CORDOVA MERLE K. "MUDHOLE" SMITH AIRPORT MASTER PLAN UPDATE

FINAL TECHNICAL REPORT

SEPTEMBER 2023

Prepared for:

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Department of Transportation & Public Facilities, Northern Region
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Airport Master Plan Update
Merle K. (Mudhole) Smith Airport

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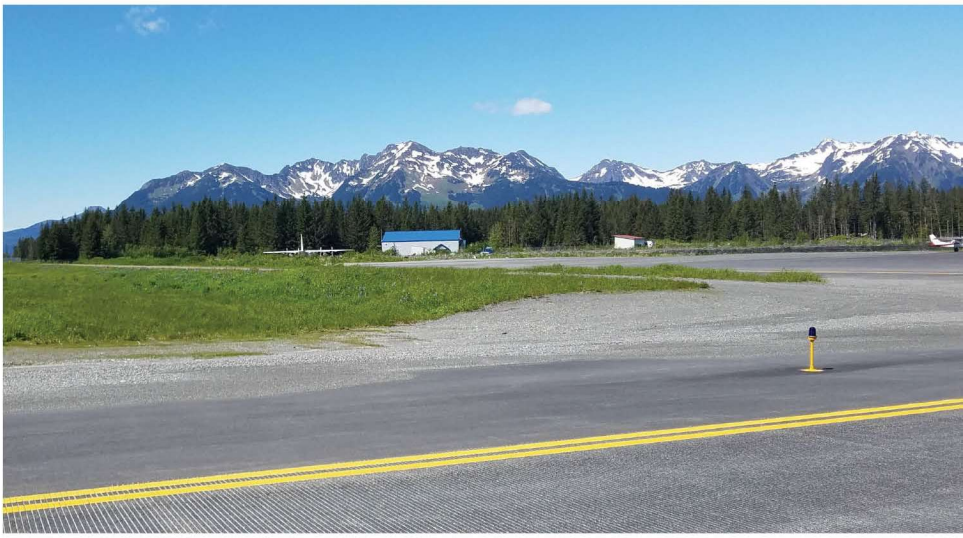
Acronyms

CORDOVA MERLE K. "MUDHOLE" SMITH
AIRPORT MASTER PLAN UPDATE



Acronyms

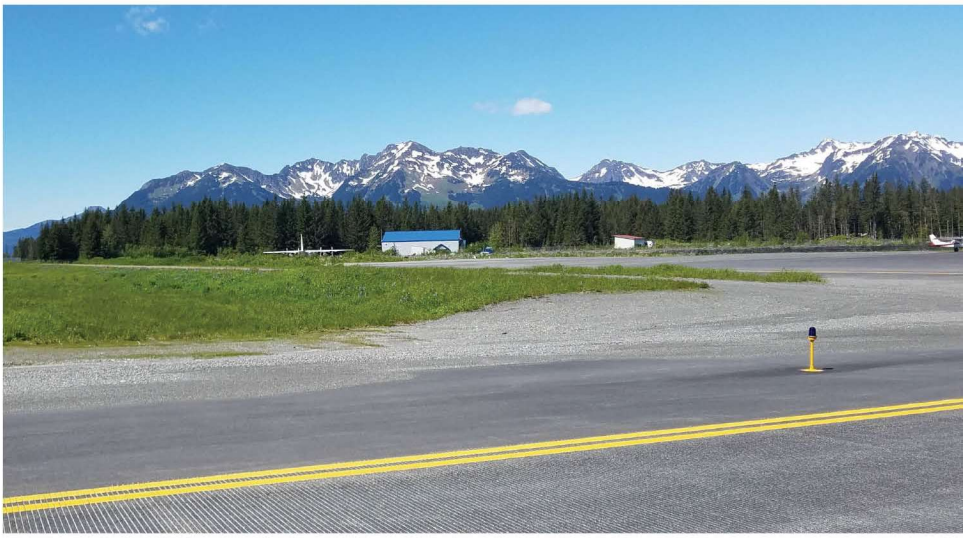
AAC	Aircraft Approach Category
AAL	Alaskan Region [FAA]
AASP	Alaska Aviation System Plan
AC	Advisory Circular
ACIP	Airport Capital Improvement Program
ADG	Airplane Design Group
ADO	Airports District Office [FAA]
ADPH	Average Day Peak Hour
ADPM	Average Day Peak Hour
AFD	Airport/Facility Directory
AGL	Above Ground Level
AIP	Airport Improvement Program
AIS	Aeronautical Information Systems
ALP	Airport Layout Plan
ALS	Approach Lighting System
AMSL	Above Mean Sea Level
AOA	Airport Operations Area
APHP	Average Peak Hour Passengers
APL	Aircraft Parking Line Limit
APRC	Approach Reference Code
ARC	Airport Reference Code
ARFF	Aircraft Rescue and Firefighting
ARP	Airport Reference Point
ASDA	Accelerated Stop Distance Available
ASL	Above Sea Level
ASV	Annual Service Volume
AVGAS	Aviation Gasoline
AVN	FAA's Office of Aviation System Standards
AWOS	Automated Weather Observing System
BRL	Building Restriction Line
CADD	Computer-Aided Drafting and Design
CAAGR	Compound Average Annual Growth Rate
CDV	Cordova Airport
CFR	Code of Federal Regulation
CIP	Capital Improvement Program
CMG	Cockpit to Main Gear Distance
CTAF	Common Traffic Advisory Frequency
DA	Decision Altitude
DH	Decision Height
DME	Distance Measuring Equipment
DOT&PF	Alaska Department of Transportation & Public Facilities
DPRC	Departure Reference Code
eNASR	National Airspace System Resources Browser

