest with helicopter logging. Forested wetland is located across the entire unit. Apply R10 BMPs 12.5, 13.5, and 13.9 and National Core BMPs Plan-2, AqEco-2, AqEco-4, Veg-1, Veg-2, Veg-5, and Veg-6.

WILDLIFE

Unit is at or above 1000 feet in elevation. No goshawk surveys required.

Helicopter Unit: 49



Units	Great Blue Heron	Stream Class III	Past Harvest
Roadless Rule	Bear Den	Stream Class IV	NonDevelopment LUDs
Contour 100ft	Proposed Temporary Roads	Riparian Management Area	Old-Growth LUD
High Vulnerability Karst	Existing NFS Roads	T77/Audubon Watersheds	Legacy
USFWS Eagle Buffer	Existing Temporary Roads	Community Use 5-Mile Zone	NonForest Service Lands
Goshawk Nest Buffer	Non-NFS Roads	Unsuitable Soils	Saltwater
Wildlife Buffers	Lakes	Full Suspension Soils	
Marbled Murrelet	Stream Class I	Beach Buffers Max High Water	
Raptor	Stream Class II	Landslides	

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Unit 49							
Unit Number:	49	Total Harvest Unit Acres	45.2	Prescription:	UEA	Harvest System:	Helicopter
VCU Number:	5900	LUD:	Timber Production	Net Harvest Volume (MBF):		339	
Summary of Concerns, Responses, BMPs, and Mitigations							
SILVICULTURE							
<p>Old-growth stands tend to already exhibit uneven-aged structure to varying degrees. The objective of uneven-aged management is to: 1) economically harvest a portion of the stand, 2) maintain old-growth structure in the stand, and 3) retain trees that will provide for economically viable and sustainable future entries. Uneven-aged management in this unit will be done by single tree selection using a helicopter logging system. When doing a cut-tree mark to designate removals, safety or hazard trees may also be marked as required for safety purposes. Variability in the stand will result in variability in the mark, from scattered individual trees to groups where overstory removal cannot exceed 2 acres in size. On average, retain approximately 66% of the pre-harvest basal area of standing live trees, and retain at least 75% in portions of the unit where windthrow risk is high. Generally maintain pre-harvest species composition after harvest. Retain: 1) healthy young 'crop' trees that promote economic future entries, 2) older trees with low timber value but high wildlife value, 3) advanced and new regeneration trees. The Silviculturist will establish inspection plots to ensure marking guidelines are adhered to and objectives are met for the unit.</p>							
TIMBER/LOGGING							
This unit is planned for Helicopter yarding to landings located on road 2050305.							
ENGINEERING/SYSTEM ROADS							
Landings on NFS road 2030305. 2050305 is a closed road and will require maintenance upgrades to meet haul standards (BMP 14.20, Road-4).							
BOTANY							
Surveys have been partially conducted as a part of the POWLLA but have not been completed and will be required due to identified potential riparian habitat for <i>Piperia unalascensis</i> (Alaska rein orchid) and <i>Platanthera orbiculata</i> (Lesser round-leaved orchid). All resource-specific information, protections and mitigations will be determined before harvest activities are implemented.							
INVASIVE SPECIES							
Helicopter Landings will need to be surveyed for invasive plants. If plants are found, BMPs (Krosse 2017) are followed to avoid spread or introduction of weeds to the area due to project actions.							
FISHERIES							
<p>Stream Num: Map location D-3 / C-3 / C-4 (92_1.0) Stream Class: II, III Channel Type: HCM Protection: Category A and B Flagging: B/W, O/W Buffer (RMA): Class II for HCM - 100 feet or to the top of the side-slope break; whichever is greater. Class III for HCM - To the top of the side-slope break Concerns: Needs stream edits</p> <p>Stream Num: Map location D-4 (92_1.1L) Stream Class: II, IV Channel Type: HCM, HCO Protection: Category A and C Flagging: B/W, G/W Buffer (RMA): Class II for HCM - 100 feet or to the top of the side-slope break; whichever is greater. Class IV for HCO - No buffer Concerns: Needs stream edits.</p> <p>Stream Num: Map location D-4 (92_1.1L.1L) Stream Class: IV Channel Type: HCO Protection: Category C Flagging: G/W Buffer (RMA): Class IV for HCO - No buffer</p>							

Unit 49

Concerns: Needs stream edits.

Stream Num: Map location D-3 / D-4 (92_1.2L)

Stream Class: II, IV

Channel Type: HCO

Protection: Category A and C

Flagging: B/W, G/W

Buffer (RMA):

Class II for HCO - 100 feet or to the top of the side-slope break; whichever is greater.

Class IV for HCO - No buffer

Concerns: Needs stream edits.

Stream Num: Map location D-4 (92_1.2L.1L)

Stream Class: II, IV

Channel Type: HCO

Protection: Category A and C

Flagging: B/W, G/W

Buffer (RMA):

Class II for HCO - 100 feet or to the top of the side-slope break; whichever is greater.

Class IV for HCO - No buffer

Concerns: Needs stream edits.

Stream Num: Map location D-4 (92_1.2L.1L.1R)

Stream Class: IV

Channel Type: HCO

Protection: Category C

Flagging: G/W

Buffer (RMA):

Class IV for HCO - No buffer

Concerns: Needs stream edits.

Stream Num: Map location D-3 (92_1.3L)

Stream Class: IV

Channel Type: HCO

Protection: Category C

Flagging: G/W

Buffer (RMA):

Class IV for HCO - No buffer

Concerns: Needs stream edits.

Stream Num: Map location D-3 (92_1.1R)

Stream Class: IV

Channel Type: HCL

Protection: Category C

Flagging: G/W

Buffer (RMA):

Class IV for HCL - No buffer

Concerns: Needs stream edits.

Stream Num: Map location D-3 (92_1.2R)

Stream Class: IV

Channel Type: HCO

Protection: Category C

Flagging: G/W

Buffer (RMA):

Class IV for HCO - No buffer

Concerns: Needs stream edits.

Stream Num: Map location C-3 / B-3 (92_1.3R)

Stream Class: III, IV

Channel Type: HCM

Unit 49

Protection: Category B and C
Flagging: O/W, G/W
Buffer (RMA):
Class III for HCM - To the top of the side-slope break
Class IV for HCO - No buffer
Concerns: Needs stream edits

Stream Num: Map location B-3 (92_1.3R.1R)
Stream Class: IV
Channel Type: HCO
Protection: Category C
Flagging: G/W
Buffer (RMA):
Class IV for HCM - No buffer
Concerns: Needs stream edits

Stream Num: Map location B-3 (92_1.3R.1L)
Stream Class: IV
Channel Type: HCO
Protection: Category C
Flagging: G/W
Buffer (RMA):
Class IV for HCM - No buffer
Concerns: Needs stream edits

Stream Num: Map location B-3 (92_1.3R.2L)
Stream Class: IV
Channel Type: HCO
Protection: Category C
Flagging: G/W
Buffer (RMA):
Class IV for HCM - No buffer
Concerns: Needs stream edits

During the GIS process some streams were not removed from the corporate layer and were not included in the unit card text. These streams will be removed from the corporate GIS layer before final unit cards are prepared. Proposed helicopter landings will need stream reviews prior to final Unit Cards and implementation.

All Streams Protection/Mitigation Actions by Category:

All Categories implement BMPs

Category A reaches flagged B/W: Under the TTRA timber harvest shall not be within 100 feet of the stream channel and a Stream course Protection Plan will be developed for that buffer. Additional AHMU buffers and selective harvest buffers may apply as specified above. Total no cut buffer is the sum of the no commercial and no programmed commercial harvest buffers.

Category B reaches flagged O/W: Trees shall be felled in such a manner so that the direction of fall is away from the stream course. Trees or products shall not be hauled or yarded across the stream course unless fully suspended. Debris entering streams from harvest activities shall be removed. Additional AHMU buffers and selective harvest buffers may apply as specified above. Total no cut buffer equals the no programmed commercial harvest buffers.

Category C reaches flagged G/W: In so far as practicable, trees will be felled and yarded away from the stream course. Debris that enters the stream channel that may affect water quality or have potential for debris flows will be removed from the stream course.

ROAD/STREAM CROSSING SUMMARY

Log landings and system road re-opening needs are discussed in the Engineering/System Roads section above. Should road/stream crossing structures be installed or re-installed the hydrologist will be consulted.

GEOLOGY/KARST

Unit has been reviewed for karst and cave resources. There is no known karst or cave resource concerns.

Unit 49

HERITAGE RESOURCES

A finding of "No historic properties affected" (36 CFR 800.4(d)(1) or "No adverse effect" (36 CFR 800.5(d)(1) has been applied. Project activities may proceed as planned; however the Heritage Professional shall be consulted if new discoveries or unanticipated effects are identified during the project's implementation phase. All activities in the vicinity of the discovery shall cease and reasonable efforts shall be taken to avoid or minimize harm to the resource.

SCENERY

No scenery concerns.

RECREATION

No recreation concerns

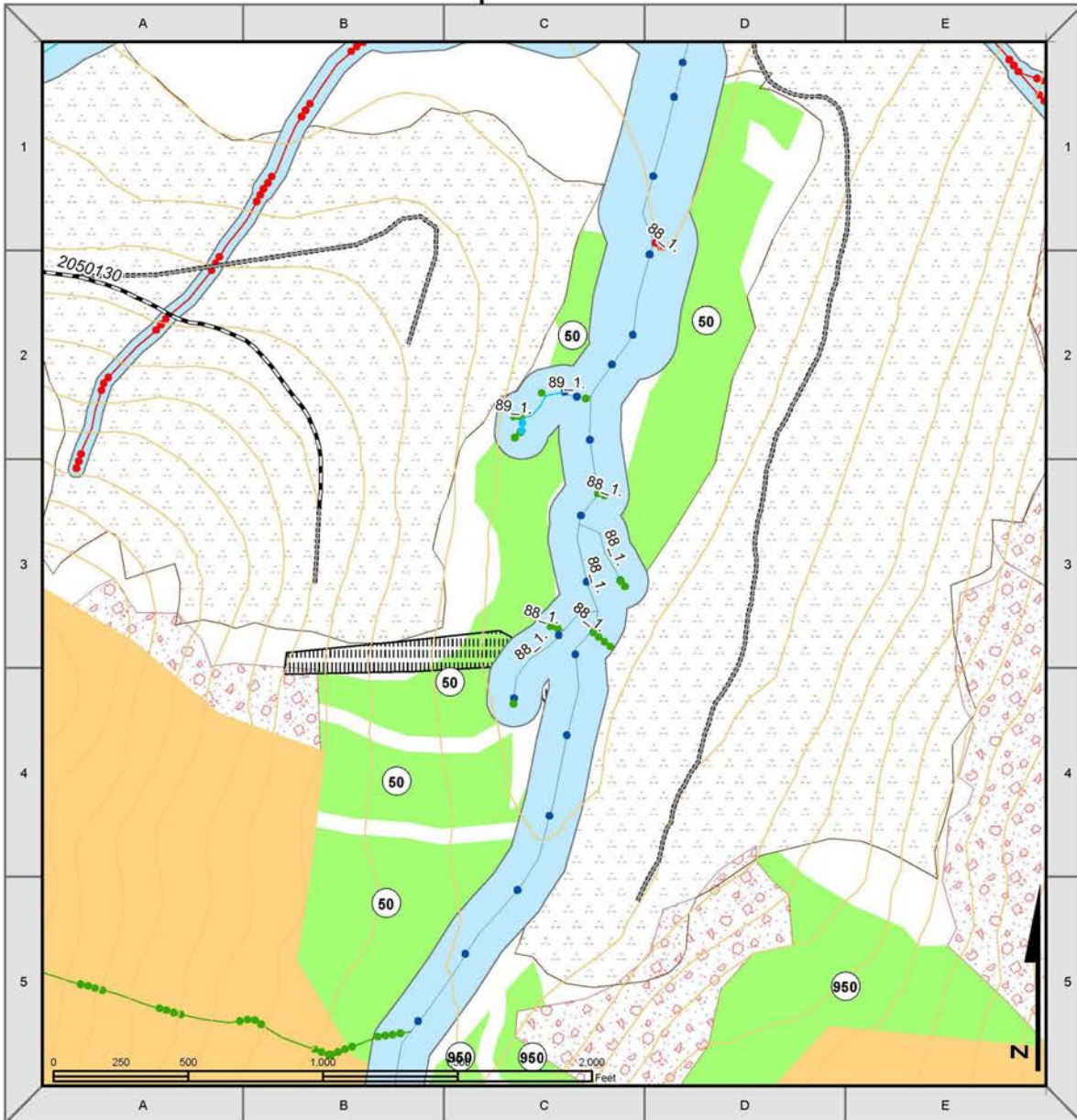
SOILS/WETLANDS

Slopes range from gentle to greater than 72%. Approximately 68 acres of unsuitable soils are excluded from harvest consideration in the north and 21 acres in the south due to existing and historic landslides, cliffs, heavy dissected slopes, and very steep wet till slopes. About 9 acres of the unit is only suitable with full suspension requirements. Helicopter logging will meet all soil and wetland resource concerns. Forested wetland/emergent short sedge wetlands occur along the western boundary. Apply R10 BMPs 12.5, 13.5, and 13.9 and National Core BMPs Plan-2, AqEco-2, AqEco-4, Veg-1, Veg-2, Veg-5, and Veg-6.

WILDLIFE

No surveys have been conducted. Unit requires all goshawk surveys. Surveys will be conducted prior to implementation.

Helicopter Unit: 50



Units	Great Blue Heron	Stream Class III	Past Harvest
Roadless Rule	Bear Den	Stream Class IV	NonDevelopment LUDs
Contour 100ft	Proposed Temporary Roads	Riparian Management Area	Old-Growth LUD
High Vulnerability Karst	Existing NFS Roads	T77/Audubon Watersheds	Legacy
USFWS Eagle Buffer	Existing Temporary Roads	Community Use 5-Mile Zone	NonForest Service Lands
Goshawk Nest Buffer	Non-NFS Roads	Unsuitable Soils	Saltwater
Wildlife Buffers	Lakes	Full Suspension Soils	
Marbled Murrelet	Stream Class I	Beach Buffers Max High Water	
Raptor	Stream Class II	Landslides	

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Unit 50							
Unit Number:	50	Total Harvest Unit Acres	31.6	Prescription:	UEA	Harvest System:	Helicopter
VCU Number:	5900	LUD:	Timber Production	Net Harvest Volume (MBF):		207	
Summary of Concerns, Responses, BMPs, and Mitigations							
SILVICULTURE							
<p>Old-growth stands tend to already exhibit uneven-aged structure to varying degrees. The objective of uneven-aged management is to: 1) economically harvest a portion of the stand, 2) maintain old-growth structure in the stand, and 3) retain trees that will provide for economically viable and sustainable future entries. Uneven-aged management in this unit will be done by single tree selection using a helicopter logging system. When doing a cut-tree mark to designate removals, safety or hazard trees may also be marked as required for safety purposes. Variability in the stand will result in variability in the mark, from scattered individual trees to groups where overstory removal cannot exceed 2 acres in size. On average, retain approximately 66% of the pre-harvest basal area of standing live trees, and retain at least 75% in portions of the unit where windthrow risk is high. Generally maintain pre-harvest species composition after harvest. Retain: 1) healthy young 'crop' trees that promote economic future entries, 2) older trees with low timber value but high wildlife value, 3) advanced and new regeneration trees. The Silviculturist will establish inspection plots to ensure marking guidelines are adhered to and objectives are met for the unit.</p>							
TIMBER/LOGGING							
This unit is planned for Helicopter yarding to landings located on road 2050305.							
ENGINEERING/SYSTEM ROADS							
Landings on NFS road 2050305. 2050305 is a closed road and will require maintenance upgrades to meet haul standards (BMP 14.20, Road-4).							
BOTANY							
Surveys have not been completed but will be required due to identified moderate potential habitat for <i>Piperia unalascensis</i> (Alaska rein orchid) and <i>Platanthera orbiculata</i> (Lesser round-leaved orchid) in the identified riparian habitat within and adjacent to the unit. All resource-specific information, protections and mitigations will be determined before harvest activities are implemented.							
INVASIVE SPECIES							
Helicopter Landings will need to be surveyed for invasive plants. If plants are found, BMPs (Krosse 2017) are followed to avoid spread or introduction of weeds to the area due to project actions.							
FISHERIES							
<p>Stream Num: Map Location D-1 / C-2 / C-3 / C-4 / C-5 (88_1.0) Stream Class: I Channel Type: MMS, FPS, MCM, HCL Protection: Category A Flagging: B/W Buffer (RMA): Class I for MMS - 120 feet or to the extent of the flood plain, riparian vegetation or soils, or riparian associated wetland fens; whichever is greater. Class I for FPS - 130 feet or to the extent of the flood plain, riparian vegetation or soils, or riparian associated wetland fens; whichever is greater. Class I for MCM - 100 feet or to the top of the side-slope break; whichever is greater. Class I for HCL - 100 feet or to the top of the side-slope break; whichever is greater. Concerns: N/A</p> <p>Stream Num: map location D-1 (88_5.0) Stream Class: IV Channel Type: HCO Protection: Category C Flagging: G/W Buffer (RMA): Class IV for HCO - No buffer Concerns: Stream edits needed</p> <p>Stream Num: map location D-2 (88_1.1L) Stream Class: III, IV Channel Type: HCM, HCO Protection: Category B and C</p>							

Unit 50

Flagging: O/W, G/W

Buffer (RMA):

Class III for HCM - To the top of the side-slope break

Class IV for HCO - No buffer

Concerns: Stream edits needed

Stream Num: map location C-2

Stream Class: II

Channel Type: HCO

Protection: Category A

Flagging: B/W

Buffer (RMA):

Class II for HCO - 100 feet or to the top of the side-slope break; whichever is greater.

Concerns: Not field verified. Stream edits needed

Stream Num: map location C-2 (88_1.5 R)

Stream Class: IV

Channel Type: HCO

Protection: Category C

Flagging: G/W

Buffer (RMA):

Class IV for HCO - No buffer

Concerns: Stream edits needed

Stream Num: map location C-2 (89_1.1R)

Stream Class: I, II, IV

Channel Type: HCO

Protection: Category A and C

Flagging: B/W, G/W

Buffer (RMA):

Class I for HCO - 100 feet or to the top of the side-slope break; whichever is greater.

Class II for HCO - 100 feet or to the top of the side-slope break; whichever is greater.

Class IV for HCO - No buffer

Concerns: N/A

Stream Num: map location C-2 (89_1.1R.1L)

Stream Class: IV

Channel Type: HCO

Protection: Category C

Flagging: G/W

Buffer (RMA):

Class IV for HCO - No buffer

Concerns: N/A

Stream Num: map location C-2 (89_1.1R.1R)

Stream Class: IV

Channel Type: HCO

Protection: Category C

Flagging: G/W

Buffer (RMA):

Class IV for HCO - No buffer

Concerns: N/A

Stream Num: map location C-2 (89_1.1R.2R)

Stream Class: IV

Channel Type: HCO

Protection: Category C

Flagging: G/W

Buffer (RMA):

Class IV for HCO - No buffer

Concerns: N/A

Unit 50

Stream Num: map location C-3 (88_1.3R)
Stream Class: II, IV
Channel Type: HCO
Protection: Category A and C
Flagging: B/W, G/W
Buffer (RMA):
Class II for HCO - 100 feet or to the top of the side-slope break; whichever is greater.
Class IV for HCO - No buffer
Concerns: Stream edits needed.

Stream Num: map location C-3 (88_1.3R.1L)
Stream Class: IV
Channel Type: HCO
Protection: Category C
Flagging: G/W
Buffer (RMA):
Class IV for HCO - No buffer
Concerns: Stream edits needed.

Stream Num: map location C-3 (88_1.2L)
Stream Class: IV
Channel Type: HCO
Protection: Category B
Flagging: O/W
Buffer (RMA):
Class IV for HCO with B protection - To the top of the side-slope break
Concerns: Not field verified, stream edits needed (class IV with B protection)

Stream Num: map location C-3 (88_1.3L)
Stream Class: I, II
Channel Type: HCO
Protection: Category A
Flagging: B/W
Buffer (RMA):
Class I for HCO - 100 feet or to the top of the side-slope break; whichever is greater.
Class II for HCO - 100 feet or to the top of the side-slope break; whichever is greater.
Concerns: Stream edits needed.

Stream Num: map location C-3 (88_1.3L.1R)
Stream Class: II, IV
Channel Type: HCO
Protection: Category A and C
Flagging: B/W, G/W
Buffer (RMA):
Class II for HCO - 100 feet or to the top of the side-slope break; whichever is greater.
Class IV for HCO - No buffer
Concerns: Stream edits needed.

Stream Num: map location C-4 (88_1.2R)
Stream Class: I
Channel Type: MMO
Protection: Category A
Flagging: B/W
Buffer (RMA):
Class I for MMO - 120 feet or to the extent of the flood plain, riparian vegetation or soils, or riparian associated wetland fens; whichever is greater.
Concerns: Not field verified. Stream edits needed.

Stream Num: map location C-3 (88_1.2R.1R)
Stream Class: I

Unit 50

Channel Type: MMO

Protection: Category A

Flagging: B/W

Buffer (RMA):

Class I for MMO - 120 feet or to the extent of the flood plain, riparian vegetation or soils, or riparian associated wetland fens; whichever is greater.

Concerns: Stream edits and field verification needed.

Stream Num: map location C-3 (88_1.4L)

Stream Class: I

Channel Type: HCO

Protection: Category A

Flagging: B/W

Buffer (RMA):

Class I for HCO - 100 feet or to the top of the side-slope break; whichever is greater.

Concerns: Stream edits needed.

Stream Num: map location C-3 (88_1.5L)

Stream Class: I

Channel Type: HCO

Protection: Category A

Flagging: B/W

Buffer (RMA):

Class I for HCO - 100 feet or to the top of the side-slope break; whichever is greater.

Concerns: Stream edits needed.

Stream Num: map location B-5 (87_2.1R)

Stream Class: IV

Channel Type: MMO, HCM

Protection: Category C

Flagging: G/W

Buffer (RMA):

Class IV for MMO - No buffer

Class IV for HCM - No buffer

Concerns: Not field verified. Stream edits needed.

During the GIS process all streams were labeled as 88_1. Map locations were provided for streams along with the correct name. Stream labels will be corrected before final unit cards are prepared. Proposed helicopter landings will need stream reviews prior to final Unit Cards and implementation.

All Streams Protection/Mitigation Actions by Category:

All Categories implement BMPs

Category A reaches flagged B/W: Under the TTRA timber harvest shall not be within 100 feet of the stream channel and a Stream course Protection Plan will be developed for that buffer. Additional AHMU buffers and selective harvest buffers may apply as specified above. Total no cut buffer is the sum of the no commercial and no programmed commercial harvest buffers.

Category B reaches flagged O/W: Trees shall be felled in such a manner so that the direction of fall is away from the stream course. Trees or products shall not be hauled or yarded across the stream course unless fully suspended. Debris entering streams from harvest activities shall be removed. Additional AHMU buffers and selective harvest buffers may apply as specified above. Total no cut buffer equals the no programmed commercial harvest buffers.

Category C reaches flagged G/W: In so far as practicable, trees will be felled and yarded away from the stream course. Debris that enters the stream channel that may affect water quality or have potential for debris flows will be removed from the stream course.

ROAD/STREAM CROSSING SUMMARY

Log landings and system road re-opening needs are discussed in the Engineering/System Roads section above. Should road/stream crossing structures be installed or re-installed the hydrologist will be consulted.

GEOLOGY/KARST

Unit has been reviewed for karst and cave resources. There is no known karst or cave resource concerns.

Unit 50

HERITAGE RESOURCES

A finding of "No historic properties affected" (36 CFR 800.4(d)(1) or "No adverse effect" (36 CFR 800.5(d)(1) has been applied. Project activities may proceed as planned; however the Heritage Professional shall be consulted if new discoveries or unanticipated effects are identified during the project's implementation phase. All activities in the vicinity of the discovery shall cease and reasonable efforts shall be taken to avoid or minimize harm to the resource.

SCENERY

No scenery concerns.

RECREATION

No recreation concerns.

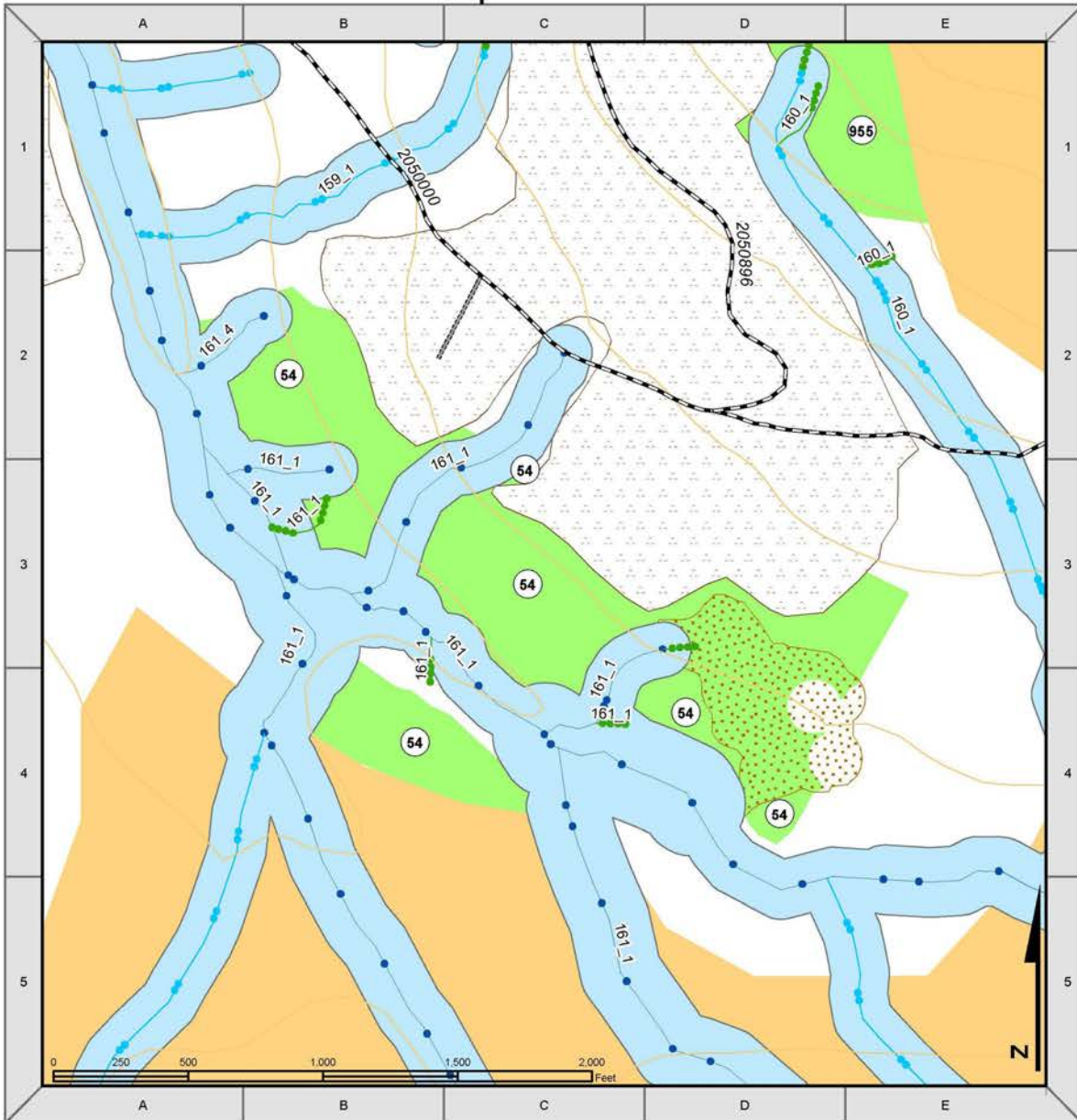
SOILS/WETLANDS

Slopes range from gentle to greater than 72%. Approximately 82 acres of unsuitable soils are excluded from harvest consideration in the southwest due to steep cliffs and landslide prone terrain. There are small patches of slopes greater than 72% within the proposed unit and are suitable for harvest. Helicopter logging will meet all soil and wetland resource concerns. Forested wetlands occur in the northern polygons. Apply R10 BMPs 12.5, 13.5, and 13.9 and National Core BMPs Plan-2, AqEco-2, AqEco-4, Veg-1, Veg-2, Veg-5, and Veg-6.

WILDLIFE

No surveys have been conducted. Requires all goshawk surveys. All surveys will be conducted prior to implementation.

Helicopter Unit: 54



Unit 54							
Unit Number:	54	Total Harvest Unit Acres	25	Prescription:	UEA	Harvest System:	Helicopter
VCU Number:	5890	LUD:	Timber Production		Net Harvest Volume (MBF):		187
Summary of Concerns, Responses, BMPs, and Mitigations							
SILVICULTURE							
<p>Old-growth stands tend to already exhibit uneven-aged structure to varying degrees. The objective of uneven-aged management is to: 1) economically harvest a portion of the stand, 2) maintain old-growth structure in the stand, and 3) retain trees that will provide for economically viable and sustainable future entries. Uneven-aged management in this unit will be done by single tree selection using a helicopter logging system. When doing a cut-tree mark to designate removals, safety or hazard trees may also be marked as required for safety purposes. Variability in the stand will result in variability in the mark, from scattered individual trees to groups where overstory removal cannot exceed 2 acres in size. On average, retain approximately 66% of the pre-harvest basal area of standing live trees, and retain at least 75% in portions of the unit where windthrow risk is high. Generally maintain pre-harvest species composition after harvest. Retain: 1) healthy young 'crop' trees that promote economic future entries, 2) older trees with low timber value but high wildlife value, 3) advanced and new regeneration trees. The Silviculturist will establish inspection plots to ensure marking guidelines are adhered to and objectives are met for the unit.</p>							
TIMBER/LOGGING							
This unit is planned for Helicopter yarding to landings located 2050000.							
ENGINEERING/SYSTEM ROADS							
Landings on NFS road 2050000 (BMP 14.20, Road-4). Road is open and maintained.							
BOTANY							
Unit was surveyed. No botanical concerns							
INVASIVE SPECIES							
Helicopter Landings will need to be surveyed for invasive plants. If plants are found, BMPs (Krosse 2017) are followed to avoid spread or introduction of weeds to the area due to project actions.							
FISHERIES							
<p>Stream Num: Map location A-2 / B-3 / C-4 / D-4 / E-4 (161_1.0) Stream Class: I Channel Type: MMM, HCM, FPM, MCS Protection: Category A Flagging: B/W Buffer (RMA): Class I for MMM - 120 feet or to the extent of the flood plain, riparian vegetation or soils, or riparian associated wetland fens; whichever is greater. Class I for HCM - 100 feet or to the top of the side-slope break; whichever is greater. Class I for FPM - 130 feet or to the extent of the flood plain, riparian vegetation or soils, or riparian associated wetland fens; whichever is greater. Class I for MCS - 100 feet or to the top of the side-slope break; whichever is greater. Concerns: N/A</p>							
<p>Stream Num: Map location A-2 (161_1.40L) Stream Class: I Channel Type: HCO Protection: Category A Flagging: B/W Buffer (RMA): Class I for HCO - 100 feet or to the top of the side-slope break; whichever is greater. Concerns: N/A</p>							
<p>Stream Num: Map location B-2 (161_1.4L.1R) Stream Class: IV Channel Type: HCO Protection: Category C Flagging: G/W Buffer (RMA): Class IV for HCO - No buffer Concerns: N/A</p>							

Unit 54

Stream Num: Map location B-3 (161_1.41L)
Stream Class: I
Channel Type: MMO
Protection: Category A
Flagging: B/W

Buffer (RMA):
Class I for MMO - 120 feet or to the extent of the flood plain, riparian vegetation or soils, or riparian associated wetland fens; whichever is greater.
Concerns: N/A

Stream Num: Map location B-3 (161_1.42L)
Stream Class: IV
Channel Type: MMO
Protection: Category C
Flagging: G/W

Buffer (RMA):
Class IV for MMO - No buffer
Concerns: N/A

Stream Num: Map location B-3 / A4 (161_1.4R)
Stream Class: I
Channel Type: FPS
Protection: Category A
Flagging: B/W

Buffer (RMA):
Class I for FPS - 130 feet or to the extent of the flood plain, riparian vegetation or soils, or riparian associated wetland fens; whichever is greater.
Concerns: N/A

Stream Num: Map location B-3 / C-2 (161_1.43L)
Stream Class: I
Channel Type: HCO
Protection: Category A
Flagging: B/W

Buffer (RMA):
Class I for HCO - 100 feet or to the top of the side-slope break; whichever is greater.
Concerns: N/A

Stream Num: Map location B-3 (161_1.41R)
Stream Class: IV
Channel Type: HCO
Protection: Category C
Flagging: G/W

Buffer (RMA):
Class IV for HCO - No buffer
Concerns: N/A

Stream Num: Map location C-3 (161_1.44L)
Stream Class: I, IV
Channel Type: MMO, HCO
Protection: Category A and C
Flagging: B/W, G/W

Buffer (RMA):
Class I for MMO - 120 feet or to the extent of the flood plain, riparian vegetation or soils, or riparian associated wetland fens; whichever is greater.
Class I for HCO - 100 feet or to the top of the side-slope break; whichever is greater.
Class IV for HCO - No buffer
Concerns: Notes say possible karst.

Stream Num: Map location C-3 (161_1.44L.1R)

Unit 54

Stream Class: IV
Channel Type: MMO
Protection: Category C
Flagging: G/W
Buffer (RMA):
Class IV for MMO - No buffer
Concerns: N/A

Stream Num: Map location C-3 / C-4 / C-5 (161_1.42R)
Stream Class: I, IV
Channel Type: MMO
Protection: Category A and C
Flagging: B/W, G/W
Buffer (RMA):
Class I for MMO - 120 feet or to the extent of the flood plain, riparian vegetation or soils, or riparian associated wetland fens; whichever is greater.
Class IV for MMO - No buffer
Concerns: N/A

During the GIS process all streams were labeled as 161_1. Map locations were provided for streams along with the correct name. Stream label will be corrected before final unit cards are prepared. Proposed helicopter landings will need stream reviews prior to final Unit Cards and implementation.

All Streams Protection/Mitigation Actions by Category:

All Categories implement BMPs

Category A reaches flagged B/W: Under the TTRA timber harvest shall not be within 100 feet of the stream channel and a Stream course Protection Plan will be developed for that buffer. Additional AHMU buffers and selective harvest buffers may apply as specified above. Total no cut buffer is the sum of the no commercial and no programmed commercial harvest buffers.

Category B reaches flagged O/W: Trees shall be felled in such a manner so that the direction of fall is away from the stream course. Trees or products shall not be hauled or yarded across the stream course unless fully suspended. Debris entering streams from harvest activities shall be removed. Additional AHMU buffers and selective harvest buffers may apply as specified above. Total no cut buffer equals the no programmed commercial harvest buffers.

Category C reaches flagged G/W: In so far as practicable, trees will be felled and yarded away from the stream course. Debris that enters the stream channel that may affect water quality or have potential for debris flows will be removed from the stream course.

ROAD/STREAM CROSSING SUMMARY

Log landings and system road re-opening needs are discussed in the Engineering/System Roads section above. Should road/stream crossing structures be installed or re-installed the hydrologist will be consulted.

GEOLOGY/KARST

Unit has been reviewed for karst and cave resources. Portions of this unit are underlain by karst. The karst is of moderate vulnerability with inclusions of high vulnerability. The high vulnerability karst has been buffered from the unit. A harvest method that obtains partial suspension is required on the moderate vulnerability karst. As laid out there is no known karst or cave resource concerns.

HERITAGE RESOURCES

A finding of "No historic properties affected" (36 CFR 800.4(d)(1)) or "No adverse effect" (36 CFR 800.5(d)(1)) has been applied. Project activities may proceed as planned; however the Heritage Professional shall be consulted if new discoveries or unanticipated effects are identified during the project's implementation phase. All activities in the vicinity of the discovery shall cease and reasonable efforts shall be taken to avoid or minimize harm to the resource.

SCENERY

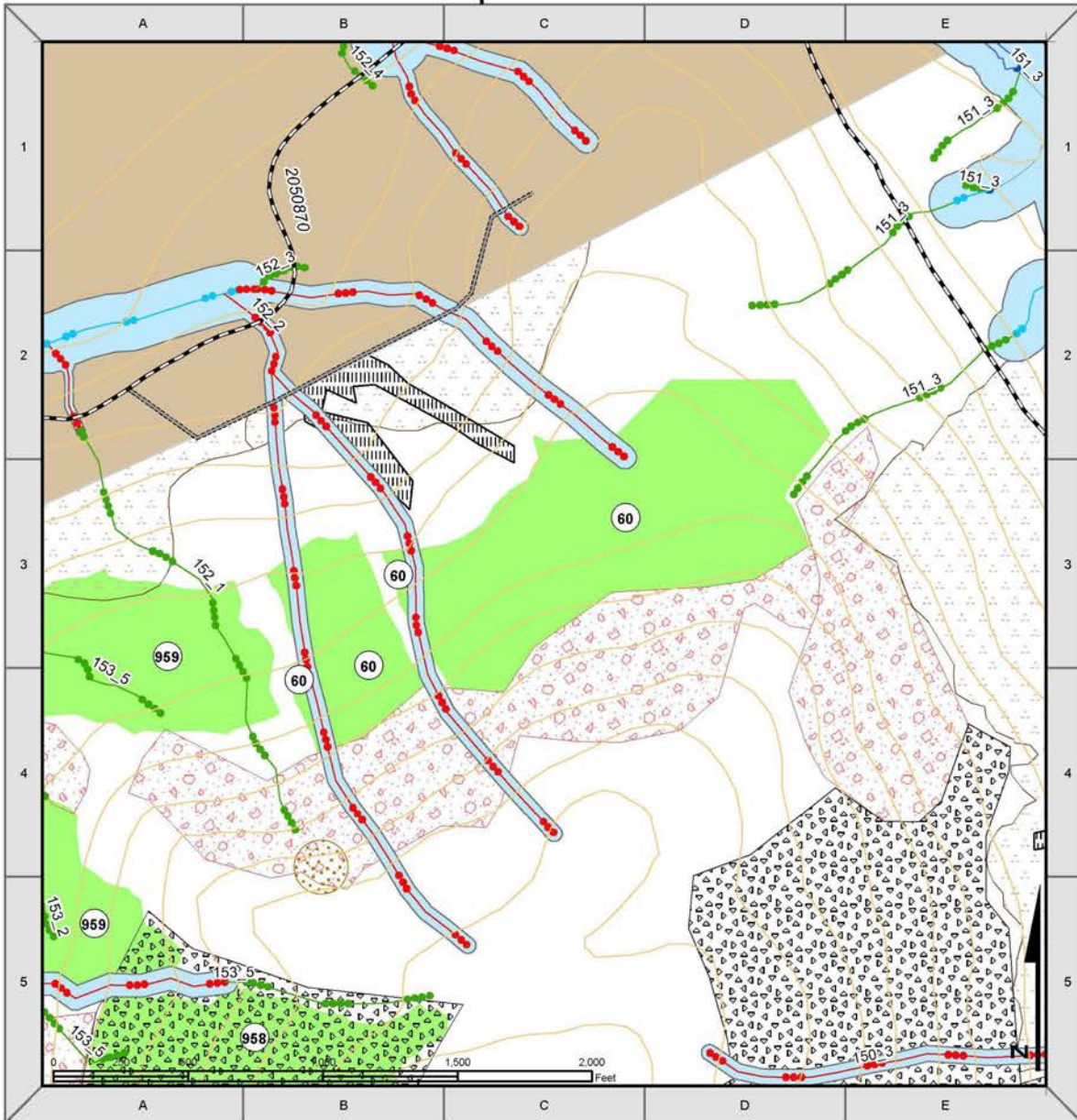
No scenery concerns.

RECREATION

No recreation concerns.

Unit 54
SOILS/WETLANDS
Slopes are gentle to 55%. All slopes are suitable for harvest with helicopter logging. Forested wetland is located intermittently across the eastern polygons. Apply R10 BMPs 12.5, 13.5, and 13.9 and National Core BMPs Plan-2, AqEco-2, AqEco-4, Veg-1, Veg-2, Veg-5, and Veg-6.
WILDLIFE
Goshawk surveys complete 2018. No goshawks detected.

Helicopter Unit: 60



Units	Great Blue Heron	Stream Class III	Past Harvest
Roadless Rule	Bear Den	Stream Class IV	NonDevelopment LUDs
Contour 100ft	Proposed Temporary Roads	Riparian Management Area	Old-Growth LUD
High Vulnerability Karst	Existing NFS Roads	T77/Audubon Watersheds	Legacy
USFWS Eagle Buffer	Existing Temporary Roads	Community Use 5-Mile Zone	NonForest Service Lands
Goshawk Nest Buffer	Non-NFS Roads	Unsuitable Soils	Saltwater
Wildlife Buffers	Lakes	Full Suspension Soils	
Marbled Murrelet	Stream Class I	Beach Buffers Max High Water	
Raptor	Stream Class II	Landslides	

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Unit 60							
Unit Number:	60	Total Harvest Unit Acres	27.4	Prescription:	UEA	Harvest System:	Helicopter
VCU Number:	5890	LUD:	Timber Production		Net Harvest Volume (MBF):		192
Summary of Concerns, Responses, BMPs, and Mitigations							
SILVICULTURE							
<p>Old-growth stands tend to already exhibit uneven-aged structure to varying degrees. The objective of uneven-aged management is to: 1) economically harvest a portion of the stand, 2) maintain old-growth structure in the stand, and 3) retain trees that will provide for economically viable and sustainable future entries. Uneven-aged management in this unit will be done by single tree selection using a helicopter logging system. When doing a cut-tree mark to designate removals, safety or hazard trees may also be marked as required for safety purposes. Variability in the stand will result in variability in the mark, from scattered individual trees to groups where overstory removal cannot exceed 2 acres in size. On average, retain approximately 66% of the pre-harvest basal area of standing live trees, and retain at least 75% in portions of the unit where windthrow risk is high. Generally maintain pre-harvest species composition after harvest. Retain: 1) healthy young 'crop' trees that promote economic future entries, 2) older trees with low timber value but high wildlife value, 3) advanced and new regeneration trees. The Silviculturist will establish inspection plots to ensure marking guidelines are adhered to and objectives are met for the unit.</p>							
TIMBER/LOGGING							
This unit is comprised of 2 settings and is planned for Helicopter yarding to landings located on road 2050870.							
ENGINEERING/SYSTEM ROADS							
Landings on NFS road 2050870. 2050870 is a closed road and will require maintenance upgrades to meet haul standards (BMP 14.20, Road-4).							
BOTANY							
Surveys have not been completed but will be required due to identified high potential habitat for <i>Cypripedium parviflorum var. pubescens</i> (Large yellow lady's slipper) and others within the central portion of the unit. All resource-specific information, protections and mitigations will be determined before harvest activities are implemented.							
INVASIVE SPECIES							
Helicopter Landings will need to be surveyed for invasive plants. If plants are found, BMPs (Krosse 2017) are followed to avoid spread or introduction of weeds to the area due to project actions.							
FISHERIES							
<p>Stream Num: Map location E-2 (151_3.1R.1L) Stream Class: IV Channel Type: HCO Protection: Category C Flagging: G/W Buffer (RMA): Class IV for HCO - No buffer Concerns: N/A</p> <p>Stream Num: Map Location B-3 (152_2.0) Stream Class: IV Channel Type: HCO Protection: Category C Flagging: GW Buffer (RMA): Class IV for HCO - No buffer Concerns: Stream edits needed</p> <p>Stream Num: Map Location B-3 (152_2.1R) Stream Class: IV Channel Type: HCO Protection: Category C Flagging: G/W Buffer (RMA): Class IV for HCO - No buffer Concerns: Stream edits needed</p>							

Unit 60

Stream Num: 152_1.0
Stream Class: IV
Channel Type: HCO
Protection: Category C
Flagging: G/W
Buffer (RMA):
Class IV for HCO - No buffer
Concerns: N/A

Stream Num: Map Location B-3 (152_1.1L)
Stream Class: IV
Channel Type: HCO
Protection: Category C
Flagging: G/W
Buffer (RMA):
Class IV for HCO - No buffer
Concerns: Stream edits needed

Stream Num: Map Location C-2 (152_3.0)
Stream Class: IV
Channel Type: HCO
Protection: Category C
Flagging: G/W
Buffer (RMA):
Class IV for HCO - No buffer
Concerns: Stream edits needed

Stream Num: Map Location C-3 (152_3.1R)
Stream Class: IV
Channel Type: HCO
Protection: Category C
Flagging: G/W
Buffer (RMA):
Class IV for HCO - No buffer
Concerns: Stream edits needed

Proposed helicopter landings will need stream reviews prior to final Unit Cards and implementation.

All Streams Protection/Mitigation Actions by Category:

All Categories implement BMPs

Category A reaches flagged B/W: Under the TTRA timber harvest shall not be within 100 feet of the stream channel and a Stream course Protection Plan will be developed for that buffer. Additional AHMU buffers and selective harvest buffers may apply as specified above. Total no cut buffer is the sum of the no commercial and no programmed commercial harvest buffers.

Category B reaches flagged O/W: Trees shall be felled in such a manner so that the direction of fall is away from the stream course. Trees or products shall not be hauled or yarded across the stream course unless fully suspended. Debris entering streams from harvest activities shall be removed. Additional AHMU buffers and selective harvest buffers may apply as specified above. Total no cut buffer equals the no programmed commercial harvest buffers.

Category C reaches flagged G/W: In so far as practicable, trees will be felled and yarded away from the stream course. Debris that enters the stream channel that may affect water quality or have potential for debris flows will be removed from the stream course.

ROAD/STREAM CROSSING SUMMARY

Log landings and system road re-opening needs are discussed in the Engineering/System Roads section above. Should road/stream crossing structures be installed or re-installed the hydrologist will be consulted.

GEOLOGY/KARST

Unit has been reviewed for karst and cave resources. There is no known karst or cave resource concerns.

Unit 60

HERITAGE RESOURCES

A finding of "No historic properties affected" (36 CFR 800.4(d)(1) or "No adverse effect" (36 CFR 800.5(d)(1) has been applied. Project activities may proceed as planned; however the Heritage Professional shall be consulted if new discoveries or unanticipated effects are identified during the project's implementation phase. All activities in the vicinity of the discovery shall cease and reasonable efforts shall be taken to avoid or minimize harm to the resource.

SCENERY

No scenery concerns.

RECREATION

No recreation concerns.

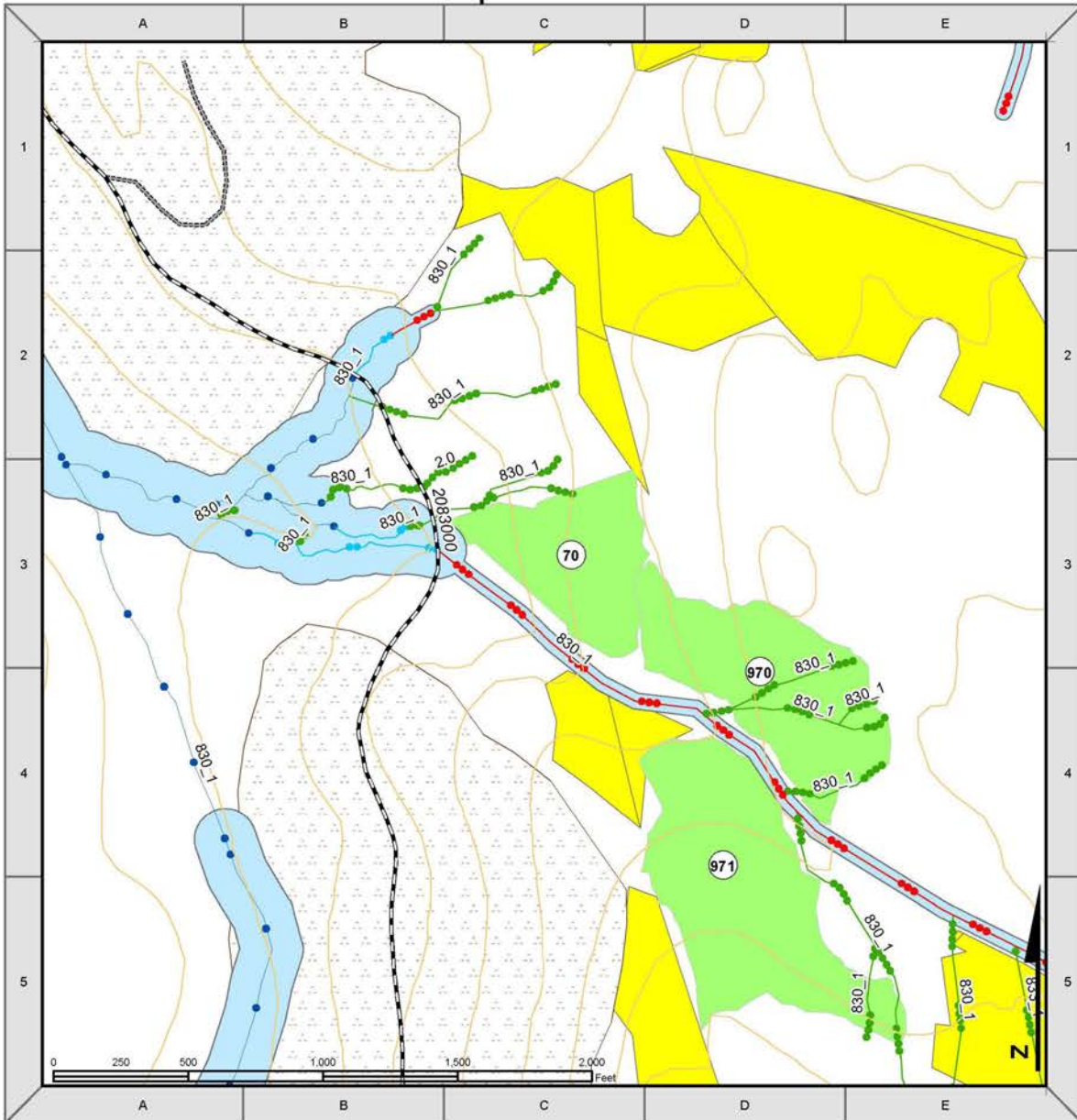
SOILS/WETLANDS

Slopes range from 35 to greater than 72%. Approximately 36 acres of unsuitable soils are excluded from harvest consideration in the south and southeast due to steep wet slopes, colluvial activity, slumps, and landslide prone terrain. There are small pitches of slopes greater than 72% within the proposed unit and are suitable for harvest. Helicopter logging will meet all soil and wetland resource concerns. Forested wetlands occur in the northeast section. Apply R10 BMPs 12.5, 13.5, and 13.9 and National Core BMPs Plan-2, AqEco-2, AqEco-4, Veg-1, Veg-2, Veg-5, and Veg-6.

WILDLIFE

Helicopter unit 60 is greater than 1000 feet in elevation. No goshawk surveys required.

Helicopter Unit: 70



Units	Great Blue Heron	Stream Class III	Past Harvest
Roadless Rule	Bear Den	Stream Class IV	NonDevelopment LUDs
Contour 100ft	Proposed Temporary Roads	Riparian Management Area	Old-Growth LUD
High Vulnerability Karst	Existing NFS Roads	T77/Audubon Watersheds	Legacy
USFWS Eagle Buffer	Existing Temporary Roads	Community Use 5-Mile Zone	NonForest Service Lands
Goshawk Nest Buffer	Non-NFS Roads	Unsuitable Soils	Saltwater
Wildlife Buffers	Lakes	Full Suspension Soils	
Marbled Murrelet	Stream Class I	Beach Buffers Max High Water	
Raptor	Stream Class II	Landslides	

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Unit 70							
Unit Number:	70	Total Harvest Unit Acres	6.5	Prescription:	UEA	Harvest System:	Helicopter
VCU Number:	5300	LUD:	Timber Production		Net Harvest Volume (MBF):		36
Summary of Concerns, Responses, BMPs, and Mitigations							
SILVICULTURE							
<p>Old-growth stands tend to already exhibit uneven-aged structure to varying degrees. The objective of uneven-aged management is to: 1) economically harvest a portion of the stand, 2) maintain old-growth structure in the stand, and 3) retain trees that will provide for economically viable and sustainable future entries. Uneven-aged management in this unit will be done by single tree selection using a helicopter logging system. When doing a cut-tree mark to designate removals, safety or hazard trees may also be marked as required for safety purposes. Variability in the stand will result in variability in the mark, from scattered individual trees to groups where overstory removal cannot exceed 2 acres in size. On average, retain approximately 66% of the pre-harvest basal area of standing live trees, and retain at least 75% in portions of the unit where windthrow risk is high. Generally maintain pre-harvest species composition after harvest. Retain: 1) healthy young 'crop' trees that promote economic future entries, 2) older trees with low timber value but high wildlife value, 3) advanced and new regeneration trees. The Silviculturist will establish inspection plots to ensure marking guidelines are adhered to and objectives are met for the unit.</p>							
TIMBER/LOGGING							
<p>This unit is planned for Helicopter yarding to landings located on temporary road that intersects road 2083000 at milepost 0.74. Additional landing located on road 2083000.</p>							
ENGINEERING/SYSTEM ROADS							
<p>Decommissioned road to be rebuilt 0.20 miles for helicopter landing, BMP 14.2, 14.5, 14.20, Road-5, Road 6. Decommissioned road intersects road 2083000 at milepost 114.96. Road 2083000 is open and maintained (BMP 14.20, Road-4).</p>							
BOTANY							
<p>Unit was surveyed. No botanical concerns.</p>							
INVASIVE SPECIES							
<p>Helicopter Landings will need to be surveyed for invasive plants. If plants are found, BMPs (Krosse 2017) are followed to avoid spread or introduction of weeds to the area due to project actions.</p>							
FISHERIES							
<p>Stream Num: Map Location B-3 (830_2.0 / 830_10.3L.1R.1L) Stream Class: IV Channel Type: HCO Protection: Category C Flagging: G/W Buffer (RMA): Class IV for HCO - No buffer Concerns: N/A</p> <p>Stream Num: Map Location C-3 (830_10.0) Stream Class: I, III Channel Type: HCM Protection: Category A and B Flagging: B/W, O/W Buffer (RMA): Class I for HCM - 100 feet or to the top of the side-slope break; whichever is greater. Class III for HCM - To the top of the side-slope break Concerns: Not field verified</p> <p>Stream Num: Map Location B-3 (830_10.3L.1R) Stream Class: I, IV Channel Type: HCO Protection: Category A and C Flagging: B/W, G/W Buffer (RMA): Class I for HCO - 100 feet or to the top of the side-slope break; whichever is greater. Class IV for HCO - No buffer Concerns: Not field verified</p>							

Unit 70

Stream Num: Map Location C-3 (830_10.3L.1R.2L)
Stream Class: IV
Channel Type: HCO
Protection: Category C
Flagging: G/W
Buffer (RMA):
Class IV for HCO - No buffer
Concerns: Not field verified

During the GIS process all streams were labeled as 830_1. Map locations were provided for streams along with the correct name. Stream labels will be corrected before final unit cards are prepared. Proposed helicopter landings will need stream reviews prior to final Unit Cards and implementation.

All Streams Protection/Mitigation Actions by Category:

All Categories implement BMPs

Category A reaches flagged B/W: Under the TTRA timber harvest shall not be within 100 feet of the stream channel and a Stream course Protection Plan will be developed for that buffer. Additional AHMU buffers and selective harvest buffers may apply as specified above. Total no cut buffer is the sum of the no commercial and no programmed commercial harvest buffers.

Category B reaches flagged O/W: Trees shall be felled in such a manner so that the direction of fall is away from the stream course. Trees or products shall not be hauled or yarded across the stream course unless fully suspended. Debris entering streams from harvest activities shall be removed. Additional AHMU buffers and selective harvest buffers may apply as specified above. Total no cut buffer equals the no programmed commercial harvest buffers.

Category C reaches flagged G/W: In so far as practicable, trees will be felled and yarded away from the stream course. Debris that enters the stream channel that may affect water quality or have potential for debris flows will be removed from the stream course.

ROAD/STREAM CROSSING SUMMARY

Log landings and system road re-opening needs are discussed in the Engineering/System Roads section above. Should road/stream crossing structures be installed or re-installed the hydrologist will be consulted.

GEOLOGY/KARST

Unit has been reviewed for karst and cave resources. There is no known karst or cave resource concerns.

HERITAGE RESOURCES

A finding of "No historic properties affected" (36 CFR 800.4(d)(1)) or "No adverse effect" (36 CFR 800.5(d)(1)) has been applied. Project activities may proceed as planned; however the Heritage Professional shall be consulted if new discoveries or unanticipated effects are identified during the project's implementation phase. All activities in the vicinity of the discovery shall cease and reasonable efforts shall be taken to avoid or minimize harm to the resource.

SCENERY

No scenery concerns.

RECREATION

No recreation concerns.

