

# Appendix B

## Unit Cards

Appendix B, Unit Cards, is used to explain site-specific information about each unit and any resource concerns and mitigations. Narrative cards and maps for each unit in this Draft EIS are in numerical order by VCU. The unit cards summarize the silvicultural prescriptions, and describe the resource concerns and mitigation measures for each unit.

In the Iyouktug project and associated maps, unit boundaries do not include stream (RMA) buffers, high vulnerability karst, or non-forested areas. Areas of resource concern, including RMAs, high vulnerability karst, goshawk nest buffers, leave strips, as well as areas to be harvested in ongoing small timber sales, are displayed as areas dropped from alternative(s) in the attached maps or are described in the unit card. These areas would not be harvested in any alternative. Areas of slopes over 72%, bear dens, marten reserves, or wetlands are described in the text of the unit cards and/or displayed on the maps; the management of these areas is described in the text. Harvest acres could be less than unit acres due to management of these areas.

Alternative 4 unit boundaries were changed to exclude Inventoried Roadless Areas (IRAs). The area in all IRAs is dropped from Alternative 4.

The following sections provide background information for the unit cards. The Introduction to Unit Cards section of this appendix explains information displayed in the individual unit cards. The Project Design, General Mitigation Measures, and Unit Lay-out Instructions section summarizes project design elements (including silvicultural prescription), mitigation measures, and unit layout instructions that apply to all units, either where a particular resource or resource condition is found, or where these conditions are found during unit layout. These elements and measures can be either from the Forest Plan or project specific.

## Introduction to Unit Cards

### **Silvicultural Prescriptions**

Silvicultural prescriptions (referred to as RX in the unit cards) have been developed for each unit to meet site specific management objectives and Forest Plan direction. These objectives may include retaining old-growth characteristics for biodiversity, protection of soils, watershed, wildlife habitat or scenery values or designing systems that are most economical for logging feasibility on a site.

Minor changes to unit boundary location and to prescriptions are expected during implementation to better meet on-site conditions. Prescription information included on unit cards and included in the Iyouktug Record of Decision is meant to provide basic guidelines to achieve desired stand structure and to address resource concerns and logging system operability.

Additional information is provided below (under Project Design, General Mitigation Measures, and Unit Lay-out Instructions) for implementing the single tree selection prescription. Detailed silvicultural prescriptions and marking guides located in the project record should also be followed during layout.

Percent species composition is calculated based on stand exam data. Species composition observed during layout may vary somewhat from these percentages.

## **Watershed and Fisheries**

All known streams, either field surveyed or identified from the GIS layer, are shown on the unit card maps. Field surveys have been done on all units that will be harvested using ground-based equipment. Several proposed helicopter units have not yet been field-verified for streams. "GIS-mapped streams" are mapped and classified based on aerial photos. It is likely that when field verification takes place prior to layout, stream inventory and protection will be updated. These streams, and any additional streams found during layout, will be protected by following the Forest Plan Riparian Standards and Guidelines listed below. Class IV streams will be protected by following Best Management Practices. Timing restrictions for instream work may be required for each fish stream crossing listed on unit cards (for temporary roads) and road cards. Instream work would be permitted through the Alaska Office of Habitat Management and Planning

### **Process Groups and Channel Types**

A process group describes streams with similar interrelationships between watershed runoff, landform relief, geology, and glacial or tidal influences on erosion and deposition. A channel type more precisely characterizes a stream and helps predict the probable responses to natural and human influences. Channel types incorporate other aspects such as gradient, pattern, stream bank incision and containment and riparian area vegetation communities. See the Forest Plan, Figure D-1 (page D-4) for a visual representation of the typical distribution of channel process groups. The following table shows the Forest Plan codes used on the unit card narratives. Unit cards summarize protection needed for each stream in the unit by process group.

Table B-1: Process Groups in the Iyouktug Project Area (Paustian et al. 1992)

Process Group	Description	Channel Morphometry	Riparian Management Area
HC	High Gradient Contained	Steep mountain slope tributaries	Within side-slope break
AF	Alluvial Fan	multi-branched channels on depositional footslopes	Greater of 140 feet or active fan surface, remove no more than 10% of trees on remainder of fan
MC	Moderate Gradient Contained	Confined stream entrenched in footslopes or lowlands	Within side-slope break
MM	Moderate Gradient/Mixed Control	Valley bottom streams with variable confinement	Greater of 120 feet or floodplain, riparian wetland extent
LC	Large Contained	Confined streams in lowlands and valleys	Greater of 100 feet or within side-slope break
FP	Floodplain	Unconfined valley flood plain streams	Greater of 130 feet or extent of floodplain or riparian vegetation or wetlands
PA	Palustrine	Placid, sinuous, lowland streams	100 feet (Class I, II)
ES	Estuarine	Unconfined streams on tidal deltas	1000 feet

Source: Forest Plan, pages D-1 - D-4.