EA	Environmental Assessment
EPA	Environmental Protection Agency
FAA	Federal Aviation Administration
FAR	Federal Aviation Regulation
FBO	Fixed Base Operator
FEMA	Federal Emergency Management Agency
FOD	Foreign Object Debris
FONSI	Finding of No Significant Impact
GA	General Aviation – Glide Angle
GIS	Geographic Information System
GPS	Global Positioning System
GS	Glide Slope
HIRL	High Intensity Runway Lights
HITL	High Intensity Taxiway Lights
IAP	Instrument Approach Procedure
ICAO	International Civil Aviation Organization
IFR	Instrument Flight Rules
ILS	Instrument Landing System
IMC	Instrument Meteorological Conditions
ISD	FAA/NOAA, Integrated Surface Database
LAAS	Local Area Augmentation System
LDA	Landing Distance Available
LNAV	Lateral Navigation
LPV	Localizer Performance with Vertical Guidance
MALSR	Medium Intensity Approach Lighting System with Runway Alignment Indicator Lights
MDA	Minimum Descent Altitude
MGW	Main Gear Width
MGW	Maximum Gross Weight
MIRL	Medium Intensity Runway Lights
MITL	Medium Intensity Taxiway Lights
MSA	Metropolitan Statistical Area
MSL	Mean Sea Level
NAS	National Airspace System
NAS	National Airspace System
NAVAIDS	Navigational Aids
NCDC	National Climatic Data Center
NEPA	National Environmental Policy Act
NOAA	National Oceanic and Atmospheric Administration
NPI	Non-Precision Instrument
NPIAS	National Plan of Integrated Airport Systems
OFA	Object Free Area
OFZ	Object Free Zone
P/T	Precipitation and Lightning Sensors
PA	Precision Approach
PAPI	Precision Approach Path Indicator

PCN	Pavement Condition Number
PenAir	Peninsula Airways
POFZ	Precision Obstacle Free Zone
RAIL	Runway Alignment Indicator Light
RDC	Runway Design Code
REIL	Runway End Identifier Lights
RNAV	Area Navigation
ROFA	Runway Object Free Area
ROFZ	Runway Obstacle Free Zone
RPZ	Runway Protection Zone
RSA	Runway Safety Area
RVR	Runway Visual Range
RWY	Runway
SAC	Stakeholder Advisory Committee
SOP	Standard Operating Procedure
TACAN	Tactical Air Navigation
TAF	Terminal Area Forecasts
TAP	Terminal Area Plan
TCH	Threshold Crossing Height
TDG	Taxiway Design Group
TDZ	Touchdown Zone
TDZE	Touchdown Zone Elevation
TERPS	Terminal Instrument Procedures
TESM	Taxiway Edge Safety Margin
TFMSC	Traffic Flow Management System Counts
TODA	Takeoff Distance Available
TOFA	Taxiway Object Free Area
TORA	Takeoff Run Available
TSA	Taxiway Safety Area; Transportation Security Administration
TW	Taxiway
TWY	Taxiway
USGS	United States Geological Survey
VFR	Visual Flight Rules
VHF	Very High Frequency
VMC	Visual Meteorological Conditions
VNAV	Vertical Navigation
VOR	Terminal Very High Frequency Omnidirectional Range
VORTAC	Terminal Very High Frequency Omnidirectional Range/TACAN

Chapter 1
Introduction

CORDOVA MERLE K. "MUDHOLE" SMITH
AIRPORT MASTER PLAN UPDATE



1 INTRODUCTION

1.1 Need for the Update of the Airport Master Plan and Airport Layout

The Alaska Department of Transportation & Public Facilities (DOT&PF) last completed the Merle K. (Mudhole) Smith Airport (FAA Location Identifier: CDV) Master Plan Update in 2000. The Airport Layout Plan (ALP) Drawing and other supporting graphical drawings, information, and data sheets (collectively referred to as the Airport Layout Plan Drawing Set) was last updated in 2012.

In 2019, using FAA Traffic Flow Management System Counts (TFMSC) and Bureau of Transportation Statistics (BTS) for CDV, an estimated 14,000 aircraft operations occurred throughout the calendar year and a total of 29 (27 Single-engine and 2 Helicopter) aircraft were locally based at the airport. During the same period, approximately 19,000 enplaned passengers were reported by the FAA.

The update of the Airport Master Plan is needed to plan the airport's infrastructure to support future air service for the community of Cordova. The airport offers critical infrastructure used by commercial fishing, residents, health services, the US Coast Guard, the military, and others, because Cordova is not on the Alaska Highway System. Future airport improvements recommended in this update of the CDV Master Plan will help support air carriers in providing regular and safe air service. As part of the update, DOT&PF will focus the validation of past airport facility planning, particularly with respect to identifying needed improvements to its airside, terminal area, and other landside facilities.

Further, revised, and updated FAA airport design standards and safety criteria guidance dictate the need to review and plan for needed updates of current airport design geometries and safety-related setbacks. A Master Plan Technical Report will be developed to provide information regarding updated airport development plans and airport design requirements while also addressing key issues, objectives, and goals pertinent to the airport's future development.

The ALP Drawing Set will be developed in accordance with guidance offered in FAA's AC 150/5070-6B, *Airport Master Plans*, Chapter 10, Section 1002, *Airport Layout Plan Drawing Set*; and *FAA Airports Division ARP Standard Operating Procedure (ARP SOP) 2.00, FAA Review and Approval of Airport Layout Plans (ALPs).*

These updates will serve to provide the needed planning platform on which to further develop the airport to improve and maximize the safe and efficient development and use of the airport while minimizing potential adverse environmental impacts to the surrounding natural environment.