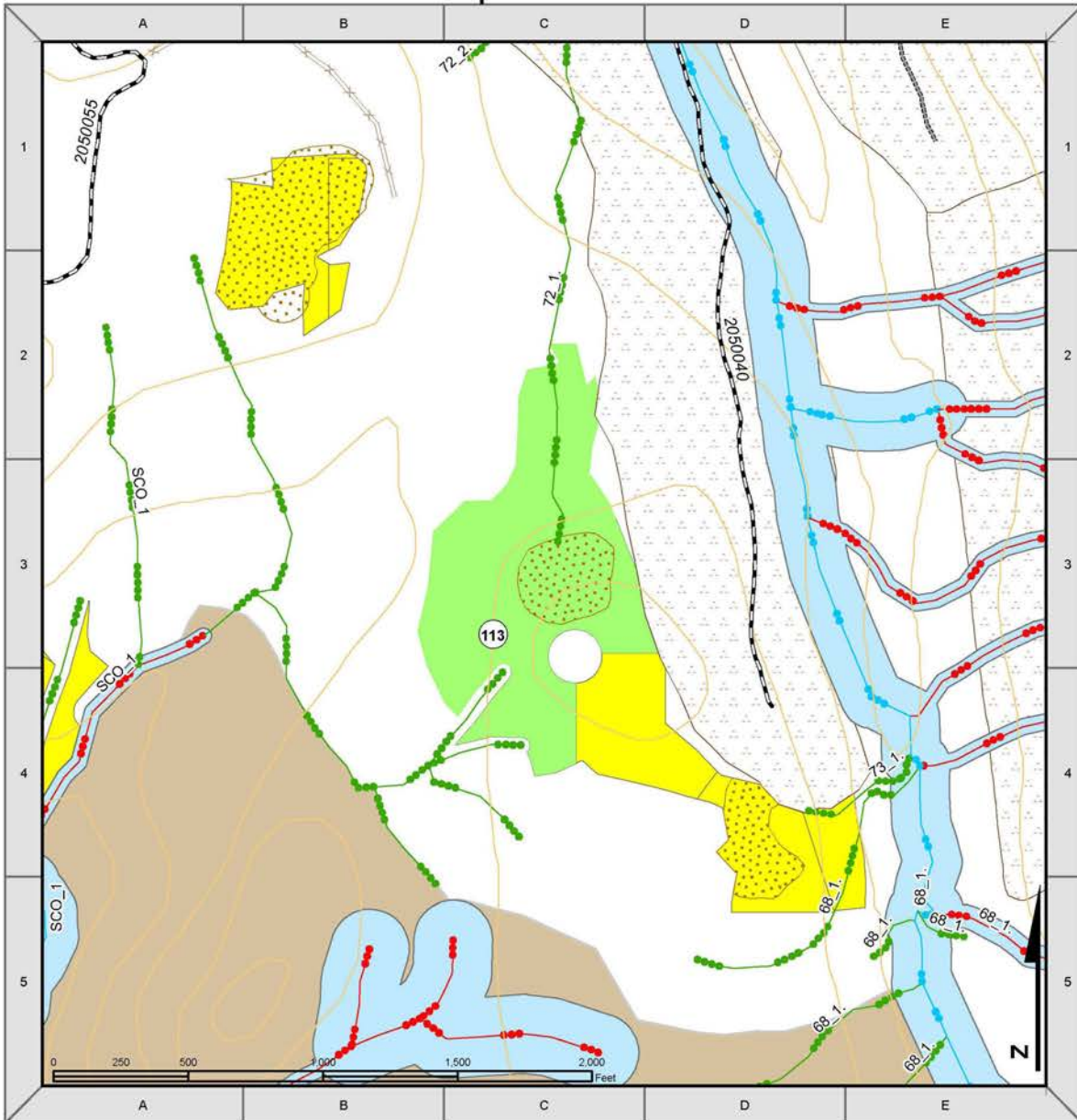
SOILS/WETLANDS

Slopes are 35 to 55%. All slopes are suitable for harvest with helicopter logging. Forested wetland is located intermittently across the unit. Apply R10 BMPs 12.5, 13.5, and 13.9 and National Core BMPs Plan-2, AqEco-2, AqEco-4, Veg-1, Veg-2, Veg-5, and Veg-6.

WILDLIFE

The helicopter portion of unit 70 is 7 acres. Goshawk surveys have been conducted. No goshawks detected.

Helicopter Unit: 113



Units	Great Blue Heron	Stream Class III	Past Harvest
Roadless Rule	Bear Den	Stream Class IV	NonDevelopment LUDs
Contour 100ft	Proposed Temporary Roads	Riparian Management Area	Old-Growth LUD
High Vulnerability Karst	Existing NFS Roads	T77/Audubon Watersheds	Legacy
USFWS Eagle Buffer	Existing Temporary Roads	Community Use 5-Mile Zone	NonForest Service Lands
Goshawk Nest Buffer	Non-NFS Roads	Unsuitable Soils	Saltwater
Wildlife Buffers	Lakes	Full Suspension Soils	
Marbled Murrelet	Stream Class I	Beach Buffers Max High Water	
Raptor	Stream Class II	Landslides	

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Unit 113							
Unit Number:	113	Total Harvest Unit Acres	14.4	Prescription:	UEA	Harvest System:	Helicopter
VCU Number:	5900	LUD:	Timber Production		Net Harvest Volume (MBF):		87
Summary of Concerns, Responses, BMPs, and Mitigations							
SILVICULTURE							
<p>Old-growth stands tend to already exhibit uneven-aged structure to varying degrees. The objective of uneven-aged management is to: 1) economically harvest a portion of the stand, 2) maintain old-growth structure in the stand, and 3) retain trees that will provide for economically viable and sustainable future entries. Uneven-aged management in this unit will be done by single tree selection using a helicopter logging system. When doing a cut-tree mark to designate removals, safety or hazard trees may also be marked as required for safety purposes. Variability in the stand will result in variability in the mark, from scattered individual trees to groups where overstory removal cannot exceed 2 acres in size. On average, retain approximately 66% of the pre-harvest basal area of standing live trees, and retain at least 75% in portions of the unit where windthrow risk is high. Generally maintain pre-harvest species composition after harvest. Retain: 1) healthy young 'crop' trees that promote economic future entries, 2) older trees with low timber value but high wildlife value, 3) advanced and new regeneration trees. The Silviculturist will establish inspection plots to ensure marking guidelines are adhered to and objectives are met for the unit.</p>							
TIMBER/LOGGING							
This unit is planned for Helicopter yarding to landings located 2050050.							
ENGINEERING/SYSTEM ROADS							
Landings on NFS road 2050050 (BMP 14.20, Road-4). Road is open and maintained.							
BOTANY							
Surveys have not been completed but will be required due to identified high potential habitat for <i>Cypripedium parviflorum var. pubescens</i> (Large yellow lady's slipper) and <i>Botrychium</i> sp. and others within the central portion of the unit. All resource-specific information, protections and mitigations will be determined before harvest activities are implemented.							
INVASIVE SPECIES							
Helicopter Landings will need to be surveyed for invasive plants. If plants are found, BMPs (Krosse 2017) are followed to avoid spread or introduction of weeds to the area due to project actions.							
FISHERIES							
<p>Stream Num: Map location C-2 / C-3 (131_1.0 / 72.1) Stream Class: IV Channel Type: HCO Protection: Category C Flagging: G/W Buffer (RMA): Class IV for HCO - No buffer Concerns: N/A</p> <p>Stream Num: Map location C-2 (113_2.0) Stream Class: IV Channel Type: HCO Protection: Category C Flagging: G/W Buffer (RMA): Class IV for HCO - No buffer Concerns: Stream edits needed</p> <p>Stream Num: Map location B-3 / C-3 (113_3.0) Stream Class: IV Channel Type: HCO Protection: Category C Flagging: G/W Buffer (RMA): Class IV for HCO - No buffer Concerns: Stream edits needed</p> <p>Stream Num: Map location C-4 (113_4.0)</p>							

Unit 113

Stream Class: IV
Channel Type: HCO
Protection: Category C
Flagging: G/W
Buffer (RMA):
Class IV for HCO - No buffer
Concerns: Stream edits needed

Stream Num: Map location C-4 (113_5.0)
Stream Class: IV
Channel Type: HCO
Protection: Category C
Flagging: G/W
Buffer (RMA):
Class IV for HCO - No buffer
Concerns: N/A

Stream Num: Map location C-4
Stream Class: IV
Channel Type: HCO
Protection: Category C
Flagging: G/W
Buffer (RMA):
Class IV for HCO - No buffer
Concerns: Not field verified, stream edits needed

Proposed helicopter landings will need stream reviews prior to final Unit Cards and implementation.

All Streams Protection/Mitigation Actions by Category:

All Categories implement BMPs

Category A reaches flagged B/W: Under the TTRA timber harvest shall not be within 100 feet of the stream channel and a Stream course Protection Plan will be developed for that buffer. Additional AHMU buffers and selective harvest buffers may apply as specified above. Total no cut buffer is the sum of the no commercial and no programmed commercial harvest buffers.

Category B reaches flagged O/W: Trees shall be felled in such a manner so that the direction of fall is away from the stream course. Trees or products shall not be hauled or yarded across the stream course unless fully suspended. Debris entering streams from harvest activities shall be removed. Additional AHMU buffers and selective harvest buffers may apply as specified above. Total no cut buffer equals the no programmed commercial harvest buffers.

Category C reaches flagged G/W: In so far as practicable, trees will be felled and yarded away from the stream course. Debris that enters the stream channel that may affect water quality or have potential for debris flows will be removed from the stream course.

ROAD/STREAM CROSSING SUMMARY

Log landings and system road re-opening needs are discussed in the Engineering/System Roads section above. Should road/stream crossing structures be installed or re-installed the hydrologist will be consulted.

GEOLOGY/KARST

Unit has been reviewed for karst and cave resources. Portions of this unit are underlain by karst. The karst is of moderate vulnerability with inclusions of high vulnerability. The high vulnerability karst will be buffered from the unit. A harvest method that obtains partial suspension is required on the moderate vulnerability karst.

HERITAGE RESOURCES

A finding of "No historic properties affected" (36 CFR 800.4(d)(1)) or "No adverse effect" (36 CFR 800.5(d)(1)) has been applied. Project activities may proceed as planned; however the Heritage Professional shall be consulted if new discoveries or unanticipated effects are identified during the project's implementation phase. All activities in the vicinity of the discovery shall cease and reasonable efforts shall be taken to avoid or minimize harm to the resource.

SCENERY

No scenery concerns.

RECREATION

No recreation concerns.

Unit 113

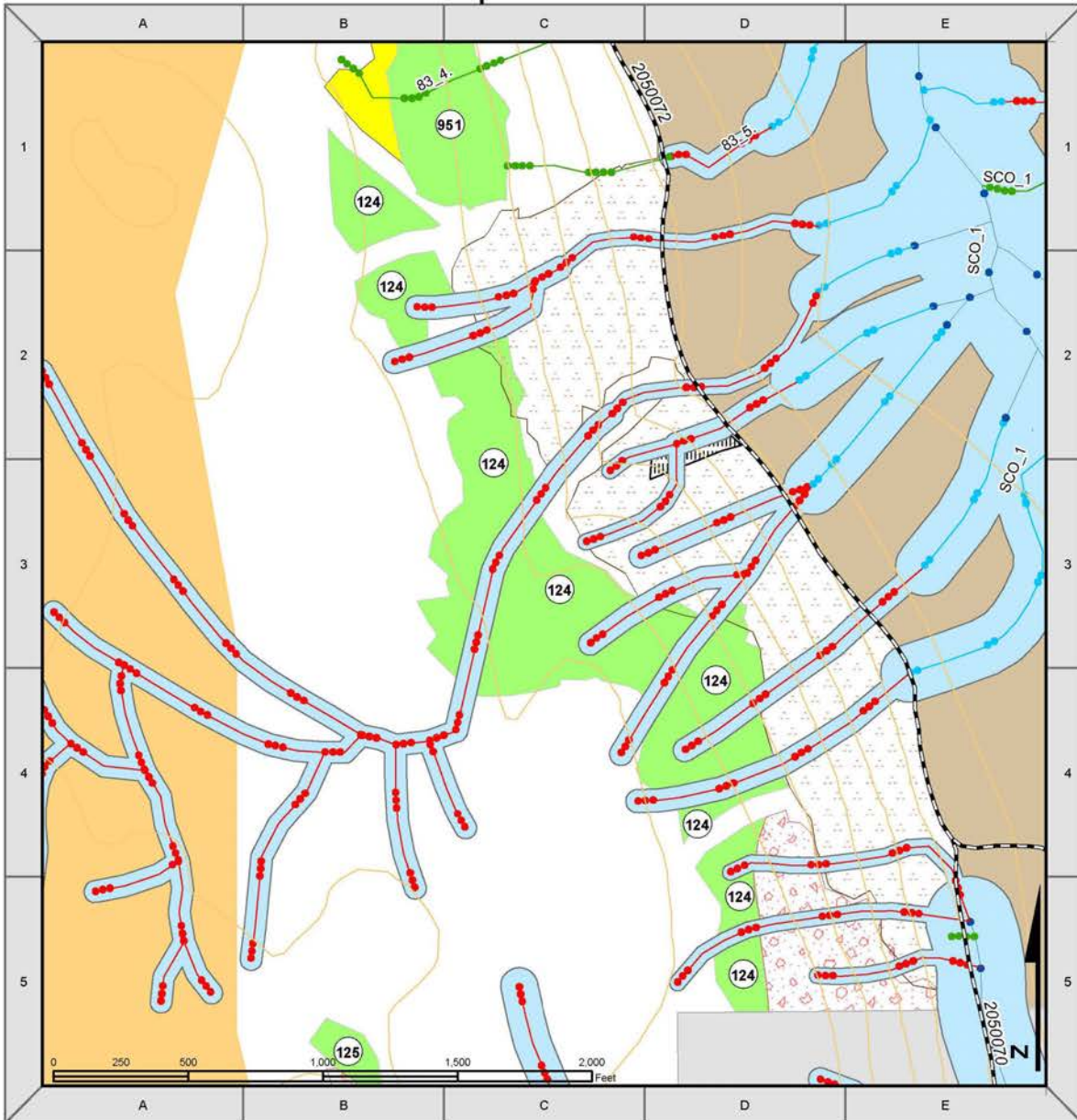
SOILS/WETLANDS

Slopes range from gentle to 55%. Helicopter logging will meet all soil and wetland resource concerns. Forested wetlands/ emergent short sedge wetlands occur along the western boundary of the unit. Apply R10 BMPs 12.5, 13.5, and 13.9 and National Core BMPs Plan-2, AqEco-2, AqEco-4, Veg-1, Veg-2, Veg-5, and Veg-6.

WILDLIFE

Most of the unit is greater than 1000 feet in elevation and does not require goshawk surveys. The portion of the unit that is less than 1000 feet in elevation has been surveyed. No goshawks detected.

Helicopter Unit: 124



Units	Great Blue Heron	Stream Class III	Past Harvest
Roadless Rule	Bear Den	Stream Class IV	NonDevelopment LUDs
Contour 100ft	Proposed Temporary Roads	Riparian Management Area	Old-Growth LUD
High Vulnerability Karst	Existing NFS Roads	T77/Audubon Watersheds	Legacy
USFWS Eagle Buffer	Existing Temporary Roads	Community Use 5-Mile Zone	NonForest Service Lands
Goshawk Nest Buffer	Non-NFS Roads	Unsuitable Soils	Saltwater
Wildlife Buffers	Lakes	Full Suspension Soils	
Marbled Murrelet	Stream Class I	Beach Buffers Max High Water	
Raptor	Stream Class II	Landslides	

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Unit 124							
Unit Number:	124	Total Harvest Unit Acres	22.5	Prescription:	UEA	Harvest System:	Helicopter
VCU Number:	5900	LUD:	Timber Production		Net Harvest Volume (MBF):		165
Summary of Concerns, Responses, BMPs, and Mitigations							
SILVICULTURE							
<p>Old-growth stands tend to already exhibit uneven-aged structure to varying degrees. The objective of uneven-aged management is to: 1) economically harvest a portion of the stand, 2) maintain old-growth structure in the stand, and 3) retain trees that will provide for economically viable and sustainable future entries. Uneven-aged management in this unit will be done by single tree selection using a helicopter logging system. When doing a cut-tree mark to designate removals, safety or hazard trees may also be marked as required for safety purposes. Variability in the stand will result in variability in the mark, from scattered individual trees to groups where overstory removal cannot exceed 2 acres in size. On average, retain approximately 66% of the pre-harvest basal area of standing live trees, and retain at least 75% in portions of the unit where windthrow risk is high. Generally maintain pre-harvest species composition after harvest. Retain: 1) healthy young 'crop' trees that promote economic future entries, 2) older trees with low timber value but high wildlife value, 3) advanced and new regeneration trees. The Silviculturist will establish inspection plots to ensure marking guidelines are adhered to and objectives are met for the unit.</p>							
TIMBER/LOGGING							
This unit is planned for Helicopter yarding to landings located 2050072.							
ENGINEERING/SYSTEM ROADS							
Landings on NFS road 2050072. 2050072 is a closed road and will require maintenance upgrades to meet haul standards (BMP 14.20, Road-4).							
BOTANY							
Surveys have not been completed but will be required due to identified potential habitat for <i>Piperia unalascensis</i> (Alaska rein orchid) and <i>Platanthera orbiculata</i> (Lesser round-leaved orchid) in the identified riparian habitat within and adjacent to the unit. All resource-specific information, protections and mitigations will be determined before harvest activities are implemented.							
INVASIVE SPECIES							
Helicopter Landings will need to be surveyed for invasive plants. If plants are found, BMPs (Krosse 2017) are followed to avoid spread or introduction of weeds to the area due to project actions.							
FISHERIES							
<p>Stream Num: S_83_4.0 Stream Class: IV Channel Type: HCO Protection: Category C Flagging: G/W Buffer (RMA): Class IV for HCO - No buffer Concerns: N/A</p> <p>Stream Num: Map location C-4 / C-3 / D-3 Stream Class: III Channel Type: HCD Protection: Category B Flagging: O/W Buffer (RMA): Class III for HCD - To the top of the side-slope break Concerns: Not field verified.</p> <p>Stream Num: Map location C-2 (83_5.0) Stream Class: IV Channel Type: HCO Protection: Category C Flagging: G/W Buffer (RMA): Class IV for HCO - No buffer Concerns: Not field verified.</p>							

Unit 124

Stream Num: Map location D-5 (82_1.0)
Stream Class: IV
Channel Type: HCO
Protection: Category C
Flagging: G/W
Buffer (RMA):
Class IV for HCO - No buffer
Concerns: Needs stream edits

Stream Num: Map location D-4 (82_2.0)
Stream Class: IV
Channel Type: HCO
Protection: Category C
Flagging: G/W
Buffer (RMA):
Class IV for HCO - No buffer
Concerns: Needs stream edits

Stream Num: Map location D-4 (82_2.1R)
Stream Class: IV
Channel Type: HCO
Protection: Category C
Flagging: G/W
Buffer (RMA):
Class IV for HCO - No buffer
Concerns: Needs stream edits

During the GIS process some streams were not removed from the corporate layer and were not included in the unit card text. These streams will be removed from the corporate GIS layer before final unit cards are prepared. Proposed helicopter landings will need stream reviews prior to final Unit Cards and implementation.

All Streams Protection/Mitigation Actions by Category:

All Categories implement BMPs

Category A reaches flagged B/W: Under the TTRA timber harvest shall not be within 100 feet of the stream channel and a Stream course Protection Plan will be developed for that buffer. Additional AHMU buffers and selective harvest buffers may apply as specified above. Total no cut buffer is the sum of the no commercial and no programmed commercial harvest buffers.

Category B reaches flagged O/W: Trees shall be felled in such a manner so that the direction of fall is away from the stream course. Trees or products shall not be hauled or yarded across the stream course unless fully suspended. Debris entering streams from harvest activities shall be removed. Additional AHMU buffers and selective harvest buffers may apply as specified above. Total no cut buffer equals the no programmed commercial harvest buffers.

Category C reaches flagged G/W: In so far as practicable, trees will be felled and yarded away from the stream course. Debris that enters the stream channel that may affect water quality or have potential for debris flows will be removed from the stream course.

ROAD/STREAM CROSSING SUMMARY

Log landings and system road re-opening needs are discussed in the Engineering/System Roads section above. Should road/stream crossing structures be installed or re-installed the hydrologist will be consulted.

GEOLOGY/KARST

Unit has been reviewed for karst and cave resources. There is no known karst or cave resource concerns.

HERITAGE RESOURCES

A finding of "No historic properties affected" (36 CFR 800.4(d)(1) or "No adverse effect" (36 CFR 800.5(d)(1) has been applied. Project activities may proceed as planned; however the Heritage Professional shall be consulted if new discoveries or unanticipated effects are identified during the project's implementation phase. All activities in the vicinity of the discovery shall cease and reasonable efforts shall be taken to avoid or minimize harm to the resource.

SCENERY

No scenery concerns.

Unit 124

RECREATION

No recreation concerns.

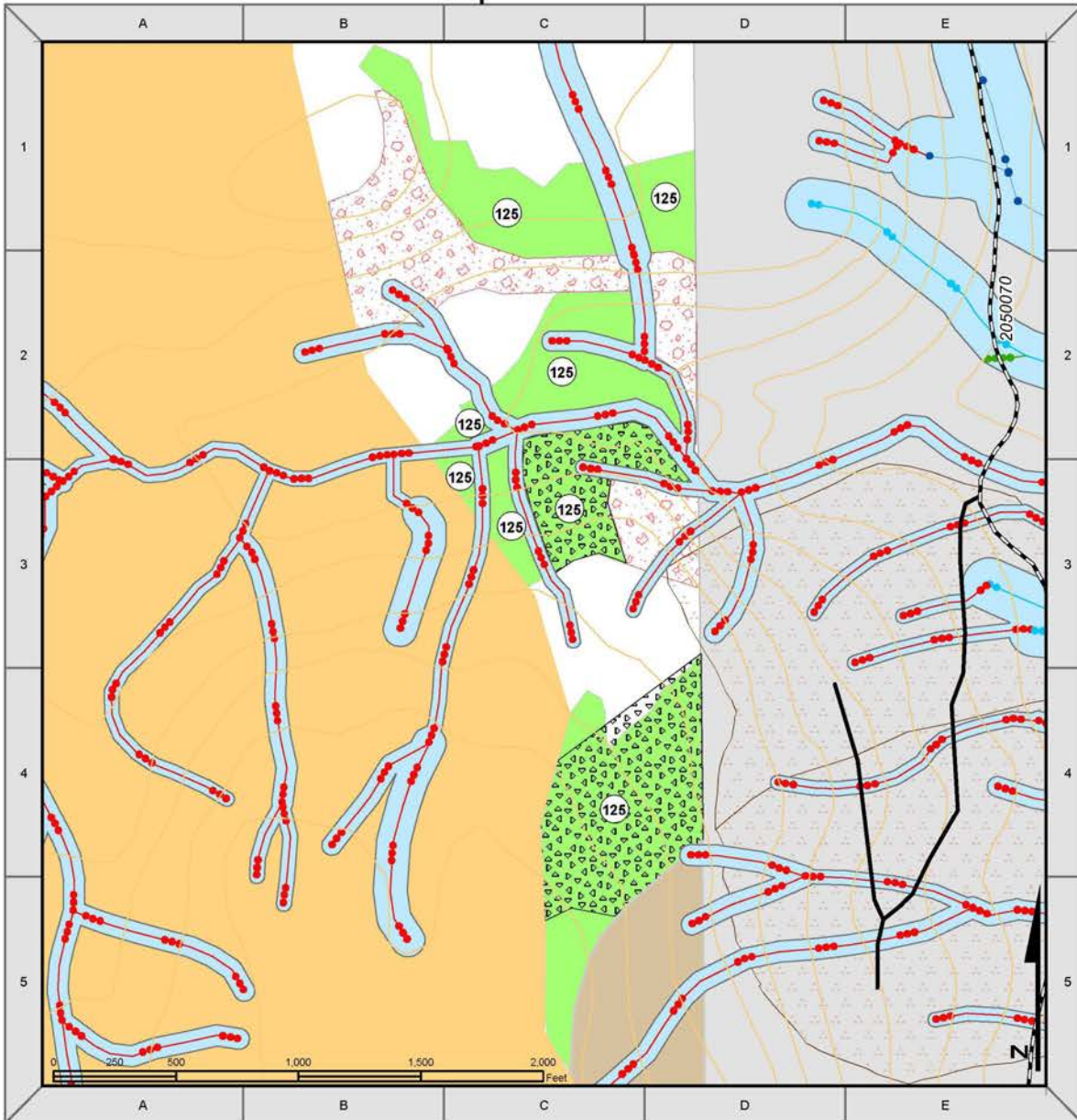
SOILS/WETLANDS

Slopes range from 35 to greater than 72%. Approximately 6 acres of unsuitable soils are excluded from harvest consideration due to wet steep slopes and landslide prone terrain. Helicopter logging will meet all soil and wetland resource concerns. Wetlands were not identified during field recon. Apply R10 BMPs 12.5, 13.5, and 13.9 and National Core BMPs Plan-2, AqEco-2, AqEco-4, Veg-1, Veg-2, Veg-5, and Veg-6.

WILDLIFE

Unit is greater than 1000 feet in elevation. No goshawk surveys required.

Helicopter Unit: 125



Units	Great Blue Heron	Stream Class III	Past Harvest
Roadless Rule	Bear Den	Stream Class IV	NonDevelopment LUDs
Contour 100ft	Proposed Temporary Roads	Riparian Management Area	Old-Growth LUD
High Vulnerability Karst	Existing NFS Roads	T77/Audubon Watersheds	Legacy
USFWS Eagle Buffer	Existing Temporary Roads	Community Use 5-Mile Zone	NonForest Service Lands
Goshawk Nest Buffer	Non-NFS Roads	Unsuitable Soils	Saltwater
Wildlife Buffers	Lakes	Full Suspension Soils	
Marbled Murrelet	Stream Class I	Beach Buffers Max High Water	
Raptor	Stream Class II	Landslides	

Unit 125							
Unit Number:	125	Total Harvest Unit Acres	34	Prescription:	UEA	Harvest System:	Helicopter
VCU Number:	5900	LUD:	Timber Production		Net Harvest Volume (MBF):		212
Summary of Concerns, Responses, BMPs, and Mitigations							
SILVICULTURE							
<p>Old-growth stands tend to already exhibit uneven-aged structure to varying degrees. The objective of uneven-aged management is to: 1) economically harvest a portion of the stand, 2) maintain old-growth structure in the stand, and 3) retain trees that will provide for economically viable and sustainable future entries. Uneven-aged management in this unit will be done by single tree selection using a helicopter logging system. When doing a cut-tree mark to designate removals, safety or hazard trees may also be marked as required for safety purposes. Variability in the stand will result in variability in the mark, from scattered individual trees to groups where overstory removal cannot exceed 2 acres in size. On average, retain approximately 66% of the pre-harvest basal area of standing live trees, and retain at least 75% in portions of the unit where windthrow risk is high. Generally maintain pre-harvest species composition after harvest. Retain: 1) healthy young 'crop' trees that promote economic future entries, 2) older trees with low timber value but high wildlife value, 3) advanced and new regeneration trees. The Silviculturist will establish inspection plots to ensure marking guidelines are adhered to and objectives are met for the unit.</p>							
TIMBER/LOGGING							
This unit is comprised of 2 settings and is planned for Helicopter yarding to landings located 2050072.							
ENGINEERING/SYSTEM ROADS							
Landings on NFS road 2050072. 2050072 is a closed road and will require maintenance upgrades to meet haul standards (BMP 14.20, Road-4).							
BOTANY							
Surveys have not been completed but will be required due to identified potential habitat for <i>Piperia unalascensis</i> (Alaska rein orchid) and <i>Platanthera orbiculata</i> (Lesser round-leaved orchid in the identified riparian habitat within and adjacent to the unit. All resource-specific information, protections and mitigations will be determined before harvest activities are implemented.							
INVASIVE SPECIES							
Helicopter Landings will need to be surveyed for invasive plants. If plants are found, BMPs (Krosse 2017) are followed to avoid spread or introduction of weeds to the area due to project actions.							
FISHERIES							
<p>Stream Num: Map Location D-2 (125_1.0) Stream Class: III Channel Type: HCV, HCD, HCL Protection: Category B Flagging: O/W Buffer (RMA): Class III for HCV - To the top of the side-slope break Class III for HCD - To the top of the side-slope break Class III for HCL - To the top of the side-slope break Concerns: N/A</p> <p>Stream Num: Map Location D-2 (125_1.1R) Stream Class: III, IV Channel Type: HCL, HCD, HCO Protection: Category B and C Flagging: O/W, G/W Buffer (RMA): Class III for HCL - To the top of the side-slope break Class III for HCD - To the top of the side-slope break Class IV for HCO - No buffer Concerns: Extreme blowdown, eroding side-slopes. Needs stream edits.</p>							

Unit 125

Stream Num: Map Location D-2 (125_1.1R.1L)
Stream Class: III, IV
Channel Type: HCL, HCM, HCO
Protection: Category B and C
Flagging: O/W, G/W
Buffer (RMA):
Class III for HCL - To the top of the side-slope break
Class III for HCM - To the top of the side-slope break
Class IV for HCO - No buffer
Concerns: Needs stream edits

Stream Num: Map Location C-2 (125_1.1R.1L.1R)
Stream Class: IV
Channel Type: HCO
Protection: Category C
Flagging: G/W
Buffer (RMA):
Class IV for HCO - No buffer
Concerns: Needs stream edits

Stream Num: Map Location C-2 (125_1.2L)
Stream Class: IV
Channel Type: HCO
Protection: Category C
Flagging: G/W
Buffer (RMA):
Class IV for HCO - No buffer
Concerns: Needs stream edits

Stream Num: Map Location B-3 (125_1.3L)
Stream Class: III
Channel Type: HCM, HCD
Protection: Category B
Flagging: O/W
Buffer (RMA):
Class III for HCM - To the top of the side-slope break
Class III for HCD - To the top of the side-slope break
Concerns: Needs stream edits

Stream Num: Map Location C-2 (125_1.4L)
Stream Class: IV
Channel Type: HCO
Protection: Category C
Flagging: G/W
Buffer (RMA):
Class IV for HCO - No buffer
Concerns: Needs stream edits

Stream Num: Map Location D-4 (125_2.0)
Stream Class: IV
Channel Type: HCO
Protection: Category C
Flagging: G/W
Buffer (RMA):
Class IV for HCO - No buffer
Concerns: N/A

Stream Num: Map Location E-5 (125_3.0)
Stream Class: IV
Channel Type: HCO

Unit 125

Protection: Category C
Flagging: G/W
Buffer (RMA):
Class IV for HCO - No buffer
Concerns: N/A

Stream Num: Map Location E-5 (125_20.0)
Stream Class: IV
Channel Type: HCO
Protection: Category C
Flagging: G/W
Buffer (RMA):
Class IV for HCO - No buffer
Concerns: N/A

During the GIS process some streams were not removed from the corporate layer and were not included in the unit card text. These streams will be removed from the corporate GIS layer before final unit cards are prepared. Proposed helicopter landings will need stream reviews prior to final Unit Cards and implementation.

All Streams Protection/Mitigation Actions by Category:

All Categories implement BMPs

Category A reaches flagged B/W: Under the TTRA timber harvest shall not be within 100 feet of the stream channel and a Stream course Protection Plan will be developed for that buffer. Additional AHMU buffers and selective harvest buffers may apply as specified above. Total no cut buffer is the sum of the no commercial and no programmed commercial harvest buffers.

Category B reaches flagged O/W: Trees shall be felled in such a manner so that the direction of fall is away from the stream course. Trees or products shall not be hauled or yarded across the stream course unless fully suspended. Debris entering streams from harvest activities shall be removed. Additional AHMU buffers and selective harvest buffers may apply as specified above. Total no cut buffer equals the no programmed commercial harvest buffers.

Category C reaches flagged G/W: In so far as practicable, trees will be felled and yarded away from the stream course. Debris that enters the stream channel that may affect water quality or have potential for debris flows will be removed from the stream course.

ROAD/STREAM CROSSING SUMMARY

Log landings and system road re-opening needs are discussed in the Engineering/System Roads section above. Should road/stream crossing structures be installed or re-installed the hydrologist will be consulted.

GEOLOGY/KARST

Unit has been reviewed for karst and cave resources. There is no known karst or cave resource concerns.

HERITAGE RESOURCES

A finding of "No historic properties affected" (36 CFR 800.4(d)(1) or "No adverse effect" (36 CFR 800.5(d)(1) has been applied. Project activities may proceed as planned; however the Heritage Professional shall be consulted if new discoveries or unanticipated effects are identified during the project's implementation phase. All activities in the vicinity of the discovery shall cease and reasonable efforts shall be taken to avoid or minimize harm to the resource.

SCENERY

No scenery concerns.

RECREATION

No recreation concerns.

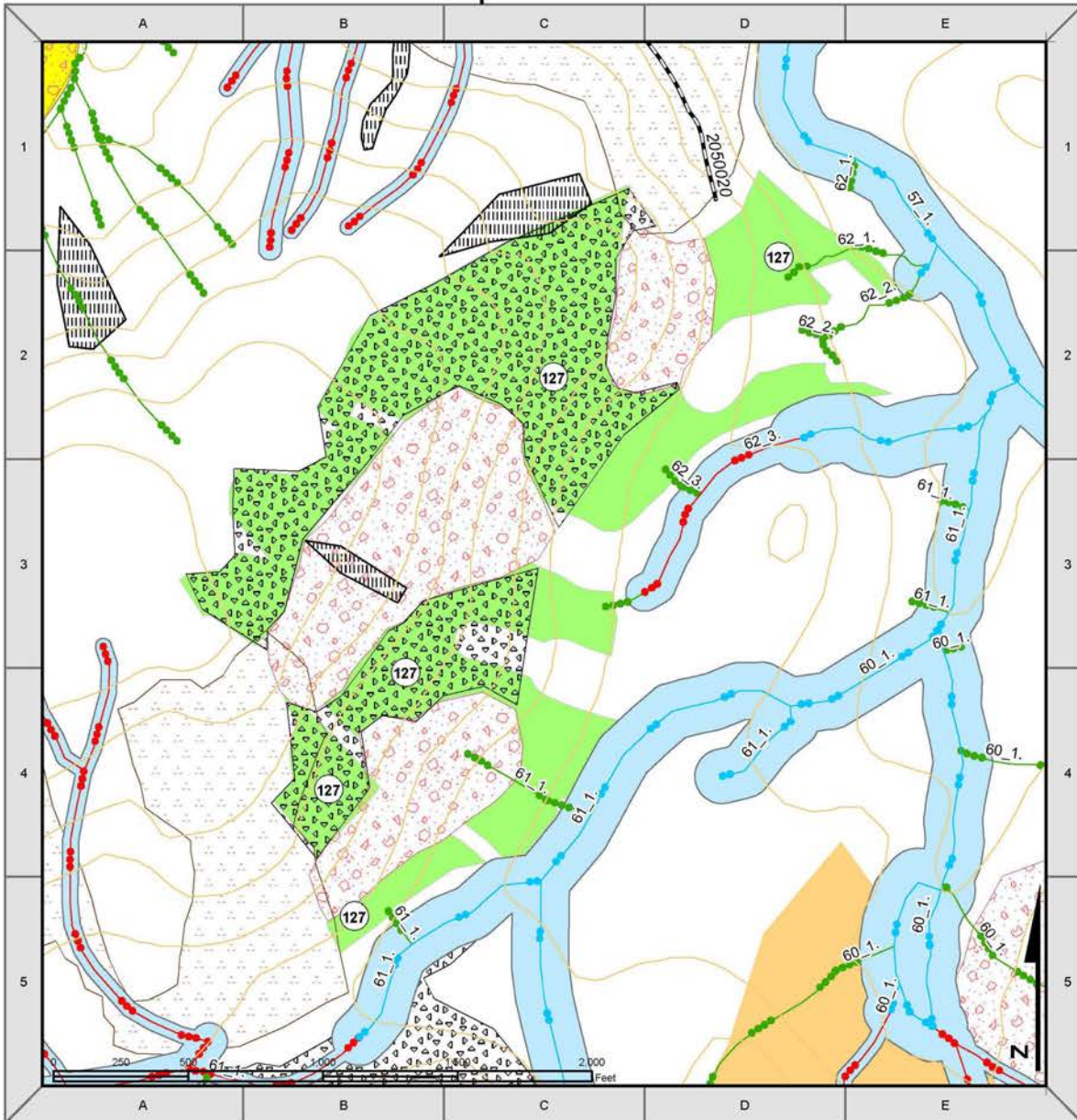
SOILS/WETLANDS

Slopes range from 25 to greater than 72%. Approximately 15 acres of unsuitable soils are excluded from harvest consideration due to excessively steep and wet slopes. About 11 acres of the remainder of the unit is only suitable with full suspension requirements. Helicopter logging will meet all soil and wetland resource concerns. Alpine muskegs and emergent short sedge wetlands occur along the boundaries of the polygons on the north and west. Apply R10 BMPs 12.5, 13.5, and 13.9 and National Core BMPs Plan-2, AqEco-2, AqEco-4, Veg-1, Veg-2, Veg-5, and Veg-6.

WILDLIFE

Unit is greater than 1000 feet in elevation. No goshawk surveys required.

Helicopter Unit: 127



Units	Great Blue Heron	Stream Class III	Past Harvest
Roadless Rule	Bear Den	Stream Class IV	NonDevelopment LUDs
Contour 100ft	Proposed Temporary Roads	Riparian Management Area	Old-Growth LUD
High Vulnerability Karst	Existing NFS Roads	T77/Audubon Watersheds	Legacy
USFWS Eagle Buffer	Existing Temporary Roads	Community Use 5-Mile Zone	NonForest Service Lands
Goshawk Nest Buffer	Non-NFS Roads	Unsuitable Soils	Saltwater
Wildlife Buffers	Lakes	Full Suspension Soils	
Marbled Murrelet	Stream Class I	Beach Buffers Max High Water	
Raptor	Stream Class II	Landslides	

Unit 127							
Unit Number:	127	Total Harvest Unit Acres	44.6	Prescription:	UEA	Harvest System:	Helicopter
VCU Number:	5900	LUD:	Timber Production	Net Harvest Volume (MBF):		313	
Summary of Concerns, Responses, BMPs, and Mitigations							
SILVICULTURE							
<p>Old-growth stands tend to already exhibit uneven-aged structure to varying degrees. The objective of uneven-aged management is to: 1) economically harvest a portion of the stand, 2) maintain old-growth structure in the stand, and 3) retain trees that will provide for economically viable and sustainable future entries. Uneven-aged management in this unit will be done by single tree selection using a helicopter logging system. When doing a cut-tree mark to designate removals, safety or hazard trees may also be marked as required for safety purposes. Variability in the stand will result in variability in the mark, from scattered individual trees to groups where overstory removal cannot exceed 2 acres in size. On average, retain approximately 66% of the pre-harvest basal area of standing live trees, and retain at least 75% in portions of the unit where windthrow risk is high. Generally maintain pre-harvest species composition after harvest. Retain: 1) healthy young 'crop' trees that promote economic future entries, 2) older trees with low timber value but high wildlife value, 3) advanced and new regeneration trees. The Silviculturist will establish inspection plots to ensure marking guidelines are adhered to and objectives are met for the unit.</p>							
TIMBER/LOGGING							
This unit is planned for Helicopter yarding to landings located along temp road via NFS road 2000440.							
ENGINEERING/SYSTEM ROADS							
Access via NFS road 2000440. 2000440 is a closed road and will require maintenance upgrades to meet haul standards (BMP 14.20, Road-4). Decommissioned road to be rebuilt 0.1 miles for helicopter landing, BMP 14.2, 14.5, 14.20, Road-5, Road 6.							
BOTANY							
Surveys have not been completed but will be required due to identified moderate potential wetland habitat for various sensitive plants. All resource-specific information, protections and mitigations will be determined before harvest activities are implemented.							
INVASIVE SPECIES							
Helicopter Landings will need to be surveyed for invasive plants. If plants are found, BMPs (Krosse 2017) are followed to avoid spread or introduction of weeds to the area due to project actions.							
FISHERIES							
<p>Stream Num: Map Location D-4 (61_1.0) Stream Class: II Channel Type: HCM Protection: Category A Flagging: B/W Buffer (RMA): Class II for HCM - 100 feet or to the top of the side-slope break; whichever is greater. Concerns: N/A</p> <p>Stream Num: Map Location C-4 (61_1.3R) Stream Class: IV Channel Type: HCO Protection: Category C Flagging: G/W Buffer (RMA): Class IV for HCO - No buffer Concerns: N/A</p> <p>Stream Num: Map Location C-4 (61_1.4R) Stream Class: II Channel Type: HCO Protection: Category A Flagging: B/W Buffer (RMA): Class II for HCO - 100 feet or to the top of the side-slope break; whichever is greater. Concerns: N/A</p>							

Unit 127

Stream Num: Map Location B-5 (61_1.4R.1R)
Stream Class: IV
Channel Type: HCO
Protection: Category C
Flagging: G/W
Buffer (RMA):
Class IV for HCO - No buffer
Concerns: N/A

Stream Num: Map Location D-1 (62_1.1R)
Stream Class: IV
Channel Type: HCO
Protection: Category C
Flagging: G/W
Buffer (RMA):
Class IV for HCO - No buffer
Concerns: N/A

Stream Num: Map Location E-2 (62_2.0)
Stream Class: II, IV
Channel Type: HCO
Protection: Category A and C
Flagging: B/W, G/W
Buffer (RMA):
Class II for HCO -100 feet or to the top of the side-slope break; whichever is greater.
Class IV for HCO - No buffer
Concerns: N/A

Stream Num: Map Location D-2 (62_2.1R)
Stream Class: IV
Channel Type: HCO
Protection: Category C
Flagging: G/W
Buffer (RMA):
Class IV for HCO - No buffer
Concerns: N/A

Stream Num: Map Location E-2 (62_2.2R / 62_1.0)
Stream Class: IV
Channel Type: HCO
Protection: Category C
Flagging: G/W
Buffer (RMA):
Class IV for HCO - No buffer
Concerns: N/A

Stream Num: Map Location E-2 (62_3.0)
Stream Class: II, III, IV
Channel Type: MMS, HCV, HCO
Protection: Category A, B, and C
Flagging: B/W, O/W, GW
Buffer (RMA):
Class II for MMS -120 feet or to the extent of the flood plain, riparian vegetation or soils, or riparian associated wetland fens; whichever is greater.
Class III for HCV - To the top of the side-slope break
Class IV for HCO - No buffer
Concerns: Moderate blowdown

Stream Num: Map Location D-3 (62_3.1R)
Stream Class: IV
Channel Type: HCO

Unit 127

Protection: Category C
Flagging: G/W
Buffer (RMA):
Class IV for HCO - No buffer
Concerns: High blowdown

During the GIS process all streams were labeled incorrectly. Map locations were provided for streams along with the correct name. Stream labels will be corrected before final unit cards are prepared. Proposed helicopter landings will need stream reviews prior to final Unit Cards and implementation.

All Streams Protection/Mitigation Actions by Category:

All Categories implement BMPs

Category A reaches flagged B/W: Under the TTRA timber harvest shall not be within 100 feet of the stream channel and a Stream course Protection Plan will be developed for that buffer. Additional AHMU buffers and selective harvest buffers may apply as specified above. Total no cut buffer is the sum of the no commercial and no programmed commercial harvest buffers.

Category B reaches flagged O/W: Trees shall be felled in such a manner so that the direction of fall is away from the stream course. Trees or products shall not be hauled or yarded across the stream course unless fully suspended. Debris entering streams from harvest activities shall be removed. Additional AHMU buffers and selective harvest buffers may apply as specified above. Total no cut buffer equals the no programmed commercial harvest buffers.

Category C reaches flagged G/W: In so far as practicable, trees will be felled and yarded away from the stream course. Debris that enters the stream channel that may affect water quality or have potential for debris flows will be removed from the stream course.

ROAD/STREAM CROSSING SUMMARY

Log landings and system road re-opening needs are discussed in the Engineering/System Roads section above. Should road/stream crossing structures be installed or re-installed the hydrologist will be consulted.

GEOLOGY/KARST

Unit has been reviewed for karst and cave resources. There is no known karst or cave resource concerns.

HERITAGE RESOURCES

A finding of "No historic properties affected" (36 CFR 800.4(d)(1) or "No adverse effect" (36 CFR 800.5(d)(1) has been applied. Project activities may proceed as planned; however the Heritage Professional shall be consulted if new discoveries or unanticipated effects are identified during the project's implementation phase. All activities in the vicinity of the discovery shall cease and reasonable efforts shall be taken to avoid or minimize harm to the resource.

SCENERY

No scenery concerns.

RECREATION

No recreation concerns.

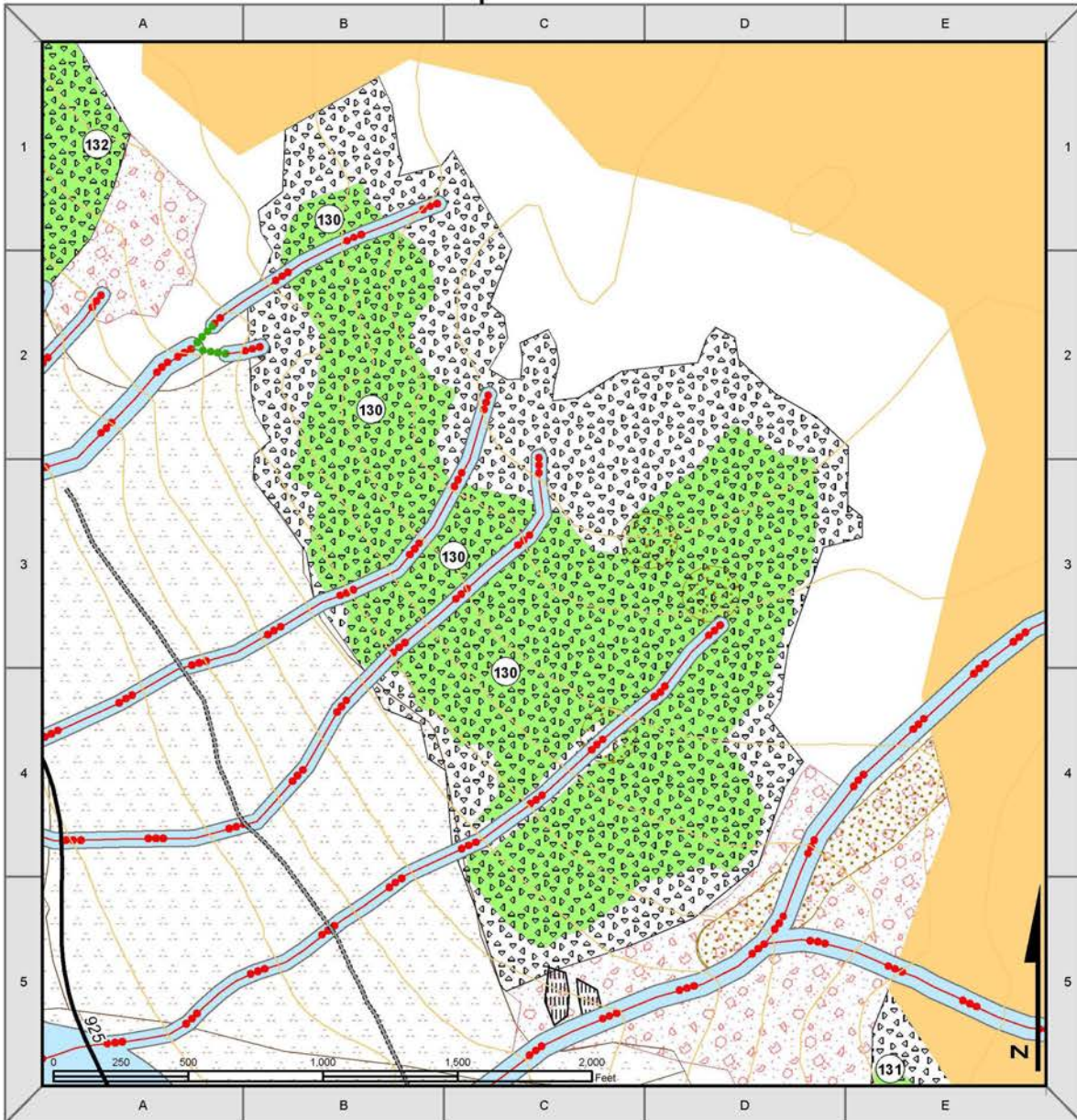
SOILS/WETLANDS

Slopes range from 30 to greater than 72%. Approximately 27 acres of unsuitable soils are excluded from harvest consideration due to MMI4 soils, existing landslides, cliffs, and extremely steep slopes. About 30 acres of the remainder of the unit is only suitable with full suspension requirements. Helicopter logging will meet all soil and wetland resource concerns. Wetlands were not identified. Apply R10 BMPs 12.5, 13.5, and 13.9 and National Core BMPs Plan-2, AqEco-2, AqEco-4, Veg-1, Veg-2, Veg-5, and Veg-6.

WILDLIFE

Unit is greater than 1000 feet in elevation. No goshawk surveys required.

Helicopter Unit: 130



Unit 130							
Unit Number:	130	Total Harvest Unit Acres	22.7	Prescription:	UEA	Harvest System:	Helicopter
VCU Number:	5880	LUD:	Timber Production		Net Harvest Volume (MBF):		170
Summary of Concerns, Responses, BMPs, and Mitigations							
SILVICULTURE							
<p>Old-growth stands tend to already exhibit uneven-aged structure to varying degrees. The objective of uneven-aged management is to: 1) economically harvest a portion of the stand, 2) maintain old-growth structure in the stand, and 3) retain trees that will provide for economically viable and sustainable future entries. Uneven-aged management in this unit will be done by single tree selection using a helicopter logging system. When doing a cut-tree mark to designate removals, safety or hazard trees may also be marked as required for safety purposes. Variability in the stand will result in variability in the mark, from scattered individual trees to groups where overstory removal cannot exceed 2 acres in size. On average, retain approximately 66% of the pre-harvest basal area of standing live trees, and retain at least 75% in portions of the unit where windthrow risk is high. Generally maintain pre-harvest species composition after harvest. Retain: 1) healthy young 'crop' trees that promote economic future entries, 2) older trees with low timber value but high wildlife value, 3) advanced and new regeneration trees. The Silviculturist will establish inspection plots to ensure marking guidelines are adhered to and objectives are met for the unit.</p>							
TIMBER/LOGGING							
This unit is planned for Helicopter yarding to landings located on temporary road at milepost 22.4 along State Highway 925.							
ENGINEERING/SYSTEM ROADS							
Decommissioned road to be rebuilt 0.1 miles for helicopter landing, BMP 14.2, 14.5, 14.20, Road-5, Road 6.							
BOTANY							
Surveys have not been completed but will be required due to identified high potential habitat for <i>Cypripedium parviflorum</i> var. <i>pubescens</i> (Large yellow lady's slipper) and others within the central portion of the unit. All resource-specific information, protections and mitigations will be determined before harvest activities are implemented.							
INVASIVE SPECIES							
Helicopter Landings will need to be surveyed for invasive plants. If plants are found, BMPs (Krosse 2017) are followed to avoid spread or introduction of weeds to the area due to project actions.							
FISHERIES							
<p>Stream Num: Map location B-5 / C-4 / D-4 / D-3 (131_1.0) Stream Class: IV Channel Type: HCO Protection: Category C Flagging: G/W Buffer (RMA): Class IV for HCO - No buffer Concerns: Stream mapped as HCM Class III but is HCO Class IV</p>							
<p>Stream Num: Map location C-4 / C-3 (131_2.0) Stream Class: IV Channel Type: HCO Protection: Category C Flagging: G/W Buffer (RMA): Class IV for HCO - No buffer Concerns: Stream needs edits</p>							
<p>Stream Num: Map location B-4 / B-3 / C-3 (131_3.0) Stream Class: IV Channel Type: HCO Protection: Category C Flagging: G/W Buffer (RMA): Class IV for HCO - No buffer Concerns: Stream needs edits. Stream mapped as HCM Class III but is HCO Class IV</p>							

Unit 130

Stream Num: Map location B-2 (131_4.0)
Stream Class: IV
Channel Type: HCO
Protection: Category C
Flagging: G/W
Buffer (RMA):
Class IV for HCO - No buffer
Concerns: Stream needs edits

Stream Num: Map location B-2 / B-1 (131_5.0)
Stream Class: IV
Channel Type: HCO
Protection: Category C
Flagging: G/W
Buffer (RMA):
Class IV for HCO - No buffer
Concerns: Stream needs edits. Stream mapped as HCM Class III but is HCO Class IV

Stream Num: Map location D-5 / C-5
Stream Class: IV
Channel Type: HCO
Protection: Category C
Flagging: G/W
Buffer (RMA):
Class IV for HCO - No buffer
Concerns: Stream edits needed on two streams at this map location. Not field verified

During the GIS process some streams were not removed from the corporate layer and were not included in the unit card text. These streams will be removed from the corporate GIS layer before final unit cards are prepared. Proposed helicopter landings will need stream reviews prior to final Unit Cards and implementation.

All Streams Protection/Mitigation Actions by Category:

All Categories implement BMPs

Category A reaches flagged B/W: Under the TTRA timber harvest shall not be within 100 feet of the stream channel and a Stream course Protection Plan will be developed for that buffer. Additional AHMU buffers and selective harvest buffers may apply as specified above. Total no cut buffer is the sum of the no commercial and no programmed commercial harvest buffers.

Category B reaches flagged O/W: Trees shall be felled in such a manner so that the direction of fall is away from the stream course. Trees or products shall not be hauled or yarded across the stream course unless fully suspended. Debris entering streams from harvest activities shall be removed. Additional AHMU buffers and selective harvest buffers may apply as specified above. Total no cut buffer equals the no programmed commercial harvest buffers.

Category C reaches flagged G/W: In so far as practicable, trees will be felled and yarded away from the stream course. Debris that enters the stream channel that may affect water quality or have potential for debris flows will be removed from the stream course.

ROAD/STREAM CROSSING SUMMARY

Log landings and system road re-opening needs are discussed in the Engineering/System Roads section above. Should road/stream crossing structures be installed or re-installed the hydrologist will be consulted.

GEOLOGY/KARST

Unit has been reviewed for karst and cave resources. Portions of this unit are underlain by karst. The karst is of moderate vulnerability with inclusions of high vulnerability. The high vulnerability karst has been or will be buffered from the unit. A harvest method that obtains partial suspension is required on the moderate vulnerability karst. As laid out there is no known karst or cave resource concerns.

HERITAGE RESOURCES

A finding of "No historic properties affected" (36 CFR 800.4(d)(1) or "No adverse effect" (36 CFR 800.5(d)(1) has been applied. Project activities may proceed as planned; however the Heritage Professional shall be consulted if new discoveries or unanticipated effects are identified during the project's implementation phase. All activities in

Unit 130

the vicinity of the discovery shall cease and reasonable efforts shall be taken to avoid or minimize harm to the resource.

SCENERY

No scenery concerns.

RECREATION

No recreation concerns.

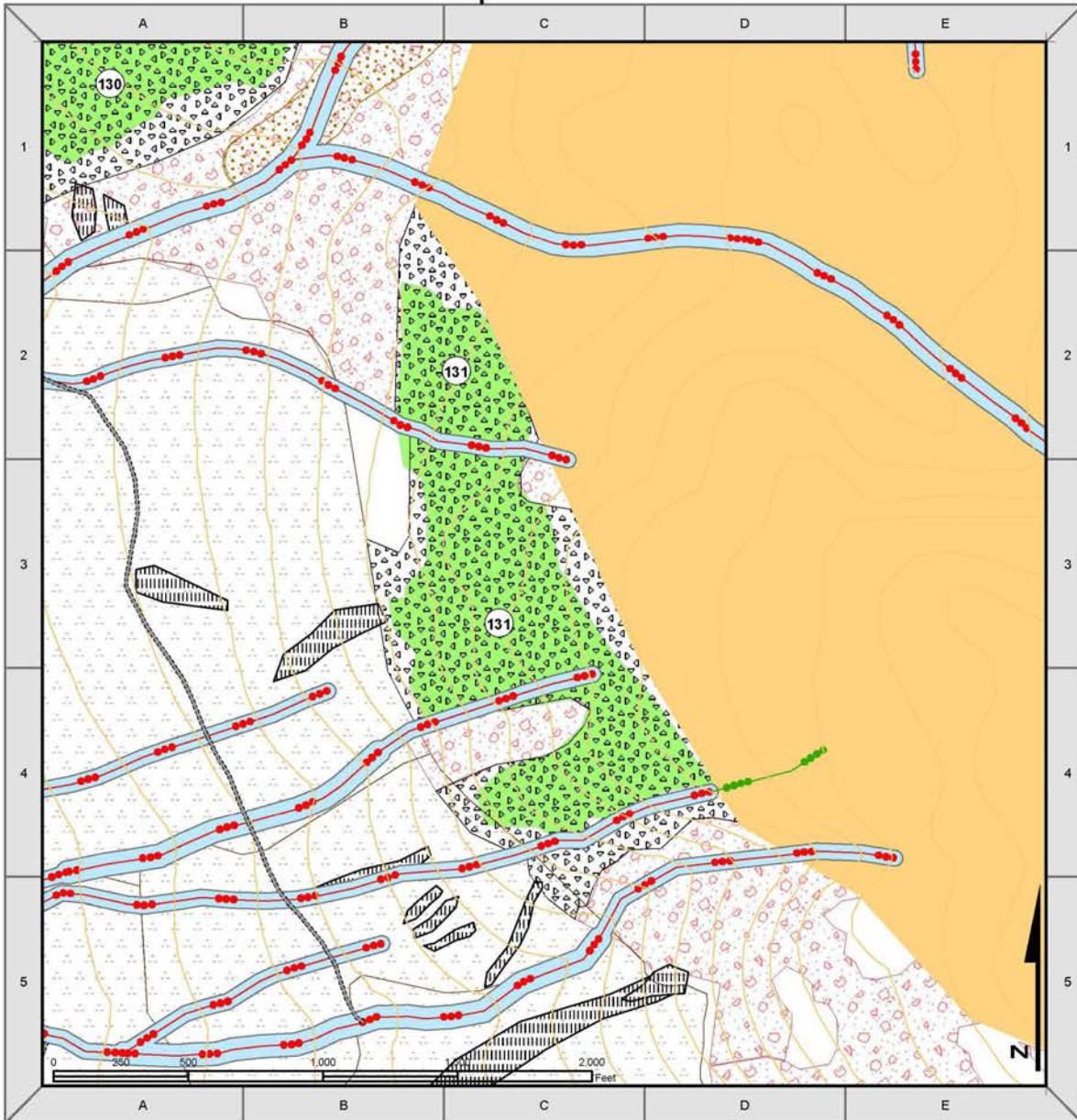
SOILS/WETLANDS

Slopes range from 30 to greater than 72%. Approximately 27 acres of unsuitable soils are excluded from harvest consideration due to existing landslides, deep v-notch, and very steep slopes. The remainder of the unit is only suitable with full suspension requirements. Helicopter logging will meet all soil and wetland resource concerns. Emergent short sedge occurs along the eastern boundaries. Apply R10 BMPs 12.5, 13.5, and 13.9 and National Core BMPs Plan-2, AqEco-2, AqEco-4, Veg-1, Veg-2, Veg-5, and Veg-6.

WILDLIFE

Unit is greater than 1000 feet in elevation. No goshawk surveys required.