### Riparian Management Areas and Riparian Standards and Guidelines for Timber Harvest

Stream buffers maintain biodiversity and productivity, streambank and stream channel processes, and the natural and beneficial qualities of large woody debris over the short and long term. Riparian Management Areas are areas of special concern to fish, other aquatic resources and wildlife. They are generally delineated as identified in the process group direction (RIP2, III, E).

The Tongass Timber Reform Act (TTRA) mandates the use of minimum 100-foot wide buffer strips along both sides of all Class I and Class II streams that flow into Class I streams. This was incorporated into the Forest Plan Standards and Guidelines as “No commercial harvest within 100 feet of Class I streams and Class II streams that flow into Class I streams.” All Class II streams in or adjacent to timber units flow into Class I streams.

### Reasonable Assurance of Windfirmness (RAW) Zone for Streams

These areas alongside stream buffers are managed to improve windfirmness to the stream buffer where windthrow is a concern. RAW zones are intended to protect the no-harvest stream buffer from accelerated windthrow. These areas, for example, may be harvested to produce a feathered edge or the most windfirm trees may be retained while the trees more likely to blowdown are harvested. Other RAW zones may be based on topography. For Class I, II, and III Floodplain (FP), High Gradient Contained (HC), Large Contained (LC), Moderate Gradient Contained (MC), Moderate Gradient/Mixed Control (MM),

and Palustrine (PA) areas, manage an appropriate distance beyond the no-harvest stream buffer to provide for a reasonable assurance of windfirmness of the Riparian Management Area (pay special attention to the area within one site-potential tree height of the Riparian Management Area). Site-potential tree heights vary according to the channel type as follows:

- Floodplain - 130 feet
- High Gradient Contained - 120 feet
- Large Contained - 100 feet
- Moderate Gradient Contained - 100 feet
- Moderate Gradient/Mixed Control - 120 feet
- Palustrine - 85 feet or less

### **Lands and Encumbered Land**

The proposed timber sales are more than a mile away from private lands. About 5,050 acres of the Iyouktug project area are encumbered. These are lands that have a claim, lien, charge or liability attached to and binding real property. This includes Native Selection land which is selected but as yet unconveyed by the USDI Bureau of Land Management for lands withdrawn in fulfillment of Native entitlements established under ANSCA. Huna Totem Corporation has “selected” all but approximately 6 acres of encumbered lands from other federally-managed land parcels; none of these selected lands fall within the Iyouktug project area.

### **Recreation**

Recreation concerns are the same as the Scenery resource concerns. Scenery resource protection and management reduces effects to recreation.

## **Project Design, General Mitigation Measures, and Unit Lay-out Instructions**

The following general project design, mitigation measures, and unit lay-out instructions apply to all units, actions, and roads in the Iyouktug project where those conditions exist. The source(s) of each general measure are listed after the measure in terms of individual Forest-wide Standards and Guidelines (see Chapter 4 of the Forest Plan) or BMPs (see Appendix C of the Forest Plan and Chapter 10 of FSH 2509.22, The Soil and Water Conservation Handbook), where applicable.

### **Silvicultural Prescription-Guidelines for All Single Tree Selection Units**

The following are general guidelines for Single tree selection prescription: Designate up to specified percent of the existing basal area for harvest emphasizing spruce 24 inches DBH or greater and yellow-cedar. Designate trees for harvest either singly or, preferably, in small clumps (cut-tree mark) to facilitate shovel and helicopter yarding. Clumps will range from several trees up to approximately an acre in size with occasional clumps as large as 2 acres to favor spruce regeneration. Percent basal area designated for harvest should not be increased to account for non forested/nonproductive areas within unit.

Harvest of other species and diameter classes will be based on market conditions at the time and refined during layout. Retain trees that represent all species and diameter classes currently in the stand; retain especially large diameter (30" +DBH) high defect trees that meet safety reserve guidelines and, if present, mid-sized (16-20" DBH) spruce and yellow-cedar with high vigor and good seed producing potential. Designate reserve trees of sufficient size and condition within areas of high value marten habitat to meet marten standards and guidelines. The residual stand and advanced spruce/yellow-cedar regeneration should be protected to the extent possible during harvest. Refer to individual unit prescriptions and marking guides for additional site-specific information.

