Data Summary

Aviation and Navigation

PEL Study Description

The City and Borough of Juneau has partnered with Alaska Department of Transportation and Public Facilities (DOT&PF) to study a possible transportation corridor to connect Juneau with the north end of Douglas Island. A connection has been studied since the 1980s but has not progressed beyond identification and recommendation of preliminary alternative alignments. The previous studies highlighted several reasons for a north crossing:

- Congestion during peak periods on the existing Douglas Island Bridge
- Concerns about safety and emergency response in the event of a bridge closure
- The potential for residential, commercial, industrial, and port development at west Douglas Island

DOT&PF has chosen to use the Planning and Environmental Linkages (PEL) process to identify and evaluate a purpose and need and recommend alternatives for connecting Juneau with Douglas Island. The PEL process will provide opportunities for public input and involvement. The analyses conducted may be incorporated into a future National Environmental Policy Act (NEPA) process.

The study area boundary, where the proposed crossing may be located, is shown in Figure 1. The study area encompasses the area where prior studies and community outreach identified potential alternative crossing locations.

Purpose of the Data Summary

This data summary was prepared as an initial step in the development of the proposed alternative corridors for the Juneau Douglas North Crossing PEL Study (Project Numbers: SFHWY00299/0003259). It is intended to confirm data for identifying existing aviation and navigation activity in the study area. This data summary includes data collection, analysis and mapping methods, assumptions, and a summary of the key findings.

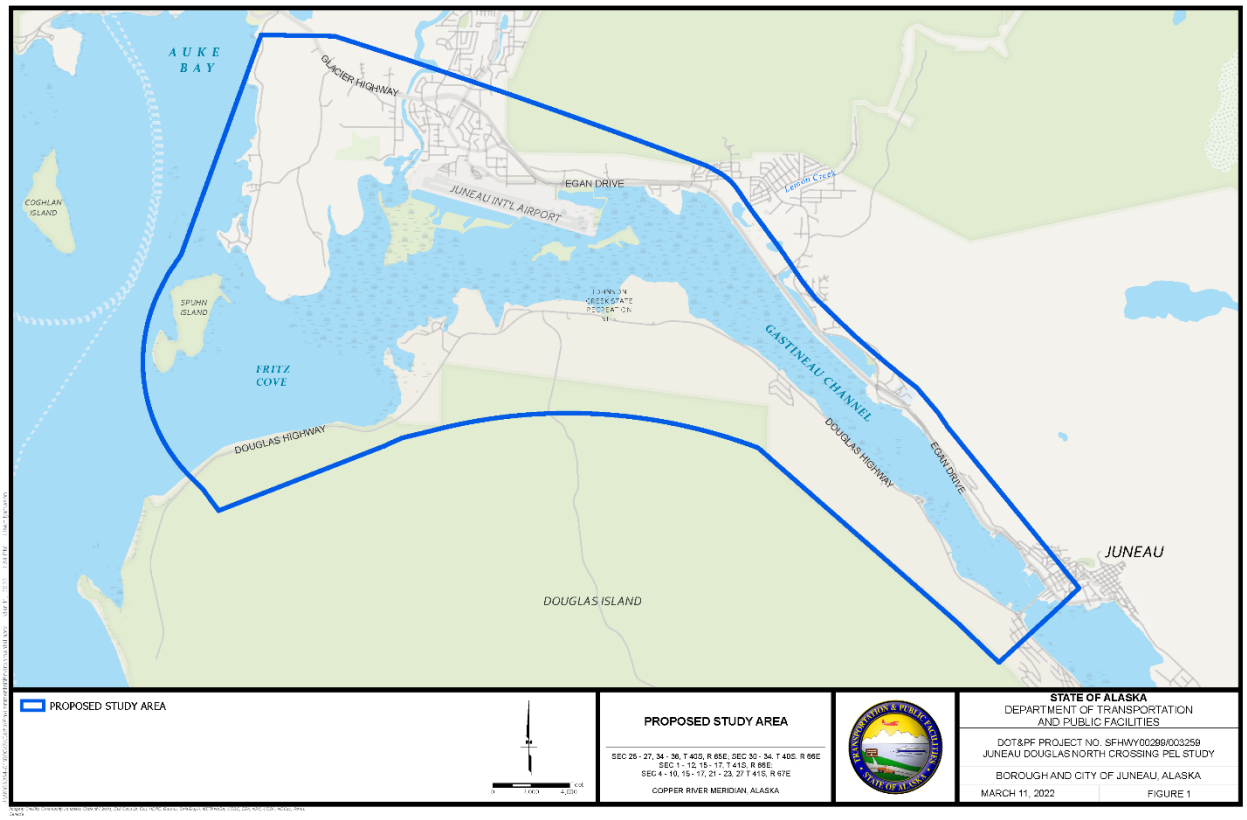

Figure 1: Study Area

Data Collections Sources

Data was collected to determine aviation and navigation resources within the study area. Data collected included a review of the following:

- Applicable Federal Aviation Administration (FAA) regulations[1]
- Juneau International Airport (JNU) Airport Layout Plan (ALP)[2]
- JNU Technical Documents and Specifications[3]

Mapping Methods

- The approaches shown on Figure 2 were mapped based on the following information:

[1] 14 CFR FAR Part 77-Safe, Efficient Use, and Preservation of the Navigable Airspace.
[2] JNU ALP Part 77, Airspace Plan sheet pages 4-7
[3] RNAV GPS V Approach Runway 8 via AirNav: PAJN - Juneau International Airport Master Record 5010 via (Facility Dashboard - JNU (faa.gov)

- JNU ALP Part 77 surfaces show the approach areas into Runway 8/26. Runway 8 has a Localizer type Directional Aid (LDA) approach with minimums to 3,200' and 4 miles visibility from the airport and a RNAV (Area Navigation) approach with minimums 1,900' and 2 miles visibility from the airport. Runway 26 has a non-precision approach.

Summary

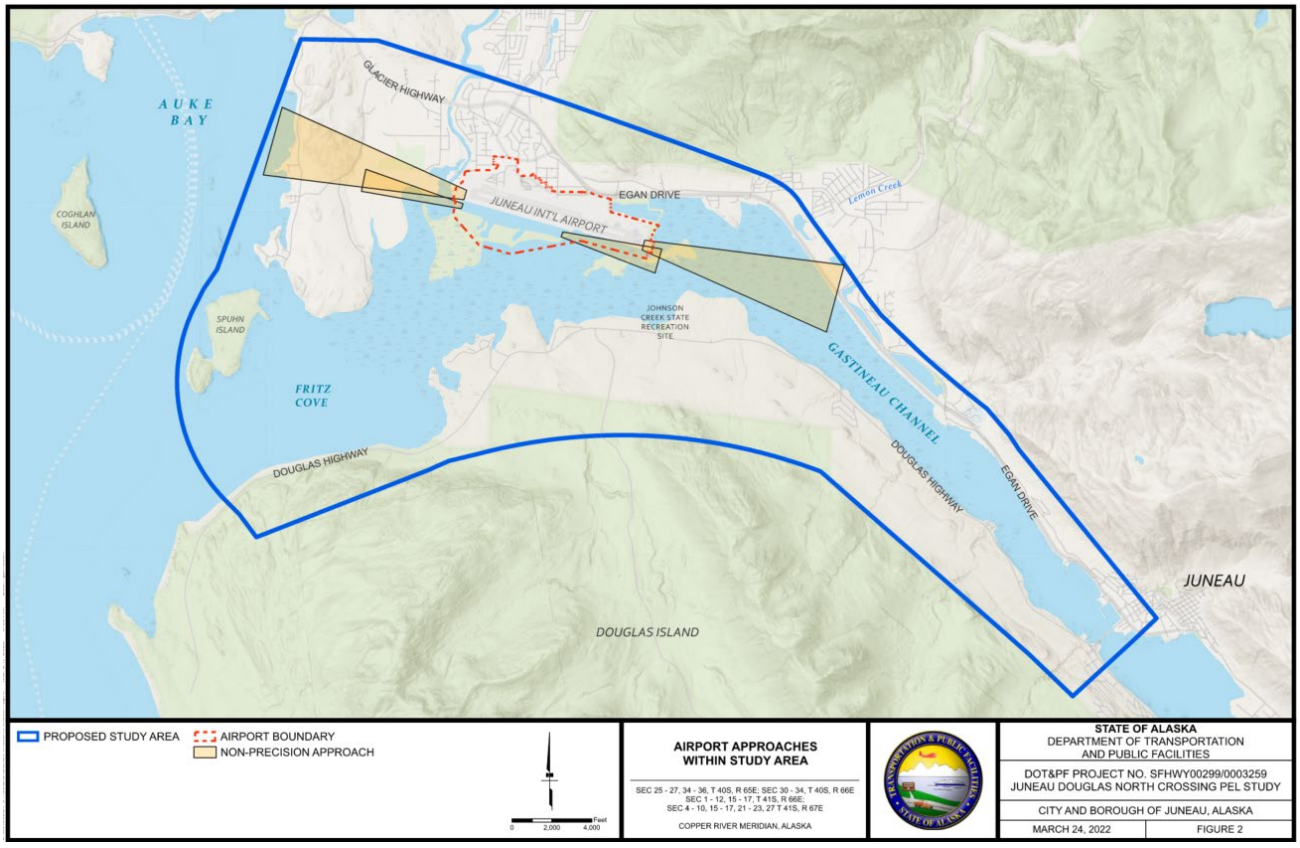

Figure 2: Approach Surfaces

- While the runway is located entirely within the airport property surrounding areas of airspace extending beyond the runway, are protected (Figure 2). Aircraft landing or taking off from a runway require an area free of obstructions to operate safely.
- The Runway Protection Zones (RPZ) are trapezoidal areas off the end of the runway that enhance protection of people and property on the ground in the event an aircraft overshoots or undershoots a runway. RPZs underlie a portion of the approach surface. The dimensions for the RPZ for runway 8/26 are 500 feet wide closest to the runway, 1,010 feet wide at the widest point of the trapezoid, and 1,700 feet long. See below for a visual reference.

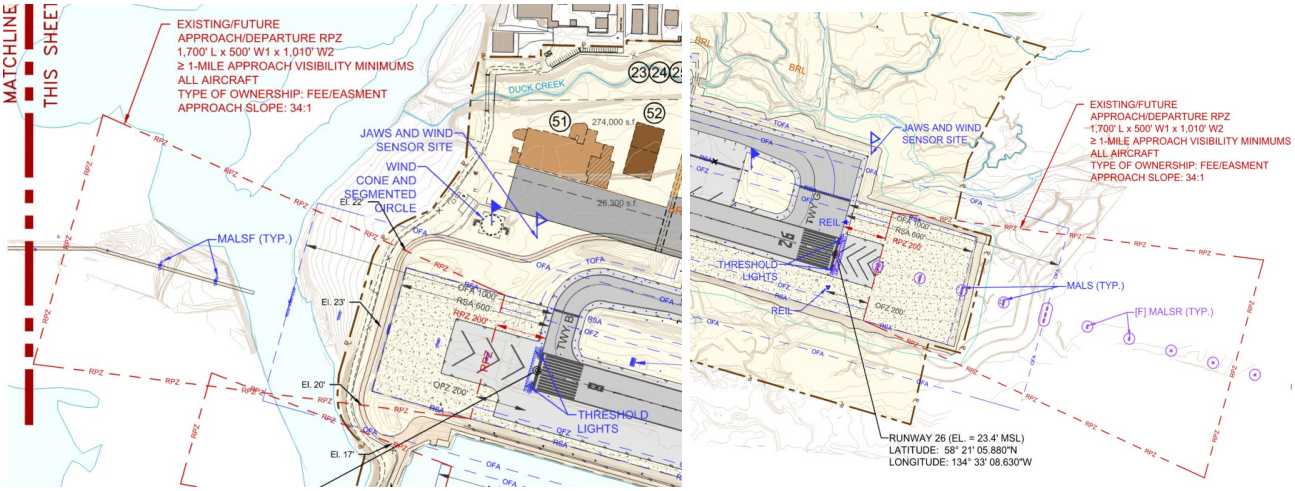

Figure 3: Runway 8/26 RPZs