Helicopter Unit: 131



Units	Great Blue Heron	Stream Class III	Past Harvest
Roadless Rule	Bear Den	Stream Class IV	NonDevelopment LUDs
Contour 100ft	Proposed Temporary Roads	Riparian Management Area	Old-Growth LUD
High Vulnerability Karst	Existing NFS Roads	T77/Audubon Watersheds	Legacy
USFWS Eagle Buffer	Existing Temporary Roads	Community Use 5-Mile Zone	NonForest Service Lands
Goshawk Nest Buffer	Non-NFS Roads	Unsuitable Soils	Saltwater
Wildlife Buffers	Lakes	Full Suspension Soils	
Marbled Murrelet	Stream Class I	Beach Buffers Max High Water	
Raptor	Stream Class II	Landslides	

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Unit 131							
Unit Number:	131	Total Harvest Unit Acres	53	Prescription:	UEA	Harvest System:	Helicopter
VCU Number:	5900	LUD:	Timber Production		Net Harvest Volume (MBF):		347
Summary of Concerns, Responses, BMPs, and Mitigations							
SILVICULTURE							
<p>Old-growth stands tend to already exhibit uneven-aged structure to varying degrees. The objective of uneven-aged management is to: 1) economically harvest a portion of the stand, 2) maintain old-growth structure in the stand, and 3) retain trees that will provide for economically viable and sustainable future entries. Uneven-aged management in this unit will be done by single tree selection using a helicopter logging system. When doing a cut-tree mark to designate removals, safety or hazard trees may also be marked as required for safety purposes. Variability in the stand will result in variability in the mark, from scattered individual trees to groups where overstory removal cannot exceed 2 acres in size. On average, retain approximately 66% of the pre-harvest basal area of standing live trees, and retain at least 75% in portions of the unit where windthrow risk is high. Generally maintain pre-harvest species composition after harvest. Retain: 1) healthy young 'crop' trees that promote economic future entries, 2) older trees with low timber value but high wildlife value, 3) advanced and new regeneration trees. The Silviculturist will establish inspection plots to ensure marking guidelines are adhered to and objectives are met for the unit.</p>							
TIMBER/LOGGING							
This unit is planned for Helicopter yarding to landings located on temporary road at milepost 22.4 along State Highway 925.							
ENGINEERING/SYSTEM ROADS							
Decommissioned road to be rebuilt 0.1 miles for helicopter landing, BMP 14.2, 14.5, 14.20, Road-5, Road 6.							
BOTANY							
Surveys have not been completed but will be required due to identified moderate potential habitat for <i>Platanthera orbiculata</i> (Lesser round-leaved orchid), within the northern 2/3rd of the unit and along streams within the unit. All resource-specific information, protections and mitigations will be determined before harvest activities are implemented.							
INVASIVE SPECIES							
Helicopter Landings will need to be surveyed for invasive plants. If plants are found, BMPs (Krosse 2017) are followed to avoid spread or introduction of weeds to the area due to project actions.							
FISHERIES							
<p>Stream Num: Map Location C-4 (130_1.0) Stream Class: III, IV Channel Type: HCO Protection: Category B and C Flagging: O/W, G/W Buffer (RMA): Class III for HCO - To the top of the side-slope break Class IV for HCO - No buffer Concerns: N/A</p> <p>Stream Num: Map Location B-4 (130_2.0) Stream Class: IV Channel Type: HCO Protection: Category C Flagging: G/W Buffer (RMA): Class IV for HCO - No buffer Concerns: N/A</p> <p>Stream Num: Map Location B-2 (130_3.0) Stream Class: IV Channel Type: HCO Protection: Category C Flagging: G/W Buffer (RMA): Class IV for HCO - No buffer Concerns: N/A</p>							

Unit 131

Stream Num: Map Location B-2 (130_4.0)
Stream Class: IV
Channel Type: HCO
Protection: Category C
Flagging: G/W
Buffer (RMA):
Class IV for HCO - No buffer
Concerns: N/A

Stream Num: Map Location B-2 (130_5.0)
Stream Class: IV
Channel Type: HCO
Protection: Category C
Flagging: G/W
Buffer (RMA):
Class IV for HCO - No buffer
Concerns: N/A

Stream Num: Map Location C-4
Stream Class: IV
Channel Type: HCO
Protection: Category C
Flagging: G/W
Buffer (RMA):
Class IV for HCO - No buffer
Concerns: Not field verified.

During the GIS process all streams were not labeled. Map locations were provided for streams along with the correct name. Stream labels will be corrected before final unit cards are prepared. Also, some streams were not removed from the corporate layer and were not included in the unit card text. These streams will be removed from the corporate GIS layer before final unit cards are prepared. Proposed helicopter landings will need stream reviews prior to final Unit Cards and implementation.

All Streams Protection/Mitigation Actions by Category:

All Categories implement BMPs

Category A reaches flagged B/W: Under the TTRA timber harvest shall not be within 100 feet of the stream channel and a Stream course Protection Plan will be developed for that buffer. Additional AHMU buffers and selective harvest buffers may apply as specified above. Total no cut buffer is the sum of the no commercial and no programmed commercial harvest buffers.

Category B reaches flagged O/W: Trees shall be felled in such a manner so that the direction of fall is away from the stream course. Trees or products shall not be hauled or yarded across the stream course unless fully suspended. Debris entering streams from harvest activities shall be removed. Additional AHMU buffers and selective harvest buffers may apply as specified above. Total no cut buffer equals the no programmed commercial harvest buffers.

Category C reaches flagged G/W: In so far as practicable, trees will be felled and yarded away from the stream course. Debris that enters the stream channel that may affect water quality or have potential for debris flows will be removed from the stream course.

ROAD/STREAM CROSSING SUMMARY

Log landings and system road re-opening needs are discussed in the Engineering/System Roads section above. Should road/stream crossing structures be installed or re-installed the hydrologist will be consulted.

GEOLOGY/KARST

Unit has been reviewed for karst and cave resources. There is no known karst or cave resource concerns.

HERITAGE RESOURCES

A finding of "No historic properties affected" (36 CFR 800.4(d)(1)) or "No adverse effect" (36 CFR 800.5(d)(1)) has been applied. Project activities may proceed as planned; however the Heritage Professional shall be consulted if new discoveries or unanticipated effects are identified during the project's implementation phase. All activities in the vicinity of the discovery shall cease and reasonable efforts shall be taken to avoid or minimize harm to the resource.

Unit 131

SCENERY

No scenery concerns.

RECREATION

No recreation concerns.

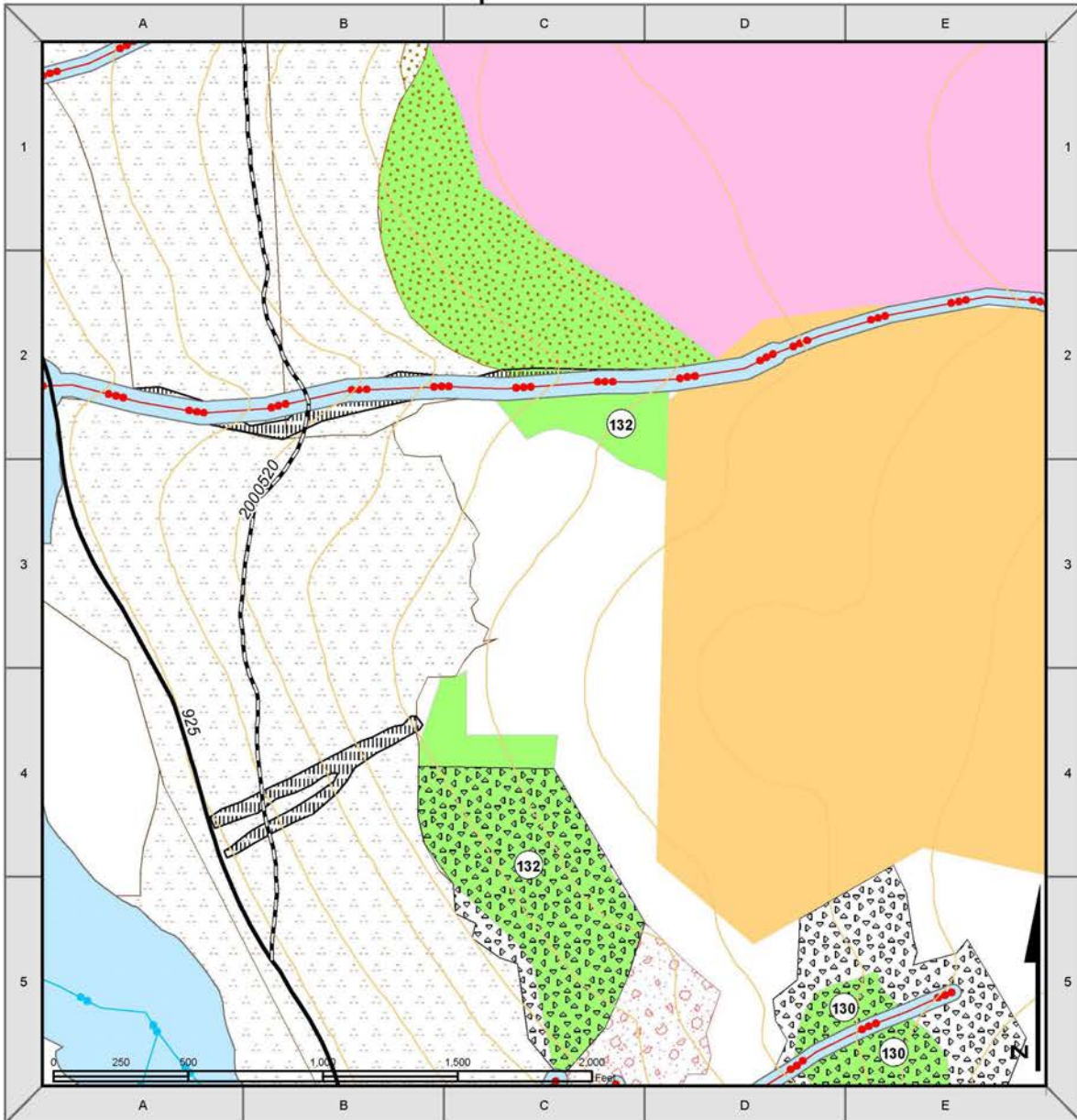
SOILS/WETLANDS

Slopes range from 35 to greater than 72%. Approximately 74 acres of unsuitable soils surrounding this unit are excluded from harvest consideration due to existing landslides, very high MMI4 soils, v-notch, and very steep landslide prone slopes. The remainder of the unit is only suitable with full suspension requirements. Helicopter logging will meet all soil and wetland resource concerns. Forested wetlands occur along the northern boundary. Apply R10 BMPs 12.5, 13.5, and 13.9 and National Core BMPs Plan-2, AqEco-2, AqEco-4, Veg-1, Veg-2, Veg-5, and Veg-6.

WILDLIFE

Unit greater than 1000 feet in elevation. No goshawk surveys required.

Helicopter Unit: 132



Units	Great Blue Heron	Stream Class III	Past Harvest
Roadless Rule	Bear Den	Stream Class IV	NonDevelopment LUDs
Contour 100ft	Proposed Temporary Roads	Riparian Management Area	Old-Growth LUD
High Vulnerability Karst	Existing NFS Roads	T77/Audubon Watersheds	Legacy
USFWS Eagle Buffer	Existing Temporary Roads	Community Use 5-Mile Zone	NonForest Service Lands
Goshawk Nest Buffer	Non-NFS Roads	Unsuitable Soils	Saltwater
Wildlife Buffers	Lakes	Full Suspension Soils	
Marbled Murrelet	Stream Class I	Beach Buffers Max High Water	
Raptor	Stream Class II	Landslides	

Unit 132							
Unit Number:	132	Total Harvest Unit Acres	16.3	Prescription:	UEA	Harvest System:	Helicopter
VCU Number:	5880	LUD:	Timber Production		Net Harvest Volume (MBF):		86
Summary of Concerns, Responses, BMPs, and Mitigations							
SILVICULTURE							
<p>Old-growth stands tend to already exhibit uneven-aged structure to varying degrees. The objective of uneven-aged management is to: 1) economically harvest a portion of the stand, 2) maintain old-growth structure in the stand, and 3) retain trees that will provide for economically viable and sustainable future entries. Uneven-aged management in this unit will be done by single tree selection using a helicopter logging system. When doing a cut-tree mark to designate removals, safety or hazard trees may also be marked as required for safety purposes. Variability in the stand will result in variability in the mark, from scattered individual trees to groups where overstory removal cannot exceed 2 acres in size. On average, retain approximately 66% of the pre-harvest basal area of standing live trees, and retain at least 75% in portions of the unit where windthrow risk is high. Generally maintain pre-harvest species composition after harvest. Retain: 1) healthy young 'crop' trees that promote economic future entries, 2) older trees with low timber value but high wildlife value, 3) advanced and new regeneration trees. The Silviculturist will establish inspection plots to ensure marking guidelines are adhered to and objectives are met for the unit.</p>							
TIMBER/LOGGING							
This unit is comprised of 2 settings and is planned for Helicopter yarding to landings located 2000520.							
ENGINEERING/SYSTEM ROADS							
Landings on NFS road 2000520. 2000520 is a closed road and will require maintenance upgrades to meet haul standards (BMP 14.20, Road-4).							
BOTANY							
Surveys have not been completed but will be required due to identified moderate potential for calcareous habitat. All resource-specific information, protections and mitigations will be determined before harvest activities are implemented.							
INVASIVE SPECIES							
Helicopter Landings will need to be surveyed for invasive plants. If plants are found, BMPs (Krosse 2017) are followed to avoid spread or introduction of weeds to the area due to project actions.							
FISHERIES							
<p>Stream Num: Map location: C-5 (132_1.0) Stream Class: III Channel Type: HCM Protection: Category C Flagging: O/W Buffer (RMA): Class III for HCM -To the top of the side-slope break Concerns: N/A</p> <p>Stream Num: Map location: C-2 (132_5.0) Stream Class: III Channel Type: HCM Protection: Category B Flagging: O/W Buffer (RMA): Class III for HCM - To the top of the side-slope break Concerns: Moderate blowdown. Stream mapped as HCD but is HCM</p> <p>Stream Num: Map location: C-2 (132_5.1R) Stream Class: IV Channel Type: HCO Protection: Category C Flagging: G/W Buffer (RMA): Class IV for HCO - No buffer Concerns: Stream needs edits</p> <p>Stream Num: Map location: C-2 (132_5.1L)</p>							

Unit 132

Stream Class: IV
Channel Type: HCO
Protection: Category C
Flagging: G/W
Buffer (RMA):
Class IV for HCO - No buffer
Concerns: Stream needs edits

During the GIS process all streams were labeled incorrect. Map locations were provided for streams along with the correct name. Stream labels will be corrected before final unit cards are prepared. Proposed helicopter landings will need stream reviews prior to final Unit Cards and implementation.

All Streams Protection/Mitigation Actions by Category:

All Categories implement BMPs

Category A reaches flagged B/W: Under the TTRA timber harvest shall not be within 100 feet of the stream channel and a Stream course Protection Plan will be developed for that buffer. Additional AHMU buffers and selective harvest buffers may apply as specified above. Total no cut buffer is the sum of the no commercial and no programmed commercial harvest buffers.

Category B reaches flagged O/W: Trees shall be felled in such a manner so that the direction of fall is away from the stream course. Trees or products shall not be hauled or yarded across the stream course unless fully suspended. Debris entering streams from harvest activities shall be removed. Additional AHMU buffers and selective harvest buffers may apply as specified above. Total no cut buffer equals the no programmed commercial harvest buffers.

Category C reaches flagged G/W: In so far as practicable, trees will be felled and yarded away from the stream course. Debris that enters the stream channel that may affect water quality or have potential for debris flows will be removed from the stream course.

ROAD/STREAM CROSSING SUMMARY

Log landings and system road re-opening needs are discussed in the Engineering/System Roads section above. Should road/stream crossing structures be installed or re-installed the hydrologist will be consulted.

GEOLOGY/KARST

Unit has been reviewed for karst and cave resources. There is no known karst or cave resource concerns.

HERITAGE RESOURCES

A finding of "No historic properties affected" (36 CFR 800.4(d)(1)) or "No adverse effect" (36 CFR 800.5(d)(1)) has been applied. Project activities may proceed as planned; however the Heritage Professional shall be consulted if new discoveries or unanticipated effects are identified during the project's implementation phase. All activities in the vicinity of the discovery shall cease and reasonable efforts shall be taken to avoid or minimize harm to the resource.

SCENERY

No scenery concerns.

RECREATION

No recreation concerns.

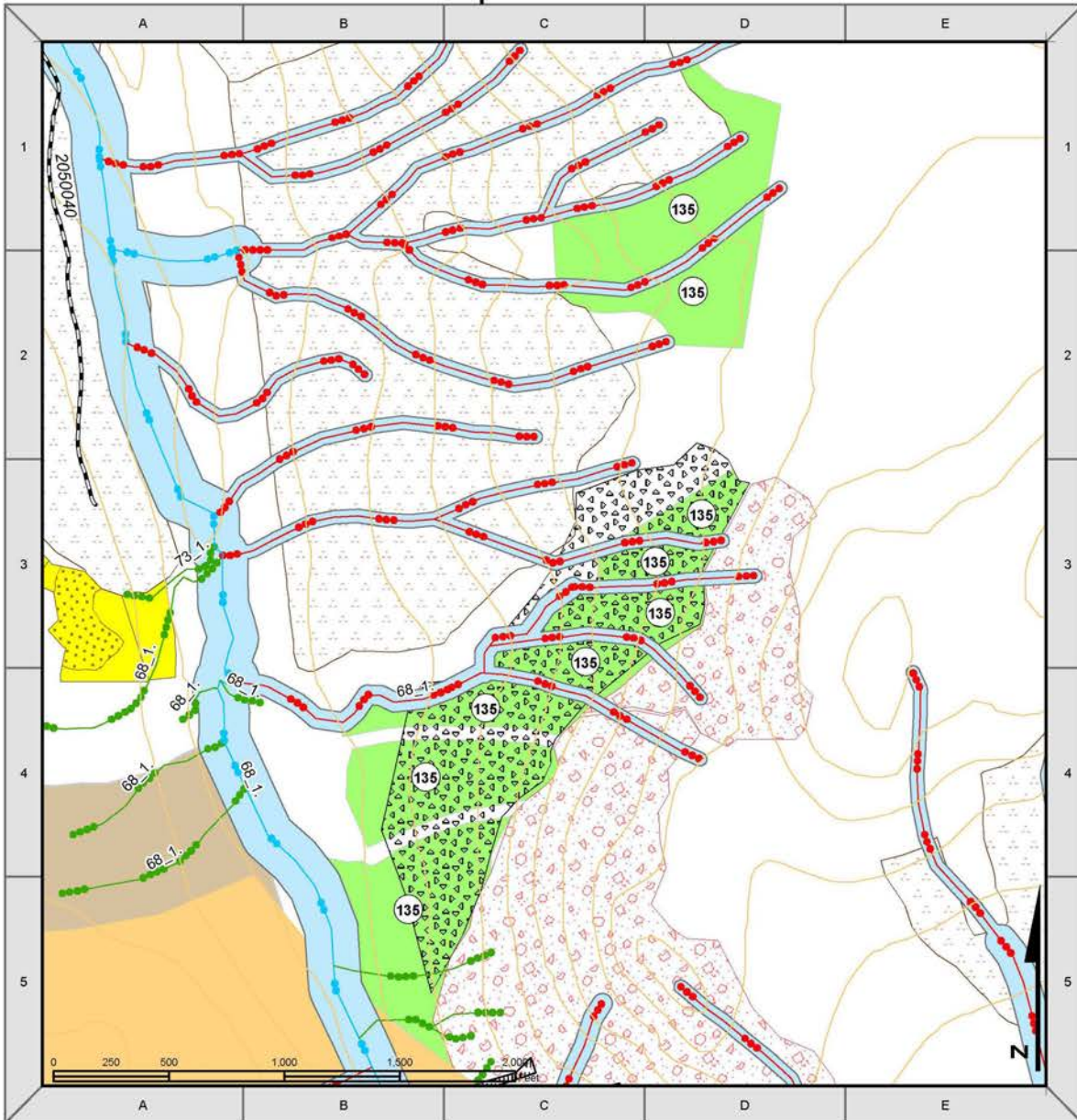
SOILS/WETLANDS

Slopes range from 25 to greater than 72%. Approximately 5 acres of unsuitable soils are excluded from harvest consideration due to existing landslides, deep v-notch, and very steep slopes. About 13 acres of the remainder of the unit is only suitable with full suspension requirements. Helicopter logging will meet all soil and wetland resource concerns. Emergent short sedge occurs along the eastern boundaries and forested wetlands in the north. Apply R10 BMPS 12.5, 13.5, and 13.9 and National Core BMPs Plan-2, AqEco-2, AqEco-4, Veg-1, Veg-2, Veg-5, and Veg-6.

WILDLIFE

Unit is greater than 1000 feet in elevation. No goshawk surveys required.

Helicopter Unit: 135



Units	Great Blue Heron	Stream Class II	Landslides
Roadless Rule	Sharp Shinned Hawk	Stream Class III	Past Harvest
Contour 100ft	Bear Den	Stream Class IV	NonDevelopment LUDs
High Vulnerability Karst	Proposed Temporary Roads	Riparian Management Area	Old-Growth LUD
USFWS Eagle Buffer	Existing NFS Roads	T77/Audubon Watersheds	Legacy
Goshawk Nest Buffer	Existing Temporary Roads	Community Use 5-Mile Zone	NonForest Service Lands
Wildlife Buffers	Non-NFS Roads	Unsuitable Soils	Saltwater
Marbled Murrelet	Lakes	Full Suspension Soils	
Raptor	Stream Class I	Beach Buffers Max High Water	

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Unit 135							
Unit Number:	135	Total Harvest Unit Acres	38.5	Prescription:	UEA	Harvest System:	Helicopter
VCU Number:	5900	LUD:	Timber Production		Net Harvest Volume (MBF):		288
Summary of Concerns, Responses, BMPs, and Mitigations							
SILVICULTURE							
<p>Old-growth stands tend to already exhibit uneven-aged structure to varying degrees. The objective of uneven-aged management is to: 1) economically harvest a portion of the stand, 2) maintain old-growth structure in the stand, and 3) retain trees that will provide for economically viable and sustainable future entries. Uneven-aged management in this unit will be done by single tree selection using a helicopter logging system. When doing a cut-tree mark to designate removals, safety or hazard trees may also be marked as required for safety purposes. Variability in the stand will result in variability in the mark, from scattered individual trees to groups where overstory removal cannot exceed 2 acres in size. On average, retain approximately 66% of the pre-harvest basal area of standing live trees, and retain at least 75% in portions of the unit where windthrow risk is high. Generally maintain pre-harvest species composition after harvest. Retain: 1) healthy young 'crop' trees that promote economic future entries, 2) older trees with low timber value but high wildlife value, 3) advanced and new regeneration trees. The Silviculturist will establish inspection plots to ensure marking guidelines are adhered to and objectives are met for the unit.</p>							
TIMBER/LOGGING							
This unit is comprised of 2 settings and is planned for Helicopter yarding to landings located on road 2050050.							
ENGINEERING/SYSTEM ROADS							
Landings on NFS road 2050050 (BMP 14.20, Road-4). Road is open and maintained.							
BOTANY							
Surveys have not been completed but will be required due to identified potential habitat for <i>Piperia unalascensis</i> (Alaska rein orchid) and <i>Platanthera orbiculata</i> (Lesser round-leaved orchid) in the identified riparian habitat within and adjacent to the unit. All resource-specific information, protections and mitigations will be determined before harvest activities are implemented.							
INVASIVE SPECIES							
Helicopter Landings will need to be surveyed for invasive plants. If plants are found, BMPs (Krosse 2017) are followed to avoid spread or introduction of weeds to the area due to project actions.							
FISHERIES							
<p>Stream Num: Map Location C-1 (135_1.0) Stream Class: IV Channel Type: HCO Protection: Category C Flagging: G/W Buffer (RMA): Class IV for HCO - No buffer Concerns: Moderate blowdown</p> <p>Stream Num: Map Location D-1 (135_1.1L) Stream Class: IV Channel Type: HCO Protection: Category C Flagging: G/W Buffer (RMA): Class IV for HCO - No buffer Concerns: Extreme blowdown</p> <p>Stream Num: Map Location C-2 (135_1.2L) Stream Class: IV Channel Type: HCO Protection: Category C Flagging: G/W Buffer (RMA): Class IV for HCO - No buffer Concerns: High blowdown</p> <p>Stream Num: Map Location A-2 / A-3 / A-4 / B-5 (68_1.0)</p>							

Unit 135

Stream Class: II
Channel Type: MCM
Protection: Category A
Flagging: B/W
Buffer (RMA):
Class II for MCM - 100 feet or to the top of the side-slope break; whichever is greater.
Concerns:

Stream Num: Map Location B-4 (68_1.1L)
Stream Class: III
Channel Type: HCD
Protection: Category B
Flagging: O/W
Buffer (RMA):
Class III for HCD - To the top of the side-slope break
Concerns: Not field verified

Stream Num: Map Location B-5 (68_1.2L)
Stream Class: IV
Channel Type: HCO
Protection: Category C
Flagging: G/W
Buffer (RMA):
Class IV for HCO - No buffer
Concerns: N/A

During the GIS process all streams were labeled incorrect. Map locations were provided for streams along with the correct name. Stream labels will be corrected before final unit cards are prepared. There are 3 un-surveyed HCV class IV streams on the bottom portion of the unit. Proposed helicopter landings will need stream reviews prior to final Unit Cards and implementation.

All Streams Protection/Mitigation Actions by Category:

All Categories implement BMPs

Category A reaches flagged B/W: Under the TTRA timber harvest shall not be within 100 feet of the stream channel and a Stream course Protection Plan will be developed for that buffer. Additional AHMU buffers and selective harvest buffers may apply as specified above. Total no cut buffer is the sum of the no commercial and no programmed commercial harvest buffers.

Category B reaches flagged O/W: Trees shall be felled in such a manner so that the direction of fall is away from the stream course. Trees or products shall not be hauled or yarded across the stream course unless fully suspended. Debris entering streams from harvest activities shall be removed. Additional AHMU buffers and selective harvest buffers may apply as specified above. Total no cut buffer equals the no programmed commercial harvest buffers.

Category C reaches flagged G/W: In so far as practicable, trees will be felled and yarded away from the stream course. Debris that enters the stream channel that may affect water quality or have potential for debris flows will be removed from the stream course.

ROAD/STREAM CROSSING SUMMARY

Log landings and system road re-opening needs are discussed in the Engineering/System Roads section above. Should road/stream crossing structures be installed or re-installed the hydrologist will be consulted.

GEOLOGY/KARST

Unit has been reviewed for karst and cave resources. There is no known karst or cave resource concerns.

HERITAGE RESOURCES

A finding of "No historic properties affected" (36 CFR 800.4(d)(1) or "No adverse effect" (36 CFR 800.5(d)(1) has been applied. Project activities may proceed as planned; however the Heritage Professional shall be consulted if new discoveries or unanticipated effects are identified during the project's implementation phase. All activities in the vicinity of the discovery shall cease and reasonable efforts shall be taken to avoid or minimize harm to the resource.

SCENERY

No scenery concerns.

Unit 135

RECREATION

No recreation concerns.

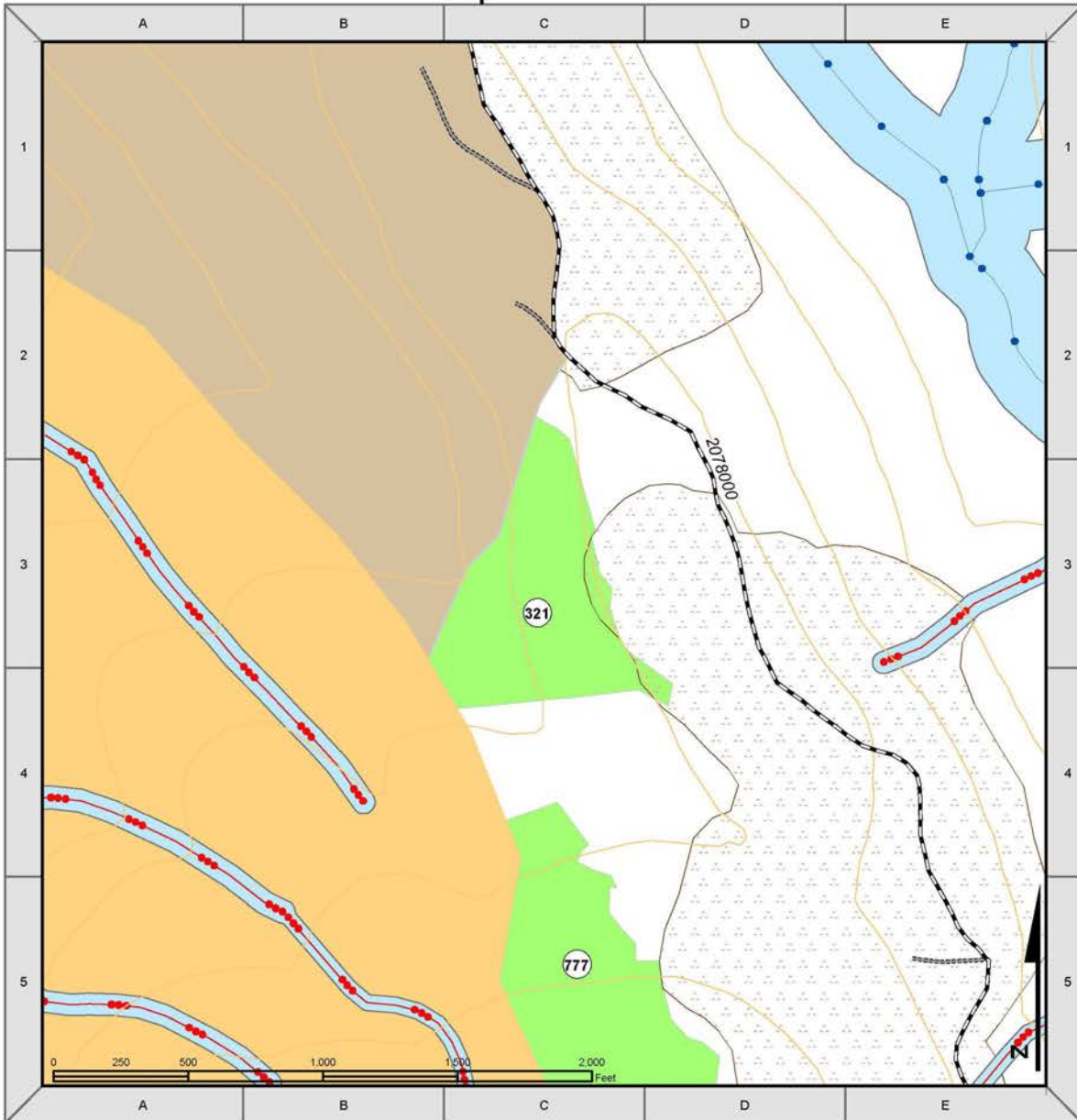
SOILS/WETLANDS

Slopes range from 35 to greater than 72%. Approximately 5 acres of unsuitable soils are excluded from harvest consideration due to existing landslides, cliffs, and very steep wet slopes. About 29 acres of the remainder of the unit is only suitable with full suspension requirements. Helicopter logging will meet all soil and wetland resource concerns. Forested wetlands are intermittent throughout. Apply R10 BMPs 12.5, 13.5, and 13.9 and National Core BMPs Plan-2, AqEco-2, AqEco-4, Veg-1, Veg-2, Veg-5, and Veg-6.

WILDLIFE

Unit is greater than 1000 feet in elevation. No goshawk surveys required.

Helicopter Unit: 321



Units	Great Blue Heron	Stream Class III	Past Harvest
Roadless Rule	Bear Den	Stream Class IV	NonDevelopment LUDs
Contour 100ft	Proposed Temporary Roads	Riparian Management Area	Old-Growth LUD
High Vulnerability Karst	Existing NFS Roads	T77/Audubon Watersheds	Legacy
USFWS Eagle Buffer	Existing Temporary Roads	Community Use 5-Mile Zone	NonForest Service Lands
Goshawk Nest Buffer	Non-NFS Roads	Unsuitable Soils	Saltwater
Wildlife Buffers	Lakes	Full Suspension Soils	
Marbled Murrelet	Stream Class I	Beach Buffers Max High Water	
Raptor	Stream Class II	Landslides	

Unit 321							
Unit Number:	321	Total Harvest Unit Acres	11.1	Prescription:	UEA	Harvest System:	Helicopter
VCU Number:	5330	LUD:	Timber Production		Net Harvest Volume (MBF):		46
Summary of Concerns, Responses, BMPs, and Mitigations							
SILVICULTURE							
<p>Old-growth stands tend to already exhibit uneven-aged structure to varying degrees. The objective of uneven-aged management is to: 1) economically harvest a portion of the stand, 2) maintain old-growth structure in the stand, and 3) retain trees that will provide for economically viable and sustainable future entries. Uneven-aged management in this unit will be done by single tree selection using a helicopter logging system. When doing a cut-tree mark to designate removals, safety or hazard trees may also be marked as required for safety purposes. Variability in the stand will result in variability in the mark, from scattered individual trees to groups where overstory removal cannot exceed 2 acres in size. On average, retain approximately 66% of the pre-harvest basal area of standing live trees, and retain at least 75% in portions of the unit where windthrow risk is high. Generally maintain pre-harvest species composition after harvest. Retain: 1) healthy young 'crop' trees that promote economic future entries, 2) older trees with low timber value but high wildlife value, 3) advanced and new regeneration trees. The Silviculturist will establish inspection plots to ensure marking guidelines are adhered to and objectives are met for the unit.</p>							
TIMBER/LOGGING							
This unit is planned for Helicopter yarding to landings located on road 2000000.							
ENGINEERING/SYSTEM ROADS							
Landings on NFS road 2000000 (BMP 14.20, Road-4). Road is open and maintained.							
BOTANY							
Surveys have not been completed but will be required due to identified potential habitat for <i>Platanthera orbiculata</i> (Lesser round-leaved orchid) within the center of the unit. All resource-specific information, protections and mitigations will be determined before harvest activities are implemented.							
INVASIVE SPECIES							
Helicopter Landings will need to be surveyed for invasive plants. If plants are found, BMPs (Krosse 2017) are followed to avoid spread or introduction of weeds to the area due to project actions.							
FISHERIES							
There are currently no mapped streams within 200ft of this unit. Notify the Fish Biologist or Hydrologist if new streams are discovered. Proposed helicopter landings will need stream reviews prior to final Unit Cards and implementation.							
<p>All Streams Protection/Mitigation Actions by Category: All Categories implement BMPs Category A reaches flagged B/W: Under the TTRA timber harvest shall not be within 100 feet of the stream channel and a Stream course Protection Plan will be developed for that buffer. Additional AHMU buffers and selective harvest buffers may apply as specified above. Total no cut buffer is the sum of the no commercial and no programmed commercial harvest buffers.</p> <p>Category B reaches flagged O/W: Trees shall be felled in such a manner so that the direction of fall is away from the stream course. Trees or products shall not be hauled or yarded across the stream course unless fully suspended. Debris entering streams from harvest activities shall be removed. Additional AHMU buffers and selective harvest buffers may apply as specified above. Total no cut buffer equals the no programmed commercial harvest buffers.</p> <p>Category C reaches flagged G/W: In so far as practicable, trees will be felled and yarded away from the stream course. Debris that enters the stream channel that may affect water quality or have potential for debris flows will be removed from the stream course.</p>							
ROAD/STREAM CROSSING SUMMARY							
Log landings and system road re-opening needs are discussed in the Engineering/System Roads section above. Should road/stream crossing structures be installed or re-installed the hydrologist will be consulted.							
GEOLOGY/KARST							
Unit has been reviewed for karst and cave resources. There is no known karst or cave resource concerns.							
HERITAGE RESOURCES							
A finding of "No historic properties affected" (36 CFR 800.4(d)(1)) or "No adverse effect" (36 CFR 800.5(d)(1)) has been applied. Project activities may proceed as planned; however the Heritage Professional shall be consulted if new discoveries or unanticipated effects are identified during the project's implementation phase. All activities in							

Unit 321

the vicinity of the discovery shall cease and reasonable efforts shall be taken to avoid or minimize harm to the resource.

SCENERY

No scenery concerns.

RECREATION

No recreation concerns.

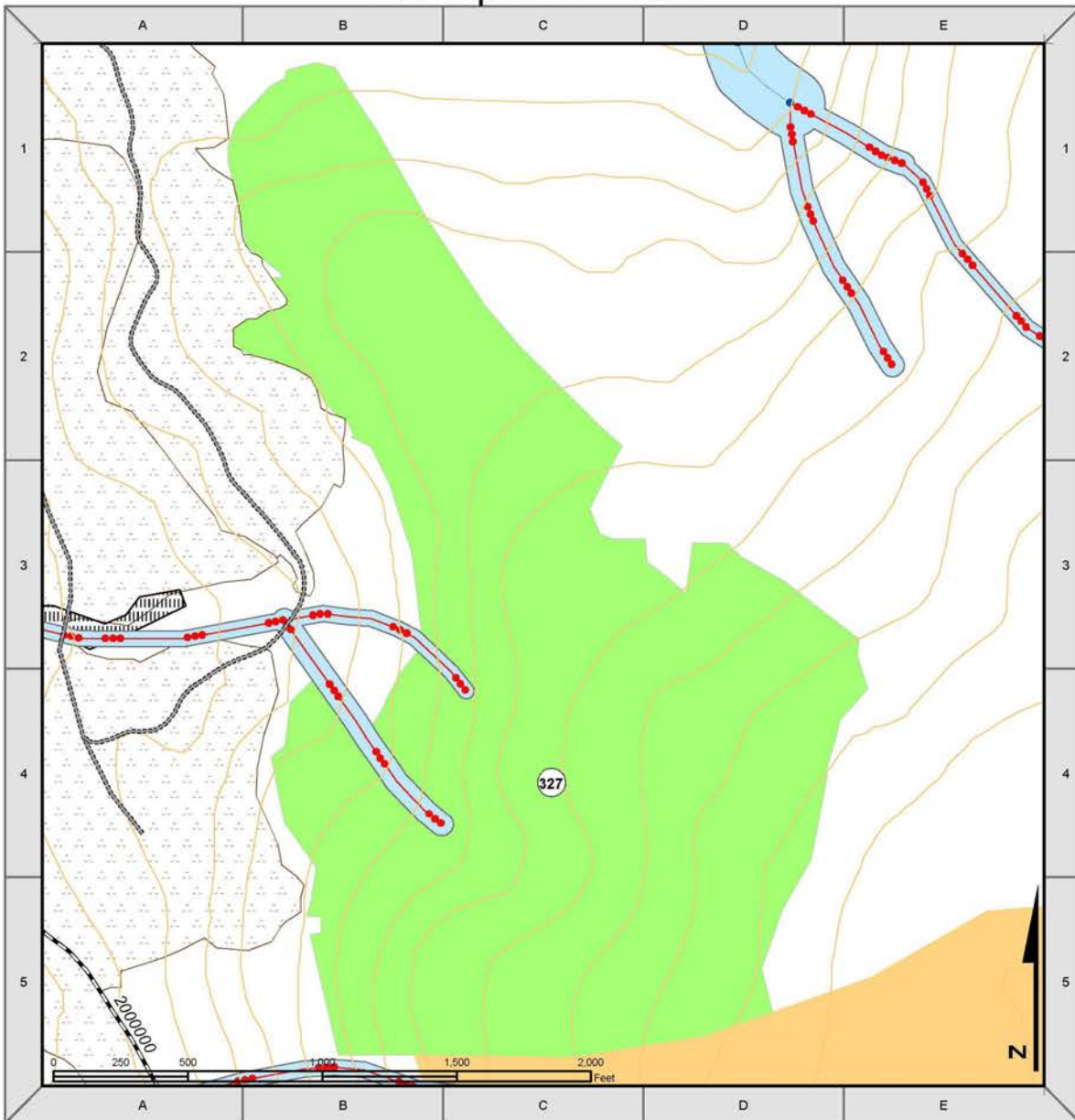
SOILS/WETLANDS

Slopes range from 10 to 85%. All slopes are suitable for harvest with helicopter logging. Forested wetlands are intermittent throughout. Apply R10 BMPs 12.5, 13.5, and 13.9 and National Core BMPs Plan-2, AqEco-2, AqEco-4, Veg-1, Veg-2, Veg-5, and Veg-6.

WILDLIFE

No surveys have been conducted. Unit requires all goshawk surveys. All surveys will be conducted prior to implementation.

Helicopter Unit: 327



Units	Great Blue Heron	Stream Class III	Past Harvest
Roadless Rule	Bear Den	Stream Class IV	NonDevelopment LUDs
Contour 100ft	Proposed Temporary Roads	Riparian Management Area	Old-Growth LUD
High Vulnerability Karst	Existing NFS Roads	T77/Audubon Watersheds	Legacy
USFWS Eagle Buffer	Existing Temporary Roads	Community Use 5-Mile Zone	NonForest Service Lands
Goshawk Nest Buffer	Non-NFS Roads	Unsuitable Soils	Saltwater
Wildlife Buffers	Lakes	Full Suspension Soils	
Marbled Murrelet	Stream Class I	Beach Buffers Max High Water	
Raptor	Stream Class II	Landslides	

Unit 327							
Unit Number:	327	Total Harvest Unit Acres	103.2	Prescription:	UEA	Harvest System:	Helicopter
VCU Number:	5330	LUD:	Modified Landscape/ Timber production		Net Harvest Volume (MBF):		493
Summary of Concerns, Responses, BMPs, and Mitigations							
SILVICULTURE							
<p>Old-growth stands tend to already exhibit uneven-aged structure to varying degrees. The objective of uneven-aged management is to: 1) economically harvest a portion of the stand, 2) maintain old-growth structure in the stand, and 3) retain trees that will provide for economically viable and sustainable future entries. Uneven-aged management in this unit will be done by single tree selection using a helicopter logging system. When doing a cut-tree mark to designate removals, safety or hazard trees may also be marked as required for safety purposes. Variability in the stand will result in variability in the mark, from scattered individual trees to groups where overstory removal cannot exceed 2 acres in size. On average, retain approximately 66% of the pre-harvest basal area of standing live trees, and retain at least 75% in portions of the unit where windthrow risk is high. Generally maintain pre-harvest species composition after harvest. Retain: 1) healthy young 'crop' trees that promote economic future entries, 2) older trees with low timber value but high wildlife value, 3) advanced and new regeneration trees. The Silviculturist will establish inspection plots to ensure marking guidelines are adhered to and objectives are met for the unit.</p>							
TIMBER/LOGGING							
This unit is planned for Helicopter yarding to landings located on temporary road that intersects road 2000000 at milepost 109.80.							
ENGINEERING/SYSTEM ROADS							
Decommissioned road to be rebuilt 0.10 miles for helicopter landing, BMP 14.2, 14.5, 14.20, Road-5, Road 6. Decommissioned road intersects road 2000000 at milepost 109.80.							
BOTANY							
Surveys have not been completed but will be required due to identified high potential habitat for <i>Cypripedium parviflorum</i> var. <i>pubescens</i> (Large yellow lady's slipper) along the eastern edge of the unit. All resource-specific information, protections and mitigations will be determined before harvest activities are implemented.							
INVASIVE SPECIES							
Helicopter Landings will need to be surveyed for invasive plants. If plants are found, BMPs (Krosse 2017) are followed to avoid spread or introduction of weeds to the area due to project actions.							
FISHERIES							
<p>Stream Num: Map location B-3 / B-4 / C-4 Stream Class: III Channel Type: HCD Protection: Category B Flagging: O/W Buffer (RMA): Class III for HCM - To the top of the side-slope break Concerns: Not field verified</p> <p>Stream Num: Map location B-3 / B-4 Stream Class: III Channel Type: HCM Protection: Category B Flagging: O/W Buffer (RMA): Class III for HCM - To the top of the side-slope break Concerns: Not field verified</p> <p>Stream Num: Map location B-5 / C-5 Stream Class: III Channel Type: HCM Protection: Category B Flagging: O/W Buffer (RMA): Class III for HCM - To the top of the side-slope break Concerns: Not field verified</p>							

Unit 327

Proposed helicopter landings will need stream reviews prior to final Unit Cards and implementation.

All Streams Protection/Mitigation Actions by Category:

All Categories implement BMPs

Category A reaches flagged B/W: Under the TTRA timber harvest shall not be within 100 feet of the stream channel and a Stream course Protection Plan will be developed for that buffer. Additional AHMU buffers and selective harvest buffers may apply as specified above. Total no cut buffer is the sum of the no commercial and no programmed commercial harvest buffers.

Category B reaches flagged O/W: Trees shall be felled in such a manner so that the direction of fall is away from the stream course. Trees or products shall not be hauled or yarded across the stream course unless fully suspended. Debris entering streams from harvest activities shall be removed. Additional AHMU buffers and selective harvest buffers may apply as specified above. Total no cut buffer equals the no programmed commercial harvest buffers.

Category C reaches flagged G/W: In so far as practicable, trees will be felled and yarded away from the stream course. Debris that enters the stream channel that may affect water quality or have potential for debris flows will be removed from the stream course.

ROAD/STREAM CROSSING SUMMARY

Log landings and system road re-opening needs are discussed in the Engineering/System Roads section above. Should road/stream crossing structures be installed or re-installed the hydrologist will be consulted.

GEOLOGY/KARST

Unit has been reviewed for karst and cave resources. There is no known karst or cave resource concerns.

HERITAGE RESOURCES

A finding of "No historic properties affected" (36 CFR 800.4(d)(1) or "No adverse effect" (36 CFR 800.5(d)(1) has been applied. Project activities may proceed as planned; however the Heritage Professional shall be consulted if new discoveries or unanticipated effects are identified during the project's implementation phase. All activities in the vicinity of the discovery shall cease and reasonable efforts shall be taken to avoid or minimize harm to the resource.

SCENERY

No scenery concerns.

RECREATION

No recreation concerns.

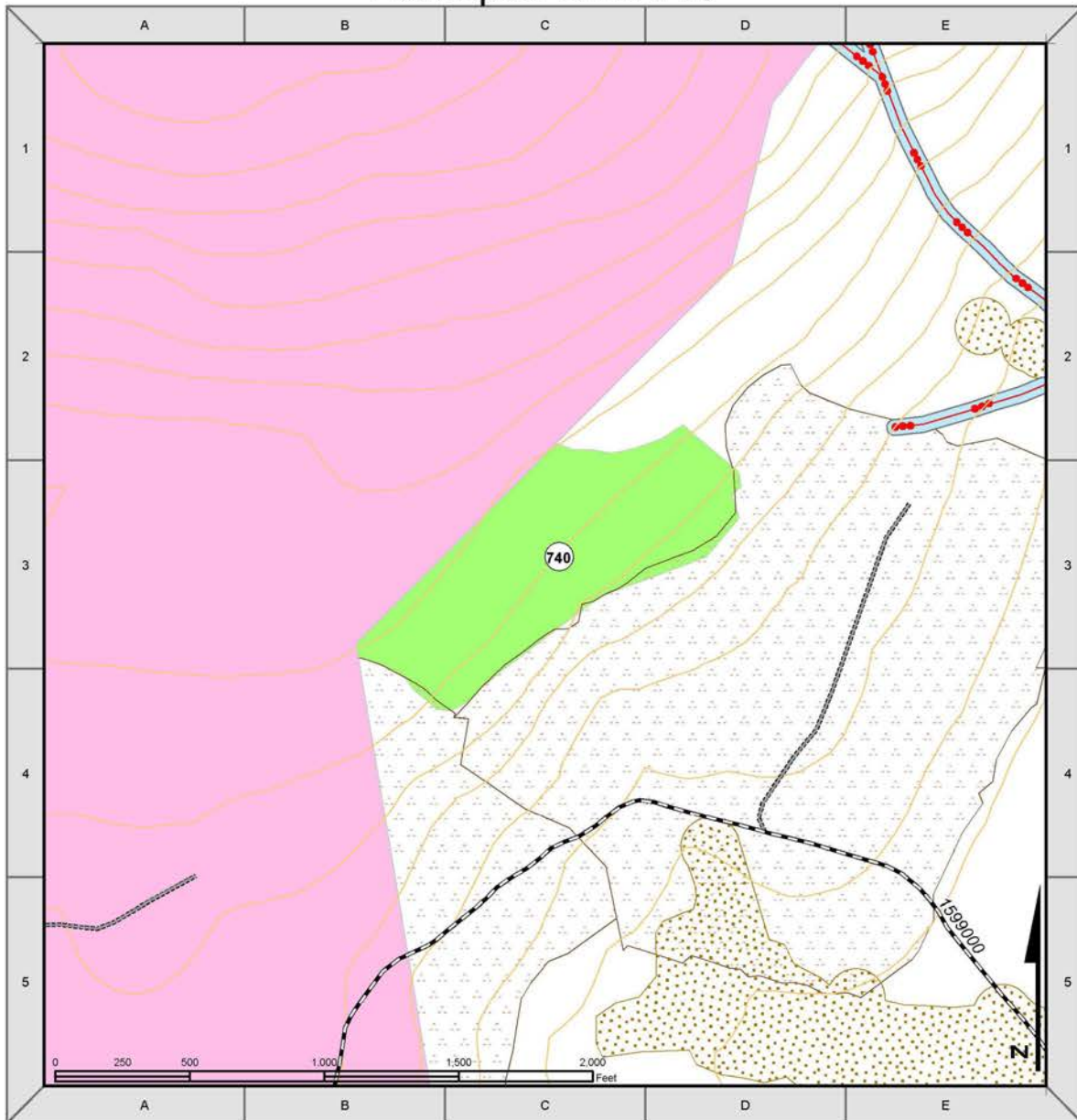
SOILS/WETLANDS

Slopes range from 10 to 100%. The steep slopes are small short pitches and the unit has many benches. All slopes are suitable for harvest with helicopter logging. Wetlands were not identified. Apply R10 BMPs 12.5, 13.5, and 13.9 and National Core BMPs Plan-2, AqEco-2, AqEco-4, Veg-1, Veg-2, Veg-5, and Veg-6.

WILDLIFE

Unit is greater than 1000 feet in elevation. No goshawk surveys required.

Helicopter Unit: 740



Units	Great Blue Heron	Stream Class III	NonDevelopment LUDs
Roadless Rule	Bear Den	Stream Class IV	Old-Growth LUD
Contour 100ft	Proposed Temporary Roads	Riparian Management Area	Legacy
High Vulnerability Karst	Existing NFS Roads	T77/Audubon Watersheds	NonForest Service Lands
USFWS Eagle Buffer	Existing Temporary Roads	Community Use 5-Mile Zone	Saltwater
Goshawk Nest Buffer	Non-NFS Roads	Unsuitable Soils	
Wildlife Buffers	Lakes	Full Suspension Soils	
Marbled Murrelet	Stream Class I	Beach Buffers Max High Water	
Raptor	Stream Class II	Landslides	

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Unit 740							
Unit Number:	740	Total Harvest Unit Acres	16.1	Prescription:	UEA	Harvest System:	Helicopter
VCU Number:	5371	LUD:	Timber Production		Net Harvest Volume (MBF):		105
Summary of Concerns, Responses, BMPs, and Mitigations							
SILVICULTURE							
<p>Old-growth stands tend to already exhibit uneven-aged structure to varying degrees. The objective of uneven-aged management is to: 1) economically harvest a portion of the stand, 2) maintain old-growth structure in the stand, and 3) retain trees that will provide for economically viable and sustainable future entries. Uneven-aged management in this unit will be done by single tree selection using a helicopter logging system. When doing a cut-tree mark to designate removals, safety or hazard trees may also be marked as required for safety purposes. Variability in the stand will result in variability in the mark, from scattered individual trees to groups where overstory removal cannot exceed 2 acres in size. On average, retain approximately 66% of the pre-harvest basal area of standing live trees, and retain at least 75% in portions of the unit where windthrow risk is high. Generally maintain pre-harvest species composition after harvest. Retain: 1) healthy young 'crop' trees that promote economic future entries, 2) older trees with low timber value but high wildlife value, 3) advanced and new regeneration trees. The Silviculturist will establish inspection plots to ensure marking guidelines are adhered to and objectives are met for the unit.</p>							
TIMBER/LOGGING							
This unit is planned for Helicopter yarding to landings located on road 1599000.							
ENGINEERING/SYSTEM ROADS							
Landings on NFS road 1599000 (BMP 14.20, Road-4). Road is open and maintained.							
BOTANY							
Surveys have not been completed but will be required due to identified high potential habitat for <i>Cypripedium parviflorum var. pubescens</i> (Large yellow lady's slipper) throughout the unit. All resource-specific information, protections and mitigations will be determined before harvest activities are implemented.							
INVASIVE SPECIES							
Helicopter Landings will need to be surveyed for invasive plants. If plants are found, BMPs (Krosse 2017) are followed to avoid spread or introduction of weeds to the area due to project actions.							
FISHERIES							
<p>Stream Num: Map location D-3 / C-3 / C-2 (740_1.3L) Stream Class: IV Channel Type: HCO Protection: Category C Flagging: G/W Buffer (RMA): Class IV for HCO - No buffer Concerns: Not field verified. Stream needs edits.</p>							
Proposed helicopter landings will need stream reviews prior to final Unit Cards and implementation.							
<p>All Streams Protection/Mitigation Actions by Category: All Categories implement BMPs Category A reaches flagged B/W: Under the TTRA timber harvest shall not be within 100 feet of the stream channel and a Stream course Protection Plan will be developed for that buffer. Additional AHMU buffers and selective harvest buffers may apply as specified above. Total no cut buffer is the sum of the no commercial and no programmed commercial harvest buffers.</p> <p>Category B reaches flagged O/W: Trees shall be felled in such a manner so that the direction of fall is away from the stream course. Trees or products shall not be hauled or yarded across the stream course unless fully suspended. Debris entering streams from harvest activities shall be removed. Additional AHMU buffers and selective harvest buffers may apply as specified above. Total no cut buffer equals the no programmed commercial harvest buffers.</p> <p>Category C reaches flagged G/W: In so far as practicable, trees will be felled and yarded away from the stream course. Debris that enters the stream channel that may affect water quality or have potential for debris flows will be removed from the stream course.</p>							
ROAD/STREAM CROSSING SUMMARY							
Log landings and system road re-opening needs are discussed in the Engineering/System Roads section above. Should road/stream crossing structures be installed or re-installed the hydrologist will be consulted.							

Unit 740

GEOLOGY/KARST

Unit has been reviewed for karst and cave resources. There is no known karst or cave resource concerns.

HERITAGE RESOURCES

A finding of "No historic properties affected" (36 CFR 800.4(d)(1) or "No adverse effect" (36 CFR 800.5(d)(1) has been applied. Project activities may proceed as planned; however the Heritage Professional shall be consulted if new discoveries or unanticipated effects are identified during the project's implementation phase. All activities in the vicinity of the discovery shall cease and reasonable efforts shall be taken to avoid or minimize harm to the resource.

SCENERY

No scenery concerns.

RECREATION

Noise concern with El Capitan Cave Recreation users.

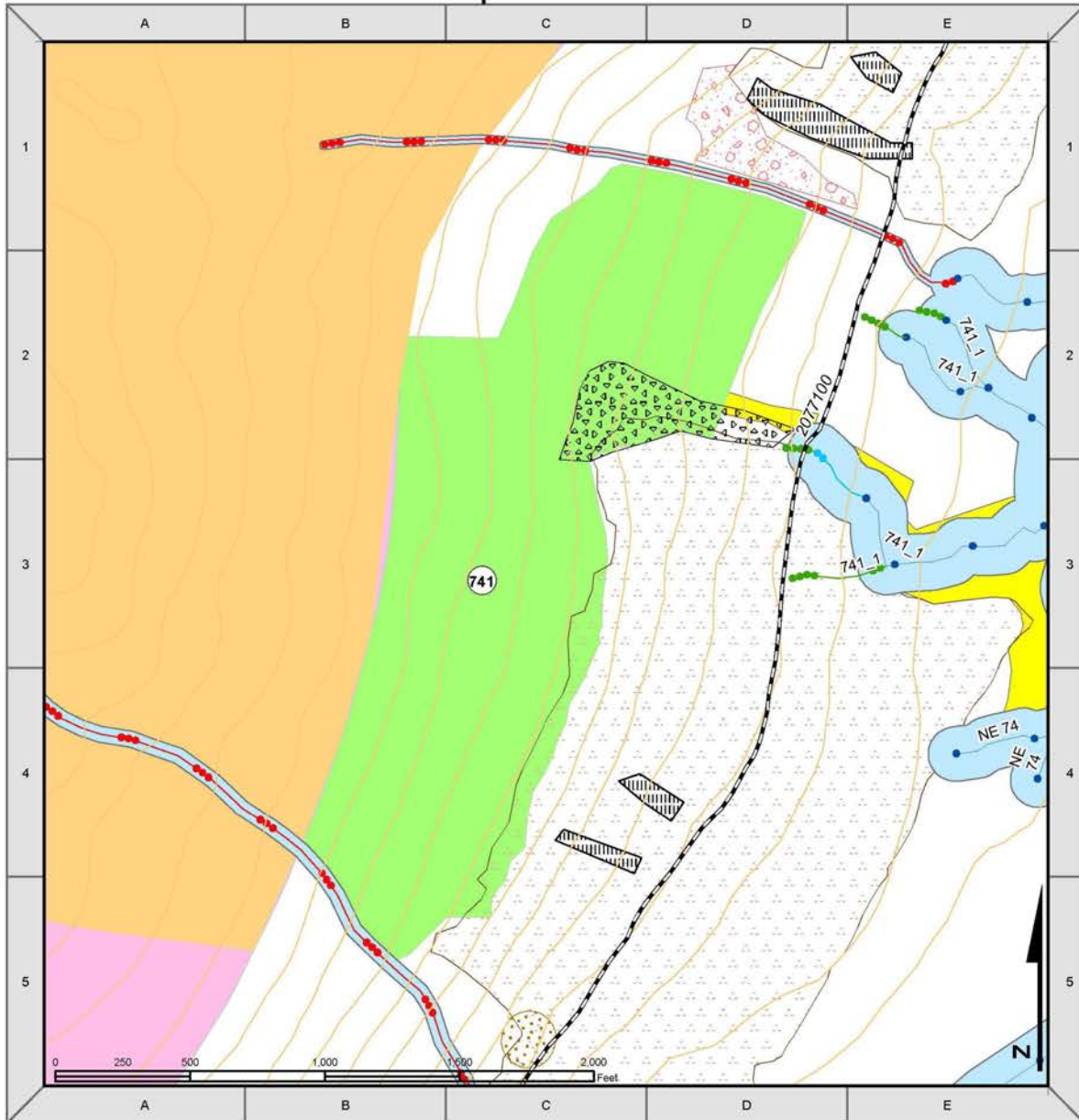
SOILS/WETLANDS

Slopes are 30 to 80%. The slopes greater than 72% are small bands of cliffs and rock outcrops. All slopes are suitable for harvest with helicopter logging. No wetlands were identified. Apply R10 BMPs 12.5, 13.5, and 13.9 and National Core BMPs Plan-2, AqEco-2, AqEco-4, Veg-1, Veg-2, Veg-5, and Veg-6.