**Silvicultural Prescription-Planting**

Inter-planting of yellow-cedar or spruce should be scheduled if necessary to increase post-harvest composition or maintain pre-harvest composition of these species.

**Temporary Road Numbers**

Temporary roads were assigned a number on analysis maps and in unit cards to provide location information only. These numbers will not be used in the transportation atlas or other documents or maps.

**Timber/Logging and Yarding Methods**

Yarding methods were proposed for Iyouktug units by the IDT based on operability, and those yarding methods were analyzed by the IDT for environmental effects. Different yarding methods have different environmental effects. Because aerial yarding methods (helicopter yarding in particular) generally have less impact than shovel yarding, a change from shovel yarding to cable or helicopter yarding, or cable to helicopter yarding would not change or would reduce environmental effects; this change to aerial yarding could be made at the discretion of the timber sale administrator without further change analysis as long as concerns in the unit cards are responded to. A change from aerial yarding to shovel yarding would require further review of effects by an IDT prior to harvest.

**Stream Channel Protection Measures Incorporated into Unit Design**

The following stream protection measures are required in all units where streams are identified. See individual unit cards for stream categories.

**Stream Protection Categories**

Category A: Class I streams and Class II streams are marked with blue and white striped flagging, and will be protected by no-cut buffers designated by process group in Forest Plan Riparian Standards and Guidelines. No commercial timber will be removed from these buffers. Trees identified for harvest will be felled to avoid no-cut buffers. Prior to any operations within a buffer, a Stream course Protection Plan will be developed for that buffer (BMP 13.16).

Category B: Class III streams are marked with orange and white striped flagging. These stream courses will be protected by no-cut buffers within the v-notch. Class IV streams with unstable side-slopes may also be assigned

Category B protection without buffers. The following are Category B protections:

Split yard and directionally fall trees away from Class III and IV streams without buffers (RIP2-II). Felled trees that inadvertently enter or cross Stream courses shall not be bucked or limbed until clear of Stream courses, unless limbing or bucking would reduce damage to the riparian vegetation or stream banks. Debris in Stream courses resulting from falling or yarding shall be removed immediately to a stable location above high water mark. Existing natural stable debris will be left undisturbed. When ground skidding systems are employed, logs will be end-lined out of riparian areas. Fully suspend logs where yarding is to be done across streams or the full length of a stream or drainage (BMP 13.16, RIP2-II).

Category C: Class IV streams and all other intermittent, ephemeral, and small perennial channels and V notches designated for soil and water quality protection are marked with green and white striped flagging and will be protected in the following manner:

Where practicable, trees will be felled and yarded away from stream courses. The trees that cannot be felled away from stream courses will be felled to bridge the stream providing these trees will be yarded during the same operating season. Trees felled to bridge stream courses will be bucked, limbed, and topped clear of stream course and its banks. Debris which restrict natural water flow, adversely affect water quality or have potential for debris flow will be removed to a stable location above high water mark before the yarder leaves the unit or upon completion of seasonal logging activities in the unit, whichever comes first (BMP 13.16).

### **Stream Crossing Protections (BMP 13.16)**

1. Location and method of stream crossings must be agreed to prior to construction. Crossings are authorized after the location of skid trails, tractor roads, and the Forest Service and the Purchaser agree to temporary roads. Temporary crossings shall not impede fish passage, or result in significant degradation of water quality (BMP 14.17).
2. Material from temporary road and skid trail stream crossings will be removed from the stream channel and the stream banks will be restored to an acceptable condition upon completion of Purchaser's use or prior to the next seasonal high runoff period, unless otherwise agreed (MBMPs 13.11, 13.14, 14.17, and 14.24).
3. Purchaser shall repair all damage to a stream course caused by Purchaser's operations, including damage to banks and channel, as designated by the Forest Service. Revegetation may be required on disturbed stream banks, V-notch sideslopes, and adjacent floodplains (BMP 12.17).

4. Water bars, windrowed slash, and other erosion control structures will be properly located to prevent water and sediment from being channeled into stream courses, and to dissipate concentrated flows.
5. Wheeled or track-laying equipment will not be operated in stream courses unless approved by Forest Service except at crossing designated by Forest Service, or as essential to construction or removal of culverts and bridges (BMP 14.14).