Part 77 is a series of imaginary surfaces defined as: primary surface, conical surface, approach surface, and transitional surface. The surfaces are used to determine whether natural terrain or man-made structures would be obstructions to the safe navigation of aircraft operating on approach to the runway. The dimension of each surface is defined within Part 77:

- The primary surface exists at ground level, centered on the runway, at the same elevation as the runway, and extends 200 feet beyond each runway end.
- The approach surface is the one aircraft use on approach to landing. The approach surface should be clear of all objects, to the greatest extent possible, to ensure that nothing can impede the landing of an aircraft on final approach. The slope for JNU approach surface is 34:1 degree, meaning for each 34 feet outward one (1) foot of elevation is gained.
- The transitional surface extends outward and upward from the sides of the airport and its runways. The transitional surface starts at the edge of the primary surface and rises at a slope of 7:1.
- The horizontal surface is 150 feet above the airport elevation and the perimeter is a set of swinging arcs from the center of the end of the primary surface for each runway end. The radius used in JNU is 10,000 feet.
- The conical surface starts at the edge of the horizonal surface and extends outward and upward at a 20:1 slope for a horizontal distance of 4,000 feet and a vertical rise of 200 feet, putting the outer edge of the conical surface at 350 feet above the airport elevation.
- The exact approach is not public information, but Alaska Airlines RNAV crosses through the downtown area at 1,500’ Mean Sea Level (MSL) on approach/missed approach and 900’ on departures. Obstacle clearance surface is at 700’ on departures.
- The edge of the part 77 will not change based on the size of aircraft using the airport. It will only change if the instrument approach changes from a non-precision (34:1) slope to a precision (50:1) slope.