1.2 Goals of the Airport Master Plan Update

The general goals of DOT&PF regarding the update of the CDV Airport Master Plan and ALP Drawing Set are as follows:

- To further enhance the airport's aeronautical role within DOT&PF's Alaska Aviation System Plan

- To increase safety and efficiency of the airfield's current and likely planned future runway, taxiways, and taxiway connectors
- To attain the highest and best use of on-airport developable land
- To preserve and protect:
    - DOT&PF's capability to leverage existing and planned future aviation assets
    - Likely needed aviation-related facility development and to accommodate anticipated future aviation-related operations and commerce
    - Navigable airspace above and around the airport to accommodate existing and anticipated NextGen-related approach capabilities to and from the airport
    - DOT&PF's ability to accommodate unforeseen or anticipated demand for civilian and military-related aviation operational activities
- The main goals and objectives of the Airport Master Plan and ALP Drawing Set update include:
    - Use of existing and relevant information
    - Documentation of existing airport facilities
    - Develop and receive FAA and DOT&PF approval of a Forecast of Aviation Activity
    - Identification of one or more "Critical" or "Design" aircraft.
    - Identify airport-compatible land use on and in proximity to the airport
    - Update the ALP Drawing Set
    - Clearly identify and verify the present and future role(s) of the airport.
    - Review/identify the size and layout of airside and landside facilities to accommodate projected demand.
    - Review existing compatible land use measures around the airport.
    - Conduct a streamlined and efficient public outreach program.
    - Develop a Capital Improvement Program (CIP) and funding plan for the airport that provides the basis for future federal, state, and local government investment.

The following areas of emphasis will be reviewed and addressed:

- Runway 9-27 Runway Safety Area,
- Runway 9-27 Line-of-Sight,
- Obstructions to Navigable Airspace,
- General Aviation Needs,
- Impact of Wildlife on Airport Operations,
- Land Use and Revenue-Generating Opportunities, and
- Drainage concerns.

During the planning process these goals were also shared with the Stakeholder Working Group and the public.

The overall purpose of this Airport Master Plan Update is to provide reasonable guidelines for future development alternatives to satisfy aviation demand in a cost-effective manner. In support of the purpose and goals identified, the primary objective of this master plan is to create a 20-year development program that will maintain a safe, efficient, economical, and environmentally sustainable airport facility for DOT&PF, the City of Cordova, and surrounding

communities of the Valdez-Cordova Census Area within Alaska's Unincorporated Borough. The key elements of the planning process are shown in **Figure 1-1**.

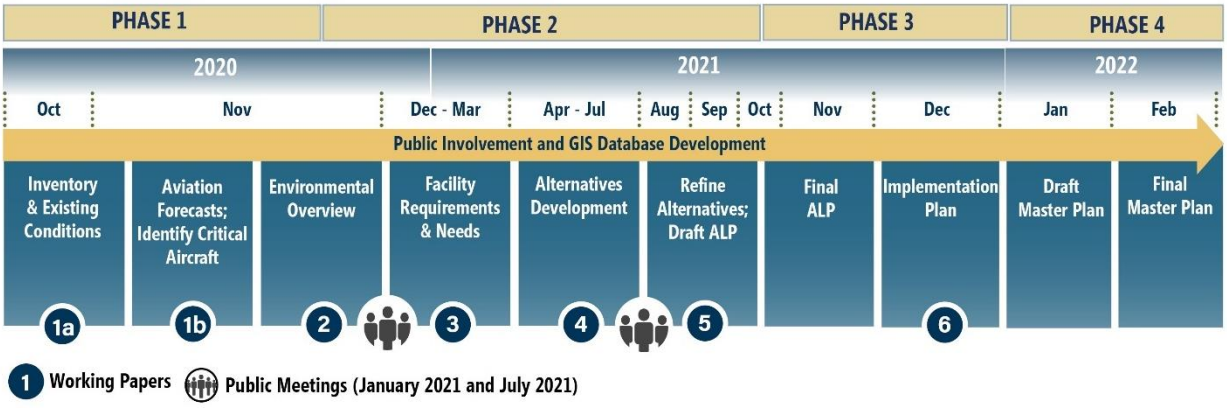


Figure 1-1: Master Planning Process

1.3 FAA Master Plan and ALP Drawing Set Update Guidance and Requirements

The update of the Airport Master Plan and Airport Layout Plan Drawing Set will fully follow guidance listed in the current FAA ALP checklist, and guidance provided in the following FAA documents:

- Advisory Circular 150/5070-6 (Change 2), *Airport Master Plans*,
- ARP SOP 2.00, *Standard Procedure for FAA Review and Approval of Airport Layout Plans (ALPs),*
- ARP SOP 3.00, *Standard Operating Procedure for FAA Review of Exhibit 'A' Airport Property Inventory Maps,*
- Advisory Circular 150/5190-4, *A Model Zoning Ordinance to Limit Height of Objects Around Airports*,
- Advisory Circular 150/5200-33C, *Hazardous Wildlife Attractants on or Near Airports*,
- Advisory Circular 150/5300-13A (Change 1), *Airport Design*,
- Advisory Circular 150/5300-13B, *Airport Design*,
- Advisory Circular 150/5320-6F, *Airport Pavement Design and Evaluation*,
- Advisory Circular 150/5325-4B, *Runway Length Requirements for Airport Design*,
- Advisory Circular 150/5335-5C, *Standardized Method of Reporting Airport Pavement Strength – PCN*,
- Advisory Circular 150/5340-1M, *Standards for Airport Markings*,
- Advisory Circular 150/5340-30H, *Design and Installation Details for Airport Visual Aids*,
- Order 5050.4B, *National Environmental Policy Act (NEPA) Implementing Instructions for Airport Actions*,
- Order 5100.38D, *Airport Improvement Program Handbook*,
- Order 5200.8, *Runway Safety Area Program*,
- Joint Order JO 7400.2L, *Procedures for Handling Airspace Matters (Change 1),*

- *Order 8260.3D, United States Standard for Terminal Instrument Procedures (*TERPS),
- Order 8260.19I, *Flight Procedures and Airspace*,
- Engineering Brief No. 99A, *Changes to Tables 3-2 and 3-4 of Advisory Circular, 150/5300-13A, Airport Design*,
- Title 14 CFR part 77, Safe, Efficient Use, and Preservation of the Navigable Airspace, and
- FAA Order 1050.1F, Environmental Impacts: Policies and Procedures.