WILDLIFE

Most of unit is greater than 1000 feet in elevation and does not require goshawk surveys. Small corner of unit is less than 1000 feet in elevation and requires all goshawk surveys. Surveys will be completed prior to implementation.

Helicopter Unit: 741



Units	Great Blue Heron	Stream Class III	Past Harvest
Roadless Rule	Bear Den	Stream Class IV	NonDevelopment LUDs
Contour 100ft	Proposed Temporary Roads	Riparian Management Area	Old-Growth LUD
High Vulnerability Karst	Existing NFS Roads	T77/Audubon Watersheds	Legacy
USFWS Eagle Buffer	Existing Temporary Roads	Community Use 5-Mile Zone	NonForest Service Lands
Goshawk Nest Buffer	Non-NFS Roads	Unsuitable Soils	Saltwater
Wildlife Buffers	Lakes	Full Suspension Soils	
Marbled Murrelet	Stream Class I	Beach Buffers Max High Water	
Raptor	Stream Class II	Landslides	

Unit 741							
Unit Number:	741	Total Harvest Unit Acres	55.3	Prescription:	UEA	Harvest System:	Helicopter
VCU Number:	5371	LUD:	Timber Production		Net Harvest Volume (MBF):		380
Summary of Concerns, Responses, BMPs, and Mitigations							
SILVICULTURE							
<p>Old-growth stands tend to already exhibit uneven-aged structure to varying degrees. The objective of uneven-aged management is to: 1) economically harvest a portion of the stand, 2) maintain old-growth structure in the stand, and 3) retain trees that will provide for economically viable and sustainable future entries. Uneven-aged management in this unit will be done by single tree selection using a helicopter logging system. When doing a cut-tree mark to designate removals, safety or hazard trees may also be marked as required for safety purposes. Variability in the stand will result in variability in the mark, from scattered individual trees to groups where overstory removal cannot exceed 2 acres in size. On average, retain approximately 66% of the pre-harvest basal area of standing live trees, and retain at least 75% in portions of the unit where windthrow risk is high. Generally maintain pre-harvest species composition after harvest. Retain: 1) healthy young 'crop' trees that promote economic future entries, 2) older trees with low timber value but high wildlife value, 3) advanced and new regeneration trees. The Silviculturist will establish inspection plots to ensure marking guidelines are adhered to and objectives are met for the unit.</p>							
TIMBER/LOGGING							
This unit is planned for Helicopter yarding to landings located on road 2077000.							
ENGINEERING/SYSTEM ROADS							
Landings on NFS road 2077000. 2077000 is a closed road and will require maintenance upgrades to meet haul standards (BMP 14.20, Road-4).							
BOTANY							
Surveys have not been completed but will be required due to identified high potential habitat for <i>Cypripedium parviflorum var. pubescens</i> (Large yellow lady's slipper) throughout the unit. All resource-specific information, protections and mitigations will be determined before harvest activities are implemented.							
INVASIVE SPECIES							
Helicopter Landings will need to be surveyed for invasive plants. If plants are found, BMPs (Krosse 2017) are followed to avoid spread or introduction of weeds to the area due to project actions.							
FISHERIES							
Stream Num:	Map location E-1 / D-1 / C-1 (741_1.4L)						
Stream Class:	III						
Channel Type:	HCO						
Protection:	Category B						
Flagging:	O/W						
Buffer (RMA):	Class III for HCO - To the top of the side-slope break						
Concerns:	Needs field verification. High blowdown						
Stream Num:	Map location E-2 / D-2 / C-2 (741_1.3L.1R)						
Stream Class:	IV						
Channel Type:	HCO						
Protection:	Category C						
Flagging:	G/W						
Buffer (RMA):	Class IV for HCO - No buffer						
Concerns:	Stream needs edits						
Stream Num:	Map location E-2 / D-2 / C-2 (741_1.3L)						
Stream Class:	IV						
Channel Type:	HCO						
Protection:	Category C						
Flagging:	G/W						
Buffer (RMA):	Class IV for HCO - No buffer						
Concerns:	Stream needs edits						
Stream Num:	Map location D-2 / C-2 / B-2 (741_1.2L)						

Unit 741

Stream Class: IV
Channel Type: HCO
Protection: Category C
Flagging: G/W
Buffer (RMA):
Class IV for HCO - No buffer
Concerns: Stream needs edits

Stream Num: Map location C-4 / B-4 (741_1.0L)
Stream Class: I
Channel Type: HCO
Protection: Category A
Flagging: B/W
Buffer (RMA):
Class I for HCO - 100 feet or to the top of the side-slope break; whichever is greater.
Concerns: Stream needs edits

Stream Num: Map location B-5 / A-4
Stream Class: III
Channel Type: HCM
Protection: Category B
Flagging: O/W
Buffer (RMA):
Class III for HCM - To the top of the side-slope break.
Concerns: Needs field verification

Proposed helicopter landings will need stream reviews prior to final Unit Cards and implementation.

All Streams Protection/Mitigation Actions by Category:

All Categories implement BMPs

Category A reaches flagged B/W: Under the TTRA timber harvest shall not be within 100 feet of the stream channel and a Stream course Protection Plan will be developed for that buffer. Additional AHMU buffers and selective harvest buffers may apply as specified above. Total no cut buffer is the sum of the no commercial and no programmed commercial harvest buffers.

Category B reaches flagged O/W: Trees shall be felled in such a manner so that the direction of fall is away from the stream course. Trees or products shall not be hauled or yarded across the stream course unless fully suspended. Debris entering streams from harvest activities shall be removed. Additional AHMU buffers and selective harvest buffers may apply as specified above. Total no cut buffer equals the no programmed commercial harvest buffers.

Category C reaches flagged G/W: In so far as practicable, trees will be felled and yarded away from the stream course. Debris that enters the stream channel that may affect water quality or have potential for debris flows will be removed from the stream course.

ROAD/STREAM CROSSING SUMMARY

Log landings and system road re-opening needs are discussed in the Engineering/System Roads section above. Should road/stream crossing structures be installed or re-installed the hydrologist will be consulted.

GEOLOGY/KARST

Unit has been reviewed for karst and cave resources. There is no known karst or cave resource concerns.

HERITAGE RESOURCES

A finding of "No historic properties affected" (36 CFR 800.4(d)(1)) or "No adverse effect" (36 CFR 800.5(d)(1)) has been applied. Project activities may proceed as planned; however the Heritage Professional shall be consulted if new discoveries or unanticipated effects are identified during the project's implementation phase. All activities in the vicinity of the discovery shall cease and reasonable efforts shall be taken to avoid or minimize harm to the resource.

SCENERY

No scenery concerns.

RECREATION

Noise concerns for El Capitan Cave recreation users.

Unit 741

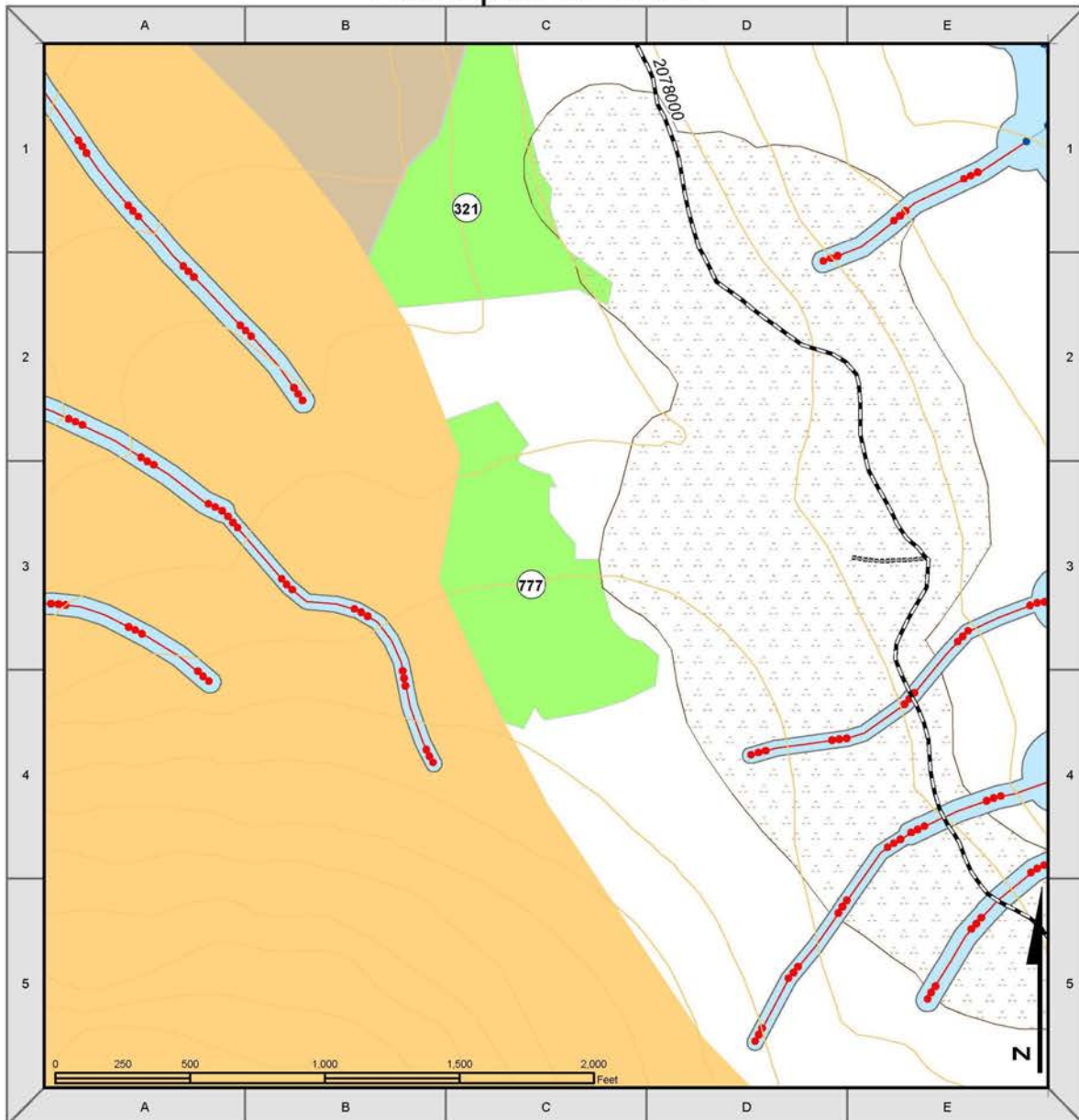
SOILS/WETLANDS

Slopes range from 35 to 95%. About 4 acres of the unit is only suitable with full suspension requirements. Cliffs are about 100 feet in length and are located throughout the unit. Helicopter logging will meet all soil and wetland resource concerns. Apply R10 BMPs 12.5, 13.5, and 13.9 and National Core BMPs Plan-2, AqEco-2, AqEco-4, Veg-1, Veg-2, Veg-5, and Veg-6.

WILDLIFE

Most of unit is greater than 1000 feet in elevation and does not require goshawk surveys. Portion less than 1000 feet in elevation meets the intent of the protocol.

Helicopter Unit: 777



Units	Great Blue Heron	Stream Class III	Past Harvest
Roadless Rule	Bear Den	Stream Class IV	NonDevelopment LUDs
Contour 100ft	Proposed Temporary Roads	Riparian Management Area	Old-Growth LUD
High Vulnerability Karst	Existing NFS Roads	T77/Audubon Watersheds	Legacy
USFWS Eagle Buffer	Existing Temporary Roads	Community Use 5-Mile Zone	NonForest Service Lands
Goshawk Nest Buffer	Non-NFS Roads	Unsuitable Soils	Saltwater
Wildlife Buffers	Lakes	Full Suspension Soils	
Marbled Murrelet	Stream Class I	Beach Buffers Max High Water	
Raptor	Stream Class II	Landslides	

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Unit 777							
Unit Number:	777	Total Harvest Unit Acres	12.2	Prescription:	UEA	Harvest System:	Helicopter
VCU Number:	5330	LUD:	Timber Production		Net Harvest Volume (MBF):		64
Summary of Concerns, Responses, BMPs, and Mitigations							
SILVICULTURE							
<p>Old-growth stands tend to already exhibit uneven-aged structure to varying degrees. The objective of uneven-aged management is to: 1) economically harvest a portion of the stand, 2) maintain old-growth structure in the stand, and 3) retain trees that will provide for economically viable and sustainable future entries. Uneven-aged management in this unit will be done by single tree selection using a helicopter logging system. When doing a cut-tree mark to designate removals, safety or hazard trees may also be marked as required for safety purposes. Variability in the stand will result in variability in the mark, from scattered individual trees to groups where overstory removal cannot exceed 2 acres in size. On average, retain approximately 66% of the pre-harvest basal area of standing live trees, and retain at least 75% in portions of the unit where windthrow risk is high. Generally maintain pre-harvest species composition after harvest. Retain: 1) healthy young 'crop' trees that promote economic future entries, 2) older trees with low timber value but high wildlife value, 3) advanced and new regeneration trees. The Silviculturist will establish inspection plots to ensure marking guidelines are adhered to and objectives are met for the unit.</p>							
TIMBER/LOGGING							
This unit is planned for Helicopter yarding to landings located on road 2000000.							
ENGINEERING/SYSTEM ROADS							
Landings on NFS road 2000000 (BMP 14.20, Road-4). Road is open and maintained.							
BOTANY							
Surveys have not been completed but will be required due to identified moderate potential habitat for <i>Platanthera orbiculata</i> (Lesser round-leaved orchid), within the unit. All resource-specific information, protections and mitigations will be determined before harvest activities are implemented.							
INVASIVE SPECIES							
Helicopter Landings will need to be surveyed for invasive plants. If plants are found, BMPs (Krosse 2017) are followed to avoid spread or introduction of weeds to the area due to project actions.							
FISHERIES							
There are currently no mapped streams within 200ft of this unit. Notify the Fish Biologist or Hydrologist if new streams are discovered. Proposed helicopter landings will need stream reviews prior to final Unit Cards and implementation.							
<p>All Streams Protection/Mitigation Actions by Category: All Categories implement BMPs Category A reaches flagged B/W: Under the TTRA timber harvest shall not be within 100 feet of the stream channel and a Stream course Protection Plan will be developed for that buffer. Additional AHMU buffers and selective harvest buffers may apply as specified above. Total no cut buffer is the sum of the no commercial and no programmed commercial harvest buffers.</p> <p>Category B reaches flagged O/W: Trees shall be felled in such a manner so that the direction of fall is away from the stream course. Trees or products shall not be hauled or yarded across the stream course unless fully suspended. Debris entering streams from harvest activities shall be removed. Additional AHMU buffers and selective harvest buffers may apply as specified above. Total no cut buffer equals the no programmed commercial harvest buffers.</p> <p>Category C reaches flagged G/W: In so far as practicable, trees will be felled and yarded away from the stream course. Debris that enters the stream channel that may affect water quality or have potential for debris flows will be removed from the stream course.</p>							
ROAD/STREAM CROSSING SUMMARY							
Log landings and system road re-opening needs are discussed in the Engineering/System Roads section above. Should road/stream crossing structures be installed or re-installed the hydrologist will be consulted.							
GEOLOGY/KARST							
Unit has been reviewed for karst and cave resources. There is no known karst or cave resource concerns.							
HERITAGE RESOURCES							
A finding of "No historic properties affected" (36 CFR 800.4(d)(1) or "No adverse effect" (36 CFR 800.5(d)(1) has been applied. Project activities may proceed as planned; however the Heritage Professional shall be consulted if new discoveries or unanticipated effects are identified during the project's implementation phase. All activities in							

Unit 777

the vicinity of the discovery shall cease and reasonable efforts shall be taken to avoid or minimize harm to the resource.

SCENERY

No scenery concerns.

RECREATION

No recreation concerns.

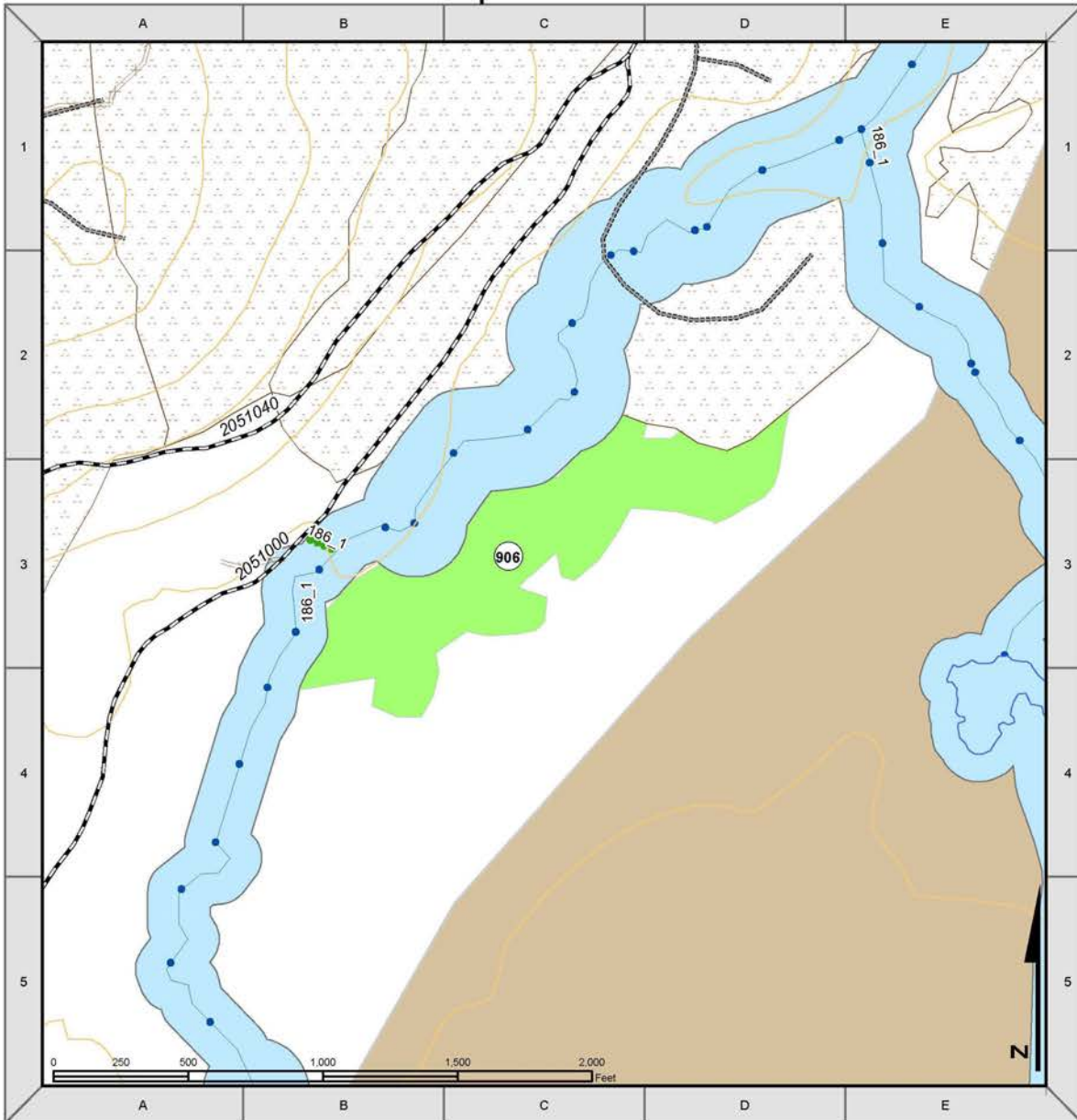
SOILS/WETLANDS

Slopes range from 10 to 85%. All slopes are suitable for harvest with helicopter logging. Forested wetlands are intermittent throughout. Apply R10 BMPs 12.5, 13.5, and 13.9 and National Core BMPs Plan-2, AqEco-2, AqEco-4, Veg-1, Veg-2, Veg-5, and Veg-6.

WILDLIFE

Unit requires all goshawk surveys. No goshawk surveys have been conducted. Surveys will be conducted prior to implementation.

Helicopter Unit: 906



Units	Great Blue Heron	Stream Class III	Past Harvest
Roadless Rule	Bear Den	Stream Class IV	NonDevelopment LUDs
Contour 100ft	Proposed Temporary Roads	Riparian Management Area	Old-Growth LUD
High Vulnerability Karst	Existing NFS Roads	T77/Audubon Watersheds	Legacy
USFWS Eagle Buffer	Existing Temporary Roads	Community Use 5-Mile Zone	NonForest Service Lands
Goshawk Nest Buffer	Non-NFS Roads	Unsuitable Soils	Saltwater
Wildlife Buffers	Lakes	Full Suspension Soils	
Marbled Murrelet	Stream Class I	Beach Buffers Max High Water	
Raptor	Stream Class II	Landslides	

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Unit 906							
Unit Number:	906	Total Harvest Unit Acres	14.9	Prescription:	UEA	Harvest System:	Helicopter
VCU Number:	5890	LUD:	Timber Production		Net Harvest Volume (MBF):		90
Summary of Concerns, Responses, BMPs, and Mitigations							
SILVICULTURE							
<p>Old-growth stands tend to already exhibit uneven-aged structure to varying degrees. The objective of uneven-aged management is to: 1) economically harvest a portion of the stand, 2) maintain old-growth structure in the stand, and 3) retain trees that will provide for economically viable and sustainable future entries. Uneven-aged management in this unit will be done by single tree selection using a helicopter logging system. When doing a cut-tree mark to designate removals, safety or hazard trees may also be marked as required for safety purposes. Variability in the stand will result in variability in the mark, from scattered individual trees to groups where overstory removal cannot exceed 2 acres in size. On average, retain approximately 66% of the pre-harvest basal area of standing live trees, and retain at least 75% in portions of the unit where windthrow risk is high. Generally maintain pre-harvest species composition after harvest. Retain: 1) healthy young 'crop' trees that promote economic future entries, 2) older trees with low timber value but high wildlife value, 3) advanced and new regeneration trees. The Silviculturist will establish inspection plots to ensure marking guidelines are adhered to and objectives are met for the unit.</p>							
TIMBER/LOGGING							
This unit is planned for Helicopter yarding to landings located on 2051000.							
ENGINEERING/SYSTEM ROADS							
Landings on NFS road 2051000 (BMP 14.20, Road-4). Road is open and maintained.							
BOTANY							
Unit was surveyed in 2019. No botanical concerns							
INVASIVE SPECIES							
Helicopter Landings will need to be surveyed for invasive plants. If plants are found, BMPs (Krosse 2017) are followed to avoid spread or introduction of weeds to the area due to project actions.							
FISHERIES							
<p>Stream Num: 186_1.0 Stream Class: I Channel Type: FPM, MCM, PAB Protection: Category A Flagging: B/W Buffer (RMA): Class I for FPM - 130 feet or to the extent of the flood plain, riparian vegetation or soils, or riparian associated wetland fens; whichever is greater. Class I for MCM - 100 feet or to the top of the side-slope break; whichever is greater. Class I for PAB -100 feet or to the extent of the flood plain, riparian vegetation or soils, or riparian associated wetland fens; whichever is greater. Concerns: Moderate blowdown</p> <p>Stream Num: Map location: B3 (186_1.1R) Stream Class: IV Channel Type: MMO Protection: Category C Flagging: G/W Buffer (RMA): Class IV for MMO - No buffer Concerns: N/A</p> <p>Stream Num: Map location: C3 (186_1.1L) Stream Class: I, II Channel Type: FPS, HCO, MMO Protection: Category A Flagging: B/W Buffer (RMA): Class I for FPS - 130 feet or to the extent of the flood plain, riparian vegetation or soils, or riparian associated wetland fens; whichever is greater Class II for HCO - 100 feet or to the top of the side-slope break; whichever is greater</p>							

Unit 906

Class II for MMO - 120 feet or to the extent of the flood plain, riparian vegetation or soils, or riparian associated wetland fens; whichever is greater

Concerns: High blowdown and stream edits needed

Proposed helicopter landings will need stream reviews prior to final Unit Cards and implementation.

All Streams Protection/Mitigation Actions by Category:

All Categories implement BMPs

Category A reaches flagged B/W: Under the TTRA timber harvest shall not be within 100 feet of the stream channel and a Stream course Protection Plan will be developed for that buffer. Additional AHMU buffers and selective harvest buffers may apply as specified above. Total no cut buffer is the sum of the no commercial and no programmed commercial harvest buffers.

Category B reaches flagged O/W: Trees shall be felled in such a manner so that the direction of fall is away from the stream course. Trees or products shall not be hauled or yarded across the stream course unless fully suspended. Debris entering streams from harvest activities shall be removed. Additional AHMU buffers and selective harvest buffers may apply as specified above. Total no cut buffer equals the no programmed commercial harvest buffers.

Category C reaches flagged G/W: In so far as practicable, trees will be felled and yarded away from the stream course. Debris that enters the stream channel that may affect water quality or have potential for debris flows will be removed from the stream course.

ROAD/STREAM CROSSING SUMMARY

Log landings and system road re-opening needs are discussed in the Engineering/System Roads section above. Should road/stream crossing structures be installed or re-installed the hydrologist will be consulted.

GEOLOGY/KARST

Unit has been reviewed for karst and cave resources. There is no known karst or cave resource concerns.

HERITAGE RESOURCES

A finding of "No historic properties affected" (36 CFR 800.4(d)(1) or "No adverse effect" (36 CFR 800.5(d)(1) has been applied. Project activities may proceed as planned; however the Heritage Professional shall be consulted if new discoveries or unanticipated effects are identified during the project's implementation phase. All activities in the vicinity of the discovery shall cease and reasonable efforts shall be taken to avoid or minimize harm to the resource.

SCENERY

No scenery concerns.

RECREATION

No recreation concerns.

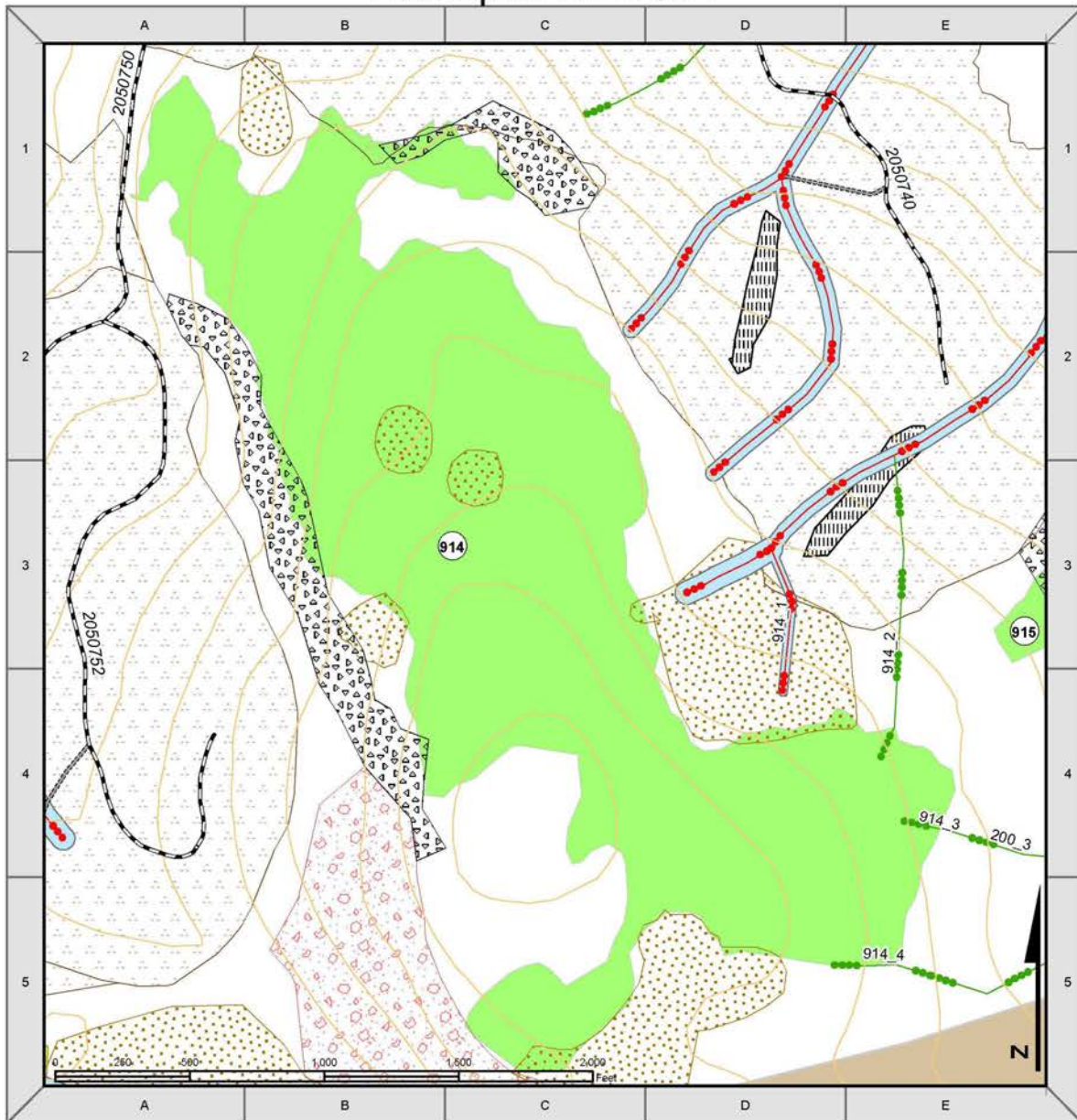
SOILS/WETLANDS

Slopes are gentle to 55%. All slopes are suitable for harvest with helicopter logging. Forested wetland is located intermittently across the unit and forested wetland/emergent short sedge is located on the southern boundary. Apply R10 BMPs 12.5, 13.5, and 13.9 and National Core BMPs Plan-2, AqEco-2, AqEco-4, Veg-1, Veg-2, Veg-5, and Veg-6.

WILDLIFE

No goshawk surveys have been conducted. Unit requires all surveys. All surveys will be conducted prior to implementation.

Helicopter Unit: 914



Units	Great Blue Heron	Stream Class III	Past Harvest
Roadless Rule	Bear Den	Stream Class IV	NonDevelopment LUDs
Contour 100ft	Proposed Temporary Roads	Riparian Management Area	Old-Growth LUD
High Vulnerability Karst	Existing NFS Roads	T77/Audubon Watersheds	Legacy
USFWS Eagle Buffer	Existing Temporary Roads	Community Use 5-Mile Zone	NonForest Service Lands
Goshawk Nest Buffer	Non-NFS Roads	Unsuitable Soils	Saltwater
Wildlife Buffers	Lakes	Full Suspension Soils	
Marbled Murrelet	Stream Class I	Beach Buffers Max High Water	
Raptor	Stream Class II	Landslides	

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Unit 914							
Unit Number:	914	Total Harvest Unit Acres	82.5	Prescription:	UEA	Harvest System:	Helicopter
VCU Number:	5871	LUD:	Timber Production		Net Harvest Volume (MBF):		560
Summary of Concerns, Responses, BMPs, and Mitigations							
SILVICULTURE							
<p>Old-growth stands tend to already exhibit uneven-aged structure to varying degrees. The objective of uneven-aged management is to: 1) economically harvest a portion of the stand, 2) maintain old-growth structure in the stand, and 3) retain trees that will provide for economically viable and sustainable future entries. Uneven-aged management in this unit will be done by single tree selection using a helicopter logging system. When doing a cut-tree mark to designate removals, safety or hazard trees may also be marked as required for safety purposes. Variability in the stand will result in variability in the mark, from scattered individual trees to groups where overstory removal cannot exceed 2 acres in size. On average, retain approximately 66% of the pre-harvest basal area of standing live trees, and retain at least 75% in portions of the unit where windthrow risk is high. Generally maintain pre-harvest species composition after harvest. Retain: 1) healthy young 'crop' trees that promote economic future entries, 2) older trees with low timber value but high wildlife value, 3) advanced and new regeneration trees. The Silviculturist will establish inspection plots to ensure marking guidelines are adhered to and objectives are met for the unit.</p>							
TIMBER/LOGGING							
This unit is planned for Helicopter yarding to landings located on roads 2050750 and 2050752.							
ENGINEERING/SYSTEM ROADS							
Landings on NFS road 2050750 and 2050752. Roads are closed and will require maintenance upgrades to meet haul standards (BMP 14.20, Road-4).							
BOTANY							
Unit was surveyed in 2019. No botanical concerns							
INVASIVE SPECIES							
Helicopter Landings will need to be surveyed for invasive plants. If plants are found, BMPs (Krosse 2017) are followed to avoid spread or introduction of weeds to the area due to project actions.							
FISHERIES							
<p>Stream Num: Map location A-1 (914_1.0) Stream Class: IV Channel Type: HCO Protection: Category C Flagging: G/W Buffer (RMA): Class IV for HCO - No buffer Concerns: Stream edits needed. Two streams named 914_1.0</p>							
<p>Stream Num: 914_2.0 Stream Class: IV Channel Type: HCO Protection: Category C Flagging: G/W Buffer (RMA): Class IV for HCO - No buffer Concerns: N/A</p>							
<p>Stream Num: 914_3.0 Stream Class: IV Channel Type: HCO Protection: Category C Flagging: G/W Buffer (RMA): Class IV for HCO - No buffer Concerns: N/A</p>							
<p>Stream Num: 914_4.0 Stream Class: IV Channel Type: HCO</p>							

Unit 914

Protection: Category C
Flagging: G/W
Buffer (RMA):
Class IV for HCO - No buffer
Concerns: N/A

During the GIS process some streams were not removed from the corporate layer and were not included in the unit card text. These streams will be removed from the corporate GIS layer before final unit cards are prepared. Proposed helicopter landings will need stream reviews prior to final Unit Cards and implementation.

All Streams Protection/Mitigation Actions by Category:

All Categories implement BMPs

Category A reaches flagged B/W: Under the TTRA timber harvest shall not be within 100 feet of the stream channel and a Stream course Protection Plan will be developed for that buffer. Additional AHMU buffers and selective harvest buffers may apply as specified above. Total no cut buffer is the sum of the no commercial and no programmed commercial harvest buffers.

Category B reaches flagged O/W: Trees shall be felled in such a manner so that the direction of fall is away from the stream course. Trees or products shall not be hauled or yarded across the stream course unless fully suspended. Debris entering streams from harvest activities shall be removed. Additional AHMU buffers and selective harvest buffers may apply as specified above. Total no cut buffer equals the no programmed commercial harvest buffers.

Category C reaches flagged G/W: In so far as practicable, trees will be felled and yarded away from the stream course. Debris that enters the stream channel that may affect water quality or have potential for debris flows will be removed from the stream course.

ROAD/STREAM CROSSING SUMMARY

Log landings and system road re-opening needs are discussed in the Engineering/System Roads section above. Should road/stream crossing structures be installed or re-installed the hydrologist will be consulted.

GEOLOGY/KARST

Unit has been reviewed and surveyed for karst and cave resources. The entire unit is underlain by moderate vulnerability karst with inclusion of high vulnerability. The high vulnerability karst areas have been dropped from the unit. A harvest method that obtains partial suspension is required.

HERITAGE RESOURCES

A finding of "No historic properties affected" (36 CFR 800.4(d)(1) or "No adverse effect" (36 CFR 800.5(d)(1) has been applied. Project activities may proceed as planned; however the Heritage Professional shall be consulted if new discoveries or unanticipated effects are identified during the project's implementation phase. All activities in the vicinity of the discovery shall cease and reasonable efforts shall be taken to avoid or minimize harm to the resource.

SCENERY

No scenery concerns.

RECREATION

Noise concerns for users of Winter Harbor Shelter.

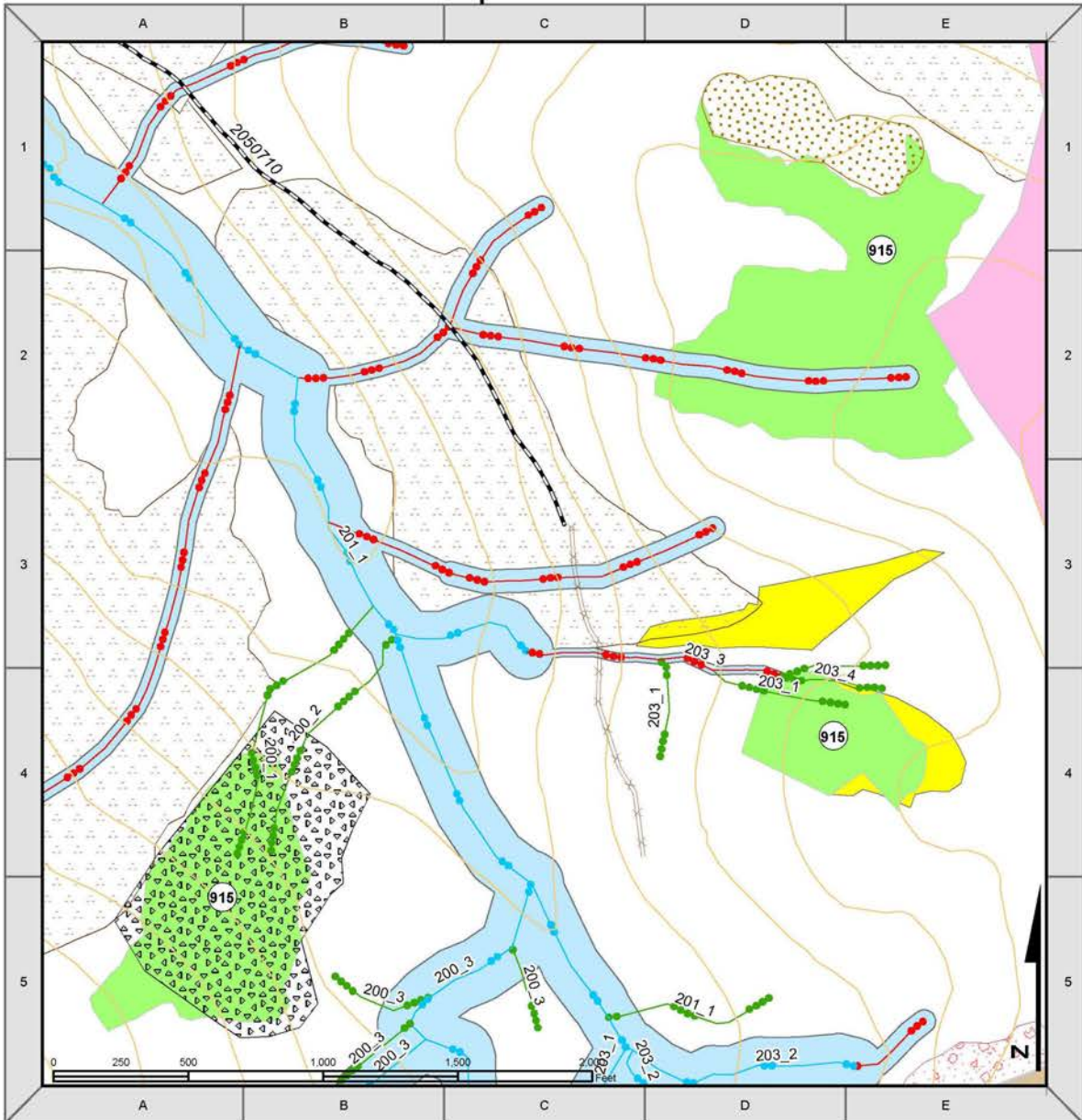
SOILS/WETLANDS

Slopes range from gentle to greater than 72%. Approximately 16 acres of unsuitable soils are excluded from harvest consideration in the southwest due to historic landslides, steep cliffs, and wet soils. About 11 acres of the unit are only suitable with full suspension requirements. Helicopter logging will meet all soil and wetland resource concerns in the entire unit. Forested wetlands occur along the southern boundary. Apply R10 BMPs 12.5, 13.5, and 13.9 and National Core BMPs Plan-2, AqEco-2, AqEco-4, Veg-1, Veg-2, Veg-5, and Veg-6.

WILDLIFE

Unit is greater than 1000 feet in elevation. No goshawk surveys required.

Helicopter Unit: 915



Units	Great Blue Heron	Stream Class III	Past Harvest
Roadless Rule	Bear Den	Stream Class IV	NonDevelopment LUDs
Contour 100ft	Proposed Temporary Roads	Riparian Management Area	Old-Growth LUD
High Vulnerability Karst	Existing NFS Roads	T77/Audubon Watersheds	Legacy
USFWS Eagle Buffer	Existing Temporary Roads	Community Use 5-Mile Zone	NonForest Service Lands
Goshawk Nest Buffer	Non-NFS Roads	Unsuitable Soils	Saltwater
Wildlife Buffers	Lakes	Full Suspension Soils	
Marbled Murrelet	Stream Class I	Beach Buffers Max High Water	
Raptor	Stream Class II	Landslides	

Unit 915							
Unit Number:	915	Total Harvest Unit Acres	34.2	Prescription:	UEA	Harvest System:	Helicopter
VCU Number:	5871	LUD:	Timber Production		Net Harvest Volume (MBF):		262
Summary of Concerns, Responses, BMPs, and Mitigations							
SILVICULTURE							
<p>Old-growth stands tend to already exhibit uneven-aged structure to varying degrees. The objective of uneven-aged management is to: 1) economically harvest a portion of the stand, 2) maintain old-growth structure in the stand, and 3) retain trees that will provide for economically viable and sustainable future entries. Uneven-aged management in this unit will be done by single tree selection using a helicopter logging system. When doing a cut-tree mark to designate removals, safety or hazard trees may also be marked as required for safety purposes. Variability in the stand will result in variability in the mark, from scattered individual trees to groups where overstory removal cannot exceed 2 acres in size. On average, retain approximately 66% of the pre-harvest basal area of standing live trees, and retain at least 75% in portions of the unit where windthrow risk is high. Generally maintain pre-harvest species composition after harvest. Retain: 1) healthy young 'crop' trees that promote economic future entries, 2) older trees with low timber value but high wildlife value, 3) advanced and new regeneration trees. The Silviculturist will establish inspection plots to ensure marking guidelines are adhered to and objectives are met for the unit.</p>							
TIMBER/LOGGING							
This unit is comprised of 3 settings and is planned for Helicopter yarding to landings located on roads 2050700 and 2050710.							
ENGINEERING/SYSTEM ROADS							
Landings on NFS roads 2050700 and 2050710. Roads are closed and will require maintenance upgrades to meet haul standards (BMP 14.20, Road-4).							
BOTANY							
Surveys have not been completed but will be required due to identified potential habitat for <i>Platanthera orbiculata</i> (Lesser round-leaved orchid), within the unit. All resource-specific information, protections and mitigations will be determined before harvest activities are implemented.							
INVASIVE SPECIES							
Helicopter Landings will need to be surveyed for invasive plants. If plants are found, BMPs (Krosse 2017) are followed to avoid spread or introduction of weeds to the area due to project actions.							
FISHERIES							
<p>Stream Num: 200_1.0 Stream Class: IV Channel Type: HCO Protection: Category C Flagging: G/W Buffer (RMA): Class IV for HCO - No buffer Concerns: Not field verified</p> <p>Stream Num: 200_2.0 Stream Class: IV Channel Type: HCO Protection: Category C Flagging: G/W Buffer (RMA): Class IV for HCO - No buffer Concerns: Not field verified</p> <p>Stream Num: Map location B-5 (200_3.1R) Stream Class: IV Channel Type: HCO Protection: Category C Flagging: G/W Buffer (RMA): Class IV for HCO - No buffer Concerns: Not field verified</p>							

Unit 915

Stream Num: Map location D-4 (203_3.1L)
Stream Class: IV
Channel Type: HCO
Protection: Category C
Flagging: G/W
Buffer (RMA):
Class IV for HCO - No buffer
Concerns: Moderate blowdown. Not field verified

Stream Num: 203_3.0
Stream Class: III, IV
Channel Type: HCO
Protection: Category B and C
Flagging: O/W, G/W
Buffer (RMA):
Class III for HCO - (enter text for the process group in the channel type)
Class IV for HCO - No buffer
Concerns: N/A

During the GIS process some streams were not removed from the corporate layer and were not included in the unit card text. These streams will be removed from the corporate GIS layer before final unit cards are prepared. Also, streams were labeled incorrectly, map locations were provided for streams along with the correct name. Stream labels will be corrected before final unit cards are prepared. Proposed helicopter landings will need stream reviews prior to final Unit Cards and implementation.

All Streams Protection/Mitigation Actions by Category:

All Categories implement BMPs

Category A reaches flagged B/W: Under the TTRA timber harvest shall not be within 100 feet of the stream channel and a Stream course Protection Plan will be developed for that buffer. Additional AHMU buffers and selective harvest buffers may apply as specified above. Total no cut buffer is the sum of the no commercial and no programmed commercial harvest buffers.

Category B reaches flagged O/W: Trees shall be felled in such a manner so that the direction of fall is away from the stream course. Trees or products shall not be hauled or yarded across the stream course unless fully suspended. Debris entering streams from harvest activities shall be removed. Additional AHMU buffers and selective harvest buffers may apply as specified above. Total no cut buffer equals the no programmed commercial harvest buffers.

Category C reaches flagged G/W: In so far as practicable, trees will be felled and yarded away from the stream course. Debris that enters the stream channel that may affect water quality or have potential for debris flows will be removed from the stream course.

ROAD/STREAM CROSSING SUMMARY

Log landings and system road re-opening needs are discussed in the Engineering/System Roads section above. Should road/stream crossing structures be installed or re-installed the hydrologist will be consulted.

GEOLOGY/KARST

Unit has been reviewed for karst and cave resources. Portions of this unit are underlain by karst. The karst is of moderate vulnerability with inclusions of high vulnerability. The high vulnerability karst has been buffered from the unit. A harvest method that obtains partial suspension is required on the moderate vulnerability karst. As laid out there is no known karst or cave resource concerns.

HERITAGE RESOURCES

A finding of "No historic properties affected" (36 CFR 800.4(d)(1)) or "No adverse effect" (36 CFR 800.5(d)(1)) has been applied. Project activities may proceed as planned; however the Heritage Professional shall be consulted if new discoveries or unanticipated effects are identified during the project's implementation phase. All activities in the vicinity of the discovery shall cease and reasonable efforts shall be taken to avoid or minimize harm to the resource.

SCENERY

No scenery concerns.

RECREATION

Noise concerns for users of Winter Harbor Shelter.

Unit 915

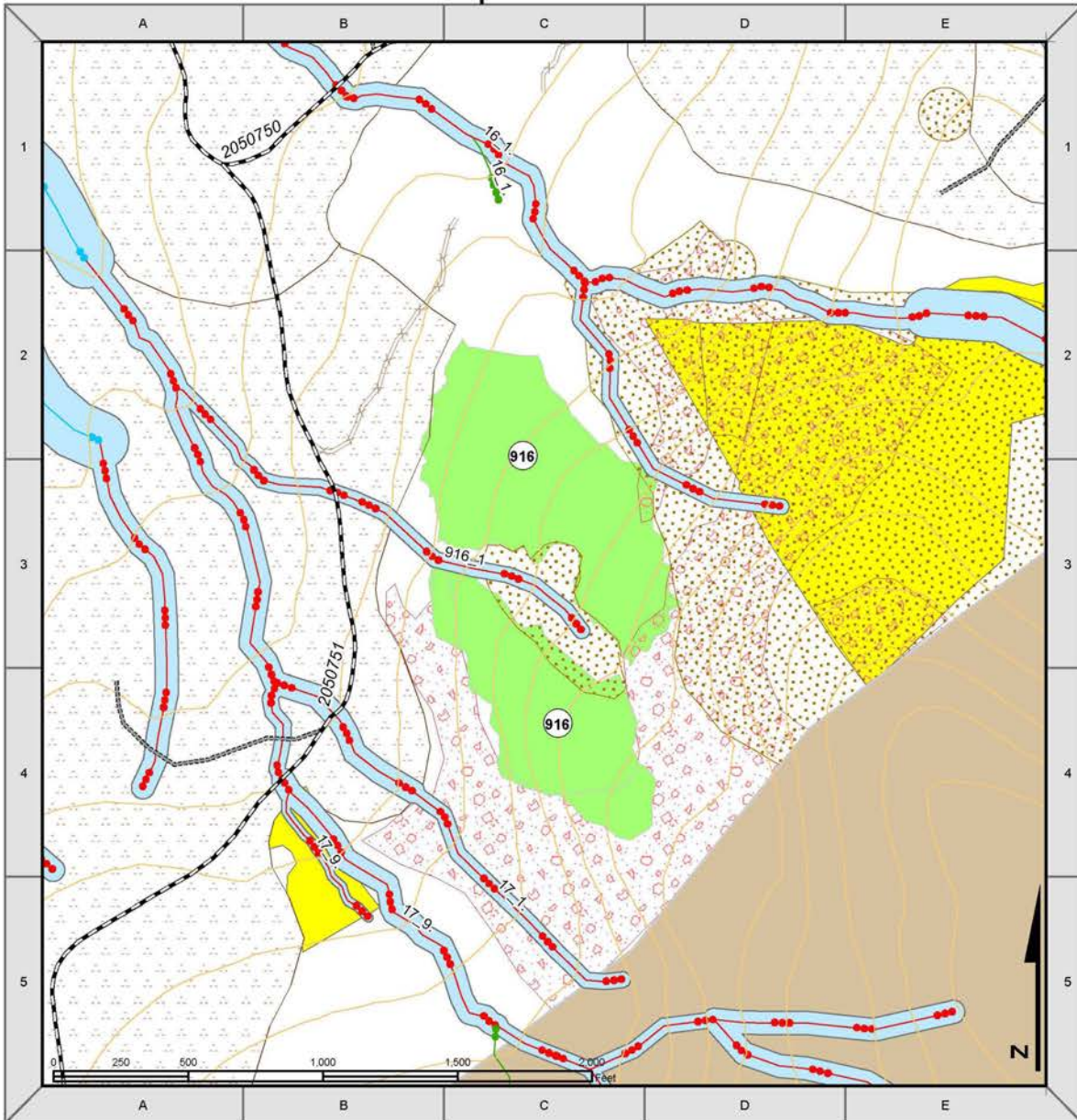
SOILS/WETLANDS

Slopes range from gentle to greater than 72% in all three polygons. All slopes greater than 72% are small pitches. About 12 acres in the western polygon are only suitable with full suspension requirements. Helicopter logging will meet all soil and wetland resource concerns in the entire unit in all three polygons. Forested wetland/ emergent short sedge wetlands occur along the southern boundaries. Apply R10 BMPs 12.5, 13.5, and 13.9 and National Core BMPs Plan-2, AqEco-2, AqEco-4, Veg-1, Veg-2, Veg-5, and Veg-6.

WILDLIFE

Goshawk surveys were conducted in 2018 and no goshawks were detected. Unit is greater than 1000 feet in elevation. No goshawk surveys required.

Helicopter Unit: 916



Units	Great Blue Heron	Stream Class III	Past Harvest
Roadless Rule	Bear Den	Stream Class IV	NonDevelopment LUDs
Contour 100ft	Proposed Temporary Roads	Riparian Management Area	Old-Growth LUD
High Vulnerability Karst	Existing NFS Roads	T77/Audubon Watersheds	Legacy
USFWS Eagle Buffer	Existing Temporary Roads	Community Use 5-Mile Zone	NonForest Service Lands
Goshawk Nest Buffer	Non-NFS Roads	Unsuitable Soils	Saltwater
Wildlife Buffers	Lakes	Full Suspension Soils	
Marbled Murrelet	Stream Class I	Beach Buffers Max High Water	
Raptor	Stream Class II	Landslides	

Unit 916							
Unit Number:	916	Total Harvest Unit Acres	21.1	Prescription:	UEA	Harvest System:	Helicopter
VCU Number:	5871	LUD:	Timber Production		Net Harvest Volume (MBF):		171
Summary of Concerns, Responses, BMPs, and Mitigations							
SILVICULTURE							
<p>Old-growth stands tend to already exhibit uneven-aged structure to varying degrees. The objective of uneven-aged management is to: 1) economically harvest a portion of the stand, 2) maintain old-growth structure in the stand, and 3) retain trees that will provide for economically viable and sustainable future entries. Uneven-aged management in this unit will be done by single tree selection using a helicopter logging system. When doing a cut-tree mark to designate removals, safety or hazard trees may also be marked as required for safety purposes. Variability in the stand will result in variability in the mark, from scattered individual trees to groups where overstory removal cannot exceed 2 acres in size. On average, retain approximately 66% of the pre-harvest basal area of standing live trees, and retain at least 75% in portions of the unit where windthrow risk is high. Generally maintain pre-harvest species composition after harvest. Retain: 1) healthy young 'crop' trees that promote economic future entries, 2) older trees with low timber value but high wildlife value, 3) advanced and new regeneration trees. The Silviculturist will establish inspection plots to ensure marking guidelines are adhered to and objectives are met for the unit.</p>							
TIMBER/LOGGING							
This unit is comprised of 2 settings and is planned for Helicopter yarding to landings located on road 2050750.							
ENGINEERING/SYSTEM ROADS							
Landings on NFS road 2050750. Road is closed and will require maintenance upgrades to meet haul standards (BMP 14.20, Road-4).							
BOTANY							
Surveys have not been completed but will be required due to identified high potential habitat for <i>Cypripedium parviflorum var. pubescens</i> (Large yellow lady's slipper) throughout the unit. All resource-specific information, protections and mitigations will be determined before harvest activities are implemented.							
INVASIVE SPECIES							
Helicopter Landings will need to be surveyed for invasive plants. If plants are found, BMPs (Krosse 2017) are followed to avoid spread or introduction of weeds to the area due to project actions.							
FISHERIES							
<p>Stream Num: 916_1.0 Stream Class: III Channel Type: HCL, HCM Protection: Category B Flagging: O/W Buffer (RMA): Class III for HCL - To the top of the side-slope break Class III for HCM - To the top of the side-slope break Concerns: Moderate blowdown. Stream mapped as only HCM Class III, but is HCL and HCM Class III</p> <p>Stream Num: Map location C-2 (16_1.2R) Stream Class: IV Channel Type: HCO Protection: Category C Flagging: G/W Buffer (RMA): No buffer Concerns: Stream mapped as HCM Class III, but is HCO Class IV</p>							
Proposed helicopter landings will need stream reviews prior to final Unit Cards and implementation.							
<p>All Streams Protection/Mitigation Actions by Category: All Categories implement BMPs Category A reaches flagged B/W: Under the TTRA timber harvest shall not be within 100 feet of the stream channel and a Stream course Protection Plan will be developed for that buffer. Additional AHMU buffers and selective harvest buffers may apply as specified above. Total no cut buffer is the sum of the no commercial and no programmed commercial harvest buffers.</p> <p>Category B reaches flagged O/W: Trees shall be felled in such a manner so that the direction of fall is away from the stream course. Trees or products shall not be hauled or yarded across the stream course unless fully</p>							

Unit 916

suspended. Debris entering streams from harvest activities shall be removed. Additional AHMU buffers and selective harvest buffers may apply as specified above. Total no cut buffer equals the no programmed commercial harvest buffers.

Category C reaches flagged G/W: In so far as practicable, trees will be felled and yarded away from the stream course. Debris that enters the stream channel that may affect water quality or have potential for debris flows will be removed from the stream course.

ROAD/STREAM CROSSING SUMMARY

Log landings and system road re-opening needs are discussed in the Engineering/System Roads section above. Should road/stream crossing structures be installed or re-installed the hydrologist will be consulted.

GEOLOGY/KARST

Unit has been reviewed for karst and cave resources. Portions of this unit are underlain by karst. The karst is of moderate vulnerability with inclusions of high vulnerability. The high vulnerability karst has been buffered from the unit. A harvest method that obtains partial suspension is required on the moderate vulnerability karst. As laid out there is no known karst or cave resource concerns.

HERITAGE RESOURCES

A finding of "No historic properties affected" (36 CFR 800.4(d)(1) or "No adverse effect" (36 CFR 800.5(d)(1) has been applied. Project activities may proceed as planned; however the Heritage Professional shall be consulted if new discoveries or unanticipated effects are identified during the project's implementation phase. All activities in the vicinity of the discovery shall cease and reasonable efforts shall be taken to avoid or minimize harm to the resource.

SCENERY

No scenery concerns.

RECREATION

Noise concerns for users of Winter Harbor Shelter.