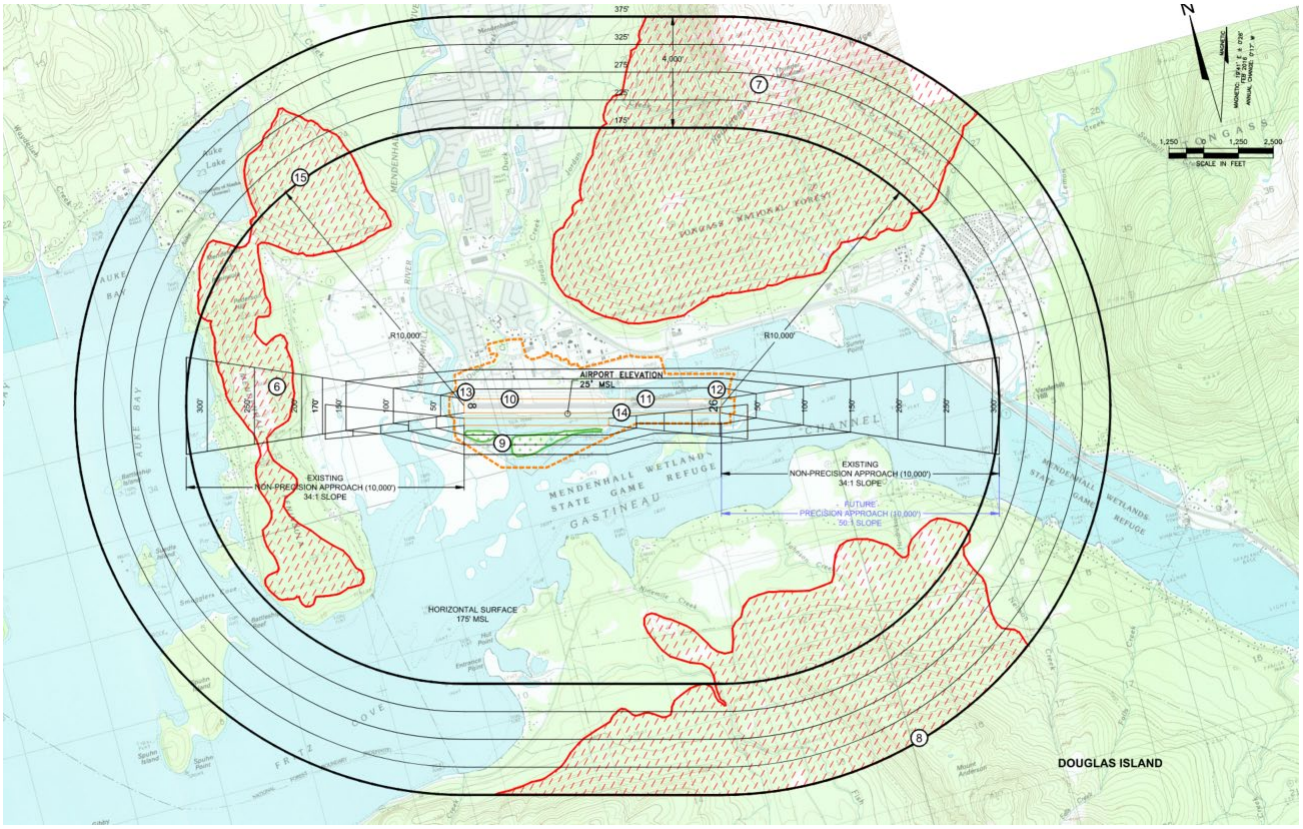

Figure 4: Part 77 Surfaces

For any construction in the vicinity of the airport the following needs to be considered:

- A new structure could make the obstacle clearance higher, if within a certain distance to the airport.
- A new structure could impact takeoff performance because the engine out surface is much closer to the ground during departure. A structure within the approach could limit payload departing Runway 8.

Part 77 approach surfaces extend horizontally 10,000 ft at a 34:1 slope, beginning 200 feet from each runway end. Additional part 77 surfaces including the transitional, horizontal, and conical surfaces will require evaluation as well. At a minimum, all structures must remain below part 77 surfaces. Any alternative selected will avoid conflict with future Part 77 surfaces of the airport both during and after construction. In the event an alternative could possibly conflict through construction, the alternative's construction methods will be analyzed to remove the conflict and choose an alternative construction method that does not conflict with the Part 77 surface.