During the alternatives refinement phase of the CDV Airport Master Plan Update, the FAA published a revision to the Airport Design advisory circular. As a result, the Preferred Development Plan and Airport Layout Plan have been updated to reflect the design guidance contained in the newly released AC 150/5300-13B, *Airport Design.*

Airport planning is a well-documented and FAA-prescribed systematic process used by airport owners to ensure the efficient future development of the airport that remains consistent with DOT&PF's airport development vision and goals, the Alaska Aviation System Plan (AASP), and the FAA's national aviation development goals. A key objective of the CDV Airport Master Plan Update is to assure the effective use of current and planned future airport resources to satisfy future aviation demand at CDV in a timely, financially, and environmentally-feasible manner.

This update of the Airport Master Plan and ALP Drawing Set will serve to represent DOT&PF's current airport development plans for a 20-year planning period that will be divided into Near (1 to 5-year), Intermediate (6 to 10-year), and Long-term (11 to 20-year) planning horizons. The near-term will be specifically examined to identify immediate airport capital improvement needs that have been previously identified and fully-funded. The following five-year Intermediate-term addresses airport facility improvement needs that are anticipated to be needed but have not been either prioritized or identified as part of the airport's CIP. This second five-year planning horizon provides airport owners ample time within which to conduct environmental due diligence and secure local, state and national FAA funding resources. Lastly, the follow-on ten-year planning horizon serves to identify airport development needs that are envisioned to be required within the following 11 to 20-year long-term horizon. It is highly anticipated that these long-term airport developments, while typically not clearly definable and/or ripe for decision making, are needed to fulfil the DOT&PF's vision and to attain the airport's long-range planning goals for continued growth and development through the end of the 20-year planning period.

Following the update of the CDV Master Plan and ALP Drawing Set, DOT&PF will have a coherent and sequentially-structured airport facility development program that will

- provide a graphic representation of existing airport features, future airport development and anticipated land use,
- establish a realistic schedule for implementation of the proposed development,
- identify a realistic financial plan to support the development,
- validate the plan technically and procedurally through investigation of concepts and alternatives on technical, economic, and environmental grounds,
- prepare and present a plan to the public that adequately addresses relevant issues and satisfies local, state, and federal regulations, and

- establish the framework for a continuous planning process.

The updated CDV ALP Drawing Set will include the following drawings:

- Title Sheet
- Airport Data Sheet
- Airport Layout Drawings (Existing and Ultimate)
- Airport Airspace Drawing
- Inner Portion of the Approach Surface Drawing(s)
- Runway Departure Surface Drawing(s)
- Terminal Area Drawing
- Land Use Drawing, and
- Airport Property Map or Exhibit A

The update of the ALP Drawing Set will include the identification, location, and timing of proposed developments as necessary to meet future aviation-related operational demand projections, or to increase or enhance the safe and efficient use of the airport. At the completion of the update of the ALP Drawing Set, the Master Plan Technical Report will provide textual and graphical supporting information and data tables following FAA's Standard Operating Procedure (SOP) – 2.00, *Standard Procedure for FAA Review and Approval of Airport Layout Plans (ALPs),* Effective Date: October 1, 2013.

1.4 FAA Airport Master Plan and ALP Drawing Set Review and Approval Process

Although locally-formulated with the collaborative participation of the FAA and Alaska DOT&PF, the FAA will typically accept, but not formerly require or provide formal approval of the DOT&PF's submittal of the entire updated CDV Airport Master Plan and ALP Drawing Set. The FAA, however, is required to review and approve two specific elements of the Master Plan and ALP Update that are limited to the Forecast of Aviation Activity as documented within the *Airport Master Plan Technical Report*, DOT&PF's adoption of one or more Critical Aircraft or a "family of aircraft" referenced for airport development, and the ALP Drawing. These FAA approval processes are required to ensure that the local airport development goals are reasonable and consistent with other FAA national forecasts and to properly align future airport planning goals with FAA airport design standards.

The Airport Layout Drawing and supporting Airport Data Sheet will be conditionally approved by the FAA and maintained on file for reference and future federal funding participation. It is from these elements that the FAA makes their determination regarding eligibility of federal Airport Improvement Program (AIP) funding for proposed airport facility development projects. All future FAA federal funding participation can only occur if the planned airport facility improvement actions are included within the current on-file copy of the CDV Airport Layout Drawing.

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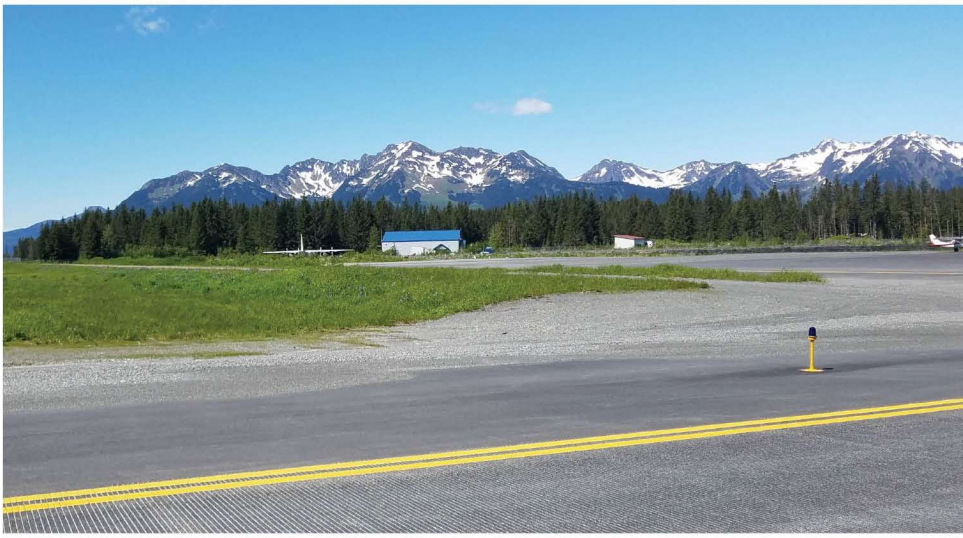
Chapter 2
Airport Setting