### **Soil and Water Applicable Best Management Practices (BMPs)**

BMPs apply to all units and all road segments. In the unit cards, BMPs were highlighted that were specific to unit concerns. However, all of the following should be implemented through layout and project implementation

The following BMPs for road development apply to temporary roads as well as to National Forest System Roads.

#### **Soil/Water Protection during Timber Sale Planning**

Incorporate soil and water resource considerations into timber sale planning. Include site-specific considerations, site preparation, designating water quality protection needs on sale area maps, locating and designing landings for good drainage and dispersion of water, incorporating erosion control and timing responsibilities into the Operating Schedule, scheduling and enforcement of erosion control during and at completion of the timber sale, including non-recurring "C" provisions to protect soil and water resources in timber sale contracts, and seeking an environmental modification of the contract if new circumstances or conditions indicate that soil, water, or watershed damage may occur. (BMPs 13.1, 13.2, 13.3, 13.4, 13.9, 13.10, 13.11, 13.12, 13.14, 13.17, and 13.18)

#### **Soil/Water Protection during Road Development**

Implement measures to reduce surface erosion and drainage interruption related to transportation. This includes water barring and cross-draining roads using ditches and culverts to prevent water running long distances over roads, closure, and seeding and fertilizing cut-and-fill slopes. (BMPs 14.1, 14.2, 14.3, 14.5, 14.7, 14.8, 14.9, 14.10, 14.11, 14.12, and 14.19)

#### **Soil/Water Protection during Road Management**

Conduct road maintenance and snow removal operations to minimize disruption of road surfaces, embankments, ditches, and drainage facilities, and use road closures or other measures to keep road surface and road site erosion at low or background levels. (TRAN23-I, BMPs 14.20 and 14.23)

#### **Management of Road Use to Reduce Erosion and Sedimentation**

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 14.22)

### **Temporary Road Decommissioning**

Decommission temporary roads after use, remove or bypass drainage structures and install waterbars in appropriate places. (RIP2-II and BMPs 12.17 and 14.24)

### **Soil/Water Protection during Development of Rock Sources, LTFs, & Other Facilities**

Implement measures to reduce surface erosion and other impacts on soils and water from gravel sources and quarries, LTFs/MAFs, sortyards, and other facilities. (BMPs 14.18, 14.19, 14.25, 14.26, and 14.27)

### **Accidental Spills**

Implement measures and plans to prevent the contamination of soil and water from accidental spills of petroleum products and hazardous substances. (BMPs 12.8 and 12.9)

## **Wildlife**

The following are to be implemented in units with known resources (see individual unit cards) or where those resources are discovered during layout and implementation:

**For marten:** Retain 10-20% of original stand structure as measured by basal area or trees per acre in high value marten habitat. Maintain an average of 4 large live trees/acre (20-30'' dbh or larger), 3 snags or decadent trees/acre (20-30'' dbh or larger), and 3 large, downed trees/acre (20-30'' dbh or larger and 10 feet long). Where trees this large are not available, substitute the next largest trees. Retained trees can be clumped to maintain a reasonable assurance of windfirmness and to minimize operational difficulties.

**For bear:** A 200-foot no harvest buffer will be implemented around den sites documented or observed to occur within units proposed for harvest, where feasible. Recommend that harvest activities occur in these units after June 1 (Flynn 2007, pers. com.). Forest Plan standards and guidelines as defined in pages 4-113 to 4-114 will be applied.

**For goshawk:** Permit no continuous disturbance likely to result in nest abandonment within the surrounding 600 feet from March 15-August 15. This applies to active nest sites and the Iyouktug nest has been active every year since 2002. If a goshawk nest is identified in or adjacent to the unit, contact the project biologist; follow Forest Plan direction for the development of the nest buffer.

**For raptor and heron nests:** Maintain a 600-foot windfirm no-harvest buffer around active raptor (excluding goshawk) and heron nest sites if identified and restrict harvest and road building activities from March 1 to July 31 within the buffer.

### **Unit Card Key**

Harvest System:

SH = Shovel yarding

C = Cable yarding

H = Helicopter yarding

Prescription/Percent Retention:

ST50 = Single tree selection harvesting up to 50% of the basal area in the stand

ST40 = Single tree selection harvesting up to 40% of the basal area in the stand

ST25 = Single tree selection harvesting up to 25% of the basal area in the stand

CC = Clearcut