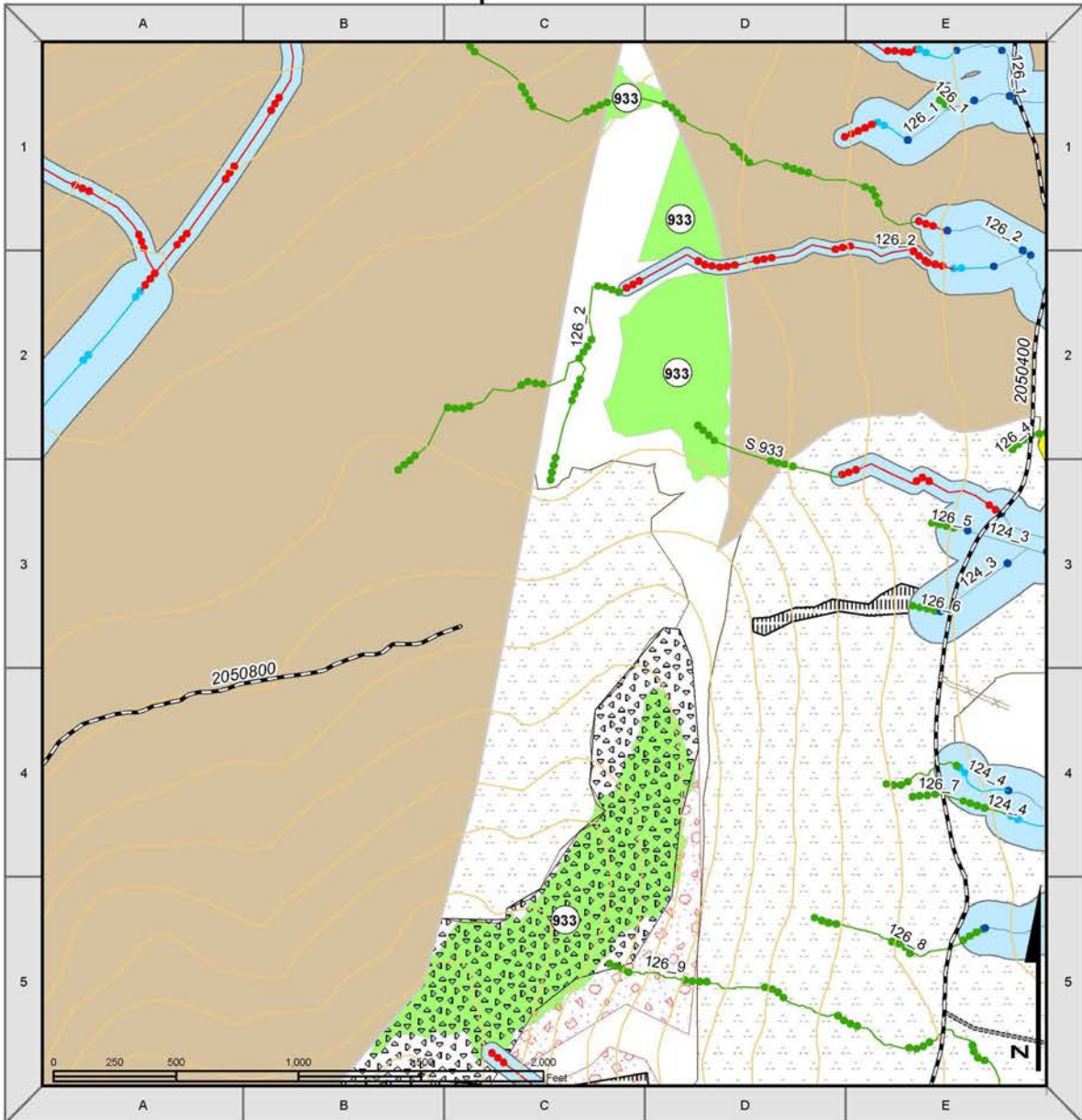
SOILS/WETLANDS

Slopes range from 35 to greater than 72%. Approximately 48 acres of unsuitable soils are excluded from harvest consideration surrounding the unit due to very steep slopes, colluvial activity, and landslide prone terrain. There are small pitches of slopes greater than 72% within the proposed unit and are suitable for harvest. Helicopter logging will meet all soil and wetland resource concerns. Apply R10 BMPs 12.5, 13.5, and 13.9 and National Core BMPs Plan-2, AqEco-2, AqEco-4, Veg-1, Veg-2, Veg-5, and Veg-6.

WILDLIFE

Goshawk surveys complete in 2017 and no goshawks were detected. Most of unit is greater than 1000 feet in elevation and no goshawk surveys required.

Helicopter Unit: 933



Units	Great Blue Heron	Stream Class III	Past Harvest
Roadless Rule	Bear Den	Stream Class IV	NonDevelopment LUDs
Contour 100ft	Proposed Temporary Roads	Riparian Management Area	Old-Growth LUD
High Vulnerability Karst	Existing NFS Roads	T77/Audubon Watersheds	Legacy
USFWS Eagle Buffer	Existing Temporary Roads	Community Use 5-Mile Zone	NonForest Service Lands
Goshawk Nest Buffer	Non-NFS Roads	Unsuitable Soils	Saltwater
Wildlife Buffers	Lakes	Full Suspension Soils	
Marbled Murrelet	Stream Class I	Beach Buffers Max High Water	
Raptor	Stream Class II	Landslides	

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Unit 933							
Unit Number:	933	Total Harvest Unit Acres	24.2	Prescription:	UEA	Harvest System:	Helicopter
VCU Number:	5890, 5880	LUD:	Timber Production	Net Harvest Volume (MBF):		150	
Summary of Concerns, Responses, BMPs, and Mitigations							
SILVICULTURE							
<p>Old-growth stands tend to already exhibit uneven-aged structure to varying degrees. The objective of uneven-aged management is to: 1) economically harvest a portion of the stand, 2) maintain old-growth structure in the stand, and 3) retain trees that will provide for economically viable and sustainable future entries. Uneven-aged management in this unit will be done by single tree selection using a helicopter logging system. When doing a cut-tree mark to designate removals, safety or hazard trees may also be marked as required for safety purposes. Variability in the stand will result in variability in the mark, from scattered individual trees to groups where overstory removal cannot exceed 2 acres in size. On average, retain approximately 66% of the pre-harvest basal area of standing live trees, and retain at least 75% in portions of the unit where windthrow risk is high. Generally maintain pre-harvest species composition after harvest. Retain: 1) healthy young 'crop' trees that promote economic future entries, 2) older trees with low timber value but high wildlife value, 3) advanced and new regeneration trees. The Silviculturist will establish inspection plots to ensure marking guidelines are adhered to and objectives are met for the unit.</p>							
TIMBER/LOGGING							
This unit is comprised of 4 settings and is planned for Helicopter yarding to landings located on road 2050400.							
ENGINEERING/SYSTEM ROADS							
Landings on NFS road 2054000 (BMP 14.20, Road-4). Road is open and maintained.							
BOTANY							
Surveys have not been completed but will be required due to identified moderate potential habitat for <i>Platanthera orbiculata</i> (lesser round-leaved orchid), within the unit. All resource-specific information, protections and mitigations will be determined before harvest activities are implemented.							
INVASIVE SPECIES							
Helicopter Landings will need to be surveyed for invasive plants. If plants are found, BMPs (Krosse 2017) are followed to avoid spread or introduction of weeds to the area due to project actions.							
FISHERIES							
<p>Stream Num: Map location D-1 (126_1.0) Stream Class: IV Channel Type: HCO Protection: Category C Flagging: G/W Buffer (RMA): Class IV for HCO - No buffer Concerns: N/A</p> <p>Stream Num: 126_2.0 Stream Class: III, IV Channel Type: HCM Protection: Category B and C Flagging: O/W, GW Buffer (RMA): Class III for HCM - To the top of the side-slope break Class IV for HCM - No buffer Concerns: Needs to be resurveyed</p> <p>Stream Num: Map location D-2 / C-2 (126_2.1L) Stream Class: III, IV Channel Type: HCM, PAS Protection: Category B and C Flagging: O/W, GW Buffer (RMA): Class III for HCM - To the top of the side-slope break Class IV for PAS - No buffer Concerns: N/A</p>							

Unit 933

Stream Num: 933_1.0
Stream Class: III, IV
Channel Type: HCO, MMO
Protection: Category B and C
Flagging: O/W, G/W
Buffer (RMA):
Class III for HCO - To the top of the side-slope break
Class IV for MMO - No buffer
Concerns: N/A

Stream Num: 126_9.0
Stream Class: IV
Channel Type: HCO
Protection: Category C
Flagging: G/W
Buffer (RMA):
Class IV for HCO - No buffer
Concerns: High blowdown

During the GIS process some streams were not removed from the corporate layer and were not included in the unit card text. These streams will be removed from the corporate GIS layer before final unit cards are prepared. Also, during the GIS process multiple streams were labeled as 126_2.0. Map locations were provided for streams along with the correct name. Stream labels will be corrected before final unit cards are prepared. Proposed helicopter landings will need stream reviews prior to final Unit Cards and implementation.

All Streams Protection/Mitigation Actions by Category:

All Categories implement BMPs

Category A reaches flagged B/W: Under the TTRA timber harvest shall not be within 100 feet of the stream channel and a Stream course Protection Plan will be developed for that buffer. Additional AHMU buffers and selective harvest buffers may apply as specified above. Total no cut buffer is the sum of the no commercial and no programmed commercial harvest buffers.

Category B reaches flagged O/W: Trees shall be felled in such a manner so that the direction of fall is away from the stream course. Trees or products shall not be hauled or yarded across the stream course unless fully suspended. Debris entering streams from harvest activities shall be removed. Additional AHMU buffers and selective harvest buffers may apply as specified above. Total no cut buffer equals the no programmed commercial harvest buffers.

Category C reaches flagged G/W: In so far as practicable, trees will be felled and yarded away from the stream course. Debris that enters the stream channel that may affect water quality or have potential for debris flows will be removed from the stream course.

ROAD/STREAM CROSSING SUMMARY

Log landings and system road re-opening needs are discussed in the Engineering/System Roads section above. Should road/stream crossing structures be installed or re-installed the hydrologist will be consulted.

GEOLOGY/KARST

Unit has been reviewed for karst and cave resources. There is no known karst or cave resource concerns.

HERITAGE RESOURCES

A finding of "No historic properties affected" (36 CFR 800.4(d)(1) or "No adverse effect" (36 CFR 800.5(d)(1) has been applied. Project activities may proceed as planned; however the Heritage Professional shall be consulted if new discoveries or unanticipated effects are identified during the project's implementation phase. All activities in the vicinity of the discovery shall cease and reasonable efforts shall be taken to avoid or minimize harm to the resource.

SCENERY

No scenery concerns.

RECREATION

No recreation concerns.

SOILS/WETLANDS

Slopes range from gentle to 55% in the northern polygons and 35 to greater than 72% in the southern polygon. Approximately 8 acres of unsuitable soils are excluded from harvest consideration in the southeast due to very steep slopes, landslides, and very high landslide prone soils. The remainder of the southern polygon is only suitable for harvest with full suspension. Helicopter logging will meet all soil and wetland resource concerns in all

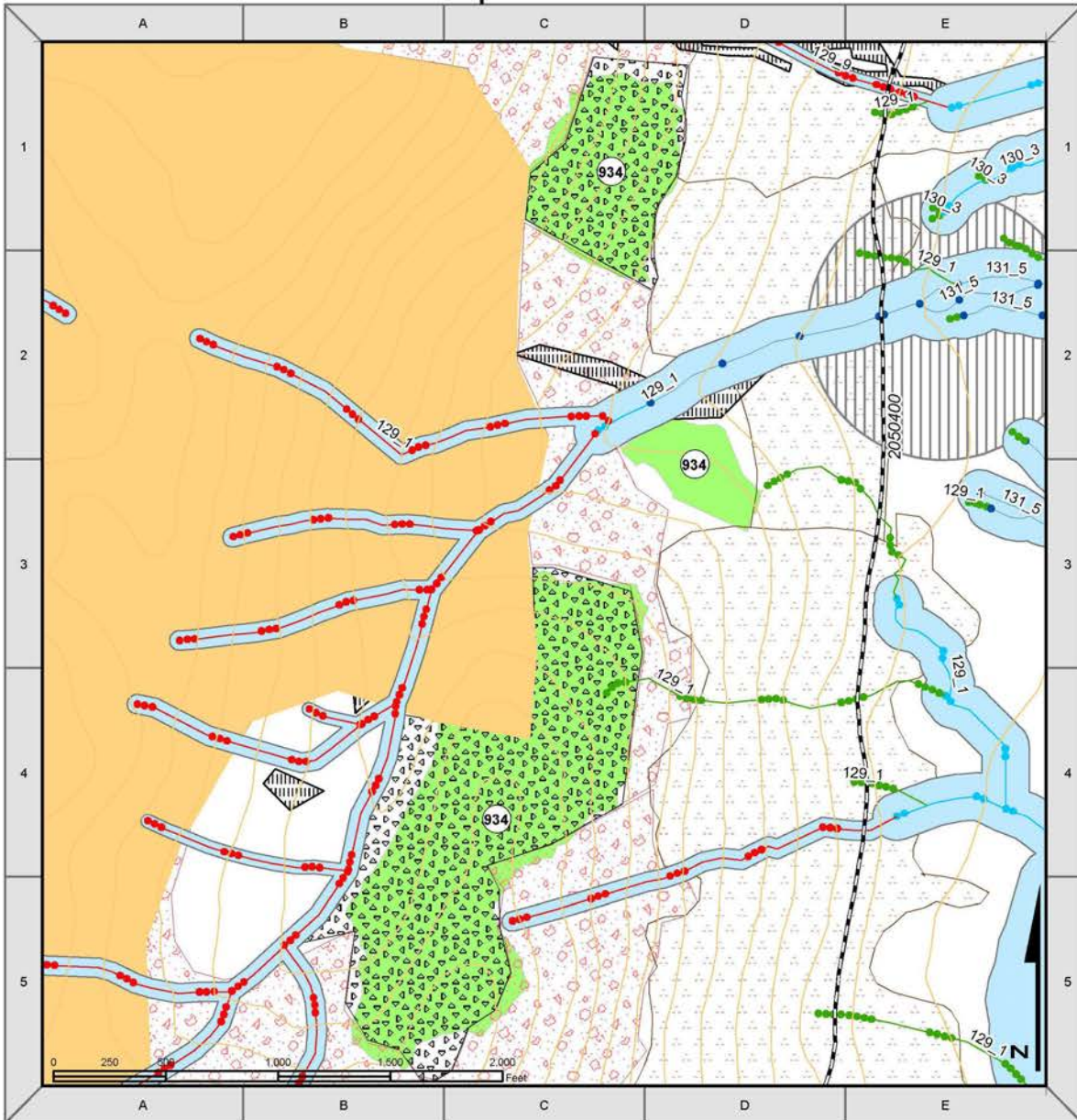
Unit 933

the polygons. Forested wetlands and forested wetland/emergent short sedge wetlands occur in the northern polygons. Apply R10 BMPs 12.5, 13.5, and 13.9 and National Core BMPs Plan-2, AqEco-2, AqEco-4, Veg-1, Veg-2, Veg-5, and Veg-6.

WILDLIFE

There are 4 pieces to the proposed unit. The 15 acre piece is greater than 1000 feet in elevation and does not require goshawk surveys. The 1, 3 and 7 acres pieces are all less than 1000 feet in elevation and will require goshawk surveys. No goshawk surveys have been conducted. All goshawk surveys will be conducted prior to implementation.

Helicopter Unit: 934



Units	Great Blue Heron	Stream Class III	Past Harvest
Roadless Rule	Bear Den	Stream Class IV	NonDevelopment LUDs
Contour 100ft	Proposed Temporary Roads	Riparian Management Area	Old-Growth LUD
High Vulnerability Karst	Existing NFS Roads	T77/Audubon Watersheds	Legacy
USFWS Eagle Buffer	Existing Temporary Roads	Community Use 5-Mile Zone	NonForest Service Lands
Goshawk Nest Buffer	Non-NFS Roads	Unsuitable Soils	Saltwater
Wildlife Buffers	Lakes	Full Suspension Soils	
Marbled Murrelet	Stream Class I	Beach Buffers Max High Water	
Raptor	Stream Class II	Landslides	

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Unit 934							
Unit Number:	934	Total Harvest Unit Acres	43.2	Prescription:	UEA	Harvest System:	Helicopter
VCU Number:	5880	LUD:	Timber Production		Net Harvest Volume (MBF):		324
Summary of Concerns, Responses, BMPs, and Mitigations							
SILVICULTURE							
<p>Old-growth stands tend to already exhibit uneven-aged structure to varying degrees. The objective of uneven-aged management is to: 1) economically harvest a portion of the stand, 2) maintain old-growth structure in the stand, and 3) retain trees that will provide for economically viable and sustainable future entries. Uneven-aged management in this unit will be done by single tree selection using a helicopter logging system. When doing a cut-tree mark to designate removals, safety or hazard trees may also be marked as required for safety purposes. Variability in the stand will result in variability in the mark, from scattered individual trees to groups where overstory removal cannot exceed 2 acres in size. On average, retain approximately 66% of the pre-harvest basal area of standing live trees, and retain at least 75% in portions of the unit where windthrow risk is high. Generally maintain pre-harvest species composition after harvest. Retain: 1) healthy young 'crop' trees that promote economic future entries, 2) older trees with low timber value but high wildlife value, 3) advanced and new regeneration trees. The Silviculturist will establish inspection plots to ensure marking guidelines are adhered to and objectives are met for the unit.</p>							
TIMBER/LOGGING							
This unit is comprised of 3 settings and is planned for Helicopter yarding to landings located on road 2050400.							
ENGINEERING/SYSTEM ROADS							
Landings on NFS road 2050400 (BMP 14.20, Road-4). Road is open and maintained. Decommissioned road to be rebuilt 0.2 miles for helicopter landing, BMP 14.2, 14.5, 14.20, Road-5, Road 6.							
BOTANY							
Surveys have not been completed, habitat appears to have a low probability of supporting sensitive plants. Will survey if time allows.							
INVASIVE SPECIES							
Helicopter Landings will need to be surveyed for invasive plants. If plants are found, BMPs (Krosse 2017) are followed to avoid spread or introduction of weeds to the area due to project actions.							
FISHERIES							
<p>Stream Num: Map location D-2 / C-2 / C-3 / B-4 (129_12.0) Stream Class: I, II, III Channel Type: HCL, HCM, HCD Protection: Category A and B Flagging: B/W, O/W Buffer (RMA): Class I for HCL - 100 feet or to the top of the side-slope break; whichever is greater. Class II for HCM - 100 feet or to the top of the side-slope break; whichever is greater. Class III for HCM - To the top of the side-slope break Class III for HCD - To the top of the side-slope break Concerns: Labeled as 129_1.0</p> <p>Stream Num: Map location B-5 (129_12.1R) Stream Class: IV Channel Type: HCO Protection: Category C Flagging: G/W Buffer (RMA): Class IV for HCO - No buffer Concerns: Labeled as 129_1.0. Stream mapped as HCD class III but is HCO class IV.</p> <p>Stream Num: Map location B-5 (129_12.1L) Stream Class: IV Channel Type: HCO Protection: Category C Flagging: G/W Buffer (RMA): Class IV for HCO - No buffer Concerns: Stream edits needed</p>							

Unit 934

Stream Num: Map location E-3 / D-3 (129_13.0)
Stream Class: IV
Channel Type: HCO
Protection: Category C
Flagging: G/W
Buffer (RMA):
Class IV for HCO - No buffer
Concerns: N/A

Stream Num: Map location C-4 / D-4 / E-4 (129_17.0)
Stream Class: IV
Channel Type: HCO
Protection: Category C
Flagging: G/W
Buffer (RMA):
Class IV for HCO - No buffer
Concerns: Labeled as 129_1.0

During the GIS process some streams were not removed from the corporate layer and were not included in the unit card text. These streams will be removed from the corporate GIS layer before final unit cards are prepared. During the GIS process all streams were labeled incorrect. Map locations were provided for streams along with the correct name. Stream labels will be corrected before final unit cards are prepared. Proposed helicopter landings will need stream reviews prior to final Unit Cards and implementation.

All Streams Protection/Mitigation Actions by Category:

All Categories implement BMPs

Category A reaches flagged B/W: Under the TTRA timber harvest shall not be within 100 feet of the stream channel and a Stream course Protection Plan will be developed for that buffer. Additional AHMU buffers and selective harvest buffers may apply as specified above. Total no cut buffer is the sum of the no commercial and no programmed commercial harvest buffers.

Category B reaches flagged O/W: Trees shall be felled in such a manner so that the direction of fall is away from the stream course. Trees or products shall not be hauled or yarded across the stream course unless fully suspended. Debris entering streams from harvest activities shall be removed. Additional AHMU buffers and selective harvest buffers may apply as specified above. Total no cut buffer equals the no programmed commercial harvest buffers.

Category C reaches flagged G/W: In so far as practicable, trees will be felled and yarded away from the stream course. Debris that enters the stream channel that may affect water quality or have potential for debris flows will be removed from the stream course.

ROAD/STREAM CROSSING SUMMARY

Log landings and system road re-opening needs are discussed in the Engineering/System Roads section above. Should road/stream crossing structures be installed or re-installed the hydrologist will be consulted.

GEOLOGY/KARST

Unit has been reviewed for karst and cave resources. There is no known karst or cave resource concerns.

HERITAGE RESOURCES

A finding of "No historic properties affected" (36 CFR 800.4(d)(1) or "No adverse effect" (36 CFR 800.5(d)(1) has been applied. Project activities may proceed as planned; however the Heritage Professional shall be consulted if new discoveries or unanticipated effects are identified during the project's implementation phase. All activities in the vicinity of the discovery shall cease and reasonable efforts shall be taken to avoid or minimize harm to the resource.

SCENERY

No scenery concerns.

RECREATION

No recreation concerns.

SOILS/WETLANDS

Slopes range from 35 to greater than 72% in all polygons. Approximately 121 acres of unsuitable soils are excluded from harvest consideration surrounding these polygons due to very steep slopes, landslides, very high MMI soils, dense streams, unstable notches, saturated hollows, and landslide prone terrain. The remainder of the southern and northern polygons are only suitable for harvest with full suspension. Helicopter logging will meet all

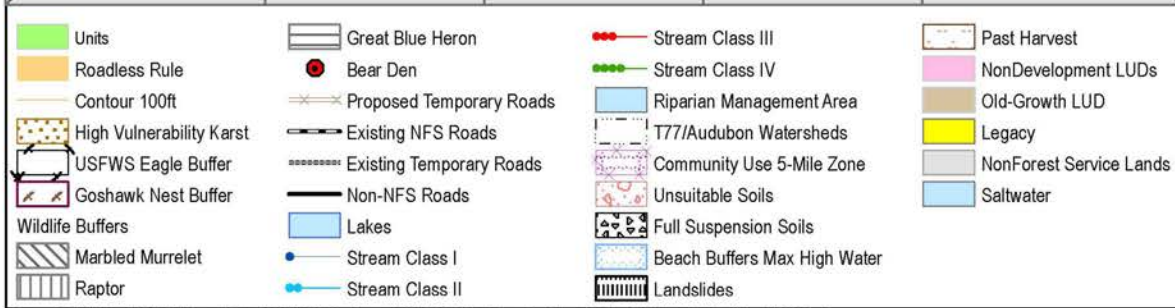
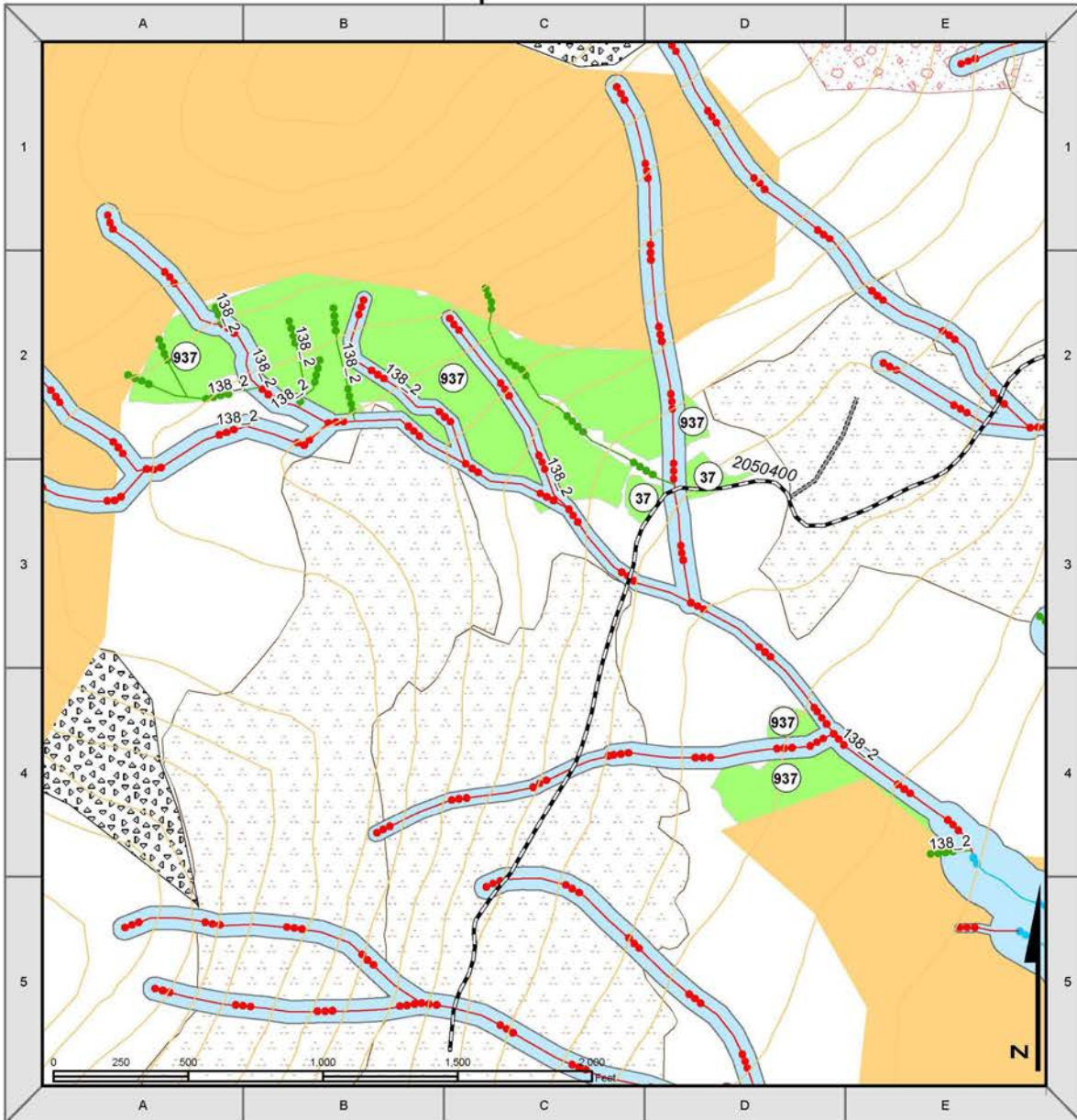
Unit 934

soil and wetland resource concerns in all the polygons. Apply R10 BMPs 12.5, 13.5, and 13.9 and National Core BMPs Plan-2, AqEco-2, AqEco-4, Veg-1, Veg-2, Veg-5, and Veg-6.

WILDLIFE

The 11 and 33 acre pieces to this unit are greater than 1000 feet in elevation and do not require goshawk surveys. The 4 acres piece is less than 1000 feet in elevation and does require goshawk surveys. No surveys have been conducted. All surveys will be conducted prior to implementation.

Helicopter Unit: 937



Unit 937							
Unit Number:	937	Total Harvest Unit Acres	19.4	Prescription:	UEA	Harvest System:	Helicopter
VCU Number:	5880	LUD:	Timber Production		Net Harvest Volume (MBF):		81
Summary of Concerns, Responses, BMPs, and Mitigations							
SILVICULTURE							
<p>Old-growth stands tend to already exhibit uneven-aged structure to varying degrees. The objective of uneven-aged management is to: 1) economically harvest a portion of the stand, 2) maintain old-growth structure in the stand, and 3) retain trees that will provide for economically viable and sustainable future entries. Uneven-aged management in this unit will be done by single tree selection using a helicopter logging system. When doing a cut-tree mark to designate removals, safety or hazard trees may also be marked as required for safety purposes. Variability in the stand will result in variability in the mark, from scattered individual trees to groups where overstory removal cannot exceed 2 acres in size. On average, retain approximately 66% of the pre-harvest basal area of standing live trees, and retain at least 75% in portions of the unit where windthrow risk is high. Generally maintain pre-harvest species composition after harvest. Retain: 1) healthy young 'crop' trees that promote economic future entries, 2) older trees with low timber value but high wildlife value, 3) advanced and new regeneration trees. The Silviculturist will establish inspection plots to ensure marking guidelines are adhered to and objectives are met for the unit.</p>							
TIMBER/LOGGING							
This unit is comprised of 2 settings and is planned for Helicopter yarding to landings located on road 2050300.							
ENGINEERING/SYSTEM ROADS							
Landings on NFS road 2050300 (BMP 14.20, Road-4). Road is open and maintained.							
BOTANY							
Surveys have not been completed but will be required due to identified moderate potential habitat for <i>Piperia unalascensis</i> (Alaska rein orchid) and <i>Platanthera orbiculata</i> (Lesser round-leaved orchid) in the identified riparian habitat within and adjacent to the unit. All resource-specific information, protections and mitigations will be determined before harvest activities are implemented.							
INVASIVE SPECIES							
Helicopter Landings will need to be surveyed for invasive plants. If plants are found, BMPs (Krosse 2017) are followed to avoid spread or introduction of weeds to the area due to project actions.							
FISHERIES							
<p>Stream Num: Map location D-4 / D-3 / C-3 / B-2 / A-2 (138_2.0 / 138_2.0.1R) Stream Class: II, III Channel Type: HCV, HCL, HCM, HCD Protection: Category A and B Flagging: B/W, O/W Buffer (RMA): Class II for HCV - 100 feet or to the top of the side-slope break; whichever is greater. Class III for HCV - To the top of the side-slope break Class III for HCL - To the top of the side-slope break Class III for HCM - To the top of the side-slope break Class III for HCD - To the top of the side-slope break Concerns: Stream edits needed, not field verified.</p>							
<p>Stream Num: Map location E-4 (138_2.1L) Stream Class: IV Channel Type: HCO Protection: Category C Flagging: G/W Buffer (RMA): Class IV for HCO - No buffer Concerns: Two streams with the name 138_2.1L</p>							
<p>Stream Num: Map location C-4 / D-4 (138_2.1L) Stream Class: III Channel Type: HCL Protection: Category B Flagging: O/W Buffer (RMA):</p>							

Unit 937

Class III for HCL - To the top of the side-slope break

Concerns: Not field verified. Two streams with the name 138_2.1L

Stream Num: Map location C-2 (138_2.0.1L)

Stream Class: IV

Channel Type: HCO

Protection: Category C

Flagging: G/W

Buffer (RMA):

Class IV for HCO - No buffer

Concerns: Stream mapped as HCM class III but is HCO class IV. Edits needed. Not field verified.

Stream Num: Map location C-2 / B-2 (138_2.0.2L)

Stream Class: IV

Channel Type: HCO

Protection: Category C

Flagging: G/W

Buffer (RMA):

Class IV for HCO - No buffer

Concerns: Edits needed. Not field verified. Stream mapped as HCM class III but is HCO class IV.

Stream Num: Map location A-2 (138_2.0.1R)

Stream Class: IV

Channel Type: HCO

Protection: Category C

Flagging: G/W

Buffer (RMA):

Class IV for HCO - No buffer

Concerns: Not field verified. Two streams at this map location with the name 138_2.0.1R

Stream Num: Map location B-2 (138_2.0.3L)

Stream Class: IV

Channel Type: HCO

Protection: Category C

Flagging: G/W

Buffer (RMA):

Class IV for HCO - No buffer

Concerns: Not field verified

Stream Num: Map location B-2 (138_2.0.4L)

Stream Class: IV

Channel Type: HCO

Protection: Category C

Flagging: G/W

Buffer (RMA):

Class IV for HCO - No buffer

Concerns: Not field verified

Stream Num: Map location B-2 (138_2.0.4L.1L)

Stream Class: IV

Channel Type: HCO

Protection: Category C

Flagging: G/W

Buffer (RMA):

Class IV for HCO - No buffer

Concerns: Edits needed. Not field verified

Stream Num: Map location A-2 (138_2.0.1R)

Stream Class: IV

Channel Type: HCO

Protection: Category C

Flagging: G/W

Unit 937

Buffer (RMA):

Class IV for HCO - No buffer

Concerns: Not field verified. Two streams at this map location with the name 138_2.0.1R

Stream Num: Map location A-2 (138_2.0.1R.1L)

Stream Class: IV

Channel Type: HCO

Protection: Category C

Flagging: G/W

Buffer (RMA):

Class IV for HCO - No buffer

Concerns: Not field verified

Stream Num: Map Location C-2 / C-3

Stream Class: IV

Channel Type: HCO

Protection: Category C

Flagging: G/W

Buffer (RMA):

Class IV for HCO - No buffer

Concerns: Stream mapped as HCD class III but is HCO class IV.

Stream Num: Map Location C-3 / B-2

Stream Class: IV

Channel Type: HCO

Protection: Category C

Flagging: G/W

Buffer (RMA):

Class IV for HCO - No buffer

Concerns: Edits needed. Not field verified

During the GIS process all streams were labeled as 138_2.0. Map locations were provided for streams along with the correct name. Stream labels will be corrected before final unit cards are prepared. Proposed helicopter landings will need stream reviews prior to final Unit Cards and implementation.

All Streams Protection/Mitigation Actions by Category:

All Categories implement BMPs

Category A reaches flagged B/W: Under the TTRA timber harvest shall not be within 100 feet of the stream channel and a Stream course Protection Plan will be developed for that buffer. Additional AHMU buffers and selective harvest buffers may apply as specified above. Total no cut buffer is the sum of the no commercial and no programmed commercial harvest buffers.

Category B reaches flagged O/W: Trees shall be felled in such a manner so that the direction of fall is away from the stream course. Trees or products shall not be hauled or yarded across the stream course unless fully suspended. Debris entering streams from harvest activities shall be removed. Additional AHMU buffers and selective harvest buffers may apply as specified above. Total no cut buffer equals the no programmed commercial harvest buffers.

Category C reaches flagged G/W: In so far as practicable, trees will be felled and yarded away from the stream course. Debris that enters the stream channel that may affect water quality or have potential for debris flows will be removed from the stream course.

ROAD/STREAM CROSSING SUMMARY

Log landings and system road re-opening needs are discussed in the Engineering/System Roads section above. Should road/stream crossing structures be installed or re-installed the hydrologist will be consulted.

GEOLOGY/KARST

Unit has been reviewed for karst and cave resources. There is no known karst or cave resource concerns.

HERITAGE RESOURCES

A finding of "No historic properties affected" (36 CFR 800.4(d)(1) or "No adverse effect" (36 CFR 800.5(d)(1) has been applied. Project activities may proceed as planned; however the Heritage Professional shall be consulted if new discoveries or unanticipated effects are identified during the project's implementation phase. All activities in

Unit 937

the vicinity of the discovery shall cease and reasonable efforts shall be taken to avoid or minimize harm to the resource.

SCENERY

No scenery concerns.

RECREATION

No recreation concerns.

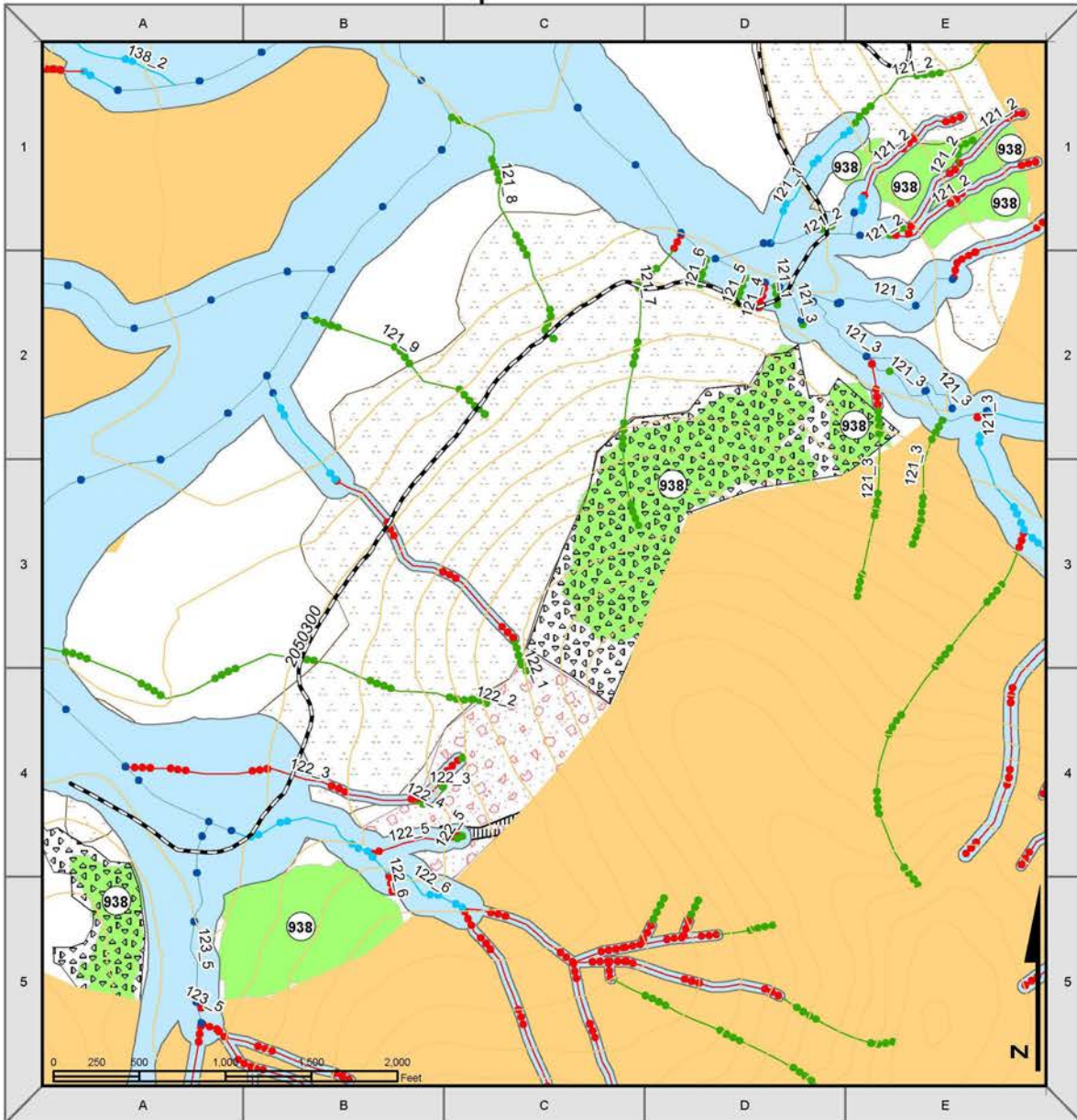
SOILS/WETLANDS

Slopes are gentle to greater than 72%. All slopes are suitable for harvest with helicopter logging. Forested wetlands are located in the southeastern polygons. Apply R10 BMPs 12.5, 13.5, and 13.9 and National Core BMPs Plan-2, AqEco-2, AqEco-4, Veg-1, Veg-2, Veg-5, and Veg-6.

WILDLIFE

This unit is separated into two areas. The northern area is greater than 1000 feet in elevation and no goshawk surveys are required; however surveys were conducted and no goshawks were detected. The southern area is less than 1000 feet in elevation and requires all surveys. No surveys have been conducted in the southern area. All surveys will be conducted prior to implementation.

Helicopter Unit: 938



Units	Great Blue Heron	Stream Class III	Past Harvest
Roadless Rule	Bear Den	Stream Class IV	NonDevelopment LUDs
Contour 100ft	Proposed Temporary Roads	Riparian Management Area	Old-Growth LUD
High Vulnerability Karst	Existing NFS Roads	T77/Audubon Watersheds	Legacy
USFWS Eagle Buffer	Existing Temporary Roads	Community Use 5-Mile Zone	NonForest Service Lands
Goshawk Nest Buffer	Non-NFS Roads	Unsuitable Soils	Saltwater
Wildlife Buffers	Lakes	Full Suspension Soils	
Marbled Murrelet	Stream Class I	Beach Buffers Max High Water	
Raptor	Stream Class II	Landslides	

Unit 938							
Unit Number:	938	Total Harvest Unit Acres	53.7	Prescription:	UEA	Harvest System:	Helicopter
VCU Number:	5880	LUD:	Timber Production		Net Harvest Volume (MBF):		492
Summary of Concerns, Responses, BMPs, and Mitigations							
SILVICULTURE							
<p>Old-growth stands tend to already exhibit uneven-aged structure to varying degrees. The objective of uneven-aged management is to: 1) economically harvest a portion of the stand, 2) maintain old-growth structure in the stand, and 3) retain trees that will provide for economically viable and sustainable future entries. Uneven-aged management in this unit will be done by single tree selection using a helicopter logging system. When doing a cut-tree mark to designate removals, safety or hazard trees may also be marked as required for safety purposes. Variability in the stand will result in variability in the mark, from scattered individual trees to groups where overstory removal cannot exceed 2 acres in size. On average, retain approximately 66% of the pre-harvest basal area of standing live trees, and retain at least 75% in portions of the unit where windthrow risk is high. Generally maintain pre-harvest species composition after harvest. Retain: 1) healthy young 'crop' trees that promote economic future entries, 2) older trees with low timber value but high wildlife value, 3) advanced and new regeneration trees. The Silviculturist will establish inspection plots to ensure marking guidelines are adhered to and objectives are met for the unit.</p>							
TIMBER/LOGGING							
This unit is comprised of 7 settings and is planned for Helicopter yarding to landings located on road 2050300.							
ENGINEERING/SYSTEM ROADS							
Landings on NFS road 2050300 (BMP 14.20, Road-4). Road is open and maintained.							
BOTANY							
Surveys have not been completed but will be required due to identified as moderate potential habitat for <i>Piperia unalascensis</i> (Alaska rein orchid) and <i>Platanthera orbiculata</i> (Lesser round-leaved orchid) in the identified riparian habitat within and adjacent to the unit. All resource-specific information, protections and mitigations will be determined before harvest activities are implemented.							
INVASIVE SPECIES							
Helicopter Landings will need to be surveyed for invasive plants. If plants are found, BMPs (Krosse 2017) are followed to avoid spread or introduction of weeds to the area due to project actions.							
FISHERIES							
<p>Stream Num: 121_1.0 Stream Class: II Channel Type: HCL, HCM Protection: Category A Flagging: B/W Buffer (RMA): Class II for HCL - 100 feet or to the top of the side-slope break; whichever is greater. Class II for HCM - 100 feet or to the top of the side-slope break; whichever is greater. Concerns: N/A</p> <p>Stream Num: 121_2.0 Stream Class: I, III Channel Type: HCL, HCM Protection: Category A and B Flagging: B/W, O/W Buffer (RMA): Class I for HCL - 100 feet or to the top of the side-slope break; whichever is greater. Class III for HCM - To the top of the side-slope break Concerns: Moderate blowdown</p> <p>Stream Num: Map location E-1 (121_2.0.1L) Stream Class: III Channel Type: HCM Protection: Category B Flagging: O/W Buffer (RMA): Class III for HCM - To the top of the side-slope break Concerns: Needs field verification</p>							

Unit 938

Stream Num: Map location E-1 (121_2.0.1L.1L)
Stream Class: IV
Channel Type: HCO
Protection: Category C
Flagging: G/W
Buffer (RMA):
Class IV for HCO - No buffer
Concerns: Needs field verification

Stream Num: Map location E-1 (121_2.1R)
Stream Class: IV
Channel Type: HCO
Protection: Category C
Flagging: G/W
Buffer (RMA):
Class IV for HCO - No buffer
Concerns: Moderate blowdown

Stream Num: Map location E-1 (121_2.2L)
Stream Class: I, II, III
Channel Type: HCO, AFO
Protection: Category A and B
Flagging: B/W, O/W
Buffer (RMA):
Class I for HCO - 100 feet or to the top of the side-slope break; whichever is greater.
Class II for AFO - 140 feet or within the active portion of the alluvial fan; whichever is greater.
Class III for HCO - To the top of the side-slope break
Concerns: Extreme blowdown and stream edits needed

Stream Num: 121_3.0
Stream Class: I
Channel Type: MMS
Protection: Category A
Flagging: B/W
Buffer (RMA):
Class I for MMS - 120 feet or to the extent of the flood plain, riparian vegetation or soils, or riparian associated wetland fens; whichever is greater.
Concerns: N/A

Stream Num: Map location E-2 / E-1 (121_3.1L)
Stream Class: I
Channel Type: HCL, HCM
Protection: Category A
Flagging: B/W
Buffer (RMA):
Class I for HCL - 100 feet or to the top of the side-slope break; whichever is greater.
Class I for HCM - 100 feet or to the top of the side-slope break; whichever is greater.
Concerns: High blowdown and stream edits needed

Stream Num: Map location D-2 (121_3.1R)
Stream Class: I, II, III
Channel Type: MMS, HCM
Protection: Category A and B
Flagging: B/W, O/W
Buffer (RMA):
Class I for MMS - 120 feet or to the extent of the flood plain, riparian vegetation or soils, or riparian associated wetland fens; whichever is greater.
Class II for HCM - 100 feet or to the top of the side-slope break; whichever is greater.
Class III for HCM - To the top of the side-slope break
Concerns: Moderate blowdown

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Stream Num: Map location D-2 (121_3.1R.1R)
Stream Class: IV
Channel Type: HCO
Protection: Category C
Flagging: G/W
Buffer (RMA):
Class IV for HCO - No buffer
Concerns: N/A

Stream Num: Map location D-3 (121_3.1R.2R)
Stream Class: IV
Channel Type: HCO
Protection: Category C
Flagging: G/W
Buffer (RMA):
Class IV for HCO - No buffer
Concerns: N/A

Stream Num: Map location D-2 (121_3.1R.3R)
Stream Class: I, IV
Channel Type: HCL, HCO
Protection: Category A and C
Flagging: B/W, G/W
Buffer (RMA):
Class I for HCL - 100 feet or to the top of the side-slope break; whichever is greater.
Class IV for HCO - No buffer
Concerns: N/A

Stream Num: Map location E-2 (121_3.2R)
Stream Class: IV
Channel Type: HCO
Protection: Category C
Flagging: G/W
Buffer (RMA):
Class IV for HCO - No buffer
Concerns: Stream edits needed

Stream Num: Map location E-2 / E-3 (121_3.3R)
Stream Class: IV
Channel Type: HCO
Protection: Category C
Flagging: G/W
Buffer (RMA):
Class IV for HCO - No buffer
Concerns: N/A

Stream Num: 121_4.0
Stream Class: I, III, IV
Channel Type: MMO, HCM, HCO
Protection: Category A, B and C
Flagging: B/W, O/W, G/W
Buffer (RMA):
Class I for MMO - 120 feet or to the extent of the flood plain, riparian vegetation or soils, or riparian associated wetland fens; whichever is greater.
Class III for HCM - To the top of the side-slope break
Class IV for HCO - No buffer
Concerns: N/A

Stream Num: 121_6.0
Stream Class: IV

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Channel Type: HCO
Protection: Category C
Flagging: G/W
Buffer (RMA):
Class IV for HCO - No buffer
Concerns: N/A

Stream Num: 121_7.0
Stream Class: IV
Channel Type: HCO
Protection: Category C
Flagging: G/W
Buffer (RMA):
Class IV for HCO - No buffer
Concerns: Stream edits needed

Stream Num: 121_8.0
Stream Class: IV
Channel Type: HCO
Protection: Category C
Flagging: G/W
Buffer (RMA):
Class IV for HCO - No buffer
Concerns: N/A

Stream Num: 122_5.0
Stream Class: III
Channel Type: HCV
Protection: Category B
Flagging: O/W
Buffer (RMA):
Class III for HCV - To the top of the side-slope break
Concerns: N/A

Stream Num: 122_6.0
Stream Class: II
Channel Type: HCL, HCV
Protection: Category A
Flagging: B/W
Buffer (RMA):
Class II for HCL - 100 feet or to the top of the side-slope break; whichever is greater.
Class II for HCV - 100 feet or to the top of the side-slope break; whichever is greater.
Concerns: N/A

Stream Num: Map location B-5 (122_6.1R)
Stream Class: III
Channel Type: HCO
Protection: Category A
Flagging: O/W
Buffer (RMA):
Class III for HCO - To the top of the side-slope break
Concerns: Extreme Blowdown and needs field verification

Stream Num: 123_5.4L
Stream Class: I
Channel Type: MMS
Protection: Category A
Flagging: B/W
Buffer (RMA):
Class I for MMS - 120 feet or to the extent of the flood plain, riparian vegetation or soils, or riparian associated wetland fens; whichever is greater.

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Concerns: High Blowdown

Stream Num: Map location A-5 (123_5.4L.1L)

Stream Class: III

Channel Type: HCO

Protection: Category B

Flagging: O/W

Buffer (RMA):

Class III for HCO - To the top of the side-slope break

Concerns: High blowdown and stream edits needed

Stream Num: Map location A-5 (123_5.4L.2L)

Stream Class: II, IV

Channel Type: HCO

Protection: Category A and C

Flagging: B/W, G/W

Buffer (RMA):

Class II for HCO - 100 feet or to the top of the side-slope break; whichever is greater.

Class IV for HCO - No buffer

Concerns: Stream edits needed

Stream Num: Map location A-5 (123_5.4L.3L)

Stream Class: II, IV

Channel Type: HCO

Protection: Category A and C

Flagging: B/W, G/W

Buffer (RMA):

Class II for HCO - 100 feet or to the top of the side-slope break; whichever is greater.

Class IV for HCO - No buffer

Concerns: Stream edits needed

Stream Num: Map location A-5 (123_5.4L.4L)

Stream Class: II, IV

Channel Type: HCO, HCLw

Protection: Category A and C

Flagging: B/W, G/W

Buffer (RMA):

Class II for HCO - 100 feet or to the top of the side-slope break; whichever is greater.

Class IV for HCLw - No buffer

Concerns: Stream edits needed

During the GIS process some streams were labeled as incorrectly. Map locations were provided for streams along with the correct name. Stream labels will be corrected before final unit cards are prepared. Proposed helicopter landings will need stream reviews prior to final Unit Cards and implementation.

All Streams Protection/Mitigation Actions by Category:

All Categories implement BMPs

Category A reaches flagged B/W: Under the TTRA timber harvest shall not be within 100 feet of the stream channel and a Stream course Protection Plan will be developed for that buffer. Additional AHMU buffers and selective harvest buffers may apply as specified above. Total no cut buffer is the sum of the no commercial and no programmed commercial harvest buffers.

Category B reaches flagged O/W: Trees shall be felled in such a manner so that the direction of fall is away from the stream course. Trees or products shall not be hauled or yarded across the stream course unless fully suspended. Debris entering streams from harvest activities shall be removed. Additional AHMU buffers and selective harvest buffers may apply as specified above. Total no cut buffer equals the no programmed commercial harvest buffers.

Category C reaches flagged G/W: In so far as practicable, trees will be felled and yarded away from the stream course. Debris that enters the stream channel that may affect water quality or have potential for debris flows will be removed from the stream course.

Unit 938

ROAD/STREAM CROSSING SUMMARY

Log landings and system road re-opening needs are discussed in the Engineering/System Roads section above. Should road/stream crossing structures be installed or re-installed the hydrologist will be consulted.

GEOLOGY/KARST

Unit has been reviewed for karst and cave resources. There is no known karst or cave resource concerns.

HERITAGE RESOURCES

A finding of "No historic properties affected" (36 CFR 800.4(d)(1) or "No adverse effect" (36 CFR 800.5(d)(1) has been applied. Project activities may proceed as planned; however the Heritage Professional shall be consulted if new discoveries or unanticipated effects are identified during the project's implementation phase. All activities in the vicinity of the discovery shall cease and reasonable efforts shall be taken to avoid or minimize harm to the resource.

SCENERY

No scenery concerns.

RECREATION

No recreation concerns.

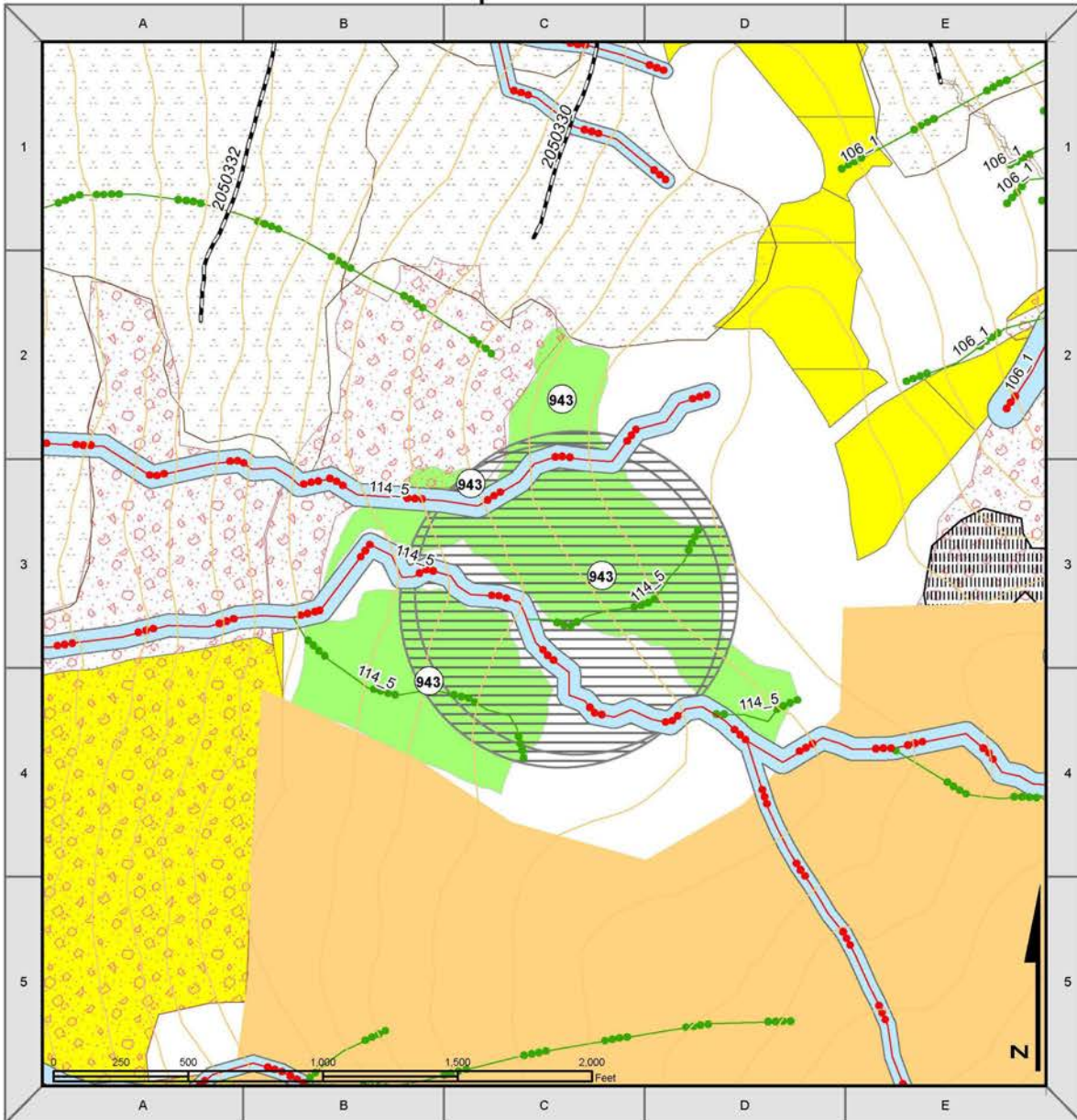
SOILS/WETLANDS

Slopes range from gentle to greater than 72% in all polygons. Approximately 19 acres of unsuitable soils are excluded from harvest consideration between the middle polygons due to very steep slopes, multiple landslides, and very high landslide prone terrain. The most western polygon and the one north of the unsuitable area are only suitable for harvest with full suspension. Helicopter logging will meet all soil and wetland resource concerns in all the polygons. Forested wetlands occur throughout the most northern polygon and forested wetland/emergent short sedge occurs along the western half of the western most polygon. Apply R10 BMPs 12.5, 13.5, and 13.9 and National Core BMPs Plan-2, AqEco-2, AqEco-4, Veg-1, Veg-2, Veg-5, and Veg-6.

WILDLIFE

There are several pieces to unit 938. The 8, 6, 14, and 25 acre pieces are less than 1000 feet in elevation and all pieces require goshawk surveys. The 3 acre piece in polygon 122 requires a July or August survey only. All surveys will be completed prior to implementation. Goshawk surveys are complete in the 1, 3 and 5 acre pieces in polygon 121. No goshawks were detected.

Helicopter Unit: 943



Units	Great Blue Heron	Stream Class II	Landslides
Roadless Rule	Sharp Shinned Hawk	Stream Class III	Past Harvest
Contour 100ft	Bear Den	Stream Class IV	NonDevelopment LUDs
High Vulnerability Karst	Proposed Temporary Roads	Riparian Management Area	Old-Growth LUD
USFWS Eagle Buffer	Existing NFS Roads	T77/Audubon Watersheds	Legacy
Goshawk Nest Buffer	Existing Temporary Roads	Community Use 5-Mile Zone	NonForest Service Lands
Wildlife Buffers	Non-NFS Roads	Unsuitable Soils	Saltwater
Marbled Murrelet	Lakes	Full Suspension Soils	
Raptor	Stream Class I	Beach Buffers Max High Water	

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Unit 943							
Unit Number:	943	Total Harvest Unit Acres	26.4	Prescription:	UEA	Harvest System:	Helicopter
VCU Number:	5880	LUD:	Timber Production	Net Harvest Volume (MBF):		168	
Summary of Concerns, Responses, BMPs, and Mitigations							
SILVICULTURE							
<p>Old-growth stands tend to already exhibit uneven-aged structure to varying degrees. The objective of uneven-aged management is to: 1) economically harvest a portion of the stand, 2) maintain old-growth structure in the stand, and 3) retain trees that will provide for economically viable and sustainable future entries. Uneven-aged management in this unit will be done by single tree selection using a helicopter logging system. When doing a cut-tree mark to designate removals, safety or hazard trees may also be marked as required for safety purposes. Variability in the stand will result in variability in the mark, from scattered individual trees to groups where overstory removal cannot exceed 2 acres in size. On average, retain approximately 66% of the pre-harvest basal area of standing live trees, and retain at least 75% in portions of the unit where windthrow risk is high. Generally maintain pre-harvest species composition after harvest. Retain: 1) healthy young 'crop' trees that promote economic future entries, 2) older trees with low timber value but high wildlife value, 3) advanced and new regeneration trees. The Silviculturist will establish inspection plots to ensure marking guidelines are adhered to and objectives are met for the unit.</p>							
TIMBER/LOGGING							
This unit is comprised of 2 settings and is planned for Helicopter yarding to landings located on road 2050300.							
ENGINEERING/SYSTEM ROADS							
Landings on NFS road 2050300 (BMP 14.20, Road-4). Road is open and maintained.							
BOTANY							
Surveys have been partially conducted as a part of the POWLLA but have not been completed and will be required due to identified high potential riparian habitat for <i>Piperia unalascensis</i> (Alaska rein orchid) and <i>Platanthera orbiculata</i> (Lesser round-leaved orchid). All resource-specific information, protections and mitigations will be determined before harvest activities are implemented.							
INVASIVE SPECIES							
Helicopter Landings will need to be surveyed for invasive plants. If plants are found, BMPs (Krosse 2017) are followed to avoid spread or introduction of weeds to the area due to project actions.							
FISHERIES							
<p>Stream Num: Map location B-3 / C-2 / D-2 (114_5.4L) Stream Class: IV Channel Type: HCO Protection: Category C Flagging: G/W Buffer (RMA): Class IV for HCO - No buffer Concerns: Stream mapped as HCD class III but is HCO class IV</p> <p>Stream Num: Map location B-4 / C-4 (114_5.6L) Stream Class: IV Channel Type: HCO Protection: Category C Flagging: G/W Buffer (RMA): Class IV for HCO - No buffer Concerns: N/A</p> <p>Stream Num: Map location A-3 / B-3 / C-4 / D-4 (114_5.5L) Stream Class: III Channel Type: HCD Protection: Category B Flagging: O/W Buffer (RMA): Class III for HCD - To the top of the side-slope break Class III for HCO - To the top of the side-slope break Concerns: N/A</p>							

Unit 943

Stream Num: Map location C-3 (114_5.5L.1L)
Stream Class: IV
Channel Type: HCO
Protection: Category C
Flagging: G/W
Buffer (RMA):
Class IV for HCO - No buffer
Concerns: stream edits needed

Stream Num: Map location C-3 (114_5.5L.2L)
Stream Class: IV
Channel Type: HCO
Protection: Category C
Flagging: G/W
Buffer (RMA):
Class IV for HCO - No buffer
Concerns: stream edits needed

Stream Num: Map location C-3 (114_5.5L.3L)
Stream Class: IV
Channel Type: HCO
Protection: Category C
Flagging: G/W
Buffer (RMA):
Class IV for HCO - No buffer
Concerns: stream edits needed

Stream Num: Map location C-4 / D-4 (114_5.5L.4L)
Stream Class: IV
Channel Type: HCO
Protection: Category C
Flagging: G/W
Buffer (RMA):
Class IV for HCO - No buffer
Concerns: N/A

Stream Num: Map location D-4 / D-5
Stream Class: III
Channel Type: HCM
Protection: Category B
Flagging: O/W
Buffer (RMA):
Class III for HCO - To the top of the side-slope break
Concerns: Not field verified.