CORDOVA MERLE K. "MUDHOLE" SMITH AIRPORT MASTER PLAN UPDATE



2 AIRPORT SETTING

2.1 Airport Location and Aeronautical Role

The Merle K. (Mudhole) Smith Airport (CDV) is located approximately 159 statute miles from Anchorage, Alaska. CDV is located 11 statute miles southeast of the central business district of Cordova, AK. The airport operates as a Public-use Commercial Service Airport, providing a variety of activities and services to the flying public including passenger service, air cargo, military operations, and general aviation. The Alaska DOT&PF owns CDV, and the airport is attended seven days a week.

Vehicular access to the airport terminal area is provided via Copper River Highway (Alaska Route 10).

The City of Cordova is located near the mouth of the Copper River in the Valdez-Cordova Census Area within Alaska's Unincorporated Borough and encompasses a total area of 61 square miles.

Detailed location information and data for the airport is provided in **Table 2-1** and **Figure 2-1**.

Table 2-1: Airport Location and Identification

Item	Data
Airport Name	Merle K. (Mudhole) Smith Airport
Owner	Alaska DOT&PF Northern Region
Distance from CBD	11 Statute miles Southeast of City of Cordova, AK
Census Area	Valdez-Cordova
FAA Region	AAL
FAA Site Number	50124.*A
FAA Location ID	PACV
NPIAS Identifier	02-0067
Airport Reference Point	
Latitude:	60°29' 30.40" N
Longitude:	145° 28' 39.20" W
Elevation (feet MSL):	53.6 feet
Acreage	105 acres
Airport Traffic Pattern	Runway 09 - Right Traffic; Runway 27 - Left Traffic

Source: 2012 CDV Airport Layout Plan; FAA Form 5010; AVN Datasheets; eNASR


Government Slough
Cabin Lake Road
Copper River Highway
Merle K.
(Mudhole)
Smith Airport
Sheridan River
Tiedeman Slough
0
0.5
1
Miles
Utqiagvik
(Barrow)
Fairbanks
Cordova
Bethel
Anchorage
Juneau
Kodiak
0
200
400
Miles

2.2 Airport Ownership Management and Development History

Merle K. (Mudhole) Smith Airport has a rich history. The airport was built in 1941 and used as a satellite field by the Army Air Corps. With the cessation of the war, the number of Armed Forces personnel declined sharply, resulting in downsizing and closures of military bases around the country. In 1944 the airport and its buildings were relinquished to the Civil Aeronautics Administration, which was later replaced by the Federal Aviation Administration (FAA). The airport is named after the late Merle K. Smith, the former president of Cordova Air Service. Smith got the nickname "Mudhole" from his first assignment flying from Cordova to McCarthy. While attempting to takeoff after a rain that made the airfield soggy, a wheel dropped into the mud and the plane nosed into the mud. This earned him the name "Mudhole" from legendary bush pilot Bob Reeve.

2.2.1 Previous Master Planning Efforts

The 1987 Airport Master Plan focused on eliminating back taxiing on Runway 09-27 by recommending construction of a parallel taxiway. It also identified the need for additional lease lot areas, and the construction of a floatplane basin.

The 1987 plan identified multiple airfield alternatives which were later refined in 2000 and reduced, based on financial feasibility and ability to meet FAA airport design standards.

Other improvements were also identified in the 1987 airport planning effort:

- Extend Blast Pads for Runways 9 and 27
- Upgrade Runway 16-34 length, width, and safety area
- Extend Taxiway D to Runway 16-34
- Upgrade Instrument Approach to Runway 9
- Develop area for Helicopter operations and parking

2.2.2 2000 Airport Master Plan Update

In the 2000 master plan update, airport issues were identified and further defined by investigating airport records, and interviewing personnel associated with the airport and the US Coast Guard.

Recommendations from the 2000 Airport Master Plan Update include a mix of projects ranging from airfield modifications, navigational aids and lighting, terminal facilities, cargo facilities, apron improvements, and other landside projects. Some of the key improvements recommended in the 2000 plan include:

- Shifting the Runway 16 threshold approximately 500 feet
- Construction of full parallel taxiway
- Terminal apron improvements
- Local Area Augmentation System (LAAS) for Global Positioning Satellite (GPS) approaches for Runways 09 and 27
- Medium Intensity Approach Lighting System with Runway Alignment Indicator Lights (MALSR) for Runway 09

Since 2000, several developmental milestones have occurred at CDV:

- Extension of Runway 09-27
- General Aviation Apron Construction
- Improved Runway Safety Area for Runway 09-27
- Engineered Materials Arresting System (EMAS) for Runway 09-27
- Acquisition of Aircraft Rescue & Fire Fighting Vehicle

It is important to note that several planning, design and construction projects conducted over the years could not have been conducted without Federal assistance through the FAA's Airport Improvement Program. **Table 2-2** depicts the FAA grant activity at CDV over the past 10 years.