During the GIS process all streams were labeled as 114_5. Map locations were provided for streams along with the correct name. Stream labels will be corrected before final unit cards are prepared. Some streams were not removed from the corporate layer and were not included in the unit card text. These streams will be removed from the corporate GIS layer before final unit cards are prepared. Proposed helicopter landings will need stream reviews prior to final Unit Cards and implementation.

All Streams Protection/Mitigation Actions by Category:

All Categories implement BMPs

Category A reaches flagged B/W: Under the TTRA timber harvest shall not be within 100 feet of the stream channel and a Stream course Protection Plan will be developed for that buffer. Additional AHMU buffers and selective harvest buffers may apply as specified above. Total no cut buffer is the sum of the no commercial and no programmed commercial harvest buffers.

Category B reaches flagged O/W: Trees shall be felled in such a manner so that the direction of fall is away from the stream course. Trees or products shall not be hauled or yarded across the stream course unless fully suspended. Debris entering streams from harvest activities shall be removed. Additional AHMU buffers and

Unit 943

selective harvest buffers may apply as specified above. Total no cut buffer equals the no programmed commercial harvest buffers.

Category C reaches flagged G/W: In so far as practicable, trees will be felled and yarded away from the stream course. Debris that enters the stream channel that may affect water quality or have potential for debris flows will be removed from the stream course.

ROAD/STREAM CROSSING SUMMARY

Log landings and system road re-opening needs are discussed in the Engineering/System Roads section above. Should road/stream crossing structures be installed or re-installed the hydrologist will be consulted.

GEOLOGY/KARST

Unit has been reviewed for karst and cave resources. There is no known karst or cave resource concerns.

HERITAGE RESOURCES

A finding of "No historic properties affected" (36 CFR 800.4(d)(1) or "No adverse effect" (36 CFR 800.5(d)(1) has been applied. Project activities may proceed as planned; however the Heritage Professional shall be consulted if new discoveries or unanticipated effects are identified during the project's implementation phase. All activities in the vicinity of the discovery shall cease and reasonable efforts shall be taken to avoid or minimize harm to the resource.

SCENERY

No scenery concerns.

RECREATION

No recreation concerns.

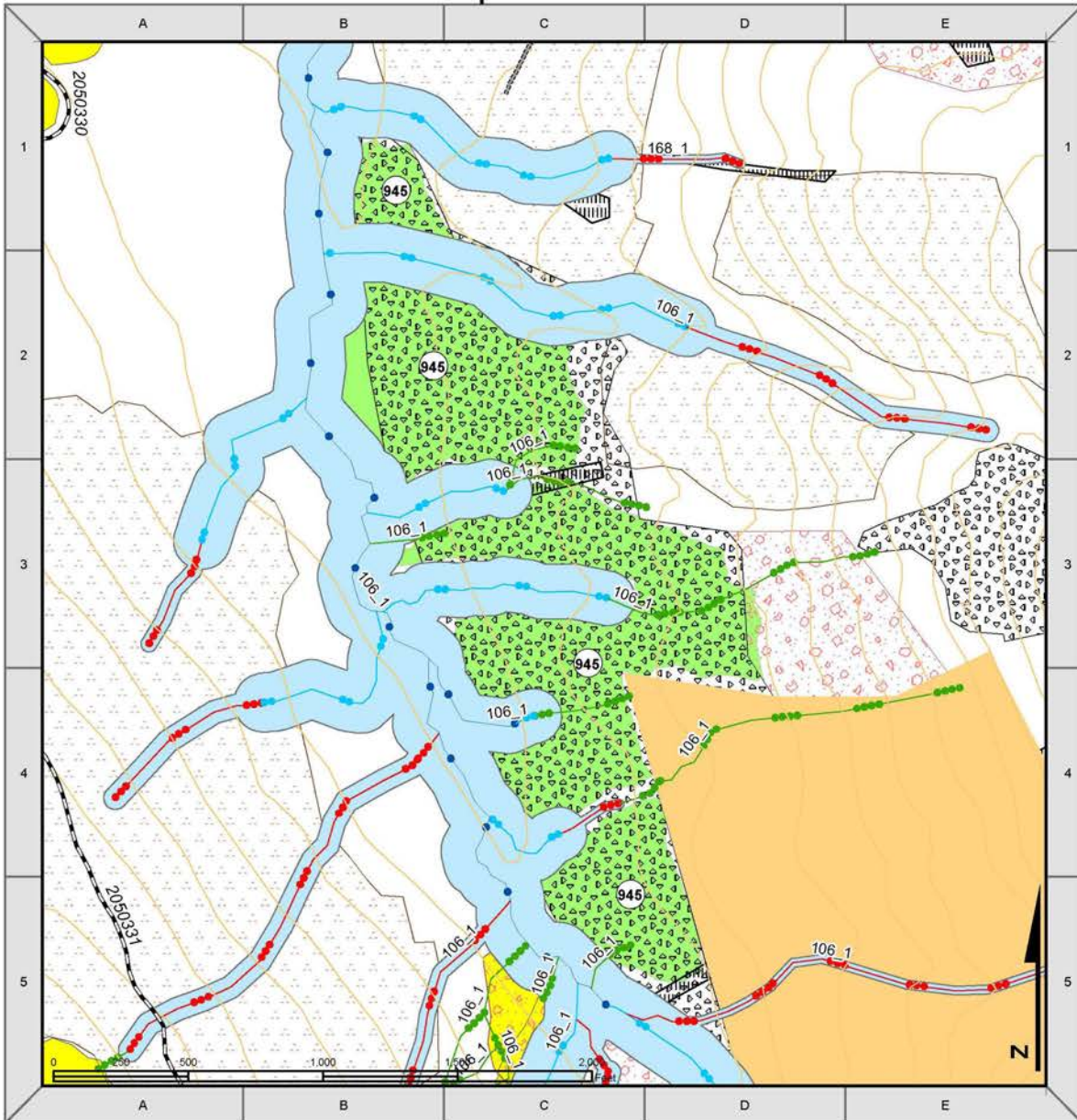
SOILS/WETLANDS

Slopes range from 30 to greater than 72% in all polygons. Approximately 74 acres of unsuitable soils are excluded from harvest consideration to the west due to extremely steep slopes, multiple landslides, erosive slopes, colluvium, and wet MMI4 soils. Helicopter logging will meet all soil and wetland resource concerns in the remainder of the unit. Apply R10 BMPs 12.5, 13.5, and 13.9 and National Core BMPs Plan-2, AqEco-2, AqEco-4, Veg-1, Veg-2, Veg-5, and Veg-6.

WILDLIFE

Unit is greater than 1000 feet in elevation. No goshawk surveys required. Great blue heron nests documented in unit. A 100 foot no cut was implemented at this location. Partial harvest by helicopter will be allowed within the remaining 100 to 600 feet of the buffer. Timing restrictions will apply.

Helicopter Unit: 945



Units	Great Blue Heron	Stream Class III	Past Harvest
Roadless Rule	Bear Den	Stream Class IV	NonDevelopment LUDs
Contour 100ft	Proposed Temporary Roads	Riparian Management Area	Old-Growth LUD
High Vulnerability Karst	Existing NFS Roads	T77/Audubon Watersheds	Legacy
USFWS Eagle Buffer	Existing Temporary Roads	Community Use 5-Mile Zone	NonForest Service Lands
Goshawk Nest Buffer	Non-NFS Roads	Unsuitable Soils	Saltwater
Wildlife Buffers	Lakes	Full Suspension Soils	
Marbled Murrelet	Stream Class I	Beach Buffers Max High Water	
Raptor	Stream Class II	Landslides	

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Unit 945							
Unit Number:	945	Total Harvest Unit Acres	34.2	Prescription:	UEA	Harvest System:	Helicopter
VCU Number:	5880	LUD:	Timber Production	Net Harvest Volume (MBF):		215	
Summary of Concerns, Responses, BMPs, and Mitigations							
SILVICULTURE							
<p>Old-growth stands tend to already exhibit uneven-aged structure to varying degrees. The objective of uneven-aged management is to: 1) economically harvest a portion of the stand, 2) maintain old-growth structure in the stand, and 3) retain trees that will provide for economically viable and sustainable future entries. Uneven-aged management in this unit will be done by single tree selection using a helicopter logging system. When doing a cut-tree mark to designate removals, safety or hazard trees may also be marked as required for safety purposes. Variability in the stand will result in variability in the mark, from scattered individual trees to groups where overstory removal cannot exceed 2 acres in size. On average, retain approximately 66% of the pre-harvest basal area of standing live trees, and retain at least 75% in portions of the unit where windthrow risk is high. Generally maintain pre-harvest species composition after harvest. Retain: 1) healthy young 'crop' trees that promote economic future entries, 2) older trees with low timber value but high wildlife value, 3) advanced and new regeneration trees. The Silviculturist will establish inspection plots to ensure marking guidelines are adhered to and objectives are met for the unit.</p>							
TIMBER/LOGGING							
This unit is comprised of 3 settings and is planned for Helicopter yarding to landings located on road 2050330.							
ENGINEERING/SYSTEM ROADS							
Landings on NFS road 2000330. 2000330 is a closed road and will require maintenance upgrades to meet haul standards (BMP 14.20, Road-4).							
BOTANY							
Unit was surveyed. No botanical concerns.							
INVASIVE SPECIES							
Helicopter Landings will need to be surveyed for invasive plants. If plants are found, BMPs (Krosse 2017) are followed to avoid spread or introduction of weeds to the area due to project actions.							
FISHERIES							
<p>Stream Num: Map location B-1 / B-2 / B-3 / B-4 / C-4 / C/5 (106_1.0) Stream Class: I, II Channel Type: MCS, MMS, HCV Protection: Category A Flagging: B/W Buffer (RMA): Class I for MCS - 100 feet or to the top of the side-slope break; whichever is greater. Class I for MMS - 120 feet or to the extent of the flood plain, riparian vegetation or soils, or riparian associated wetland fens; whichever is greater. Class II for HCV - 100 feet or to the top of the side-slope break; whichever is greater. Concerns: Blowdown and slides in stream.</p> <p>Stream Num: Map location B-1 / C-1 (168_1.1L / 106_1.1L) Stream Class: II Channel Type: HCO Protection: Category A Flagging: B/W Buffer (RMA): Class II for HCO - 100 feet or to the top of the side-slope break; whichever is greater. Concerns: Two streams named 106_1.1L</p> <p>Stream Num: Map location B-2 / C-2 (106_1.10L) Stream Class: II Channel Type: HCM, HCD Protection: Category A Flagging: B/W Buffer (RMA): Class II for HCM - 100 feet or to the top of the side-slope break; whichever is greater. Class II for HCD - 100 feet or to the top of the side-slope break; whichever is greater.</p>							

Unit 945

Concerns: Blowdown at the top end of the stream.

Stream Num: Map location B-3 / C-3 (106_1.2L)

Stream Class: II, IV

Channel Type: HCO

Protection: Category A and C

Flagging: B/W, G/W

Buffer (RMA):

Class II for HCO - 100 feet or to the top of the side-slope break; whichever is greater.

Class IV for HCO - No buffer

Concerns: Blowdown at the beginning of stream. Two streams named 106_1.2L.

Stream Num: Map location C-3 (106_1.2L.1L)

Stream Class: IV

Channel Type: HCO

Protection: Category C

Flagging: G/W

Buffer (RMA):

Class IV for HCO - No buffer

Concerns: N/A

Stream Num: Map location B-3 (106_1.3L)

Stream Class: IV

Channel Type: HCO

Protection: Category C

Flagging: G/W

Buffer (RMA):

Class IV for HCO - No buffer

Concerns: Blowdown.

Stream Num: Map location B-3 / C-3 / D-3 (106_1.4L)

Stream Class: II, IV

Channel Type: HCO

Protection: Category A and C

Flagging: B/W, G/W

Buffer (RMA):

Class II for HCO - 100 feet or to the top of the side-slope break; whichever is greater.

Class IV for HCO - No buffer

Concerns: N/A

Stream Num: Map location B-4 / C-4 (106_1.5L)

Stream Class: I, II, IV

Channel Type: MMO, HCO

Protection: Category A and C

Flagging: B/W, G/W

Buffer (RMA):

Class I for MMO - 120 feet or to the extent of the flood plain, riparian vegetation or soils, or riparian associated wetland fens; whichever is greater.

Class II for HCO - 100 feet or to the top of the side-slope break; whichever is greater.

Class IV for HCO - No buffer

Concerns: N/A

Stream Num: Map location C-4 / D-4 (106_1.6L)

Stream Class: II, III, IV

Channel Type: HCM, HCO

Protection: Category A, B, and C

Flagging: B/W, O/W, G/W

Buffer (RMA):

Class II for HCM - 100 feet or to the top of the side-slope break; whichever is greater.

Class III for HCM - to the top of the side-slope break

Class IV for HCO - No buffer

Unit 945

Concerns: N/A

Stream Num: Map location C-4 (106_1.6L.1L)
Stream Class: IV
Channel Type: HCO
Protection: Category C
Flagging: G/W
Buffer (RMA):
Class IV for HCO - No buffer
Concerns: Blowdown. Needs stream edits.

Stream Num: Map location C-5 / 106_1.7L
Stream Class: IV
Channel Type: HCO
Protection: Category C
Flagging: G/W
Buffer (RMA):
Class IV for HCO - No buffer
Concerns: N/A

Stream Num: Map Location C-5 / D-5 (106_1.8L)
Stream Class: III
Channel Type: HCO
Protection: Category B
Flagging: O/W
Buffer (RMA):
Class III for HCO - To the top of the side-slope break
Concerns: N/A

Stream Num: Map Location B-2 / A-3
Stream Class: II
Channel Type: HCM
Protection: Category A
Flagging: B/W
Buffer (RMA):
Class II for HCM - 100 feet or to the top of the side-slope break; whichever is greater.
Concerns: Not field verified

Stream Num: Map Location B-4
Stream Class: II
Channel Type: HCD
Protection: Category A
Flagging: B/W
Buffer (RMA):
Class II for HCD - 100 feet or to the top of the side-slope break; whichever is greater.
Concerns: Not field verified

Stream Num: Map Location B-4
Stream Class: III
Channel Type: HCD
Protection: Category B
Flagging: O/W
Buffer (RMA):
Class III for HCD - to the top of the side-slope break
Concerns: Not field verified

Stream Num: Map Location B-4
Stream Class: III
Channel Type: HCD
Protection: Category B
Flagging: O/W

Unit 945

Buffer (RMA):
Class III for HCD - to the top of the side-slope break
Concerns: Not field verified

Stream Num: Map Location B-5 / C-5 (106_1.2R)
Stream Class: III
Channel Type: HCM
Protection: Category B
Flagging: O/W

Buffer (RMA):
Class III for HCM - to the top of the side-slope break
Concerns: N/A

Stream Num: Map Location B-5 / C-5 (106_1.3R)
Stream Class: IV
Channel Type: HCO
Protection: Category C
Flagging: G/W
Buffer (RMA):
Class IV for HCO – No buffer
Concerns: N/A

Stream Num: Map Location C-5 (106_1.1L)
Stream Class: IV
Channel Type: HCO
Protection: Category C
Flagging: G/W
Buffer (RMA):
Class IV for HCO – No buffer
Concerns: Two streams named 106_1.1L

Stream Num: Map Location C-5 (106_1.2L)
Stream Class: II
Channel Type: HCV
Protection: Category A
Flagging: B/W
Buffer (RMA):
Class II for HCV - 100 feet or to the top of the side-slope break; whichever is greater.
Concerns: Two streams named 106_1.2L

During the GIS process all streams were labeled as 106_1. Map locations were provided for streams along with the correct name. Stream labels will be corrected before final unit cards are prepared. Proposed helicopter landings will need stream reviews prior to final Unit Cards and implementation.

All Streams Protection/Mitigation Actions by Category:

All Categories implement BMPs

Category A reaches flagged B/W: Under the TTRA timber harvest shall not be within 100 feet of the stream channel and a Stream course Protection Plan will be developed for that buffer. Additional AHMU buffers and selective harvest buffers may apply as specified above. Total no cut buffer is the sum of the no commercial and no programmed commercial harvest buffers.

Category B reaches flagged O/W: Trees shall be felled in such a manner so that the direction of fall is away from the stream course. Trees or products shall not be hauled or yarded across the stream course unless fully suspended. Debris entering streams from harvest activities shall be removed. Additional AHMU buffers and selective harvest buffers may apply as specified above. Total no cut buffer equals the no programmed commercial harvest buffers.

Category C reaches flagged G/W: In so far as practicable, trees will be felled and yarded away from the stream course. Debris that enters the stream channel that may affect water quality or have potential for debris flows will be removed from the stream course.

Unit 945

ROAD/STREAM CROSSING SUMMARY

Log landings and system road re-opening needs are discussed in the Engineering/System Roads section above. Should road/stream crossing structures be installed or re-installed the hydrologist will be consulted.

GEOLOGY/KARST

Unit has been reviewed for karst and cave resources. There is no known karst or cave resource concerns.

HERITAGE RESOURCES

A finding of "No historic properties affected" (36 CFR 800.4(d)(1)) or "No adverse effect" (36 CFR 800.5(d)(1)) has been applied. Project activities may proceed as planned; however the Heritage Professional shall be consulted if new discoveries or unanticipated effects are identified during the project's implementation phase. All activities in the vicinity of the discovery shall cease and reasonable efforts shall be taken to avoid or minimize harm to the resource.

SCENERY

No scenery concerns.

RECREATION

No recreation concerns.

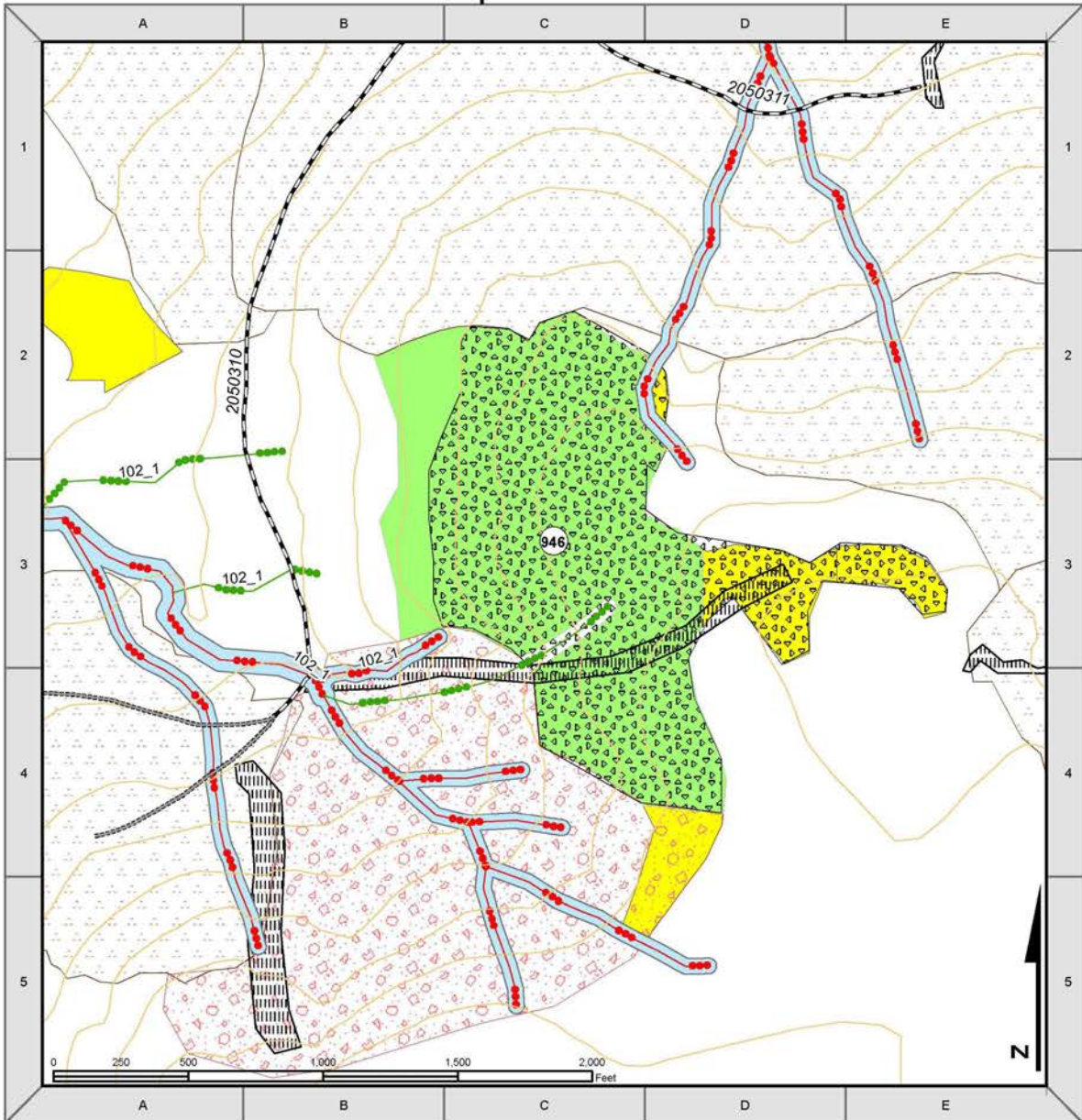
SOILS/WETLANDS

Slopes range from gentle to greater than 72% in the unit. Approximately 8 acres of unsuitable soils are excluded from harvest consideration in the east due to erosive steep slopes and high landslide prone terrain. The remainder of the unit is suitable for harvest with a minimum of full suspension. Helicopter logging will meet all soil and wetland resource concerns within the unit. Apply R10 BMPs 12.5, 13.5, and 13.9 and National Core BMPs Plan-2, AqEco-2, AqEco-4, Veg-1, Veg-2, Veg-5, and Veg-6.

WILDLIFE

Goshawk surveys conducted in 2018 and 2019. No goshawks detected.

Helicopter Unit: 946



Units	Great Blue Heron	Stream Class III	Past Harvest
Roadless Rule	Bear Den	Stream Class IV	NonDevelopment LUDs
Contour 100ft	Proposed Temporary Roads	Riparian Management Area	Old-Growth LUD
High Vulnerability Karst	Existing NFS Roads	T77/Audubon Watersheds	Legacy
USFWS Eagle Buffer	Existing Temporary Roads	Community Use 5-Mile Zone	NonForest Service Lands
Goshawk Nest Buffer	Non-NFS Roads	Unsuitable Soils	Saltwater
Wildlife Buffers	Lakes	Full Suspension Soils	
Marbled Murrelet	Stream Class I	Beach Buffers Max High Water	
Raptor	Stream Class II	Landslides	

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Unit 946							
Unit Number:	946	Total Harvest Unit Acres	34.4	Prescription:	UEA	Harvest System:	Helicopter
VCU Number:	5880	LUD:	Timber Production	Net Harvest Volume (MBF):		123	
Summary of Concerns, Responses, BMPs, and Mitigations							
SILVICULTURE							
<p>Old-growth stands tend to already exhibit uneven-aged structure to varying degrees. The objective of uneven-aged management is to: 1) economically harvest a portion of the stand, 2) maintain old-growth structure in the stand, and 3) retain trees that will provide for economically viable and sustainable future entries. Uneven-aged management in this unit will be done by single tree selection using a helicopter logging system. When doing a cut-tree mark to designate removals, safety or hazard trees may also be marked as required for safety purposes. Variability in the stand will result in variability in the mark, from scattered individual trees to groups where overstory removal cannot exceed 2 acres in size. On average, retain approximately 66% of the pre-harvest basal area of standing live trees, and retain at least 75% in portions of the unit where windthrow risk is high. Generally maintain pre-harvest species composition after harvest. Retain: 1) healthy young 'crop' trees that promote economic future entries, 2) older trees with low timber value but high wildlife value, 3) advanced and new regeneration trees. The Silviculturist will establish inspection plots to ensure marking guidelines are adhered to and objectives are met for the unit.</p>							
TIMBER/LOGGING							
This unit is comprised of 1 setting and is planned for Helicopter yarding to landings located on road 2050310.							
ENGINEERING/SYSTEM ROADS							
Landings on NFS road 2050310. 2050310 is a closed road and will require maintenance upgrades to meet haul standards (BMP 14.20, Road-4).							
BOTANY							
Unit was surveyed. No botanical concerns.							
INVASIVE SPECIES							
Helicopter Landings will need to be surveyed for invasive plants. If plants are found, BMPs (Krosse 2017) are followed to avoid spread or introduction of weeds to the area due to project actions.							
FISHERIES							
<p>Stream Num: Map Location B-3 (102_1.3L) Stream Class: III Channel Type: HCM Protection: Category B Flagging: O/W Buffer (RMA): Class III for HCM - To the top of the side-slope break Concerns: N/A</p>							
<p>Stream Num: Map Location B-4 (102_1.4L) Stream Class: IV Channel Type: HCO Protection: Category C Flagging: G/W Buffer (RMA): Class IV for HCO - No buffer Concerns: N/A</p>							
<p>Stream Num: Map Location C-4 (102_1.5L) Stream Class: IV Channel Type: HCO Protection: Category C Flagging: G/W Buffer (RMA): Class IV for HCO - No buffer Concerns: N/A</p>							
<p>Stream Num: Map Location C-4 (102_1.6L) Stream Class: III, IV Channel Type: HCM, HCLw</p>							

Unit 946

Protection: Category B and C
Flagging: O/W, G/W
Buffer (RMA):
Class III for HCM - To the top of the side-slope break
Class IV for HCLw - No buffer
Concerns: N/A

Stream Num: Map Location D-2 (102_5.0)
Stream Class: IV
Channel Type: HCO
Protection: Category C
Flagging: G/W
Buffer (RMA):
Class IV for HCO - No buffer
Concerns: N/A

During the GIS process all streams were labeled incorrectly. Map locations were provided for streams along with the correct name. Stream labels will be corrected before final unit cards are prepared. Also, some streams were not removed from the corporate layer and were not included in the unit card text. These streams will be removed from the corporate GIS layer before final unit cards are prepared. Proposed helicopter landings will need stream reviews prior to final Unit Cards and implementation.

All Streams Protection/Mitigation Actions by Category:

All Categories implement BMPs

Category A reaches flagged B/W: Under the TTRA timber harvest shall not be within 100 feet of the stream channel and a Stream course Protection Plan will be developed for that buffer. Additional AHMU buffers and selective harvest buffers may apply as specified above. Total no cut buffer is the sum of the no commercial and no programmed commercial harvest buffers.

Category B reaches flagged O/W: Trees shall be felled in such a manner so that the direction of fall is away from the stream course. Trees or products shall not be hauled or yarded across the stream course unless fully suspended. Debris entering streams from harvest activities shall be removed. Additional AHMU buffers and selective harvest buffers may apply as specified above. Total no cut buffer equals the no programmed commercial harvest buffers.

Category C reaches flagged G/W: In so far as practicable, trees will be felled and yarded away from the stream course. Debris that enters the stream channel that may affect water quality or have potential for debris flows will be removed from the stream course.

ROAD/STREAM CROSSING SUMMARY

Log landings and system road re-opening needs are discussed in the Engineering/System Roads section above. Should road/stream crossing structures be installed or re-installed the hydrologist will be consulted.

GEOLOGY/KARST

Unit has been reviewed for karst and cave resources. There is no known karst or cave resource concerns.

HERITAGE RESOURCES

A finding of "No historic properties affected" (36 CFR 800.4(d)(1) or "No adverse effect" (36 CFR 800.5(d)(1) has been applied. Project activities may proceed as planned; however the Heritage Professional shall be consulted if new discoveries or unanticipated effects are identified during the project's implementation phase. All activities in the vicinity of the discovery shall cease and reasonable efforts shall be taken to avoid or minimize harm to the resource.

SCENERY

No scenery concerns.

RECREATION

No recreation concerns.

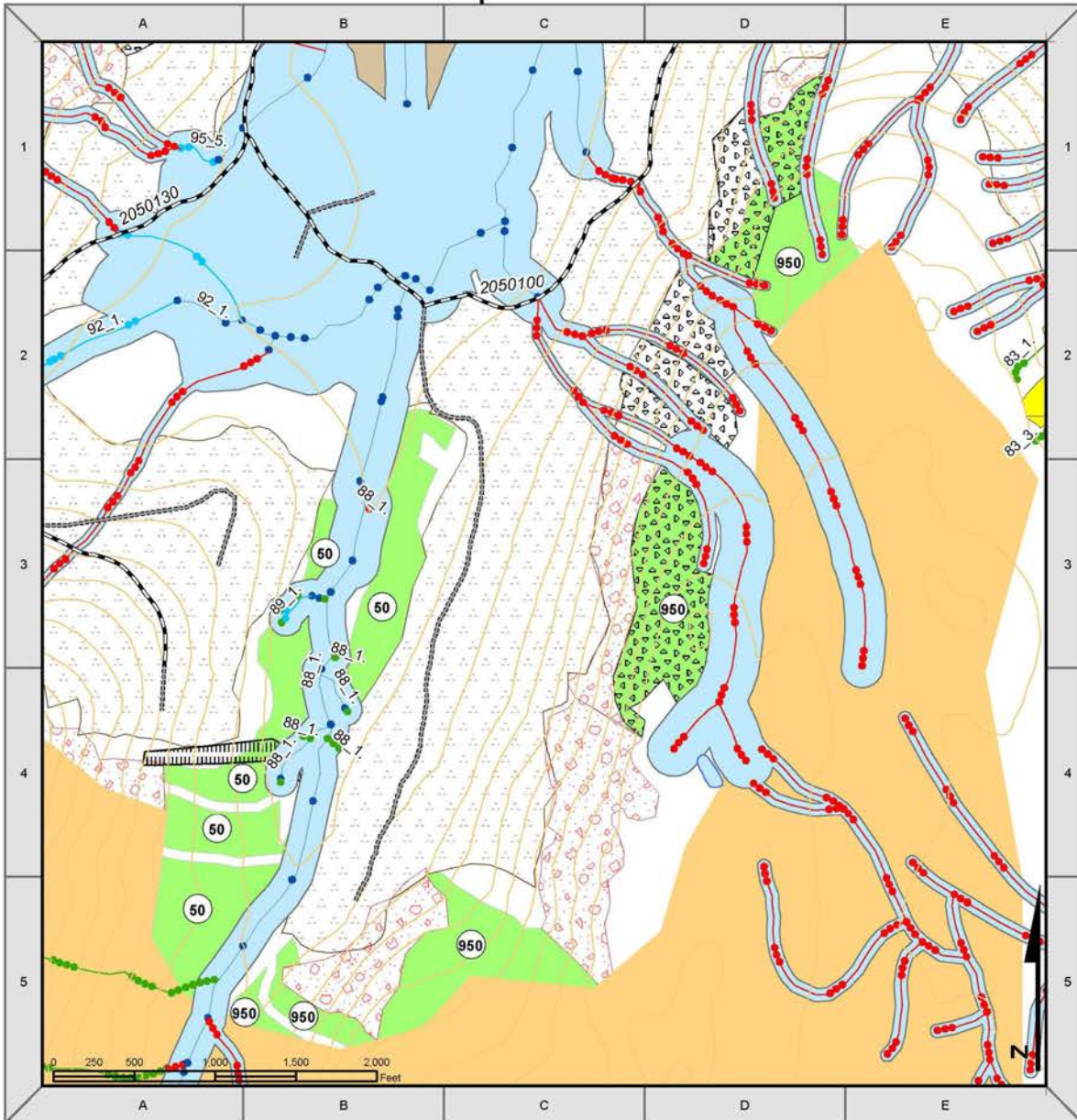
SOILS/WETLANDS

Slopes range from 25 to greater than 72% in all polygons. Approximately 45 acres of unsuitable soils are excluded from harvest consideration south of the unit due to very high MMI4 soils and dense water quality streams. The remainder of the unit is suitable for harvest with a minimum of full suspension. Helicopter logging will meet all soil and wetland resource concerns within the unit. Apply R10 BMPs 12.5, 13.5, and 13.9 and National Core BMPs Plan-2, AqEco-2, AqEco-4, Veg-1, Veg-2, Veg-5, and Veg-6.

WILDLIFE

Unit is greater than 1000 feet in elevation. No goshawk surveys are required.

Helicopter Unit: 950



Units	Great Blue Heron	Stream Class III	Past Harvest
Roadless Rule	Bear Den	Stream Class IV	NonDevelopment LUDs
Contour 100ft	Proposed Temporary Roads	Riparian Management Area	Old-Growth LUD
High Vulnerability Karst	Existing NFS Roads	T77/Audubon Watersheds	Legacy
USFWS Eagle Buffer	Existing Temporary Roads	Community Use 5-Mile Zone	NonForest Service Lands
Goshawk Nest Buffer	Non-NFS Roads	Unsuitable Soils	Saltwater
Wildlife Buffers	Lakes	Full Suspension Soils	
Marbled Murrelet	Stream Class I	Beach Buffers Max High Water	
Raptor	Stream Class II	Landslides	

Unit 950							
Unit Number:	950	Total Harvest Unit Acres	43.2	Prescription:	UEA	Harvest System:	Helicopter
VCU Number:	5900	LUD:	Timber Production		Net Harvest Volume (MBF):		270
Summary of Concerns, Responses, BMPs, and Mitigations							
SILVICULTURE							
<p>Old-growth stands tend to already exhibit uneven-aged structure to varying degrees. The objective of uneven-aged management is to: 1) economically harvest a portion of the stand, 2) maintain old-growth structure in the stand, and 3) retain trees that will provide for economically viable and sustainable future entries. Uneven-aged management in this unit will be done by single tree selection using a helicopter logging system. When doing a cut-tree mark to designate removals, safety or hazard trees may also be marked as required for safety purposes. Variability in the stand will result in variability in the mark, from scattered individual trees to groups where overstory removal cannot exceed 2 acres in size. On average, retain approximately 66% of the pre-harvest basal area of standing live trees, and retain at least 75% in portions of the unit where windthrow risk is high. Generally maintain pre-harvest species composition after harvest. Retain: 1) healthy young 'crop' trees that promote economic future entries, 2) older trees with low timber value but high wildlife value, 3) advanced and new regeneration trees. The Silviculturist will establish inspection plots to ensure marking guidelines are adhered to and objectives are met for the unit.</p>							
TIMBER/LOGGING							
This unit is comprised of 3 settings and is planned for Helicopter yarding to landings located on road 2050305.							
ENGINEERING/SYSTEM ROADS							
Landings on NFS road 2050305. 2050305 is a closed road and will require maintenance upgrades to meet haul standards (BMP 14.20, Road-4).							
BOTANY							
Surveys have not been completed but will be required due to identified wetland habitat within and adjacent to the unit. All resource-specific information, protections and mitigations will be determined before harvest activities are implemented.							
INVASIVE SPECIES							
Helicopter Landings will need to be surveyed for invasive plants. If plants are found, BMPs (Krosse 2017) are followed to avoid spread or introduction of weeds to the area due to project actions.							
FISHERIES							
<p>Stream Num: Map location B-5 (88_1.0) Stream Class: I Channel Type: HCL Protection: Category A Flagging: B/W Buffer (RMA): Class I for HCL - 100 feet or to the top of the side-slope break; whichever is greater. Concerns: N/A</p> <p>Stream Num: Map location C-3 (88_1.1L) Stream Class: IV Channel Type: HCO Protection: Category C Flagging: G/W Buffer (RMA): Class IV for HCO - No buffer Concerns: Not field verified</p> <p>Stream Num: Map location C-3 (88_5.0) Stream Class: IV Channel Type: HCO Protection: Category C Flagging: G/W Buffer (RMA): Class IV for HCO - No buffer Concerns: Not field verified</p> <p>Stream Num: Map location D-2 (950_1.0)</p>							

Unit 950

Stream Class: III
Channel Type: HCM
Protection: Category B
Flagging: O/W
Buffer (RMA):
Class III for HCM - To the top of the side-slope break
Concerns: Not field verified

Stream Num: Map location D-2 (950_2.0)
Stream Class: IV
Channel Type: HCO
Protection: Category C
Flagging: G/W
Buffer (RMA):
Class IV for HCO - No buffer
Concerns: Stream needs edits

Stream Num: Map location D-1 (950_3.0)
Stream Class: IV
Channel Type: HCO
Protection: Category C
Flagging: G/W
Buffer (RMA):
Class IV for HCO - No buffer
Concerns: Stream edits needed

Stream Num: Map location D-1 / D-2 (950_4.0)
Stream Class: IV
Channel Type: HCO
Protection: Category C
Flagging: G/W
Buffer (RMA):
Class IV for HCO - No buffer
Concerns: Stream edits needed

Stream Num: Map location A-5
Stream Class: III
Channel Type: HCL
Protection: Category A
Flagging: B/W
Buffer (RMA):
Class I for HCL - 100 feet or to the top of the side-slope break; whichever is greater.
Concerns: N/A

During the GIS process some streams were not removed from the corporate layer and were not included in the unit card text. These streams will be removed from the corporate GIS layer before final unit cards are prepared. Proposed helicopter landings will need stream reviews prior to final Unit Cards and implementation.

All Streams Protection/Mitigation Actions by Category:

All Categories implement BMPs

Category A reaches flagged B/W: Under the TTRA timber harvest shall not be within 100 feet of the stream channel and a Stream course Protection Plan will be developed for that buffer. Additional AHMU buffers and selective harvest buffers may apply as specified above. Total no cut buffer is the sum of the no commercial and no programmed commercial harvest buffers.

Category B reaches flagged O/W: Trees shall be felled in such a manner so that the direction of fall is away from the stream course. Trees or products shall not be hauled or yarded across the stream course unless fully suspended. Debris entering streams from harvest activities shall be removed. Additional AHMU buffers and selective harvest buffers may apply as specified above. Total no cut buffer equals the no programmed commercial harvest buffers.

Unit 950

Category C reaches flagged G/W: In so far as practicable, trees will be felled and yarded away from the stream course. Debris that enters the stream channel that may affect water quality or have potential for debris flows will be removed from the stream course.

ROAD/STREAM CROSSING SUMMARY

Log landings and system road re-opening needs are discussed in the Engineering/System Roads section above. Should road/stream crossing structures be installed or re-installed the hydrologist will be consulted.

GEOLOGY/KARST

Unit has been reviewed for karst and cave resources. There is no known karst or cave resource concerns.

HERITAGE RESOURCES

A finding of "No historic properties affected" (36 CFR 800.4(d)(1) or "No adverse effect" (36 CFR 800.5(d)(1) has been applied. Project activities may proceed as planned; however the Heritage Professional shall be consulted if new discoveries or unanticipated effects are identified during the project's implementation phase. All activities in the vicinity of the discovery shall cease and reasonable efforts shall be taken to avoid or minimize harm to the resource.

SCENERY

No scenery concerns.

RECREATION

No recreation concerns.

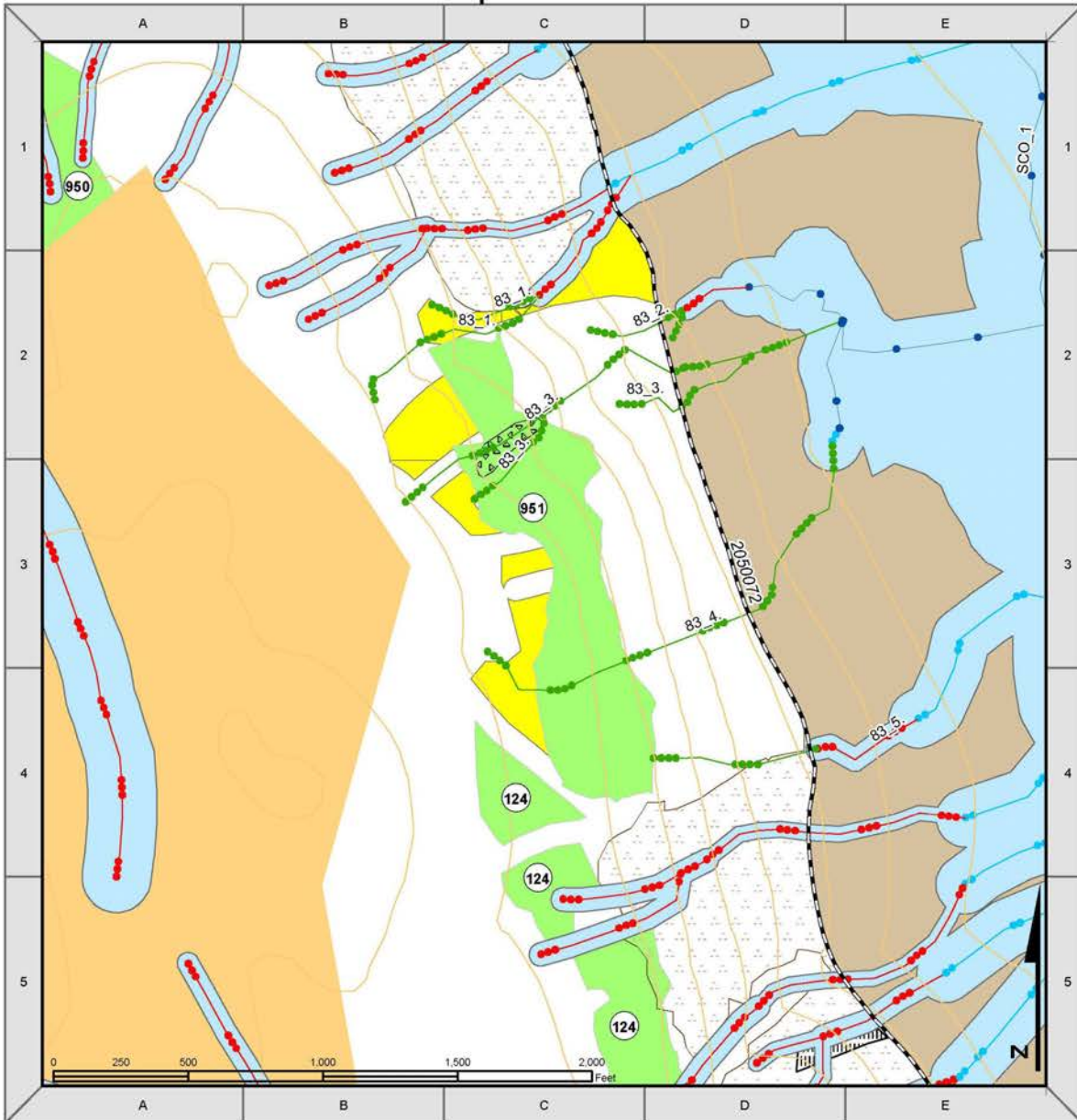
SOILS/WETLANDS

Slopes range from 30 to greater than 72% in all polygons. Approximately 38 acres of unsuitable soils are excluded from harvest consideration due to cliffs, outcrops, extremely steep slopes, landslides, and very high landslide prone terrain. About 25 acres in the remainder of the unit are only suitable for harvest with full suspension. Helicopter logging will meet all soil and wetland resource concerns in all the polygons. Apply R10 BMPs 12.5, 13.5, and 13.9 and National Core BMPs Plan-2, AqEco-2, AqEco-4, Veg-1, Veg-2, Veg-5, and Veg-6.

WILDLIFE

Northern most of this unit is less than 1000 feet in elevation and requires goshawk surveys. No surveys have been conducted. A portion of unit is greater than 1000 feet in elevation and does not require goshawk surveys. All surveys will be completed prior to implementation.

Helicopter Unit: 951



Units	Great Blue Heron	Stream Class III	Past Harvest
Roadless Rule	Bear Den	Stream Class IV	NonDevelopment LUDs
Contour 100ft	Proposed Temporary Roads	Riparian Management Area	Old-Growth LUD
High Vulnerability Karst	Existing NFS Roads	T77/Audubon Watersheds	Legacy
USFWS Eagle Buffer	Existing Temporary Roads	Community Use 5-Mile Zone	NonForest Service Lands
Goshawk Nest Buffer	Non-NFS Roads	Unsuitable Soils	Saltwater
Wildlife Buffers	Lakes	Full Suspension Soils	
Marbled Murrelet	Stream Class I	Beach Buffers Max High Water	
Raptor	Stream Class II	Landslides	

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Unit 951							
Unit Number:	951	Total Harvest Unit Acres	12.8	Prescription:	UEA	Harvest System:	Helicopter
VCU Number:	5900	LUD:	Timber Production		Net Harvest Volume (MBF):		116
Summary of Concerns, Responses, BMPs, and Mitigations							
SILVICULTURE							
<p>Old-growth stands tend to already exhibit uneven-aged structure to varying degrees. The objective of uneven-aged management is to: 1) economically harvest a portion of the stand, 2) maintain old-growth structure in the stand, and 3) retain trees that will provide for economically viable and sustainable future entries. Uneven-aged management in this unit will be done by single tree selection using a helicopter logging system. When doing a cut-tree mark to designate removals, safety or hazard trees may also be marked as required for safety purposes. Variability in the stand will result in variability in the mark, from scattered individual trees to groups where overstory removal cannot exceed 2 acres in size. On average, retain approximately 66% of the pre-harvest basal area of standing live trees, and retain at least 75% in portions of the unit where windthrow risk is high. Generally maintain pre-harvest species composition after harvest. Retain: 1) healthy young 'crop' trees that promote economic future entries, 2) older trees with low timber value but high wildlife value, 3) advanced and new regeneration trees. The Silviculturist will establish inspection plots to ensure marking guidelines are adhered to and objectives are met for the unit.</p>							
TIMBER/LOGGING							
This unit is comprised of 1 setting and is planned for Helicopter yarding to landings located on road 2050072.							
ENGINEERING/SYSTEM ROADS							
Landings on NFS road 2050072. 2050072 is a closed road and will require maintenance upgrades to meet haul standards (BMP 14.20, Road-4).							
BOTANY							
Surveys have not been completed but will be required due to identified high potential habitat for <i>Piperia unalascensis</i> (Alaska rein orchid) and <i>Platanthera orbiculata</i> (Lesser round-leaved orchid) in the identified riparian habitat within and adjacent to the unit. All resource-specific information, protections and mitigations will be determined before harvest activities are implemented.							
INVASIVE SPECIES							
Helicopter Landings will need to be surveyed for invasive plants. If plants are found, BMPs (Krosse 2017) are followed to avoid spread or introduction of weeds to the area due to project actions.							
FISHERIES							
<p>Stream Num: Map Location C-2 (83_1.0) Stream Class: III Channel Type: HCD Protection: Category B Flagging: O/W Buffer (RMA): Class III for HCM - To the top of the side-slope break Concerns: Not field verified</p> <p>Stream Num: Map Location C-2 (83_1.1L) Stream Class: IV Channel Type: HCD Protection: Category C Flagging: G/W Buffer (RMA): Class III for HCM - To the top of the side-slope break Concerns: Not field verified</p> <p>Stream Num: 83_3.0 Stream Class: IV Channel Type: HCO Protection: Category C Flagging: G/W Buffer (RMA): Class IV for HCO - No buffer Concerns: N/A</p>							

Unit 951

Stream Num: Map Location C-2 (83_3.1L)
Stream Class: IV
Channel Type: HCO
Protection: Category C
Flagging: G/W
Buffer (RMA):
Class IV for HCO - No buffer
Concerns: Not field verified

Stream Num: Map Location C-2
Stream Class: IV
Channel Type: HCO
Protection: Category C
Flagging: G/W
Buffer (RMA):
Class IV for HCO - No buffer
Concerns: Not field verified

Stream Num: Map Location D-3 (83_4.0)
Stream Class: IV
Channel Type: HCO
Protection: Category C
Flagging: G/W
Buffer (RMA):
Class IV for HCO - No buffer
Concerns: Not field verified

Stream Num: Map Location D-4 (83_5.0)
Stream Class: IV
Channel Type: HCO
Protection: Category C
Flagging: G/W
Buffer (RMA):
Class IV for HCO - No buffer
Concerns: Not field verified

During the GIS process all streams were labeled incorrect. Map locations were provided for streams along with the correct name. Stream labels will be corrected before final unit cards are prepared. Proposed helicopter landings will need stream reviews prior to final Unit Cards and implementation.

All Streams Protection/Mitigation Actions by Category:

All Categories implement BMPs

Category A reaches flagged B/W: Under the TTRA timber harvest shall not be within 100 feet of the stream channel and a Stream course Protection Plan will be developed for that buffer. Additional AHMU buffers and selective harvest buffers may apply as specified above. Total no cut buffer is the sum of the no commercial and no programmed commercial harvest buffers.

Category B reaches flagged O/W: Trees shall be felled in such a manner so that the direction of fall is away from the stream course. Trees or products shall not be hauled or yarded across the stream course unless fully suspended. Debris entering streams from harvest activities shall be removed. Additional AHMU buffers and selective harvest buffers may apply as specified above. Total no cut buffer equals the no programmed commercial harvest buffers.

Category C reaches flagged G/W: In so far as practicable, trees will be felled and yarded away from the stream course. Debris that enters the stream channel that may affect water quality or have potential for debris flows will be removed from the stream course.

ROAD/STREAM CROSSING SUMMARY

Log landings and system road re-opening needs are discussed in the Engineering/System Roads section above. Should road/stream crossing structures be installed or re-installed the hydrologist will be consulted.

GEOLOGY/KARST

Unit has been reviewed for karst and cave resources. There is no known karst or cave resource concerns.

Unit 951

HERITAGE RESOURCES

A finding of "No historic properties affected" (36 CFR 800.4(d)(1) or "No adverse effect" (36 CFR 800.5(d)(1) has been applied. Project activities may proceed as planned; however the Heritage Professional shall be consulted if new discoveries or unanticipated effects are identified during the project's implementation phase. All activities in the vicinity of the discovery shall cease and reasonable efforts shall be taken to avoid or minimize harm to the resource.

SCENERY

No scenery concerns.

RECREATION

No recreation concerns.

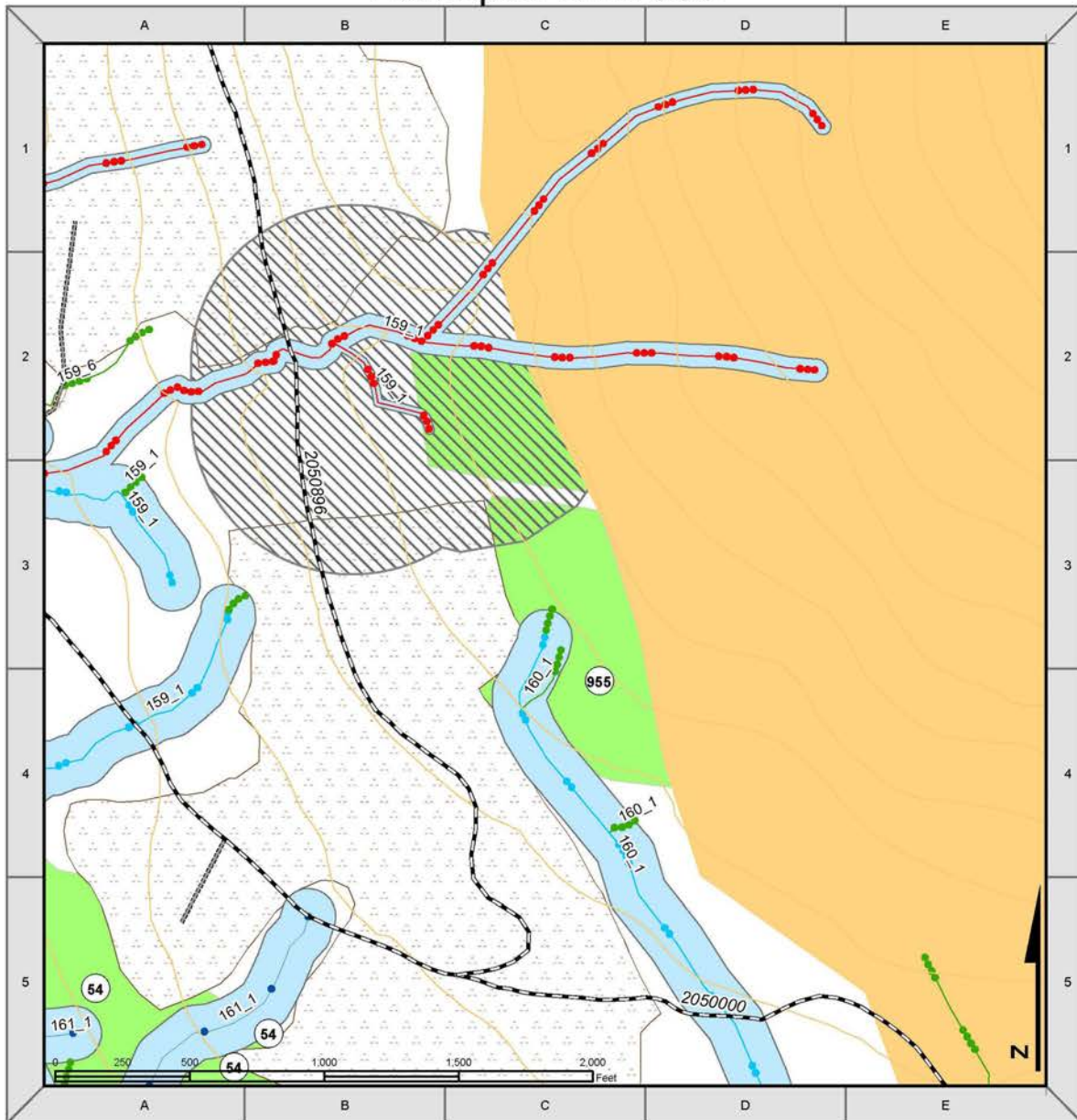
SOILS/WETLANDS

Slopes range from 30 to greater than 72% in all polygons. About 1 acre of the unit is only suitable for harvest with full suspension. Helicopter logging will meet all soil and wetland resource concerns in all of the unit. Apply R10 BMPs 12.5, 13.5, and 13.9 and National Core BMPs Plan-2, AqEco-2, AqEco-4, Veg-1, Veg-2, Veg-5, and Veg-6.

WILDLIFE

Goshawk surveys are complete. No goshawks detected.

Helicopter Unit: 955



Units	Great Blue Heron	Stream Class III	Past Harvest
Roadless Rule	Bear Den	Stream Class IV	NonDevelopment LUDs
Contour 100ft	Proposed Temporary Roads	Riparian Management Area	Old-Growth LUD
High Vulnerability Karst	Existing NFS Roads	T77/Audubon Watersheds	Legacy
USFWS Eagle Buffer	Existing Temporary Roads	Community Use 5-Mile Zone	NonForest Service Lands
Goshawk Nest Buffer	Non-NFS Roads	Unsuitable Soils	Saltwater
Wildlife Buffers	Lakes	Full Suspension Soils	
Marbled Murrelet	Stream Class I	Beach Buffers Max High Water	
Raptor	Stream Class II	Landslides	

Unit 955							
Unit Number:	955	Total Harvest Unit Acres	7.9	Prescription:	UEA	Harvest System:	Helicopter
VCU Number:	5890	LUD:	Timber Production		Net Harvest Volume (MBF):		49
Summary of Concerns, Responses, BMPs, and Mitigations							
SILVICULTURE							
<p>Old-growth stands tend to already exhibit uneven-aged structure to varying degrees. The objective of uneven-aged management is to: 1) economically harvest a portion of the stand, 2) maintain old-growth structure in the stand, and 3) retain trees that will provide for economically viable and sustainable future entries. Uneven-aged management in this unit will be done by single tree selection using a helicopter logging system. When doing a cut-tree mark to designate removals, safety or hazard trees may also be marked as required for safety purposes. Variability in the stand will result in variability in the mark, from scattered individual trees to groups where overstory removal cannot exceed 2 acres in size. On average, retain approximately 66% of the pre-harvest basal area of standing live trees, and retain at least 75% in portions of the unit where windthrow risk is high. Generally maintain pre-harvest species composition after harvest. Retain: 1) healthy young 'crop' trees that promote economic future entries, 2) older trees with low timber value but high wildlife value, 3) advanced and new regeneration trees. The Silviculturist will establish inspection plots to ensure marking guidelines are adhered to and objectives are met for the unit.</p>							
TIMBER/LOGGING							
This unit is planned for Helicopter yarding to landings located 2050000.							
ENGINEERING/SYSTEM ROADS							
Landings on NFS road 2050000 (BMP 14.20, Road-4). Road is open and maintained.							
BOTANY							
Surveys have not been completed but will be required due to identified high potential habitat for <i>Cypripedium parviflorum</i> var. <i>pubescens</i> (Large yellow Lady's slipper) and others within the unit. All resource-specific information, protections and mitigations will be determined before harvest activities are implemented.							
INVASIVE SPECIES							
Helicopter Landings will need to be surveyed for invasive plants. If plants are found, BMPs (Krosse 2017) are followed to avoid spread or introduction of weeds to the area due to project actions.							
FISHERIES							
<p>Stream Num: Map location C-3 / C-4 / C-5 (160_1.50L) Stream Class: II, IV Channel Type: HCO Protection: Category A and C Flagging: B/W, G/W Buffer (RMA): Class II for HCO - 100 feet or to the top of the side-slope break; whichever is greater. Class IV for HCO - No buffer Concerns: N/A</p> <p>Stream Num: Map location C-4 (160_1.50L.1R) Stream Class: IV Channel Type: HCO Protection: Category C Flagging: G/W Buffer (RMA): Class IV for HCO - No buffer Concerns: Not field verified</p> <p>Stream Num: Map location C-3 (160_1.50L.2R) Stream Class: IV Channel Type: HCO Protection: Category C Flagging: G/W Buffer (RMA): Class IV for HCO - No buffer Concerns: N/A</p>							

Unit 955

During the GIS process all streams were labeled as 160_1. Map locations were provided for streams along with the correct name. Stream labels will be corrected before final unit cards are prepared. Proposed helicopter landings will need stream reviews prior to final Unit Cards and implementation.