Table 2-2: FAA Grant Activity

Fiscal Year	Project Description	Grant Sequence Number	Original Grant Amount	Entitlement Funds	Discretionary Funds
2011	Rehabilitate Runway 16-34 Surface Preservation	079	$60,915	$60,915	$0
2011	Remove Obstructions	082	$99,325	$99,325	$0
2012	Snow Removal Equipment (Plow Truck, Sander)	086	$500,000	$500,000	$0
2014	Acquire Snow Removal Equipment (Tow Plow)	096	$148,043	$148,043	$0
2015	Rehabilitate Runway 16-34 Surface Preservation	102	$33,320	$33,320	$0
2016	Construct Taxiway	014	$2,400,000	$0	$2,400,000
2016	Construct Access Road	014	$900,318	$900,318	$0
2016	Construct 7,000 SF GA Apron	014	$1,500,000	$0	$1,500,000
2016	Reconstruct Taxiways C, D and Taxilane L	014	$2,000,000	$0	$2,000,000
2016	Rehabilitate Apron	014	$1,500,000	$0	$1,500,000
2016	Install Perimeter Fencing	014	$1,500,000	$0	$1,500,000
2016	Rehabilitate Runway 9-27 Remarking	108	$57,987	$57,987	$0
2017	Interactive Training System	116	$11,443	$11,443	$0
2017	Install Perimeter Fencing	116	$487,116	$487,116	$0
2017	Rehabilitate Runway 9-27 Surface Preservation (Crack Seal and Remarking)	116	$58,530	$58,530	$0
2018	Rehabilitate Runway 9-27 Surface Preservation (Crack Seal and Remarking)	121	$67,776	$67,776	$0
2018	Snow Removal Equipment (Broom Attachment for Loader)	121	$98,467	$98,467	$0
2019	Update Airport Master Plan Study	015	$313,500	$313,500	$0
2019	Rehabilitate Runway 9-27	126	$71,457	$71,457	$0

Table 2-2: FAA Grant Activity					
Fiscal Year	Project Description	Grant Sequence Number	Original Grant Amount	Entitlement Funds	Discretionary Funds
	Pavement Markings				
2019	Snow Removal Equipment (Loader)	126	$439,736	$439,736	$0
2019	Rehabilitate Runway 9-27	126	$274,835	$274,835	$0

Source: DOT&PF, FAA Airport Improvement Program (AIP) Grant Histories

2.2.3 Airport Reference Code

The Airport Reference Code (ARC) is a coded system composed of the Aircraft Approach Category (AAC) and Airplane Design Group (ADG). The ARC relates airport design criteria to the operational and physical characteristics of the aircraft that will operate at the airport. CDV is currently designed in accordance with ARC of D-III design standards and is planned to meet ARC D-III requirements in the future. ARC D-III corresponds to aircraft operations having approach speeds ranging from 141 knots or more to, but less than 166 knots (AAC D), and wingspans and tail heights ranging from 79 feet to, but less than 118 feet and 30 feet up to, but less than 45 feet, respectively (ADG III). Existing and future aircraft operations are considered based on FAA-approved aviation demand forecasts and the airport's existing and future role within the air transportation system. The ARC is used for planning and design only and does not limit the aircraft that may be able to operate safely at the airport.

2.2.4 Runway Design Code

The Runway Design Code (RDC) is a coded system composed of the selected AAC, ADG, and approach visibility minimums. The RDC provides the information needed to determine certain design standards that apply. The first component, depicted by a letter, is the AAC and relates to aircraft approach speed. The second component is depicted by a Roman numeral, is the ADG and relates to either the aircraft wingspan or tail height, whichever is most restrictive of the largest aircraft expected to operate on the runway and taxiways. The third component relates to the visibility minimums expressed by RVR values in feet of 1200, 1600, 2400, and 5000. CDV has an existing RDC of D-III-VIS for Runway 09, D-III-2400 for Runway 27, and A-I-VIS for Runway 16-34.

2.2.5 Taxiway Design Group

Taxiway Design Group (TDG) relates to the undercarriage dimensions of an aircraft. Taxiway/taxilane width and fillet standards, and in some instances, runway to taxiway and taxiway/taxilane separation requirements, are determined by TDG. The TDG is based on the Main Gear Width (MGW) and the Cockpit to Main Gear Distance (CMG). Based upon the major air carrier aircraft operations with at least 500 operations, the critical aircraft (Boeing 737-800) is classified as TDG 3. The critical aircraft has changed since the previous planning effort and is further discussed in Chapter 3, Forecasts of Aviation Activity.

2.3 Surrounding Vicinity Airports

Cordova Municipal Airport (CKU) is the lone public use airport located within a 40 nautical mile radius of CDV and is listed in **Table 2-3**. CKU is a non-towered public use airport with a 1,600-foot gravel runway and an 8,000-foot by 3,000-foot water runway. The Merle K. (Mudhole) Smith Airport and nearby Cordova Municipal Airport are depicted on the FAA's Anchorage Sectional Chart as shown in **Figure 2-2.**

Table 2-3: Surrounding Vicinity Airports

Airport Code	Name	Number of Based Aircraft	Instrument Approach Capabilities	LPV Vertically-Guided Approach	Distance from CDV (Nautical Miles)
CKU	Cordova Municipal Airport	21	No	No	8 Northwest

Source: AirNav, LLC., compiled by Michael Baker International, Inc., September 2020.

2.4 National Plan of Integrated Airport Systems

The FAA's National Plan of Integrated Airport Systems (NPIAS) identifies airports included in the national airport system, the role they serve, and the amounts and types of airport development eligible for federal funding under the AIP over five years. The most recent report includes fiscal years 2019 to 2023 and identifies 3,328 public-use airports (3,321 existing and 7 proposed) that are important to national air transportation and estimates a need for approximately $35.1 billion in AIP-eligible airport projects between 2019 and 2023.

Airports listed in the NPIAS are eligible for federal funding under the FAA's Airport Improvement Program (AIP). Additionally, the NPIAS defines the role of each airport by one of four basic service levels. These levels are listed in **Table 2-4,** which describes the type of service that the airport currently provides and is expected to provide at the end of the NPIAS five-year planning period. It also represents the funding categories established by Congress to assist in airport development. CDV is classified as a primary commercial service airport. This is important from a funding standpoint because funds are limited for airports in this category in Alaska.

Table 2-4: FAA NPIAS Airport Service Level Classification

Category	Criteria
Commercial Service – Primary	A public use commercial service airport that enplanes more than 10,000 passengers annually.
Commercial Service – Non-primary	A public use commercial service airport that enplanes between 2,500 and 10,000 passengers annually.
General Aviation – Reliever	A general aviation airport that relieves congestion at a commercial service airport and provides general aviation access to its community. Must have at least 100 based aircraft or 25,000 annual itinerant operations.
General Aviation	All other NPIAS airports.

Source: FAA Order 5090.3C, Field Formulation of the National Plan of Integrated Airport Systems, December 2000.

Source:FAA VFR Sectional Aeronautical Chart - Anchorage. 106 Edition: Effective 20 May 2020, Expires 05 Nov. 2020

2.5 Alaska Airport System Plan

As part of their continuing Alaska Aviation System Plan (AASP), DOT&PF reports that the state has 394 public-use airports, with 239 owned and operated by DOT&PF. The Alaska aviation industry:

- contributes more than $3.8 billion to the state's economy and supports 35,000 jobs statewide (7.8 percent of jobs in the state),
- transports groceries, household goods, and construction materials to rural Alaska,
- supports a variety of local industries such as fresh and live seafood markets, and tourism,
- provides crucial aviation support to Alaska's healthcare system for both regular treatment and trauma care, and
- ranks as the 6th largest sector in the state when compared to other economic sectors, ahead of Construction and Manufacturing, Trade, and Hospitality and Leisure.

DOT&PF is currently updating their 2017 Alaska Aviation System Plan which designates Merle K. (Mudhole) Smith Airport as a Regional airport. According to the plan, airports in the Regional classification are transportation and economic centers for more than one community but are not international airports. They typically accommodate large aircraft with advanced approaches and aviation facilities and are often Part 139 certified. The AASP defined performance measures as a basis for measuring performance and adequacy of the airport system. The performance measures evaluated in the AASP include:

- Airport Design Standards - Seven factors were evaluated at each airport: Runway Safety Areas (RSA), Obstacle Free Areas (OFZ), Threshold Siting Surfaces (TSS), Runway Protection Zones (RPZ), Runway Visibility Zones (RVZ), Crosswind Coverage, and Parallel Taxiway.
- Airport Service - This index examines the capabilities of Regional airports like CDV to serve their respective markets. It includes criteria for runway length, lighting, instrument approach and taxiway type, and other services such as fuel sales and passenger shelter.

Moving into the future, the AASP identifies a number of key challenges facing Alaska aviation and airports like Merle K. (Mudhole) Smith Airport:

- Need for airfield maintenance and improvements,
- Ability to find skilled and dependable labor,
- Increase in fuel costs, and
- Alaska's pilot population of over 8,200 is aging and there is a shortage of pilots entering the industry.

2.6 14 CFR Part 139 Certification of Airports

The FAA prescribes rules governing the certification and operation of airports for commercial operations under Federal Aviation Regulations (FAR) Part 139, Certification of Airports. According to the regulation for Alaska, Part 139 certification is required for any airport having activity by air carrier aircraft capable of carrying 30 or more passengers and requires that all such airports prepare an Airport Certification Manual and establish appropriate

safety and security procedures in compliance with FAA standards. FAR Part 139 categorizes airports into four classes shown in **Table 2-5,** based on the type of air carrier operations experienced at the facility. CDV is categorized as a Class I airport, ARFF Index B and is required to undergo annual FAA inspections in order to retain their FAR Part 139 Airport Certification.

Table 2-5: FAR Part 139 Airport Classes

Class	Description
Class I	Airports serving all types of scheduled operations of air carrier aircraft designed for at least 31 passenger seats and any other type of air carrier operations.
Class II	Airports that serve scheduled operations of small air carrier aircraft and unscheduled operations of large air carrier aircraft.
Class III	Airports that serve only scheduled operations of small air carrier aircraft.
Class IV	Airports that serve only unscheduled operations of large air carrier aircraft.

Source: FAR Part 139, Certification of Airports.

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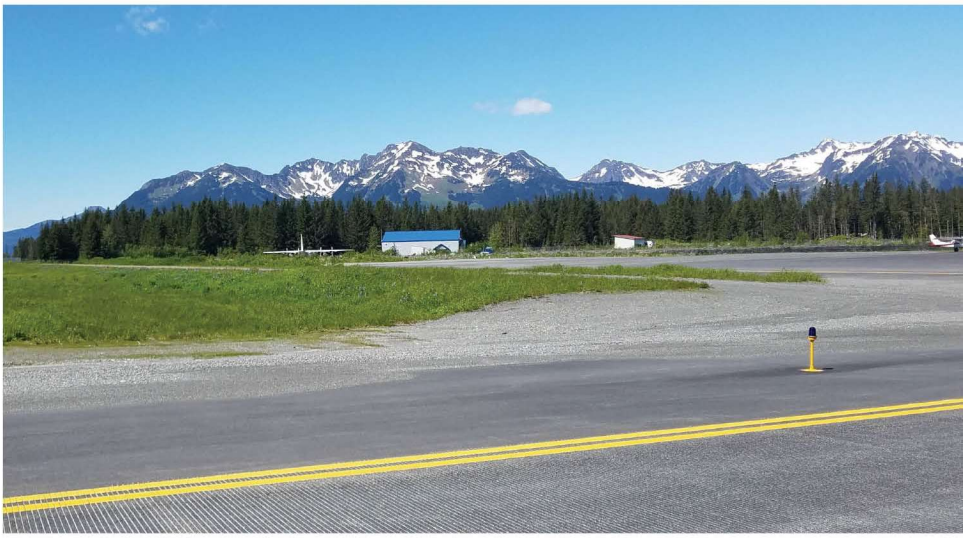
Chapter 3
Existing Airport Facilities

CORDOVA MERLE K. "MUDHOLE" SMITH
AIRPORT MASTER PLAN UPDATE



3 EXISTING AIRPORT FACILITIES

The initial step in the update of the Airport Master Plan requires developing an inventory of the existing facilities available at CDV. Chapter 3 summarizes information collected in September 2020 regarding the current airfield configuration, existing facilities, and surrounding airspace environment. This is a necessary step for understanding the framework within which the airport functions and providing a solid foundation for evaluating the airport's existing and future facility requirements and improvements.