All Streams Protection/Mitigation Actions by Category:

All Categories implement BMPs

Category A reaches flagged B/W: Under the TTRA timber harvest shall not be within 100 feet of the stream channel and a Stream course Protection Plan will be developed for that buffer. Additional AHMU buffers and selective harvest buffers may apply as specified above. Total no cut buffer is the sum of the no commercial and no programmed commercial harvest buffers.

Category B reaches flagged O/W: Trees shall be felled in such a manner so that the direction of fall is away from the stream course. Trees or products shall not be hauled or yarded across the stream course unless fully suspended. Debris entering streams from harvest activities shall be removed. Additional AHMU buffers and selective harvest buffers may apply as specified above. Total no cut buffer equals the no programmed commercial harvest buffers.

Category C reaches flagged G/W: In so far as practicable, trees will be felled and yarded away from the stream course. Debris that enters the stream channel that may affect water quality or have potential for debris flows will be removed from the stream course.

ROAD/STREAM CROSSING SUMMARY

Log landings and system road re-opening needs are discussed in the Engineering/System Roads section above. Should road/stream crossing structures be installed or re-installed the hydrologist will be consulted.

GEOLOGY/KARST

Unit has been reviewed for karst and cave resources. There is no known karst or cave resource concerns.

HERITAGE RESOURCES

A finding of "No historic properties affected" (36 CFR 800.4(d)(1)) or "No adverse effect" (36 CFR 800.5(d)(1)) has been applied. Project activities may proceed as planned; however the Heritage Professional shall be consulted if new discoveries or unanticipated effects are identified during the project's implementation phase. All activities in the vicinity of the discovery shall cease and reasonable efforts shall be taken to avoid or minimize harm to the resource.

SCENERY

No scenery concerns.

RECREATION

No recreation concerns.

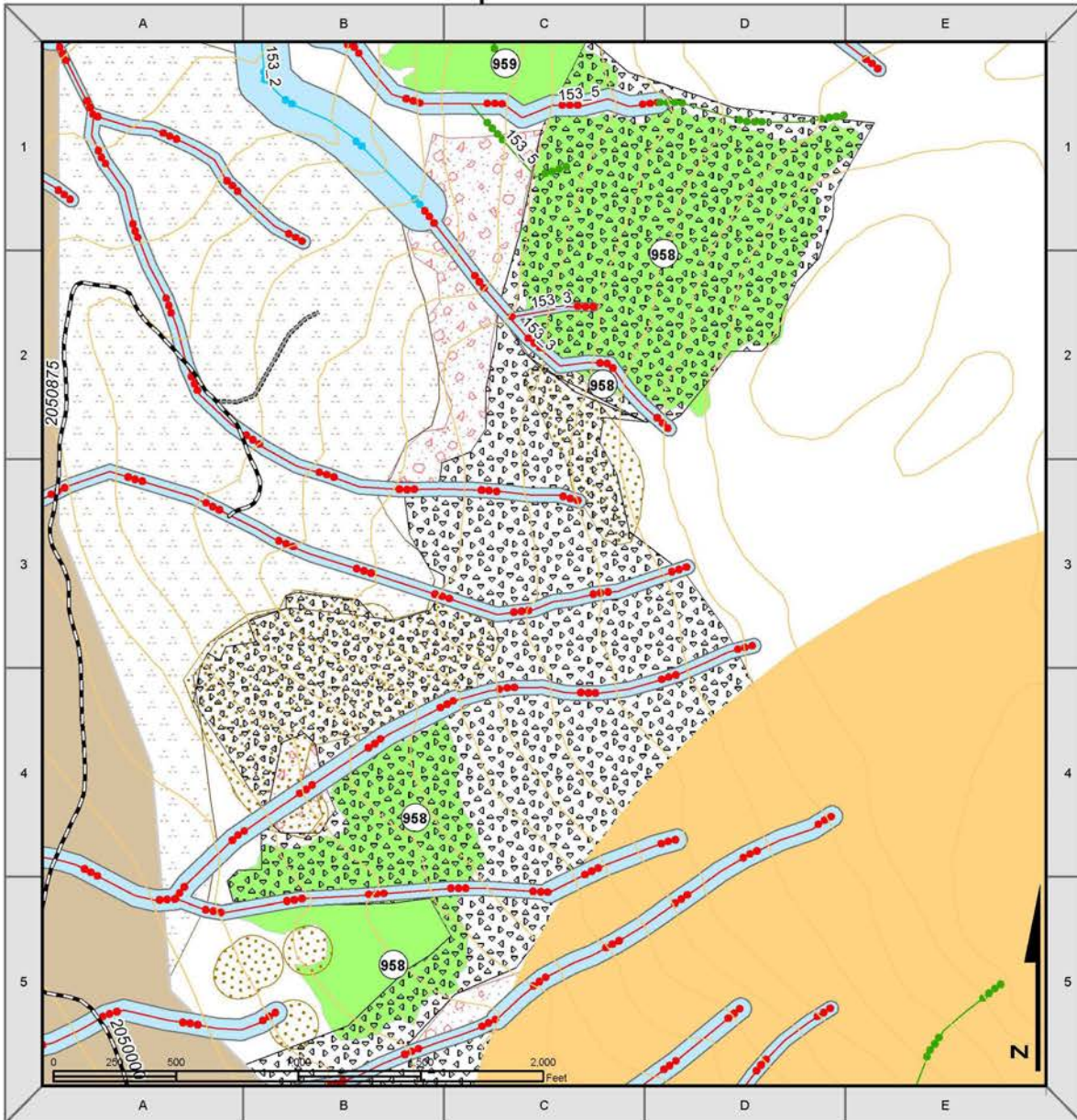
SOILS/WETLANDS

Slopes range from 35 to 55% in the unit. Helicopter logging will meet all soil and wetland resource concerns. Forested wetlands are located throughout. Apply R10 BMPs 12.5, 13.5, and 13.9 and National Core BMPs Plan-2, AqEco-2, AqEco-4, Veg-1, Veg-2, Veg-5, and Veg-6.

WILDLIFE

No goshawk surveys have been conducted. Goshawk surveys are required. All surveys will be conducted prior to implementation.

Helicopter Unit: 958



Units	Great Blue Heron	Stream Class III	Past Harvest
Roadless Rule	Bear Den	Stream Class IV	NonDevelopment LUDs
Contour 100ft	Proposed Temporary Roads	Riparian Management Area	Old-Growth LUD
High Vulnerability Karst	Existing NFS Roads	T77/Audubon Watersheds	Legacy
USFWS Eagle Buffer	Existing Temporary Roads	Community Use 5-Mile Zone	NonForest Service Lands
Goshawk Nest Buffer	Non-NFS Roads	Unsuitable Soils	Saltwater
Wildlife Buffers	Lakes	Full Suspension Soils	
Marbled Murrelet	Stream Class I	Beach Buffers Max High Water	
Raptor	Stream Class II	Landslides	

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Unit 958							
Unit Number:	958	Total Harvest Unit Acres	42	Prescription:	UEA	Harvest System:	Helicopter
VCU Number:	5890	LUD:	Timber Production		Net Harvest Volume (MBF):		433
Summary of Concerns, Responses, BMPs, and Mitigations							
SILVICULTURE							
<p>Old-growth stands tend to already exhibit uneven-aged structure to varying degrees. The objective of uneven-aged management is to: 1) economically harvest a portion of the stand, 2) maintain old-growth structure in the stand, and 3) retain trees that will provide for economically viable and sustainable future entries. Uneven-aged management in this unit will be done by single tree selection using a helicopter logging system. When doing a cut-tree mark to designate removals, safety or hazard trees may also be marked as required for safety purposes. Variability in the stand will result in variability in the mark, from scattered individual trees to groups where overstory removal cannot exceed 2 acres in size. On average, retain approximately 66% of the pre-harvest basal area of standing live trees, and retain at least 75% in portions of the unit where windthrow risk is high. Generally maintain pre-harvest species composition after harvest. Retain: 1) healthy young 'crop' trees that promote economic future entries, 2) older trees with low timber value but high wildlife value, 3) advanced and new regeneration trees. The Silviculturist will establish inspection plots to ensure marking guidelines are adhered to and objectives are met for the unit.</p>							
TIMBER/LOGGING							
This unit is comprised of 2 settings and is planned for Helicopter yarding to landings located on roads 2050000 and 2050870.							
ENGINEERING/SYSTEM ROADS							
Landings on NFS road 2050050 (BMP 14.20, Road-4). Road is open and maintained. Landings on NFS road 2050870. 2050870 is a closed road and will require maintenance upgrades to meet haul standards (BMP 14.20, Road-4).							
BOTANY							
Surveys have not been completed but will be required due to identified high potential habitat for CYPAP3 and others within the unit. All resource-specific information, protections and mitigations will be determined before harvest activities are implemented.							
INVASIVE SPECIES							
Helicopter Landings will need to be surveyed for invasive plants. If plants are found, BMPs (Krosse 2017) are followed to avoid spread or introduction of weeds to the area due to project actions.							
FISHERIES							
<p>Stream Num: Map location C-2 (153_2.0) Stream Class: IV Channel Type: HCO Protection: Category C Flagging: G/W Buffer (RMA): Class IV for HCO – No buffer Concerns: Stream edits needed</p> <p>Stream Num: Map location C-2 (153_3.0.1L) Stream Class: IV Channel Type: HCO Protection: Category C Flagging: G/W Buffer (RMA): Class IV for HCO – No buffer Concerns: Stream edits needed</p> <p>Stream Num: Map location C-1 / D-1 (153_51.0) Stream Class: III, IV Channel Type: HCD, HCO Protection: Category B and C Flagging: O/W, G/W Buffer (RMA): Class III for HCD - To the top of the side-slope break Class IV for HCO - No buffer</p>							

Unit 958

Concerns: High Blowdown

Stream Num: Map location C-1 (153_51.1R)
Stream Class: IV
Channel Type: HCO
Protection: Category C
Flagging: G/W
Buffer (RMA):
Class IV for HCO - No buffer
Concerns: N/A

Stream Num: Map location B-4 (958_5.0)
Stream Class: III
Channel Type: HCM, HCD
Protection: Category B
Flagging: O/W
Buffer (RMA):
Class III for HCM - To the top of the side-slope break
Class III for HCD - To the top of the side-slope break
Concerns: High Blowdown

Stream Num: Map location B-5 (958_5.1R)
Stream Class: IV
Channel Type: HCL
Protection: Category C
Flagging: G/W
Buffer (RMA):
Class IV for HCL - No buffer
Concerns: High Blowdown and stream edits needed

Stream Num: Map location B-5 / C-5 (958_1.1L.1L)
Stream Class: III
Channel Type: HCD
Protection: Category B
Flagging: O/W
Buffer (RMA):
Class III for HCD - To the top of the side-slope break
Concerns: Extreme Blowdown and stream edits needed

Stream Num: Map location B-5 (958_1.1L.0L)
Stream Class: IV
Channel Type: HCO
Protection: Category C
Flagging: G/W
Buffer (RMA):
Class IV for HCO - No buffer
Concerns: Stream edits needed

During the GIS process all streams were labeled incorrectly. Map locations were provided for streams along with the correct name. Stream labels will be corrected before final unit cards are prepared. Proposed helicopter landings will need stream reviews prior to final Unit Cards and implementation.

All Streams Protection/Mitigation Actions by Category:

All Categories implement BMPs

Category A reaches flagged B/W: Under the TTRA timber harvest shall not be within 100 feet of the stream channel and a Stream course Protection Plan will be developed for that buffer. Additional AHMU buffers and selective harvest buffers may apply as specified above. Total no cut buffer is the sum of the no commercial and no programmed commercial harvest buffers.

Category B reaches flagged O/W: Trees shall be felled in such a manner so that the direction of fall is away from the stream course. Trees or products shall not be hauled or yarded across the stream course unless fully suspended. Debris entering streams from harvest activities shall be removed. Additional AHMU buffers and

Unit 958

selective harvest buffers may apply as specified above. Total no cut buffer equals the no programmed commercial harvest buffers.

Category C reaches flagged G/W: In so far as practicable, trees will be felled and yarded away from the stream course. Debris that enters the stream channel that may affect water quality or have potential for debris flows will be removed from the stream course.

ROAD/STREAM CROSSING SUMMARY

Log landings and system road re-opening needs are discussed in the Engineering/System Roads section above. Should road/stream crossing structures be installed or re-installed the hydrologist will be consulted.

GEOLOGY/KARST

Unit has been reviewed for karst and cave resources. There is no known karst or cave resource concerns.

HERITAGE RESOURCES

A finding of "No historic properties affected" (36 CFR 800.4(d)(1) or "No adverse effect" (36 CFR 800.5(d)(1) has been applied. Project activities may proceed as planned; however the Heritage Professional shall be consulted if new discoveries or unanticipated effects are identified during the project's implementation phase. All activities in the vicinity of the discovery shall cease and reasonable efforts shall be taken to avoid or minimize harm to the resource.

SCENERY

No scenery concerns.

RECREATION

No recreation concerns.

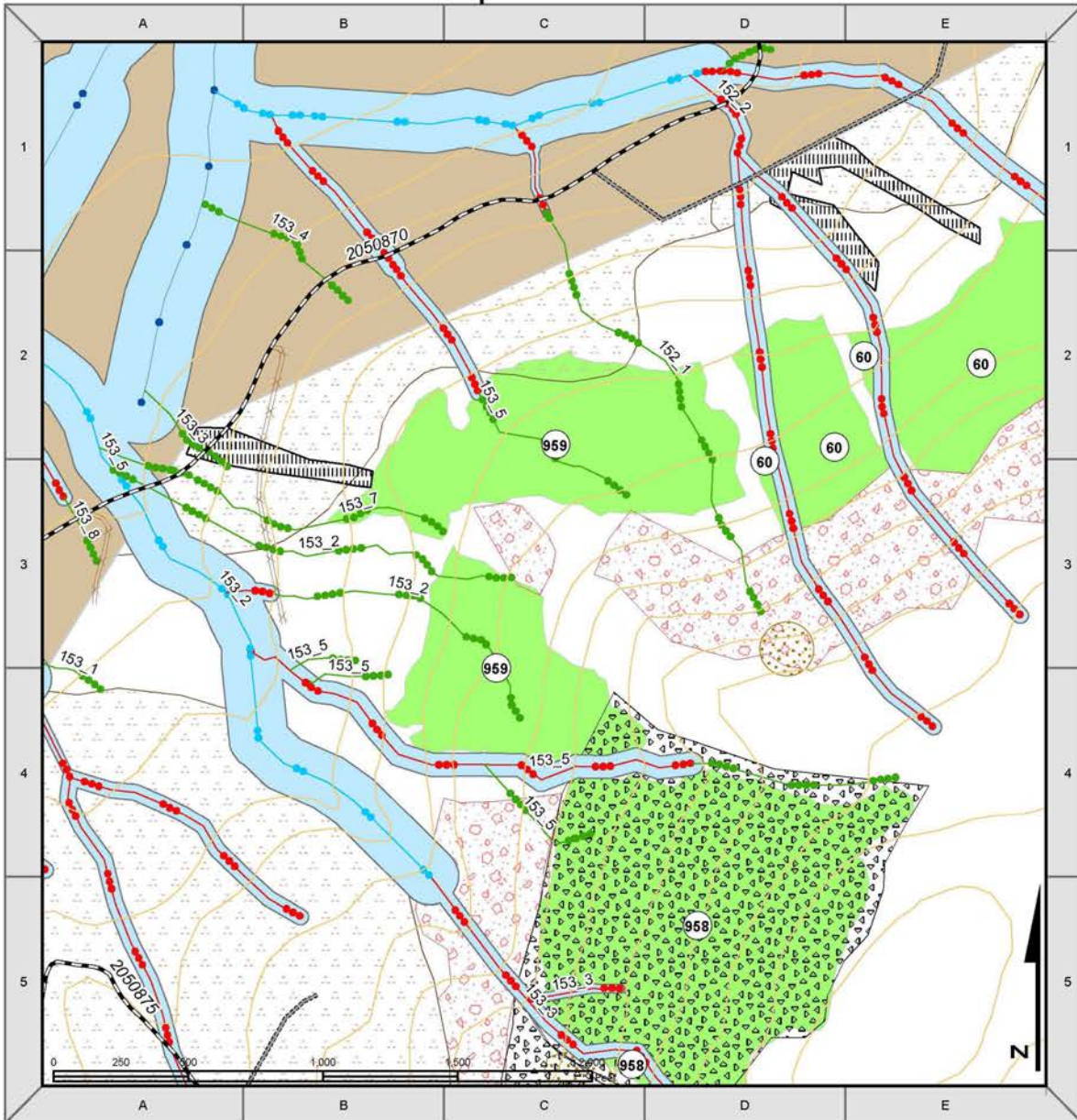
SOILS/WETLANDS

Slopes range from 45 to greater than 72% in all polygons. Approximately 13 acres of unsuitable soils are excluded from harvest consideration around the polygons due very steep slopes and landslides. Both polygons are only suitable for harvest with full suspension. Helicopter logging will meet all soil and wetland resource concerns. Forested wetlands occur intermittently in both polygons. Apply R10 BMPs 12.5, 13.5, and 13.9 and National Core BMPs Plan-2, AqEco-2, AqEco-4, Veg-1, Veg-2, Veg-5, and Veg-6.

WILDLIFE

Portion of proposed unit is greater than 1000 feet in elevation. No goshawk surveys required. The other portion of the unit is less than 1000 feet in elevation. This portion of the unit was surveyed for goshawks in 2017. No goshawks were detected. Surveys meet the intent of the protocol.

Helicopter Unit: 959



Units	Great Blue Heron	Stream Class III	Past Harvest
Roadless Rule	Bear Den	Stream Class IV	NonDevelopment LUDs
Contour 100ft	Proposed Temporary Roads	Riparian Management Area	Old-Growth LUD
High Vulnerability Karst	Existing NFS Roads	T77/Audubon Watersheds	Legacy
USFWS Eagle Buffer	Existing Temporary Roads	Community Use 5-Mile Zone	NonForest Service Lands
Goshawk Nest Buffer	Non-NFS Roads	Unsuitable Soils	Saltwater
Wildlife Buffers	Lakes	Full Suspension Soils	
Marbled Murrelet	Stream Class I	Beach Buffers Max High Water	
Raptor	Stream Class II	Landslides	

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Unit 959							
Unit Number:	959	Total Harvest Unit Acres	24.5	Prescription:	UEA	Harvest System:	Helicopter
VCU Number:	5890	LUD:	Timber Production		Net Harvest Volume (MBF):		220
Summary of Concerns, Responses, BMPs, and Mitigations							
SILVICULTURE							
<p>Old-growth stands tend to already exhibit uneven-aged structure to varying degrees. The objective of uneven-aged management is to: 1) economically harvest a portion of the stand, 2) maintain old-growth structure in the stand, and 3) retain trees that will provide for economically viable and sustainable future entries. Uneven-aged management in this unit will be done by single tree selection using a helicopter logging system. When doing a cut-tree mark to designate removals, safety or hazard trees may also be marked as required for safety purposes. Variability in the stand will result in variability in the mark, from scattered individual trees to groups where overstory removal cannot exceed 2 acres in size. On average, retain approximately 66% of the pre-harvest basal area of standing live trees, and retain at least 75% in portions of the unit where windthrow risk is high. Generally maintain pre-harvest species composition after harvest. Retain: 1) healthy young 'crop' trees that promote economic future entries, 2) older trees with low timber value but high wildlife value, 3) advanced and new regeneration trees. The Silviculturist will establish inspection plots to ensure marking guidelines are adhered to and objectives are met for the unit.</p>							
TIMBER/LOGGING							
This unit is comprised of 2 settings and is planned for Helicopter yarding to landings located on road 2050870.							
ENGINEERING/SYSTEM ROADS							
Landings on NFS road 2050870. 2050870 is a closed road and will require maintenance upgrades to meet haul standards (BMP 14.20, Road-4).							
BOTANY							
Surveys have not been completed but will be required due to identified potential riparian and calcareous habitat within the unit. All resource-specific information, protections and mitigations will be determined before harvest activities are implemented.							
INVASIVE SPECIES							
Helicopter Landings will need to be surveyed for invasive plants. If plants are found, BMPs (Krosse 2017) are followed to avoid spread or introduction of weeds to the area due to project actions.							
FISHERIES							
<p>Stream Num: Map location D-2 / D-3 (152_1.0) Stream Class: IV Channel Type: HCO Protection: Category C Flagging: G/W Buffer (RMA): Class IV for HCO - No buffer Concerns: High Blowdown</p> <p>Stream Num: Map location D-2 / D-3 (152_1.1L) Stream Class: IV Channel Type: HCO Protection: Category C Flagging: G/W Buffer (RMA): Class IV for HCO - No buffer Concerns: High Blowdown; Needs stream edits</p> <p>Stream Num: Map location D-2 / D-3 (152_2.1R) Stream Class: IV Channel Type: HCO Protection: Category C Flagging: G/W Buffer (RMA): Class IV for HCO - No buffer Concerns: Needs stream edits; Stream incorrectly mapped as Class III HCM</p> <p>Stream Num: Map location B-3 / C-3 (153_2.0L)</p>							

Unit 959

Stream Class: IV
Channel Type: HCO
Protection: Category C
Flagging: G/W
Buffer (RMA):
Class IV for HCO - No buffer
Concerns: Extreme Blowdown

Stream Num: Map location B-3 / C-3 / C-4 (153_2.1L)
Stream Class: IV
Channel Type: HCO
Protection: Category C
Flagging: G/W
Buffer (RMA):
Class IV for HCO - No buffer
Concerns: N/A

Stream Num: Map location B-2 / C-2 / C-3 (153_5.0)
Stream Class: III, IV
Channel Type: HCM, HCO
Protection: Category B and C
Flagging: O/W, G/W
Buffer (RMA):
Class III for HCM - To the top of the side-slope break
Class IV for HCO - No buffer
Concerns: High blowdown

Stream Num: Map location B-3 (153_7.0)
Stream Class: IV
Channel Type: HCL
Protection: Category C
Flagging: G/W
Buffer (RMA):
Class IV for HCL - No buffer
Concerns: High blowdown

Stream Num: Map location B-3 / C-4 / D-4 (153_51.0)
Stream Class: III, IV
Channel Type: HCD, HCO
Protection: Category B and C
Flagging: O/W, G/W
Buffer (RMA):
Class III for HCD - To the top of the side-slope break
Class IV for HCO - No buffer
Concerns: High Blowdown

Stream Num: Map location B-3 (153_51.1L)
Stream Class: IV
Channel Type: HCO
Protection: Category C
Flagging: G/W
Buffer (RMA):
Class IV for HCO - No buffer
Concerns: N/A

Stream Num: Map location C-4 (153_51.1R)
Stream Class: IV
Channel Type: HCO
Protection: Category C
Flagging: G/W
Buffer (RMA):

Unit 959

Class IV for HCO - No buffer
Concerns: N/A

Stream Num: Map location B-4 (153_51.2L)
Stream Class: IV
Channel Type: HCO
Protection: Category C
Flagging: G/W
Buffer (RMA):
Class IV for HCO - No buffer
Concerns: N/A

Proposed helicopter landings will need stream reviews prior to final Unit Cards and implementation.

All Streams Protection/Mitigation Actions by Category:

All Categories implement BMPs

Category A reaches flagged B/W: Under the TTRA timber harvest shall not be within 100 feet of the stream channel and a Stream course Protection Plan will be developed for that buffer. Additional AHMU buffers and selective harvest buffers may apply as specified above. Total no cut buffer is the sum of the no commercial and no programmed commercial harvest buffers.

Category B reaches flagged O/W: Trees shall be felled in such a manner so that the direction of fall is away from the stream course. Trees or products shall not be hauled or yarded across the stream course unless fully suspended. Debris entering streams from harvest activities shall be removed. Additional AHMU buffers and selective harvest buffers may apply as specified above. Total no cut buffer equals the no programmed commercial harvest buffers.

Category C reaches flagged G/W: In so far as practicable, trees will be felled and yarded away from the stream course. Debris that enters the stream channel that may affect water quality or have potential for debris flows will be removed from the stream course.

ROAD/STREAM CROSSING SUMMARY

Log landings and system road re-opening needs are discussed in the Engineering/System Roads section above. Should road/stream crossing structures be installed or re-installed the hydrologist will be consulted.

GEOLOGY/KARST

Unit has been reviewed for karst and cave resources. There is no known karst or cave resource concerns.

HERITAGE RESOURCES

A finding of "No historic properties affected" (36 CFR 800.4(d)(1) or "No adverse effect" (36 CFR 800.5(d)(1) has been applied. Project activities may proceed as planned; however the Heritage Professional shall be consulted if new discoveries or unanticipated effects are identified during the project's implementation phase. All activities in the vicinity of the discovery shall cease and reasonable efforts shall be taken to avoid or minimize harm to the resource.

SCENERY

No scenery concerns.

RECREATION

No recreation concerns.

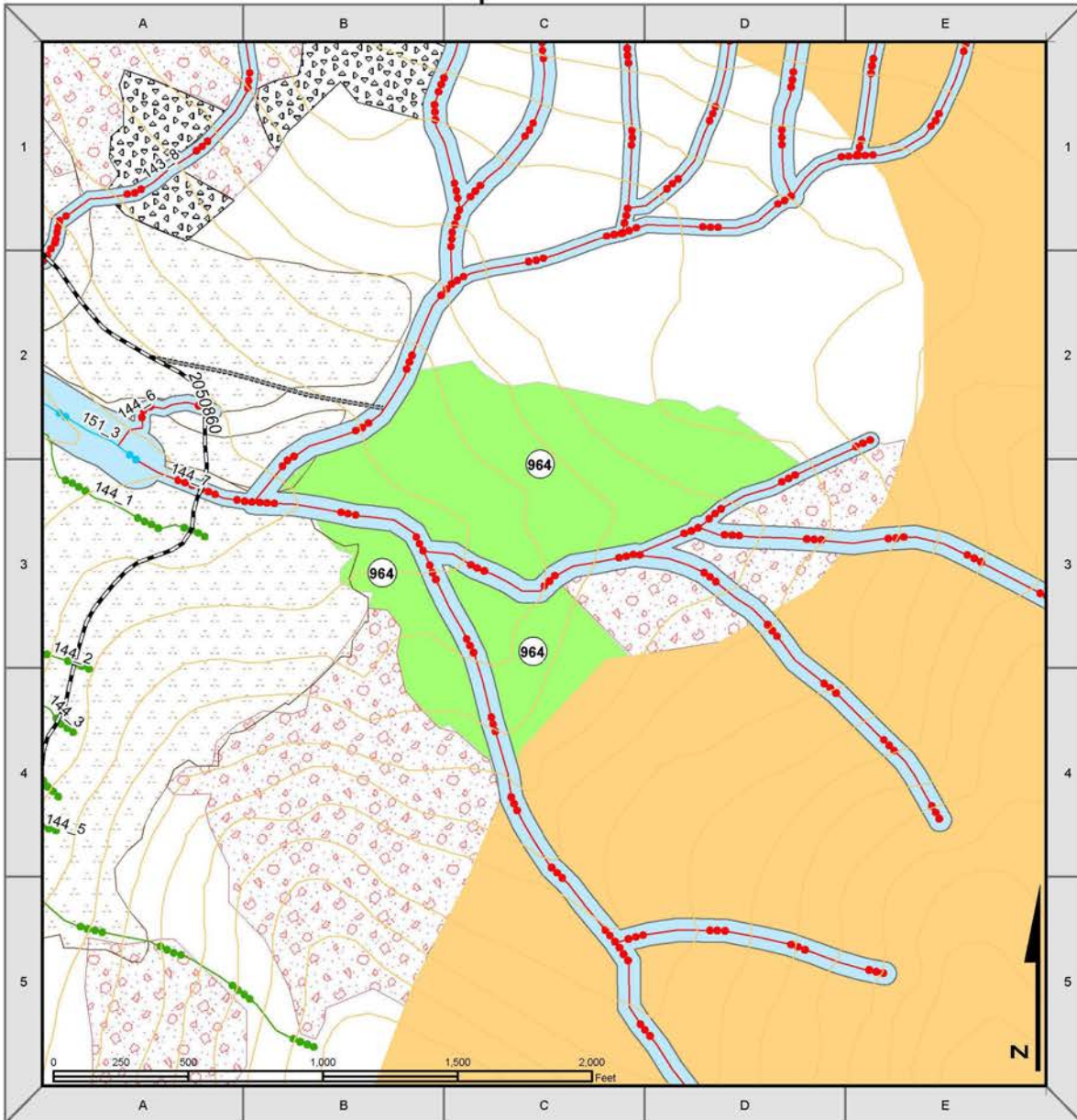
SOILS/WETLANDS

Slopes range from 35 to greater than 72% in all polygons. Approximately 25 acres of unsuitable soils are excluded from harvest consideration around the polygons due to steep wet slopes, colluvial activity, slumps, and landslide prone terrain. There are small pitches of slopes greater than 72% within the proposed unit and are suitable for harvest. Helicopter logging will meet all soil and wetland resource concerns. Forested wetlands occur intermittently in both polygons. Apply R10 BMPs 12.5, 13.5, and 13.9 and National Core BMPs Plan-2, AqEco-2, AqEco-4, Veg-1, Veg-2, Veg-5, and Veg-6.

WILDLIFE

Goshawk surveys were completed in 2017. No goshawks were detected.

Helicopter Unit: 964



Units	Great Blue Heron	Stream Class III	Past Harvest
Roadless Rule	Bear Den	Stream Class IV	NonDevelopment LUDs
Contour 100ft	Proposed Temporary Roads	Riparian Management Area	Old-Growth LUD
High Vulnerability Karst	Existing NFS Roads	T77/Audubon Watersheds	Legacy
USFWS Eagle Buffer	Existing Temporary Roads	Community Use 5-Mile Zone	NonForest Service Lands
Goshawk Nest Buffer	Non-NFS Roads	Unsuitable Soils	Saltwater
Wildlife Buffers	Lakes	Full Suspension Soils	
Marbled Murrelet	Stream Class I	Beach Buffers Max High Water	
Raptor	Stream Class II	Landslides	

Unit 964							
Unit Number:	964	Total Harvest Unit Acres	27.9	Prescription:	UEA	Harvest System:	Helicopter
VCU Number:	5890	LUD:	Timber Production		Net Harvest Volume (MBF):		188
Summary of Concerns, Responses, BMPs, and Mitigations							
SILVICULTURE							
<p>Old-growth stands tend to already exhibit uneven-aged structure to varying degrees. The objective of uneven-aged management is to: 1) economically harvest a portion of the stand, 2) maintain old-growth structure in the stand, and 3) retain trees that will provide for economically viable and sustainable future entries. Uneven-aged management in this unit will be done by single tree selection using a helicopter logging system. When doing a cut-tree mark to designate removals, safety or hazard trees may also be marked as required for safety purposes. Variability in the stand will result in variability in the mark, from scattered individual trees to groups where overstory removal cannot exceed 2 acres in size. On average, retain approximately 66% of the pre-harvest basal area of standing live trees, and retain at least 75% in portions of the unit where windthrow risk is high. Generally maintain pre-harvest species composition after harvest. Retain: 1) healthy young 'crop' trees that promote economic future entries, 2) older trees with low timber value but high wildlife value, 3) advanced and new regeneration trees. The Silviculturist will establish inspection plots to ensure marking guidelines are adhered to and objectives are met for the unit.</p>							
TIMBER/LOGGING							
This unit is planned for Helicopter yarding to landings located on 2050860.							
ENGINEERING/SYSTEM ROADS							
Landings on NFS road 2050860 (BMP 14.20, Road-4). Road is open and maintained.							
BOTANY							
Unit was surveyed. No botanical concerns.							
INVASIVE SPECIES							
Helicopter Landings will need to be surveyed for invasive plants. If plants are found, BMPs (Krosse 2017) are followed to avoid spread or introduction of weeds to the area due to project actions.							
FISHERIES							
<p>Stream Num: Map location B-2 (144_6.0) Stream Class: III Channel Type: HCD Protection: Category B Flagging: O/W Buffer (RMA): Class III for HCD - To the top of the side-slope break Concerns: Extreme blowdown; Needs stream edits; Stream is incorrectly mapped as HCM</p> <p>Stream Num: Map location A-3 / B-3 / C-3 / C-4 (144_7.0) Stream Class: III Channel Type: HCM Protection: Category B Flagging: O/W Buffer (RMA): Class III for HCM -To the top of the side-slope break Concerns: Needs stream edits; Stream is incorrectly mapped as HCD</p> <p>Stream Num: Map location B-3 / B-2 / C-2 (144_7.1L) Stream Class: III Channel Type: HCM Protection: Category B Flagging: O/W Buffer (RMA): Class III for HCM - To the top of the side-slope break Concerns: Extreme blowdown; Needs stream edits; Not currently mapped</p> <p>Stream Num: Map location B-2 (144_7.1L.1L) Stream Class: IV Channel Type: HCO Protection: Category C</p>							

Unit 964

Flagging: G/W
Buffer (RMA):
Class IV for HCO – No Buffer
Concerns: Needs stream edits; Not currently mapped

Stream Num: Map location B-3 (144_7.1R)
Stream Class: IV
Channel Type: HCO
Protection: Category C
Flagging: G/W
Buffer (RMA):
Class IV for HCO – No Buffer
Concerns: Needs stream edits; Not currently mapped

Stream Num: Map location B-3 / C-3 / D-2 (144_7.2L)
Stream Class: III, IV
Channel Type: HCM, HCO
Protection: Category B and C
Flagging: O/W, G/W
Buffer (RMA):
Class III for HCM - To the top of the side-slope break
Class IV for HCO – No Buffer
Concerns: Needs stream edits; Incorrectly mapped further south as HCD

Stream Num: Map location C-3 / C-2 (144_7.2L.1L)
Stream Class: IV
Channel Type: HCO
Protection: Category C
Flagging: G/W
Buffer (RMA):
Class IV for HCO – No Buffer
Concerns: Needs stream edits; Not currently mapped

Stream Num: Map location C-3 / C-2 (144_7.2L.2L)
Stream Class: IV
Channel Type: HCL
Protection: Category C
Flagging: G/W
Buffer (RMA):
Class IV for HCL – No Buffer
Concerns: Needs stream edits; Not currently mapped

Stream Num: Map location C-3 (144_7.2L.2R)
Stream Class: IV
Channel Type: HCL
Protection: Category C
Flagging: G/W
Buffer (RMA):
Class IV for HCL – No Buffer
Concerns: Needs stream edits; Not currently mapped

Stream Num: Map location D-3 (144_7.2L.3R)
Stream Class: IV
Channel Type: HCO
Protection: Category C
Flagging: G/W
Buffer (RMA):
Class IV for HCO – No Buffer
Concerns: Needs stream edits; Not currently mapped

Stream Num: Map location C-4 (144_7.3L)

Unit 964

Stream Class: IV
Channel Type: HCO
Protection: Category C
Flagging: G/W
Buffer (RMA):
Class IV for HCO – No Buffer
Concerns: Needs stream edits; Not currently mapped

Proposed helicopter landings will need stream reviews prior to final Unit Cards and implementation.

All Streams Protection/Mitigation Actions by Category:

All Categories implement BMPs

Category A reaches flagged B/W: Under the TTRA timber harvest shall not be within 100 feet of the stream channel and a Stream course Protection Plan will be developed for that buffer. Additional AHMU buffers and selective harvest buffers may apply as specified above. Total no cut buffer is the sum of the no commercial and no programmed commercial harvest buffers.

Category B reaches flagged O/W: Trees shall be felled in such a manner so that the direction of fall is away from the stream course. Trees or products shall not be hauled or yarded across the stream course unless fully suspended. Debris entering streams from harvest activities shall be removed. Additional AHMU buffers and selective harvest buffers may apply as specified above. Total no cut buffer equals the no programmed commercial harvest buffers.

Category C reaches flagged G/W: In so far as practicable, trees will be felled and yarded away from the stream course. Debris that enters the stream channel that may affect water quality or have potential for debris flows will be removed from the stream course.

ROAD/STREAM CROSSING SUMMARY

Log landings and system road re-opening needs are discussed in the Engineering/System Roads section above. Should road/stream crossing structures be installed or re-installed the hydrologist will be consulted.

GEOLOGY/KARST

Unit has been reviewed for karst and cave resources. There is no known karst or cave resource concerns.

HERITAGE RESOURCES

A finding of "No historic properties affected" (36 CFR 800.4(d)(1) or "No adverse effect" (36 CFR 800.5(d)(1) has been applied. Project activities may proceed as planned; however the Heritage Professional shall be consulted if new discoveries or unanticipated effects are identified during the project's implementation phase. All activities in the vicinity of the discovery shall cease and reasonable efforts shall be taken to avoid or minimize harm to the resource.

SCENERY

No scenery concerns.

RECREATION

No recreation concerns.

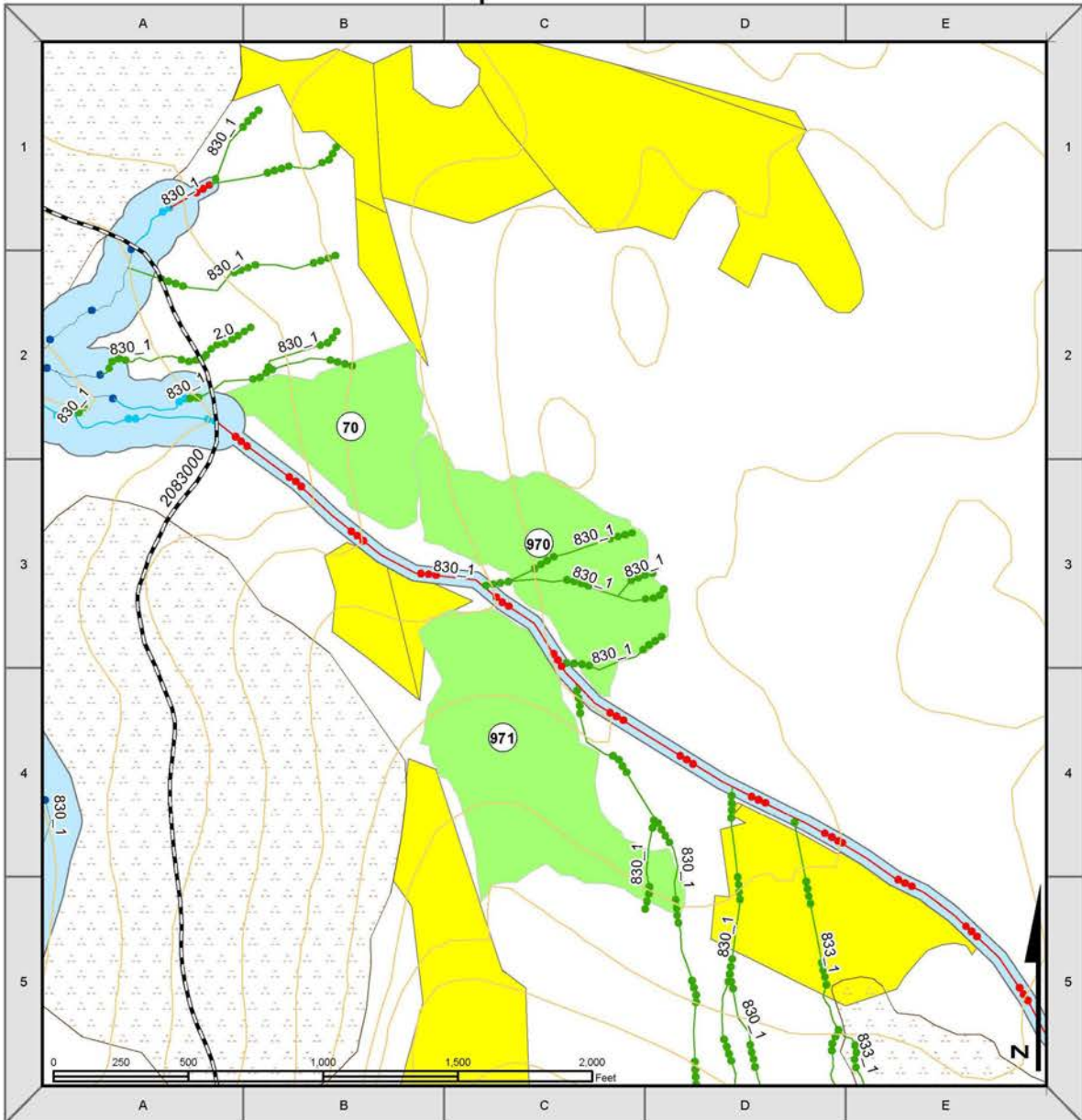
SOILS/WETLANDS

Slopes range from 35 to greater than 72% in all polygons. Approximately 34 acres of unsuitable soils are excluded from harvest consideration around the polygons due to extremely steep slopes, landslides, wet slopes, and very high landslide prone terrain. There are small pitches of slopes greater than 72% within the proposed unit and are suitable for harvest. Helicopter logging will meet all soil and wetland resource concerns. Forested wetlands occur intermittently in the northwest. Apply R10 BMPs 12.5, 13.5, and 13.9 and National Core BMPs Plan-2, AqEco-2, AqEco-4, Veg-1, Veg-2, Veg-5, and Veg-6.

WILDLIFE

Most of the unit is above 1000 feet in elevations and does not require goshawk surveys. A portion of the unit is less than 1000 feet in elevation and does require goshawk surveys. No surveys have been conducted in this area. All surveys will be conducted prior to implementation.

Helicopter Unit: 970



Units	Great Blue Heron	Stream Class III	Past Harvest
Roadless Rule	Bear Den	Stream Class IV	NonDevelopment LUDs
Contour 100ft	Proposed Temporary Roads	Riparian Management Area	Old-Growth LUD
High Vulnerability Karst	Existing NFS Roads	T77/Audubon Watersheds	Legacy
USFWS Eagle Buffer	Existing Temporary Roads	Community Use 5-Mile Zone	NonForest Service Lands
Goshawk Nest Buffer	Non-NFS Roads	Unsuitable Soils	Saltwater
Wildlife Buffers	Lakes	Full Suspension Soils	
Marbled Murrelet	Stream Class I	Beach Buffers Max High Water	
Raptor	Stream Class II	Landslides	

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Unit 970							
Unit Number:	970	Total Harvest Unit Acres	9.6	Prescription:	UEA	Harvest System:	Helicopter
VCU Number:	5300	LUD:	Timber Production		Net Harvest Volume (MBF):		47
Summary of Concerns, Responses, BMPs, and Mitigations							
SILVICULTURE							
<p>Old-growth stands tend to already exhibit uneven-aged structure to varying degrees. The objective of uneven-aged management is to: 1) economically harvest a portion of the stand, 2) maintain old-growth structure in the stand, and 3) retain trees that will provide for economically viable and sustainable future entries. Uneven-aged management in this unit will be done by single tree selection using a helicopter logging system. When doing a cut-tree mark to designate removals, safety or hazard trees may also be marked as required for safety purposes. Variability in the stand will result in variability in the mark, from scattered individual trees to groups where overstory removal cannot exceed 2 acres in size. On average, retain approximately 66% of the pre-harvest basal area of standing live trees, and retain at least 75% in portions of the unit where windthrow risk is high. Generally maintain pre-harvest species composition after harvest. Retain: 1) healthy young 'crop' trees that promote economic future entries, 2) older trees with low timber value but high wildlife value, 3) advanced and new regeneration trees. The Silviculturist will establish inspection plots to ensure marking guidelines are adhered to and objectives are met for the unit.</p>							
TIMBER/LOGGING							
<p>This unit is planned for Helicopter yarding to landings located on temporary road that intersects road 2083000 at milepost 0.74. Additional landing located on road 2083000.</p>							
ENGINEERING/SYSTEM ROADS							
<p>Decommissioned road to be rebuilt 0.20 miles for helicopter landing, BMP 14.2, 14.5, 14.20, Road-5, Road 6. Decommissioned road intersects road 2083000 at milepost 114.96. Road 2083000 is open and maintained (BMP 14.20, Road-4).</p>							
BOTANY							
<p>Unit was surveyed, No botanical concerns.</p>							
INVASIVE SPECIES							
<p>Helicopter Landings will need to be surveyed for invasive plants. If plants are found, BMPs (Krosse 2017) are followed to avoid spread or introduction of weeds to the area due to project actions.</p>							
FISHERIES							
<p>Stream Num: Map location B-3 / C-3 / C-4 / D-4 (830_10.0) Stream Class: III Channel Type: HCM Protection: Category B Flagging: O/W Buffer (RMA): Class III for HCM - To the top of the side-slope break Concerns: Not field verified</p>							
<p>Stream Num: Map location C-4 / D-4 (830_10.0.1L) Stream Class: IV Channel Type: HCO Protection: Category C Flagging: G/W Buffer (RMA): Class IV for HCO - No buffer Concerns: Not field verified</p>							
<p>Stream Num: Map Location C-4 (830_10.0.1R) Stream Class: IV Channel Type: HCO Protection: Category C Flagging: G/W Buffer (RMA): Class IV for HCO - No buffer Concerns: Not field verified</p>							
<p>Stream Num: Map Location C-3 (830_10.0.1R.1L)</p>							

Unit 970

Stream Class: IV
Channel Type: HCO
Protection: Category C
Flagging: G/W
Buffer (RMA):
Class IV for HCO - No buffer
Concerns: Not field verified

Stream Num: Map Location C-3 (830_10.0.2R)
Stream Class: IV
Channel Type: HCO
Protection: Category C
Flagging: G/W
Buffer (RMA):
Class IV for HCO - No buffer
Concerns: Not field verified

Stream Num: Map Location C-3 (830_10.0.2R.1.L)
Stream Class: IV
Channel Type: HCO
Protection: Category C
Flagging: G/W
Buffer (RMA):
Class IV for HCO - No buffer
Concerns: Not field verified

During the GIS process all streams were labeled as 830_1.0. Map locations were provided for streams along with the correct name. Stream labels will be corrected before final unit cards are prepared. Proposed helicopter landings will need stream reviews prior to final Unit Cards and implementation.

All Streams Protection/Mitigation Actions by Category:

All Categories implement BMPs

Category A reaches flagged B/W: Under the TTRA timber harvest shall not be within 100 feet of the stream channel and a Stream course Protection Plan will be developed for that buffer. Additional AHMU buffers and selective harvest buffers may apply as specified above. Total no cut buffer is the sum of the no commercial and no programmed commercial harvest buffers.

Category B reaches flagged O/W: Trees shall be felled in such a manner so that the direction of fall is away from the stream course. Trees or products shall not be hauled or yarded across the stream course unless fully suspended. Debris entering streams from harvest activities shall be removed. Additional AHMU buffers and selective harvest buffers may apply as specified above. Total no cut buffer equals the no programmed commercial harvest buffers.

Category C reaches flagged G/W: In so far as practicable, trees will be felled and yarded away from the stream course. Debris that enters the stream channel that may affect water quality or have potential for debris flows will be removed from the stream course.

ROAD/STREAM CROSSING SUMMARY

Log landings and system road re-opening needs are discussed in the Engineering/System Roads section above. Should road/stream crossing structures be installed or re-installed the hydrologist will be consulted.

GEOLOGY/KARST

Unit has been reviewed for karst and cave resources. There is no known karst or cave resource concerns.

HERITAGE RESOURCES

A finding of "No historic properties affected" (36 CFR 800.4(d)(1)) or "No adverse effect" (36 CFR 800.5(d)(1)) has been applied. Project activities may proceed as planned; however the Heritage Professional shall be consulted if new discoveries or unanticipated effects are identified during the project's implementation phase. All activities in the vicinity of the discovery shall cease and reasonable efforts shall be taken to avoid or minimize harm to the resource.

SCENERY

No scenery concerns.

RECREATION

No recreation concerns.

Unit 970

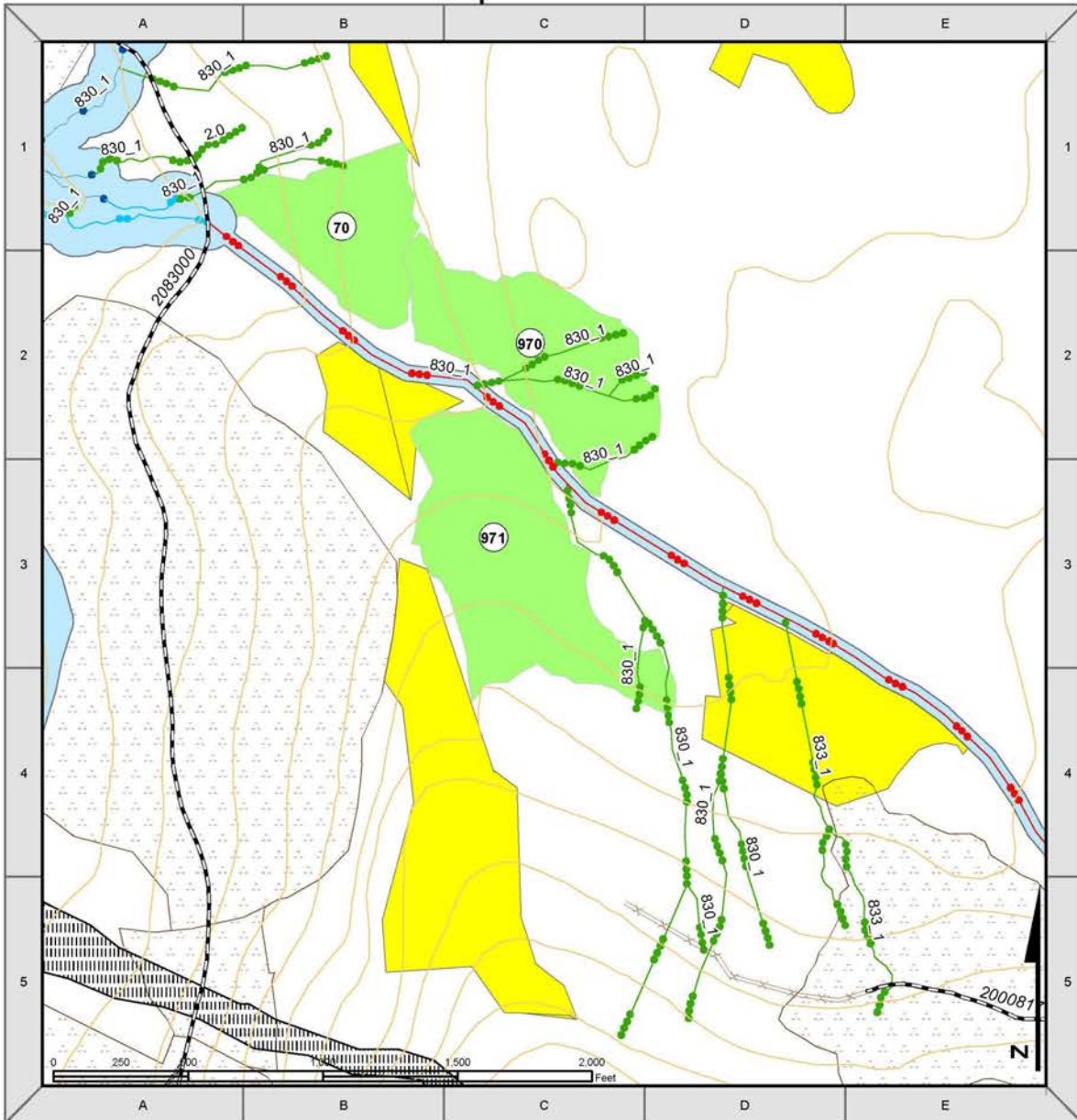
SOILS/WETLANDS

Slopes range from 35 to 55% in the unit. Helicopter logging will meet all soil and wetland resource concerns. Forested wetlands are located throughout. Apply R10 BMPs 12.5, 13.5, and 13.9 and National Core BMPs Plan-2, AqEco-2, AqEco-4, Veg-1, Veg-2, Veg-5, and Veg-6.

WILDLIFE

Goshawk surveys have not been conducted. Unit requires all goshawk surveys. All surveys will be conducted prior to implementation.

Helicopter Unit: 971



Units	Great Blue Heron	Stream Class III	Past Harvest
Roadless Rule	Bear Den	Stream Class IV	NonDevelopment LUDs
Contour 100ft	Proposed Temporary Roads	Riparian Management Area	Old-Growth LUD
High Vulnerability Karst	Existing NFS Roads	T77/Audubon Watersheds	Legacy
USFWS Eagle Buffer	Existing Temporary Roads	Community Use 5-Mile Zone	NonForest Service Lands
Goshawk Nest Buffer	Non-NFS Roads	Unsuitable Soils	Saltwater
Wildlife Buffers	Lakes	Full Suspension Soils	
Marbled Murrelet	Stream Class I	Beach Buffers Max High Water	
Raptor	Stream Class II	Landslides	

Unit 971							
Unit Number:	971	Total Harvest Unit Acres	12.6	Prescription:	UEA	Harvest System:	Helicopter
VCU Number:	5300	LUD:	Timber Production, Modified Landscape		Net Harvest Volume (MBF):		52
Summary of Concerns, Responses, BMPs, and Mitigations							
SILVICULTURE							
<p>Old-growth stands tend to already exhibit uneven-aged structure to varying degrees. The objective of uneven-aged management is to: 1) economically harvest a portion of the stand, 2) maintain old-growth structure in the stand, and 3) retain trees that will provide for economically viable and sustainable future entries. Uneven-aged management in this unit will be done by single tree selection using a helicopter logging system. When doing a cut-tree mark to designate removals, safety or hazard trees may also be marked as required for safety purposes. Variability in the stand will result in variability in the mark, from scattered individual trees to groups where overstory removal cannot exceed 2 acres in size. On average, retain approximately 66% of the pre-harvest basal area of standing live trees, and retain at least 75% in portions of the unit where windthrow risk is high. Generally maintain pre-harvest species composition after harvest. Retain: 1) healthy young 'crop' trees that promote economic future entries, 2) older trees with low timber value but high wildlife value, 3) advanced and new regeneration trees. The Silviculturist will establish inspection plots to ensure marking guidelines are adhered to and objectives are met for the unit.</p>							
TIMBER/LOGGING							
<p>This unit is planned for Helicopter yarding to landings located on temporary road that intersects road 2083000 at milepost 0.74. Additional landing located on road 2083000.</p>							
ENGINEERING/SYSTEM ROADS							
<p>Decommissioned road to be rebuilt 0.20 miles for helicopter landing, BMP 14.2, 14.5, 14.20, Road-5, Road 6. Decommissioned road intersects road 2083000 at milepost 114.96. Road 2083000 is open and maintained (BMP 14.20, Road-4).</p>							
BOTANY							
<p>Surveys have not been completed, habitat appears to have a low probability of supporting sensitive plants. Will survey if time allows.</p>							
INVASIVE SPECIES							
<p>Helicopter Landings will need to be surveyed for invasive plants. If plants are found, BMPs (Krosse 2017) are followed to avoid spread or introduction of weeds to the area due to project actions.</p>							
FISHERIES							
<p>Stream Num: Map location B-3 / C-3 / C-4 / D-4 (830_10.0) Stream Class: III Channel Type: HCM Protection: Category B Flagging: O/W Buffer (RMA): Class III for HCM - To the top of the side-slope break Concerns: Not field verified</p>							
<p>Stream Num: Map location C-4 / D-4 (830_10.0.1L) Stream Class: IV Channel Type: HCO Protection: Category C Flagging: G/W Buffer (RMA): Class IV for HCO - No buffer Concerns: Not field verified</p>							
<p>Stream Num: Map Location C-4 (830_10.0.1R) Stream Class: IV Channel Type: HCO Protection: Category C Flagging: G/W Buffer (RMA): Class IV for HCO - No buffer Concerns: Not field verified</p>							

Unit 971

Stream Num: Map Location C-3 (830_10.0.1R.1L)
Stream Class: IV
Channel Type: HCO
Protection: Category C
Flagging: G/W
Buffer (RMA):
Class IV for HCO - No buffer
Concerns: Not field verified

Stream Num: Map Location C-3 (830_10.0.2R)
Stream Class: IV
Channel Type: HCO
Protection: Category C
Flagging: G/W
Buffer (RMA):
Class IV for HCO - No buffer
Concerns: Not field verified

During the GIS process all streams were labeled as 830_1.0. Map locations were provided for streams along with the correct name. Stream labels will be corrected before final unit cards are prepared. Proposed helicopter landings will need stream reviews prior to final Unit Cards and implementation.

All Streams Protection/Mitigation Actions by Category:

All Categories implement BMPs

Category A reaches flagged B/W: Under the TTRA timber harvest shall not be within 100 feet of the stream channel and a Stream course Protection Plan will be developed for that buffer. Additional AHMU buffers and selective harvest buffers may apply as specified above. Total no cut buffer is the sum of the no commercial and no programmed commercial harvest buffers.

Category B reaches flagged O/W: Trees shall be felled in such a manner so that the direction of fall is away from the stream course. Trees or products shall not be hauled or yarded across the stream course unless fully suspended. Debris entering streams from harvest activities shall be removed. Additional AHMU buffers and selective harvest buffers may apply as specified above. Total no cut buffer equals the no programmed commercial harvest buffers.

Category C reaches flagged G/W: In so far as practicable, trees will be felled and yarded away from the stream course. Debris that enters the stream channel that may affect water quality or have potential for debris flows will be removed from the stream course.

ROAD/STREAM CROSSING SUMMARY

Log landings and system road re-opening needs are discussed in the Engineering/System Roads section above. Should road/stream crossing structures be installed or re-installed the hydrologist will be consulted.

GEOLOGY/KARST

Unit has been reviewed for karst and cave resources. There is no known karst or cave resource concerns.

HERITAGE RESOURCES

A finding of "No historic properties affected" (36 CFR 800.4(d)(1) or "No adverse effect" (36 CFR 800.5(d)(1) has been applied. Project activities may proceed as planned; however the Heritage Professional shall be consulted if new discoveries or unanticipated effects are identified during the project's implementation phase. All activities in the vicinity of the discovery shall cease and reasonable efforts shall be taken to avoid or minimize harm to the resource.

SCENERY

No scenery concerns.

RECREATION

No recreation concerns.

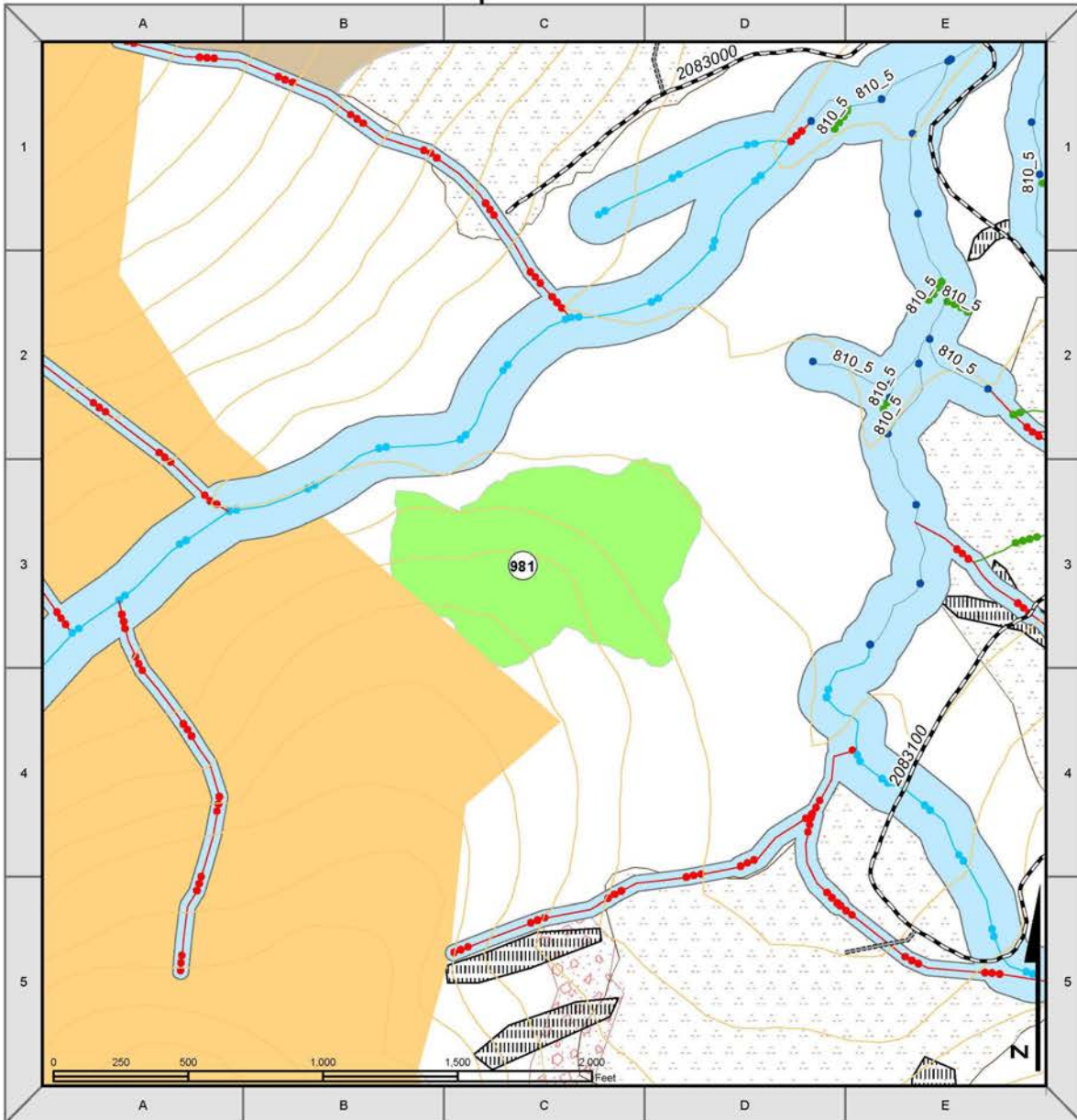
SOILS/WETLANDS

Slopes range from 25 to 55% in the unit. Helicopter logging will meet all soil and wetland resource concerns. Forested wetlands are located throughout. Apply R10 BMPs 12.5, 13.5, and 13.9 and National Core BMPs Plan-2, AqEco-2, AqEco-4, Veg-1, Veg-2, Veg-5, and Veg-6.

WILDLIFE

Goshawk surveys are not complete. The unit requires a July or August goshawk survey. All surveys will be conducted prior to implementation.

Helicopter Unit: 981



Units	Great Blue Heron	Stream Class III	Past Harvest
Roadless Rule	Bear Den	Stream Class IV	NonDevelopment LUDs
Contour 100ft	Proposed Temporary Roads	Riparian Management Area	Old-Growth LUD
High Vulnerability Karst	Existing NFS Roads	T77/Audubon Watersheds	Legacy
USFWS Eagle Buffer	Existing Temporary Roads	Community Use 5-Mile Zone	NonForest Service Lands
Goshawk Nest Buffer	Non-NFS Roads	Unsuitable Soils	Saltwater
Wildlife Buffers	Lakes	Full Suspension Soils	
Marbled Murrelet	Stream Class I	Beach Buffers Max High Water	
Raptor	Stream Class II	Landslides	

Unit 981							
Unit Number:	981	Total Harvest Unit Acres	14.8	Prescription:	UEA	Harvest System:	Helicopter
VCU Number:	5300	LUD:	Timber Production		Net Harvest Volume (MBF):		61
Summary of Concerns, Responses, BMPs, and Mitigations							
SILVICULTURE							
<p>Old-growth stands tend to already exhibit uneven-aged structure to varying degrees. The objective of uneven-aged management is to: 1) economically harvest a portion of the stand, 2) maintain old-growth structure in the stand, and 3) retain trees that will provide for economically viable and sustainable future entries. Uneven-aged management in this unit will be done by single tree selection using a helicopter logging system. When doing a cut-tree mark to designate removals, safety or hazard trees may also be marked as required for safety purposes. Variability in the stand will result in variability in the mark, from scattered individual trees to groups where overstory removal cannot exceed 2 acres in size. On average, retain approximately 66% of the pre-harvest basal area of standing live trees, and retain at least 75% in portions of the unit where windthrow risk is high. Generally maintain pre-harvest species composition after harvest. Retain: 1) healthy young 'crop' trees that promote economic future entries, 2) older trees with low timber value but high wildlife value, 3) advanced and new regeneration trees. The Silviculturist will establish inspection plots to ensure marking guidelines are adhered to and objectives are met for the unit.</p>							
TIMBER/LOGGING							
This unit is planned for Helicopter yarding to landings located on road 2083000.							
ENGINEERING/SYSTEM ROADS							
Landings on NFS road 2083000 (BMP 14.20, Road-4). Road is open and maintained.							
BOTANY							
Surveys have not been completed but will be required due to identified potential habitat as a result of the proximity to wetlands adjacent to the unit. All resource-specific information, protections and mitigations will be determined before harvest activities are implemented.							
INVASIVE SPECIES							
Helicopter Landings will need to be surveyed for invasive plants. If plants are found, BMPs (Krosse 2017) are followed to avoid spread or introduction of weeds to the area due to project actions.							
FISHERIES							
<p>Stream Num: Map Location C-3 Stream Class: IV Channel Type: HCO Protection: Category C Flagging: G/W Buffer (RMA): Class IV for HCO - No Buffer Concerns: Not field verified</p> <p>Stream Num: Map Location D-4 Stream Class: IV Channel Type: HCO Protection: Category C Flagging: G/W Buffer (RMA): Class IV for HCO - No Buffer Concerns: Not Field Verified</p> <p>Stream Num: Map Location B-3 Stream Class: II Channel Type: MCM Protection: Category A Flagging: B/W Buffer (RMA): Class II for MCM - 100 feet or to the top of the side-slope break; whichever is greater. Concerns: Not Field Verified</p>							
Proposed helicopter landings will need stream reviews prior to final Unit Cards and implementation.							

Unit 981

All Streams Protection/Mitigation Actions by Category:

All Categories implement BMPs

Category A reaches flagged B/W: Under the TTRA timber harvest shall not be within 100 feet of the stream channel and a Stream course Protection Plan will be developed for that buffer. Additional AHMU buffers and selective harvest buffers may apply as specified above. Total no cut buffer is the sum of the no commercial and no programmed commercial harvest buffers.

Category B reaches flagged O/W: Trees shall be felled in such a manner so that the direction of fall is away from the stream course. Trees or products shall not be hauled or yarded across the stream course unless fully suspended. Debris entering streams from harvest activities shall be removed. Additional AHMU buffers and selective harvest buffers may apply as specified above. Total no cut buffer equals the no programmed commercial harvest buffers.

Category C reaches flagged G/W: In so far as practicable, trees will be felled and yarded away from the stream course. Debris that enters the stream channel that may affect water quality or have potential for debris flows will be removed from the stream course.

ROAD/STREAM CROSSING SUMMARY

Log landings and system road re-opening needs are discussed in the Engineering/System Roads section above. Should road/stream crossing structures be installed or re-installed the hydrologist will be consulted.

GEOLOGY/KARST

Unit has been reviewed for karst and cave resources. There is no known karst or cave resource concerns.

HERITAGE RESOURCES

A finding of "No historic properties affected" (36 CFR 800.4(d)(1)) or "No adverse effect" (36 CFR 800.5(d)(1)) has been applied. Project activities may proceed as planned; however the Heritage Professional shall be consulted if new discoveries or unanticipated effects are identified during the project's implementation phase. All activities in the vicinity of the discovery shall cease and reasonable efforts shall be taken to avoid or minimize harm to the resource.

SCENERY

No scenery concerns.

RECREATION

No recreation concerns.

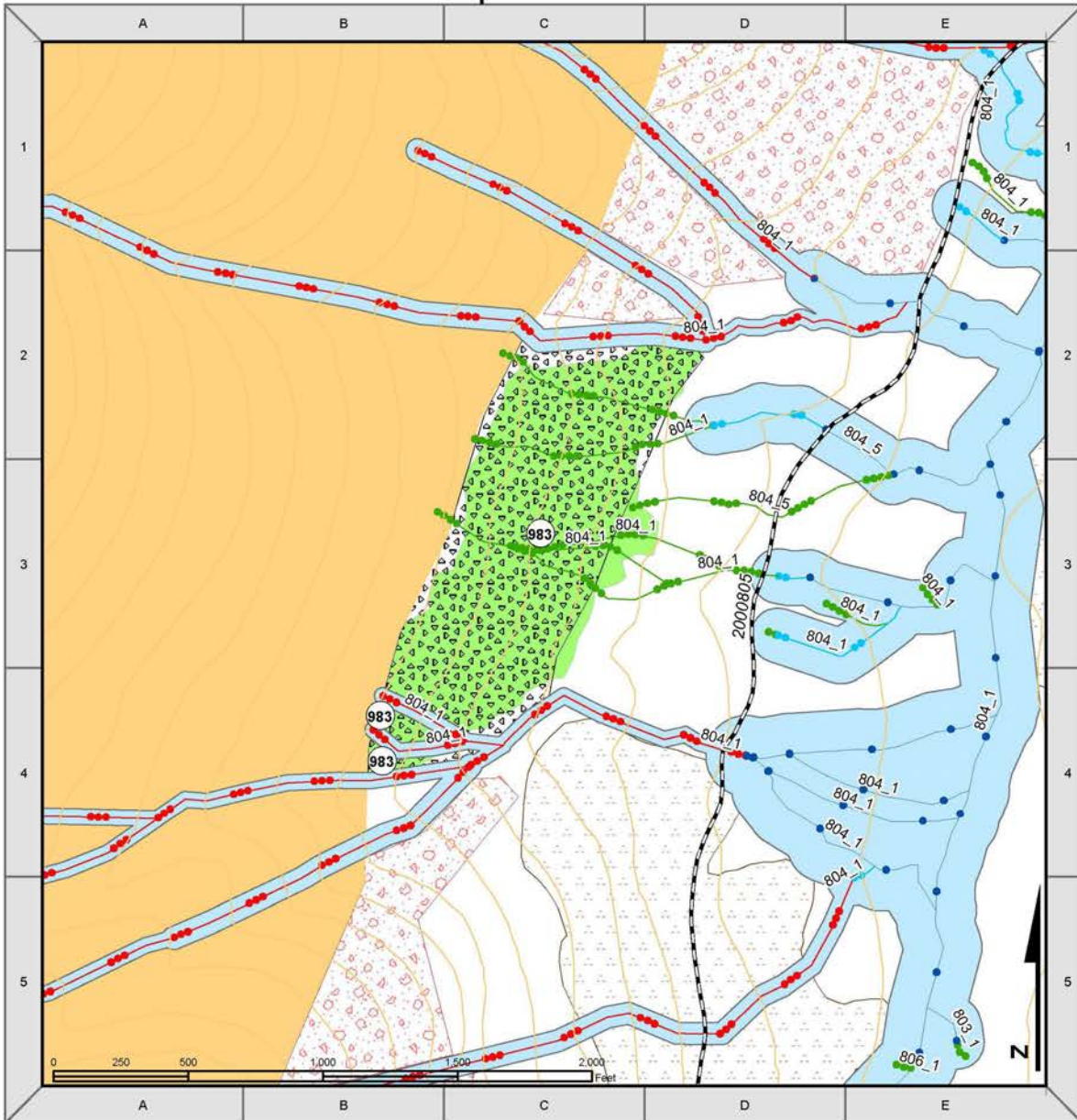
SOILS/WETLANDS

Slopes range from 35 to greater than 72% in all polygons. Helicopter logging will meet all soil and wetland resource concerns. Forested wetlands occur intermittently in the eastern portion of the unit. Apply R10 BMPs 12.5, 13.5, and 13.9 and National Core BMPs Plan-2, AqEco-2, AqEco-4, Veg-1, Veg-2, Veg-5, and Veg-6.

WILDLIFE

Surveys not complete. Unit requires a July or August goshawk survey. All surveys will be conducted prior to implementation.

Helicopter Unit: 983



Units	Great Blue Heron	Stream Class III	Past Harvest
Roadless Rule	Bear Den	Stream Class IV	NonDevelopment LUDs
Contour 100ft	Proposed Temporary Roads	Riparian Management Area	Old-Growth LUD
High Vulnerability Karst	Existing NFS Roads	T77/Audubon Watersheds	Legacy
USFWS Eagle Buffer	Existing Temporary Roads	Community Use 5-Mile Zone	NonForest Service Lands
Goshawk Nest Buffer	Non-NFS Roads	Unsuitable Soils	Saltwater
Wildlife Buffers	Lakes	Full Suspension Soils	
Marbled Murrelet	Stream Class I	Beach Buffers Max High Water	
Raptor	Stream Class II	Landslides	

Unit 983							
Unit Number:	983	Total Harvest Unit Acres	20.1	Prescription:	UEA	Harvest System:	Helicopter
VCU Number:	5300	LUD:	Timber Production, Modified Landscape		Net Harvest Volume (MBF):		151
Summary of Concerns, Responses, BMPs, and Mitigations							
SILVICULTURE							
<p>Old-growth stands tend to already exhibit uneven-aged structure to varying degrees. The objective of uneven-aged management is to: 1) economically harvest a portion of the stand, 2) maintain old-growth structure in the stand, and 3) retain trees that will provide for economically viable and sustainable future entries. Uneven-aged management in this unit will be done by single tree selection using a helicopter logging system. When doing a cut-tree mark to designate removals, safety or hazard trees may also be marked as required for safety purposes. Variability in the stand will result in variability in the mark, from scattered individual trees to groups where overstory removal cannot exceed 2 acres in size. On average, retain approximately 66% of the pre-harvest basal area of standing live trees, and retain at least 75% in portions of the unit where windthrow risk is high. Generally maintain pre-harvest species composition after harvest. Retain: 1) healthy young 'crop' trees that promote economic future entries, 2) older trees with low timber value but high wildlife value, 3) advanced and new regeneration trees. The Silviculturist will establish inspection plots to ensure marking guidelines are adhered to and objectives are met for the unit.</p>							
TIMBER/LOGGING							
This unit is planned for Helicopter yarding to landings located on road 2000805.							
ENGINEERING/SYSTEM ROADS							
Landings on NFS road 2000805. 2000805 is a closed road and will require maintenance upgrades to meet haul standards (BMP 14.20, Road-4).							
BOTANY							
Surveys have not been completed, habitat appears to have a low probability of supporting sensitive plants. Will survey if time allows.							
INVASIVE SPECIES							
Helicopter Landings will need to be surveyed for invasive plants. If plants are found, BMPs (Krosse 2017) are followed to avoid spread or introduction of weeds to the area due to project actions.							
FISHERIES							
<p>Stream Num: Map location: D2 (804_1.2R.1L) Stream Class: III Channel Type: HCM, HCD Protection: Category B Flagging: O/W Buffer (RMA): Class III for HCM - To the top of the side-slope break Class III for HCD - To the top of the side-slope break Concerns: Not field verified</p> <p>Stream Num: Map Location: D2 (Trib to 804_1.2R.1L) Stream Class: III Channel Type: HCD Protection: Category B Flagging: O/W Buffer (RMA): Class III for HCD - To the top of the side-slope break Concerns: Not field verified</p> <p>Stream Num: Map location: D2 (804_1.3R / 804_5.0) Stream Class: IV Channel Type: HCO Protection: Category C Flagging: G/W Buffer (RMA): Class IV for HCO - No buffer Concerns: N/A</p> <p>Stream Num: Map location: D2 (804_1.3R.IL / 804_5.2L)</p>							

Unit 983

Stream Class: IV
Channel Type: HCO
Protection: Category C
Flagging: G/W
Buffer (RMA):
Class IV for HCO - No buffer
Concerns: N/A

Stream Num: Map location: C3 (804_1.4R)
Stream Class: IV
Channel Type: HCO
Protection: Category C
Flagging: G/W
Buffer (RMA):
Class IV for HCO - No buffer
Concerns: Multiple channels

Stream Num: Map location: C4 (804_1.6R)
Stream Class: III
Channel Type: HCM
Protection: Category B
Flagging: O/W
Buffer (RMA):
Class III for HCM - To the top of the side-slope break
Concerns: Not field verified

Stream Num: Map location: C4 and B4 (804_1.6R.1R)
Stream Class: III
Channel Type: HCM
Protection: Category B
Flagging: O/W
Buffer (RMA):
Class III for HCM - To the top of the side-slope break
Concerns: Not field verified

Stream Num: Map location: C4 and B4 (804_1.6R.1R.1R)
Stream Class: III
Channel Type: HCM
Protection: Category B
Flagging: O/W
Buffer (RMA):
Class III for HCM - To the top of the side-slope break
Concerns: Not field verified

Stream Num: Map location: B4
Stream Class: III
Channel Type: HCM
Protection: Category B
Flagging: O/W
Buffer (RMA):
Class III for HCM - To the top of the side-slope break
Concerns: Not field verified

Proposed helicopter landings will need stream reviews prior to final Unit Cards and implementation.

All Streams Protection/Mitigation Actions by Category:

All Categories implement BMPs

Category A reaches flagged B/W: Under the TTRA timber harvest shall not be within 100 feet of the stream channel and a Stream course Protection Plan will be developed for that buffer. Additional AHMU buffers and selective harvest buffers may apply as specified above. Total no cut buffer is the sum of the no commercial and no programmed commercial harvest buffers.

Unit 983

Category B reaches flagged O/W: Trees shall be felled in such a manner so that the direction of fall is away from the stream course. Trees or products shall not be hauled or yarded across the stream course unless fully suspended. Debris entering streams from harvest activities shall be removed. Additional AHMU buffers and selective harvest buffers may apply as specified above. Total no cut buffer equals the no programmed commercial harvest buffers.

Category C reaches flagged G/W: In so far as practicable, trees will be felled and yarded away from the stream course. Debris that enters the stream channel that may affect water quality or have potential for debris flows will be removed from the stream course.

ROAD/STREAM CROSSING SUMMARY

Log landings and system road re-opening needs are discussed in the Engineering/System Roads section above. Should road/stream crossing structures be installed or re-installed the hydrologist will be consulted.

GEOLOGY/KARST

Unit has been reviewed for karst and cave resources. There is no known karst or cave resource concerns.

HERITAGE RESOURCES

A finding of "No historic properties affected" (36 CFR 800.4(d)(1) or "No adverse effect" (36 CFR 800.5(d)(1) has been applied. Project activities may proceed as planned; however the Heritage Professional shall be consulted if new discoveries or unanticipated effects are identified during the project's implementation phase. All activities in the vicinity of the discovery shall cease and reasonable efforts shall be taken to avoid or minimize harm to the resource.

SCENERY

No scenery concerns.

RECREATION

No recreation concerns.

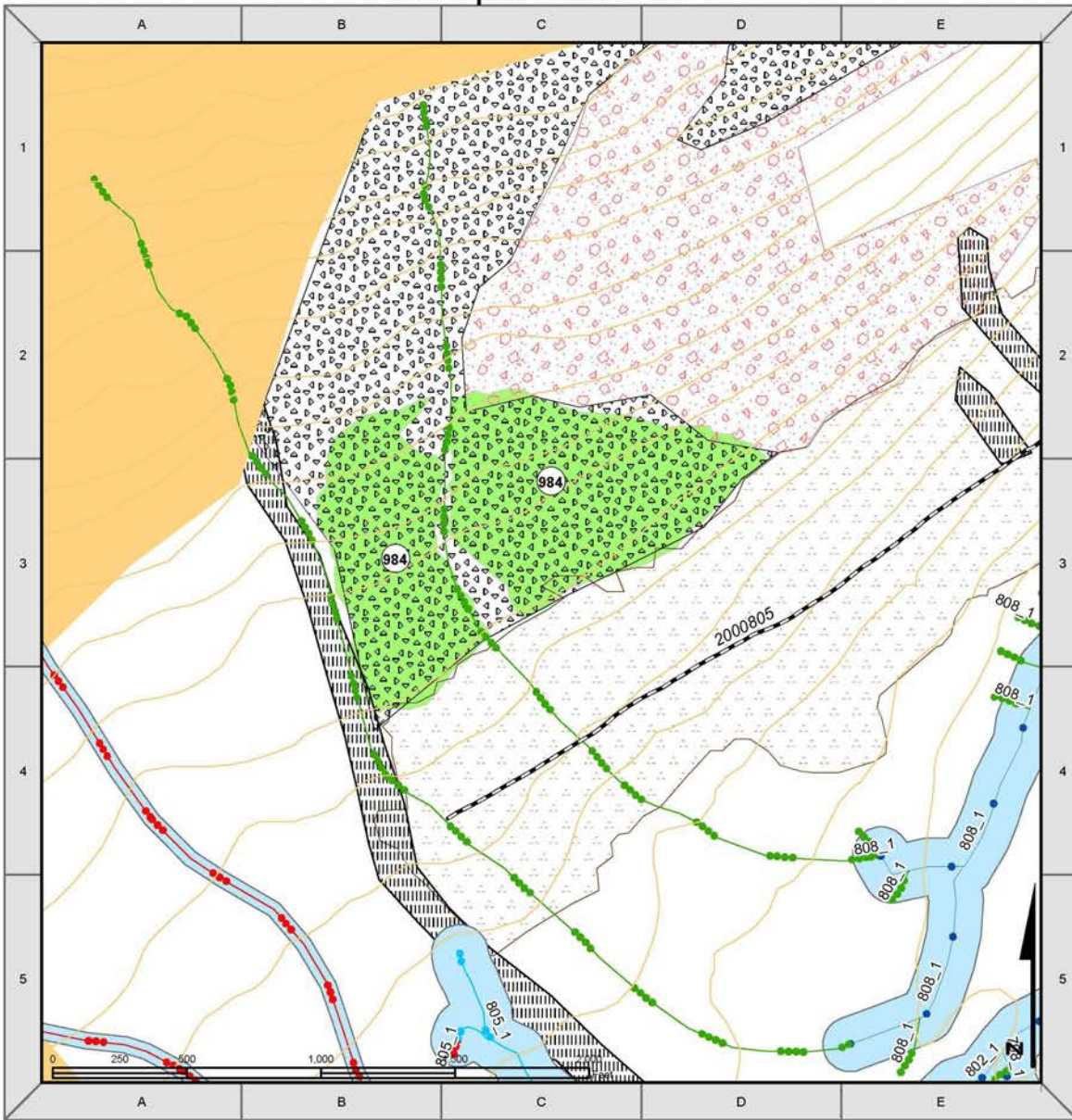
SOILS/WETLANDS

Slopes range from 35 to greater than 72% in all polygons. The majority of the unit is only suitable for harvest with a minimum of full suspension. Helicopter logging will meet all soil and wetland resource concerns. Forested wetlands occur intermittently in the eastern portion of the unit. Apply R10 BMPs 12.5, 13.5, and 13.9 and National Core BMPs Plan-2, AqEco-2, AqEco-4, Veg-1, Veg-2, Veg-5, and Veg-6.

WILDLIFE

Goshawk surveys complete. No detections. Meets intent of protocol.

Helicopter Unit: 984



Units	Great Blue Heron	Stream Class III	Past Harvest
Roadless Rule	Bear Den	Stream Class IV	NonDevelopment LUDs
Contour 100ft	Proposed Temporary Roads	Riparian Management Area	Old-Growth LUD
High Vulnerability Karst	Existing NFS Roads	T77/Audubon Watersheds	Legacy
USFWS Eagle Buffer	Existing Temporary Roads	Community Use 5-Mile Zone	NonForest Service Lands
Goshawk Nest Buffer	Non-NFS Roads	Unsuitable Soils	Saltwater
Wildlife Buffers	Lakes	Full Suspension Soils	
Marbled Murrelet	Stream Class I	Beach Buffers Max High Water	
Raptor	Stream Class II	Landslides	

Unit 984							
Unit Number:	984	Total Harvest Unit Acres	24.1	Prescription:	UEA	Harvest System:	Helicopter
VCU Number:	5330	LUD:	Timber Production		Net Harvest Volume (MBF):		117
Summary of Concerns, Responses, BMPs, and Mitigations							
SILVICULTURE							
<p>Old-growth stands tend to already exhibit uneven-aged structure to varying degrees. The objective of uneven-aged management is to: 1) economically harvest a portion of the stand, 2) maintain old-growth structure in the stand, and 3) retain trees that will provide for economically viable and sustainable future entries. Uneven-aged management in this unit will be done by single tree selection using a helicopter logging system. When doing a cut-tree mark to designate removals, safety or hazard trees may also be marked as required for safety purposes. Variability in the stand will result in variability in the mark, from scattered individual trees to groups where overstory removal cannot exceed 2 acres in size. On average, retain approximately 66% of the pre-harvest basal area of standing live trees, and retain at least 75% in portions of the unit where windthrow risk is high. Generally maintain pre-harvest species composition after harvest. Retain: 1) healthy young 'crop' trees that promote economic future entries, 2) older trees with low timber value but high wildlife value, 3) advanced and new regeneration trees. The Silviculturist will establish inspection plots to ensure marking guidelines are adhered to and objectives are met for the unit.</p>							
TIMBER/LOGGING							
This unit is planned for Helicopter yarding to landings located on road 2000805.							
ENGINEERING/SYSTEM ROADS							
Landings on NFS road 2000805. 2000805 is a closed road and will require maintenance upgrades to meet haul standards (BMP 14.20, Road-4).							
BOTANY							
Unit was surveyed in 2019. No botanical concerns							
INVASIVE SPECIES							
Helicopter Landings will need to be surveyed for invasive plants. If plants are found, BMPs (Krosse 2017) are followed to avoid spread or introduction of weeds to the area due to project actions.							
FISHERIES							
<p>Stream Num: Map location B-3 (808_10.2L) Stream Class: IV Channel Type: HCO Protection: Category C Flagging: O/W Buffer (RMA): Class IV for HCO - No buffer Concerns: Not field verified</p>							
<p>Stream Num: Map location C-3 (808_10.3L) Stream Class: IV Channel Type: HCO Protection: Category C Flagging: O/W Buffer (RMA): Class IV for HCO - No buffer Concerns: Not field verified</p>							
<p>Stream Num: Map location B-3 Stream Class: IV Channel Type: HCO Protection: Category C Flagging: O/W Buffer (RMA): Class IV for HCO - No buffer Concerns: Not field verified</p>							
Proposed helicopter landings will need stream reviews prior to final Unit Cards and implementation.							
All Streams Protection/Mitigation Actions by Category:							
All Categories implement BMPs							

Unit 984

Category A reaches flagged B/W: Under the TTRA timber harvest shall not be within 100 feet of the stream channel and a Stream course Protection Plan will be developed for that buffer. Additional AHMU buffers and selective harvest buffers may apply as specified above. Total no cut buffer is the sum of the no commercial and no programmed commercial harvest buffers.

Category B reaches flagged O/W: Trees shall be felled in such a manner so that the direction of fall is away from the stream course. Trees or products shall not be hauled or yarded across the stream course unless fully suspended. Debris entering streams from harvest activities shall be removed. Additional AHMU buffers and selective harvest buffers may apply as specified above. Total no cut buffer equals the no programmed commercial harvest buffers.

Category C reaches flagged G/W: In so far as practicable, trees will be felled and yarded away from the stream course. Debris that enters the stream channel that may affect water quality or have potential for debris flows will be removed from the stream course.

ROAD/STREAM CROSSING SUMMARY

Log landings and system road re-opening needs are discussed in the Engineering/System Roads section above. Should road/stream crossing structures be installed or re-installed the hydrologist will be consulted.

GEOLOGY/KARST

Unit has been reviewed for karst and cave resources. There is no known karst or cave resource concerns.

HERITAGE RESOURCES

A finding of "No historic properties affected" (36 CFR 800.4(d)(1) or "No adverse effect" (36 CFR 800.5(d)(1) has been applied. Project activities may proceed as planned; however the Heritage Professional shall be consulted if new discoveries or unanticipated effects are identified during the project's implementation phase. All activities in the vicinity of the discovery shall cease and reasonable efforts shall be taken to avoid or minimize harm to the resource.

SCENERY

No scenery concerns.

RECREATION

No recreation concerns.

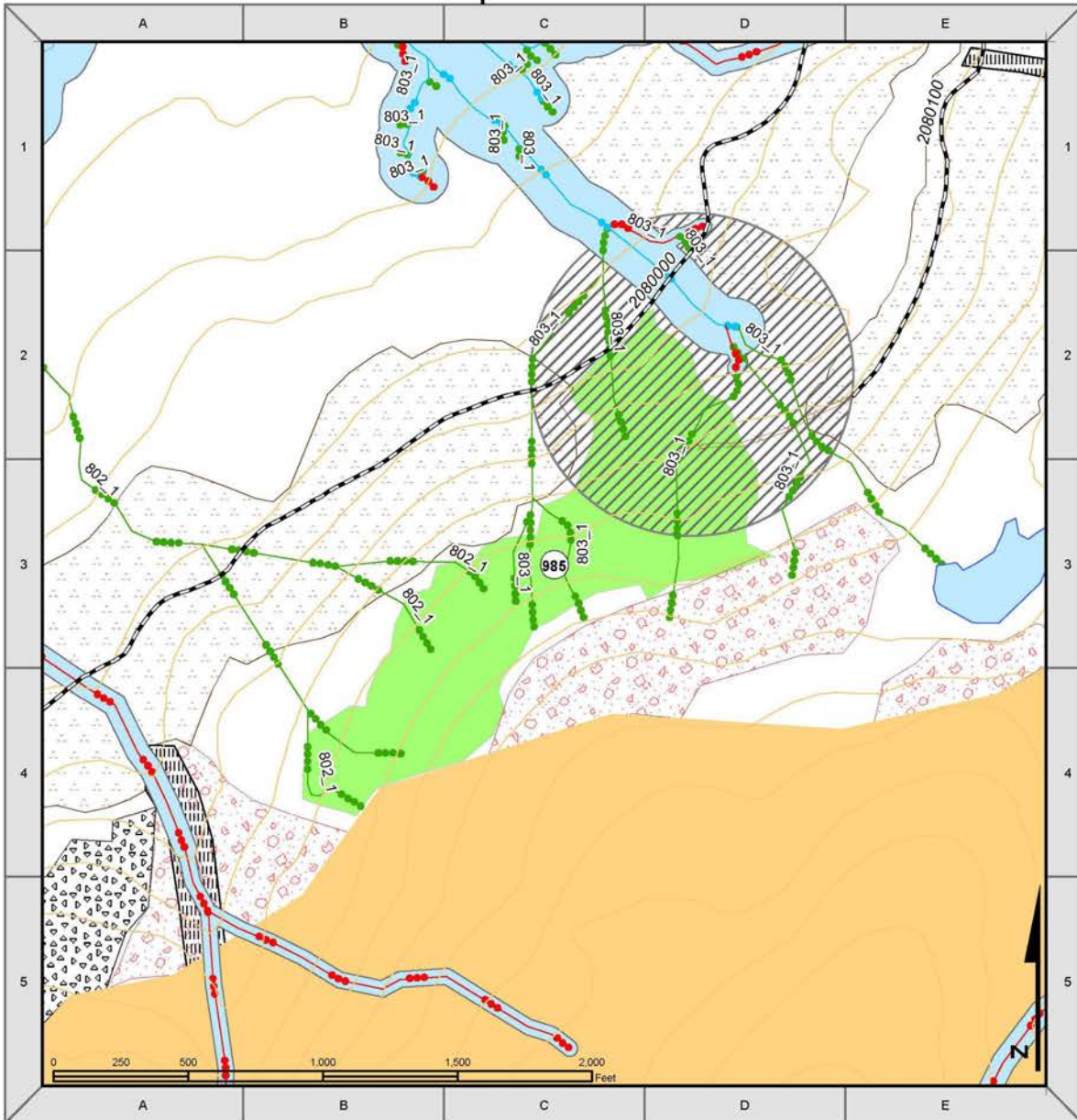
SOILS/WETLANDS

Slopes range from 35 to greater than 72% in all polygons. Approximately 46 acres of unsuitable soils are excluded from harvest consideration to the northeast due to extremely steep slopes, landslides, and very high landslide prone terrain. There are small pitches of slopes greater than 72% within the proposed unit and are suitable for harvest with a minimum of full suspension. Helicopter logging will meet all soil and wetland resource concerns. Apply R10 BMPs 12.5, 13.5, and 13.9 and National Core BMPs Plan-2, AqEco-2, AqEco-4, Veg-1, Veg-2, Veg-5, and Veg-6.

WILDLIFE

This unit is over 1000 feet in elevation. No goshawk surveys are required.

Helicopter Unit: 985



Units	Great Blue Heron	Stream Class II	Landslides
Roadless Rule	Sharp Shinned Hawk	Stream Class III	Past Harvest
Contour 100ft	Bear Den	Stream Class IV	NonDevelopment LUDs
High Vulnerability Karst	Proposed Temporary Roads	Riparian Management Area	Old-Growth LUD
USFWS Eagle Buffer	Existing NFS Roads	T77/Audubon Watersheds	Legacy
Goshawk Nest Buffer	Existing Temporary Roads	Community Use 5-Mile Zone	NonForest Service Lands
Wildlife Buffers	Non-NFS Roads	Unsuitable Soils	Saltwater
Marbled Murrelet	Lakes	Full Suspension Soils	
Raptor	Stream Class I	Beach Buffers Max High Water	

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Unit 985							
Unit Number:	985	Total Harvest Unit Acres	24.0	Prescription:	UEA	Harvest System:	Helicopter
VCU Number:	5330	LUD:	Timber Production	Net Harvest Volume (MBF):		135	
Summary of Concerns, Responses, BMPs, and Mitigations							
SILVICULTURE							
<p>Old-growth stands tend to already exhibit uneven-aged structure to varying degrees. The objective of uneven-aged management is to: 1) economically harvest a portion of the stand, 2) maintain old-growth structure in the stand, and 3) retain trees that will provide for economically viable and sustainable future entries. Uneven-aged management in this unit will be done by single tree selection using a helicopter logging system. When doing a cut-tree mark to designate removals, safety or hazard trees may also be marked as required for safety purposes. Variability in the stand will result in variability in the mark, from scattered individual trees to groups where overstory removal cannot exceed 2 acres in size. On average, retain approximately 66% of the pre-harvest basal area of standing live trees, and retain at least 75% in portions of the unit where windthrow risk is high. Generally maintain pre-harvest species composition after harvest. Retain: 1) healthy young 'crop' trees that promote economic future entries, 2) older trees with low timber value but high wildlife value, 3) advanced and new regeneration trees. The Silviculturist will establish inspection plots to ensure marking guidelines are adhered to and objectives are met for the unit.</p>							
TIMBER/LOGGING							
This unit is planned for Helicopter yarding to landings located on roads 2080000 and 2000805.							
ENGINEERING/SYSTEM ROADS							
Landings on NFS road 2080000 and 2000805 (BMP 14.20, Road-4). Road 2000805 is open and maintained. 2000805 is a closed road and will require maintenance upgrades to meet haul standards (BMP 14.20, Road-4).							
BOTANY							
Unit was surveyed in 2019. No botany concerns							
INVASIVE SPECIES							
Helicopter Landings will need to be surveyed for invasive plants. If plants are found, BMPs (Krosse 2017) are followed to avoid spread or introduction of weeds to the area due to project actions.							
FISHERIES							
<p>Stream Num: Map location C-2 (803_1.4L) Stream Class: II Channel Type: HCM Protection: Category A Flagging: B/W Buffer (RMA): Class II for HCM - 100 feet or to the top of the side-slope break; whichever is greater. Concerns: Not field verified.</p>							
<p>Stream Num: Map location C-2 (803_1.4L.7R) Stream Class: IV Channel Type: HCO Protection: Category C Flagging: G/W Buffer (RMA): Class IV for HCO - No buffer Concerns: Not field verified.</p>							
<p>Stream Num: Map location C-2 / C-3 (803_1.4L.7R.1R) Stream Class: IV Channel Type: HCO Protection: Category C Flagging: G/W Buffer (RMA): Class IV for HCO - No buffer Concerns: Not field verified.</p>							
<p>Stream Num: Map location C-3 (803_1.4L.7R.1R.1R) Stream Class: IV Channel Type: HCO</p>							

Unit 985

Protection: Category C
Flagging: G/W
Buffer (RMA):
Class IV for HCO - No buffer
Concerns: Not field verified. Two streams named 803_1.4L.7R.1R.1R

Stream Num: Map location C-3 (803_1.4L.7R.1R.1R)
Stream Class: IV
Channel Type: HCO
Protection: Category C
Flagging: G/W
Buffer (RMA):
Class IV for HCO - No buffer
Concerns: Not field verified. Two streams named 803_1.4L.7R.1R.1R

Stream Num: Map location D-2 / D-3 (803_1.6L)
Stream Class: III, IV
Channel Type: HCM, HCL
Protection: Category B and C
Flagging: O/W, G/W
Buffer (RMA):
Class III for HCM - To the top of the side-slope break
Class IV for HCL - No buffer
Concerns: Not field verified.

Stream Num: Map location D-2 / D-3 (802_1.6L)
Stream Class: IV
Channel Type: HCO
Protection: Category C
Flagging: G/W
Buffer (RMA):
Class IV for HCO - No buffer
Concerns: Not field verified.

Stream Num: Map location D-2 / D-3 (803_1.6L.1R)
Stream Class: IV
Channel Type: HCO
Protection: Category C
Flagging: G/W
Buffer (RMA):
Class IV for HCO - No buffer
Concerns: Not field verified.

Stream Num: Map location B-3 (802_1.6L.1R.1R)
Stream Class: IV
Channel Type: HCO
Protection: Category C
Flagging: G/W
Buffer (RMA):
Class IV for HCO - No buffer
Concerns: Not field verified. Two streams named 802_1.6L.1R.1R

Stream Num: Map location B-3 (802_1.6L.1R.1R)
Stream Class: IV
Channel Type: HCO
Protection: Category C
Flagging: G/W
Buffer (RMA):
Class IV for HCO - No buffer
Concerns: Not field verified. Two streams named 802_1.6L.1R.1R

Unit 985

Stream Num: Map location B-4 (802_1.6L_2R)
Stream Class: IV
Channel Type: HCO
Protection: Category C
Flagging: G/W
Buffer (RMA):
Class IV for HCO - No buffer
Concerns: Not field verified.

During the GIS process all streams were labeled incorrect. Map locations were provided for streams along with the correct name. Stream labels will be corrected before final unit cards are prepared. Proposed helicopter landings will need stream reviews prior to final Unit Cards and implementation

All Streams Protection/Mitigation Actions by Category:

All Categories implement BMPs

Category A reaches flagged B/W: Under the TTRA timber harvest shall not be within 100 feet of the stream channel and a Stream course Protection Plan will be developed for that buffer. Additional AHMU buffers and selective harvest buffers may apply as specified above. Total no cut buffer is the sum of the no commercial and no programmed commercial harvest buffers.

Category B reaches flagged O/W: Trees shall be felled in such a manner so that the direction of fall is away from the stream course. Trees or products shall not be hauled or yarded across the stream course unless fully suspended. Debris entering streams from harvest activities shall be removed. Additional AHMU buffers and selective harvest buffers may apply as specified above. Total no cut buffer equals the no programmed commercial harvest buffers.

Category C reaches flagged G/W: In so far as practicable, trees will be felled and yarded away from the stream course. Debris that enters the stream channel that may affect water quality or have potential for debris flows will be removed from the stream course.

ROAD/STREAM CROSSING SUMMARY

Log landings and system road re-opening needs are discussed in the Engineering/System Roads section above. Should road/stream crossing structures be installed or re-installed the hydrologist will be consulted.

GEOLOGY/KARST

Unit has been reviewed for karst and cave resources. There is no known karst or cave resource concerns.

HERITAGE RESOURCES

A finding of "No historic properties affected" (36 CFR 800.4(d)(1) or "No adverse effect" (36 CFR 800.5(d)(1) has been applied. Project activities may proceed as planned; however the Heritage Professional shall be consulted if new discoveries or unanticipated effects are identified during the project's implementation phase. All activities in the vicinity of the discovery shall cease and reasonable efforts shall be taken to avoid or minimize harm to the resource.

SCENERY

No scenery concerns.

RECREATION

No recreation concerns.

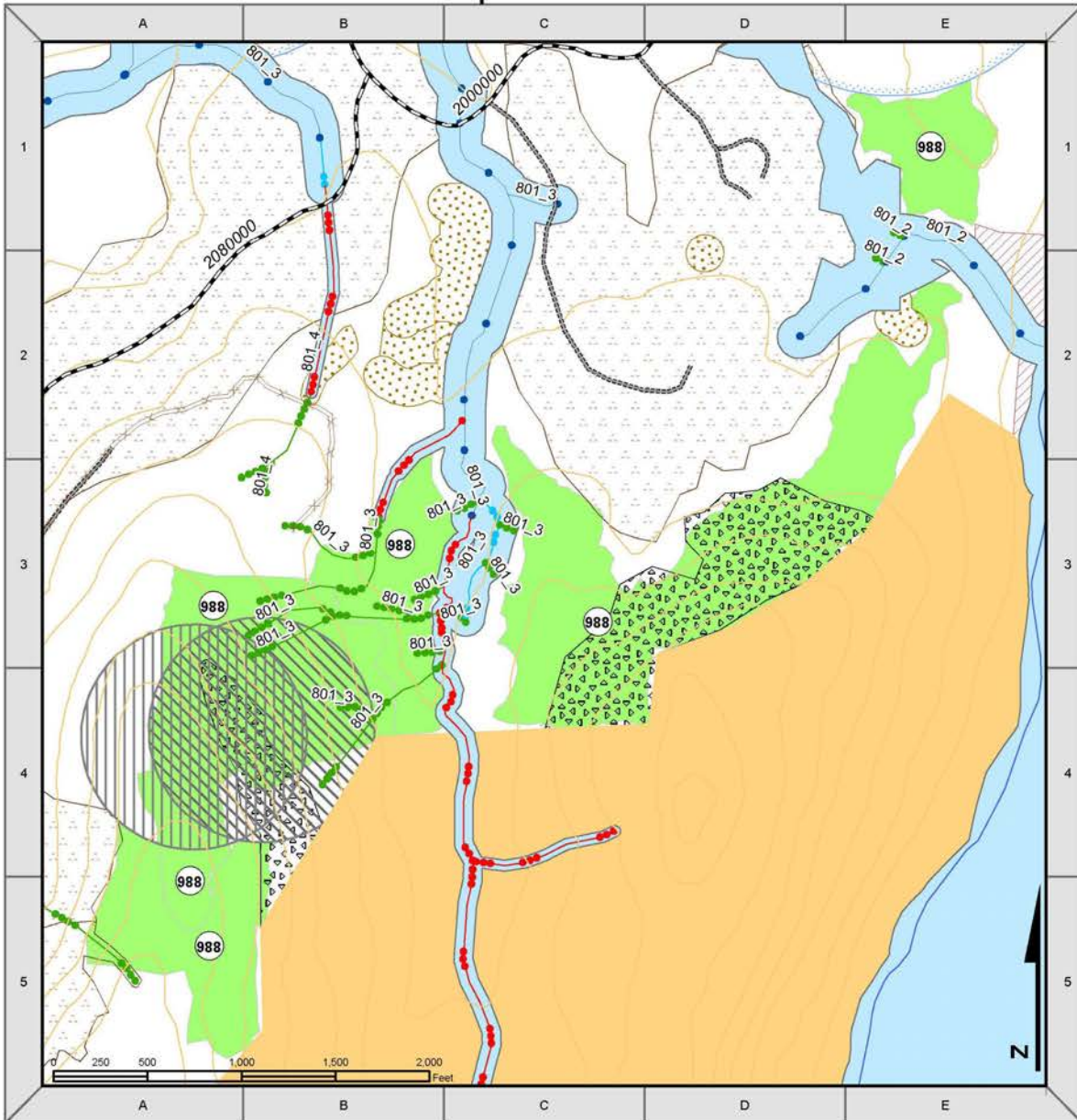
SOILS/WETLANDS

Slopes range from 35 to greater than 72%. Approximately 21 acres were excluded from harvest consideration due to very steep cliffs, steep wet slopes, and landslide activity. Small 50ft rock outcrops with slopes greater than 72% are present within the unit boundary. Helicopter yarding will meet all soil and wetland resource concerns. Forested wetlands are present on the gentle slopes. Apply R10 BMPs 12.5, 13.5, and 13.9 and National Core BMPs Plan-2, AqEco-2, AqEco-4, Veg-1, Veg-2, Veg-5, and Veg-6.

WILDLIFE

Goshawk surveys are complete. No goshawks detected. Sharp shinned hawk activity was documented in the unit. The unit boundary will be modified to account for the nest buffer.

Helicopter Unit: 988



Units	Great Blue Heron	Stream Class III	Past Harvest
Roadless Rule	Bear Den	Stream Class IV	NonDevelopment LUDs
Contour 100ft	Proposed Temporary Roads	Riparian Management Area	Old-Growth LUD
High Vulnerability Karst	Existing NFS Roads	T77/Audubon Watersheds	Legacy
USFWS Eagle Buffer	Existing Temporary Roads	Community Use 5-Mile Zone	NonForest Service Lands
Goshawk Nest Buffer	Non-NFS Roads	Unsuitable Soils	Saltwater
Wildlife Buffers	Lakes	Full Suspension Soils	
Marbled Murrelet	Stream Class I	Beach Buffers Max High Water	
Raptor	Stream Class II	Landslides	

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Unit 988							
Unit Number:	988	Total Harvest Unit Acres	86.3	Prescription:	UEA	Harvest System:	Helicopter
VCU Number:	5330	LUD:	Modified Landscape, Scenic Viewshed		Net Harvest Volume (MBF):		512
Summary of Concerns, Responses, BMPs, and Mitigations							
SILVICULTURE							
<p>Old-growth stands tend to already exhibit uneven-aged structure to varying degrees. The objective of uneven-aged management is to: 1) economically harvest a portion of the stand, 2) maintain old-growth structure in the stand, and 3) retain trees that will provide for economically viable and sustainable future entries. Uneven-aged management in this unit will be done by single tree selection using a helicopter logging system. When doing a cut-tree mark to designate removals, safety or hazard trees may also be marked as required for safety purposes. Variability in the stand will result in variability in the mark, from scattered individual trees to groups where overstory removal cannot exceed 2 acres in size. On average, retain approximately 66% of the pre-harvest basal area of standing live trees, and retain at least 75% in portions of the unit where windthrow risk is high. Generally maintain pre-harvest species composition after harvest. Retain: 1) healthy young 'crop' trees that promote economic future entries, 2) older trees with low timber value but high wildlife value, 3) advanced and new regeneration trees. The Silviculturist will establish inspection plots to ensure marking guidelines are adhered to and objectives are met for the unit.</p>							
TIMBER/LOGGING							
<p>This unit is comprised of 5 settings and is planned for Helicopter yarding to landings located on temporary road that intersects road 2000000 at milepost 114.96. Additional landing located on road 2080000.</p>							
ENGINEERING/SYSTEM ROADS							
<p>Decommissioned road to be rebuilt 0.20 miles for helicopter landing, BMP 14.2, 14.5, 14.20, Road-5, Road 6. Decommissioned road intersects road 2000000 at milepost 114.96. Road 2080000 is open and maintained (BMP 14.20, Road-4).</p>							
BOTANY							
<p>There are three subunits to this unit card. All three units were surveyed. This unit is adjacent to a population of <i>Physocarpus capitatus</i> (Pacific ninebark), which is an S3 plant and considered rare in the state. However, it is not rare on POW. This plant is also in a riparian buffer outside but near the unit and will not be impacted due to project activities. Additional buffers are not recommended.</p>							
INVASIVE SPECIES							
<p>Helicopter Landings will need to be surveyed for invasive plants. If plants are found, BMPs (Krosse 2017) are followed to avoid spread or introduction of weeds to the area due to project actions.</p>							
FISHERIES							
<p>Stream Num: 801_2.0 Stream Class: I Channel Type: HCO, MMS, PAB Protection: Category A Flagging: B/W Buffer (RMA): Class I for HCO - 100 feet or to the top of the side-slope break; whichever is greater. Class I for MMS - 120 feet or to the extent of the flood plain, riparian vegetation or soils, or riparian associated wetland fens; whichever is greater. Class I for PAB - 100 feet or to the extent of the flood plain, riparian vegetation or soils, or riparian associated wetland fens; whichever is greater. Concerns: High blowdown areas.</p> <p>Stream Num: Map location E-1 (801_2.1R) Stream Class: IV Channel Type: MMO Protection: Category C Flagging: G/W Buffer (RMA): Class IV for MMO - No buffer Concerns: N/A</p> <p>Stream Num: Map location E-2 (801_2.1R) Stream Class: IV Channel Type: MMO</p>							

Unit 988

Protection: Category C
Flagging: G/W
Buffer (RMA):
Class IV for MMO - No buffer
Concerns: N/A

Stream Num: 801_3.0
Stream Class: II, III
Channel Type: HCD
Protection: Category A and B
Flagging: B/W, O/W
Buffer (RMA):
Class II for HCD - 100 feet or to the top of the side-slope break; whichever is greater.
Class III for HCD - To the top of the side-slope break
Concerns: Not field verified.

Stream Num: Map location B-3 (801_3.1R)
Stream Class: III, IV
Channel Type: HCD, HCM, HCO
Protection: Category B and C
Flagging: O/W, G/W
Buffer (RMA):
Class III for HCD - To the top of the side-slope break
Class III for HCM - To the top of the side-slope break
Class IV for HCO - No buffer
Concerns: N/A

Stream Num: Map location C-3 (801_3.2L)
Stream Class: II, IV
Channel Type: HCO
Protection: Category A and C
Flagging: B/W, G/W
Buffer (RMA):
Class II for HCO - 100 feet or to the top of the side-slope break; whichever is greater.
Class IV for HCO - No buffer
Concerns: Not field verified.

Stream Num: Map location C-3 (801_3.2L.1L)
Stream Class: IV
Channel Type: HCO
Protection: Category C
Flagging: G/W
Buffer (RMA):
Class IV for HCO - No buffer
Concerns: N/A

Stream Num: Map location C-3 (801_3.2L.2L)
Stream Class: IV
Channel Type: HCO
Protection: Category C
Flagging: G/W
Buffer (RMA):
Class IV for HCO - No buffer
Concerns: N/A

Stream Num: Map location C-3 (801_3.2L.1R)
Stream Class: IV
Channel Type: HCO
Protection: Category C
Flagging: G/W
Buffer (RMA):

Unit 988

Class IV for HCO - No buffer

Concerns: N/A

Stream Num: Map location C-3 (801_3.3R)

Stream Class: IV

Channel Type: HCO

Protection: Category C

Flagging: G/W

Buffer (RMA):

Class IV for HCO - No buffer

Concerns: N/A

Stream Num: Map location B-3 (801_3.4R)

Stream Class: III, IV

Channel Type: HCM, HCO

Protection: Category B and C

Flagging: G/W

Buffer (RMA):

Class III for HCM - To the top of the side-slope break

Class IV for HCO - No buffer

Concerns: Not field verified.

Stream Num: Map location B-3 (801_3.4R.1R)

Stream Class: IV

Channel Type: HCO

Protection: Category C

Flagging: G/W

Buffer (RMA):

Class IV for HCO - No buffer

Concerns: N/A

Stream Num: Map location B-3 (801_3.4R.2R)

Stream Class: IV

Channel Type: HCO

Protection: Category C

Flagging: G/W

Buffer (RMA):

Class IV for HCO - No buffer

Concerns: N/A

Stream Num: Map Location B-3 (801_3.1R.1R)

Stream Class: IV

Channel Type: HCO

Protection: Category C

Flagging: G/W

Buffer (RMA):

Class IV for HCO - No buffer

Concerns: N/A

Stream Num: Map location C-3 (801_3.7R)

Stream Class: IV

Channel Type: HCO

Protection: Category C

Flagging: G/W

Buffer (RMA):

Class IV for HCO - No buffer

Concerns: N/A

Stream Num: Map location C-3 / C-4 (801_3.5R)

Stream Class: IV

Channel Type: HCO

Unit 988

Protection: Category C
Flagging: G/W
Buffer (RMA):
Class IV for HCO - No buffer
Concerns: N/A

Stream Num: Map location B-4 (801_3.6R)
Stream Class: IV
Channel Type: HCO
Protection: Category C
Flagging: G/W
Buffer (RMA):
Class IV for HCO - No buffer
Concerns: N/A

Stream Num: Map location B-4 (801_3.6R.1)
Stream Class: IV
Channel Type: HCO
Protection: Category C
Flagging: G/W
Buffer (RMA):
Class IV for HCO - No buffer
Concerns: N/A

Stream Num: Map location A-5 (801_7.0)
Stream Class: IV
Channel Type: HCO
Protection: Category C
Flagging: G/W
Buffer (RMA):
Class IV for HCO - No buffer
Concerns: N/A

During the GIS process all streams were labeled as 801_2.0 / 801_3.0. Map locations were provided for streams along with the correct name. Stream labels will be corrected before final unit cards are prepared. Proposed unit helicopter landings will need stream reviews prior to final Unit Cards and implementation

All Streams Protection/Mitigation Actions by Category:

All Categories implement BMPs

Category A reaches flagged B/W: Under the TTRA timber harvest shall not be within 100 feet of the stream channel and a Stream course Protection Plan will be developed for that buffer. Additional AHMU buffers and selective harvest buffers may apply as specified above. Total no cut buffer is the sum of the no commercial and no programmed commercial harvest buffers.

Category B reaches flagged O/W: Trees shall be felled in such a manner so that the direction of fall is away from the stream course. Trees or products shall not be hauled or yarded across the stream course unless fully suspended. Debris entering streams from harvest activities shall be removed. Additional AHMU buffers and selective harvest buffers may apply as specified above. Total no cut buffer equals the no programmed commercial harvest buffers.

Category C reaches flagged G/W: In so far as practicable, trees will be felled and yarded away from the stream course. Debris that enters the stream channel that may affect water quality or have potential for debris flows will be removed from the stream course.

ROAD/STREAM CROSSING SUMMARY

Log landings and system road re-opening needs are discussed in the Engineering/System Roads section above. Should road/stream crossing structures be installed or re-installed the hydrologist will be consulted.

GEOLOGY/KARST

Unit has been reviewed for karst and cave resources. Portions of this unit are underlain by karst. The karst is of moderate vulnerability with inclusions of high vulnerability. The high vulnerability karst has been buffered from the unit. A harvest method that obtains partial suspension is required on the moderate vulnerability karst. As laid out there is no known karst or cave resource concerns.

Unit 988

HERITAGE RESOURCES

A finding of "No historic properties affected" (36 CFR 800.4(d)(1) or "No adverse effect" (36 CFR 800.5(d)(1) has been applied. Project activities may proceed as planned; however the Heritage Professional shall be consulted if new discoveries or unanticipated effects are identified during the project's implementation phase. All activities in the vicinity of the discovery shall cease and reasonable efforts shall be taken to avoid or minimize harm to the resource.

SCENERY

No scenery concerns.

RECREATION

No recreation concerns.

SOILS/WETLANDS

Slopes range from gentle to greater than 72%. About 20 acres are only suitable for harvest with a minimum of full suspension. Helicopter logging will meet all resource concerns in the entire unit. Small forested wetland areas are located in the northern portion of the unit. Apply R10 BMPs 12.5, 13.5, and 13.9 and National Core BMPs Plan-2, AqEco-2, AqEco-4, Veg-1, Veg-2, Veg-5, and Veg-6.

WILDLIFE

This Unit is in 3 separate pieces One piece, 43 ac in size; all surveys have been completed. The 8 ac piece requires a May/June goshawk survey. There is a wildlife nest buffer within the 33 ac proposed unit. The unit boundary has been modified to incorporate the wildlife buffer.