To obtain an accurate depiction of the existing conditions at CDV and its surrounding community, a comprehensive inventory was conducted of the existing physical plant and facilities, on-airport land uses, adjacent and surrounding land uses, historical aviation-related operational data, historical development, historical airport-related land acquisition, and any other relevant data and information that would be deemed useful to address airport planning needs. These assessments were accomplished through the collection of data and information obtained from the following sources:

- Interviews with airport personnel, users, and tenants
- Correspondence with local, state, and federal agencies
- Review of previous airport planning analyses and studies
- Review of aerial photography, mapping, and facility layout plans
- Review of facility directories, published flight procedures for CDV, Alaska Sectional Charts, etc.
- Review and use of applicable FAA publications, activity databases, and planning guidelines
- Review of airport-specific and local/regional FAA operational and aircraft basing statistical reports

Airport facilities support the operation of aircraft and include runways, taxiways, navigational aids (NAVAIDS), airfield lighting and signage, and pavement markings. **Figures 3-1** and **3-2** depict the current complement of aviation facilities at CDV.

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NDB Antenna
Chemical Storage
CABIN LAKE ROAD
Sand Storage
DOT & PF Maintenance
Property Line
Passenger Terminal
US Coast Guard
Main Apron
COPPER RIVER HWY
APP/DEP RPZ 250' x 450' x 1000'
SREB
Taxiway "K"
General Aviation Parking
Itinerant Parking
Taxilane "L"
ARFF
Segmented Circle & Lighted Wind Cone
Wind Cone
Service Road
ASOS Critical Area 500' Dia
ASOS
APP/DEP RPZ 500' x 1010' x 1700'
Wind Cone
VASI
VASI
EMAS
ODALS
Taxiway "C"
Taxiway "D"
Runway 09 - 27 (7,500' x 150')
MALSR
VASI
VASI
Glideslope Antenna
APP/DEP RPZ 500' x 1010' x 1700'
Property Line
Runway 16 - 34 (1,899' x 30')
APP/DEP RPZ 250' x 450' x 1000'
LEGEND
ITEM
DESCRIPTION
PROPERTY LINE
RUNWAY SAFETY AREA
RUNWAY OBJECT FREE AREA
ASOS
NAVIGATIONAL AIDS
800'
0
800'

BUILDING TABLE	
#	STRUCTURE NAME
1	US COAST GUARD HANGAR
2	ALASKA WILDERNESS OUFITTING
3	TSA
4	PASSENGER TERMINAL
5	ALASKA AIRLINES BUILDING
6	FAA
7	FAA/ANTENNA TOWERS
8	HANGAR
9	HANGAR
10	HANGAR
11	HANGAR
12	HANGAR
13	HANGAR
14	HANGAR
15	HANGAR
16	HANGAR
17	HANGAR
18	FAA
19	GENERATOR BUILDING
20	HANGAR
21	ARFF
22	SREB
23	HANGAR

LEGEND	
ITEM	DESCRIPTION
RSA	RUNWAY SAFETY AREA
OFA	RUNWAY OBJECT FREE AREA
	ASOS
	NAVIGATIONAL AID VASI-4
	SNOW STORAGE AREA

3.1 The Airfield

3.1.1 Runways 09-27 and 16-34

The paved and lighted Runway 09-27 is 7,500 feet long and has a northwest/southeast centerline orientation. The runway is 150 feet wide with 35-foot paved shoulders on each side of the runway edge. Each end of the runway pavement is designated and marked based on the runway's orientation relative to magnetic north and marked as Runway 09 and Runway 27 (having a centerline magnetic bearing of 90 degrees and 270 degrees), respectively.

Runway 09 and Runway 27 are equipped with 4-box Visual Approach Slope Indicators (VASI). Runway 09 is equipped with Runway End Identifier Lights (REILS), and Omni-directional Approach Lights (ODALS). Runway 27 is equipped with a Medium Intensity Approach Lighting System having runway alignment indicator lights (MALSR). When operational, the MALSR approach lighting system supports published RNAV (GPS) LPV, lateral navigation (LNAV)/vertical navigation (VNAV) IAP visibility minimums for Runway 27 down to ½ mile. According to the 2021 DOT&PF Pavement Inspection Report, Runway 09-27 is reported to have a weighted average PCI of 66.18. Corrective maintenance is recommended when the PCI is between 60-69.

Runway 16-34 is 1,934 feet long and 30 feet wide and has a north/south centerline orientation. Each end of this gravel runway is designated based on the runway's orientation relative to magnetic north. The runway ends are designated as Runway 16 and Runway 34 (having a centerline magnetic bearing of 160 degrees and 340 degrees), respectively. Runway 16-34 is classified as a visual runway with no runway or approach lighting system. Runway 16-34 is reported to be in fair condition.

As mentioned in Sections 2.2.3 to 2.2.5, the runway design characteristics for CDV as currently prescribed by the FAA are shown in **Table 3-1**.

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Table 3-1: Runway Design Characteristics				
Item	Runway			
	09	27	16	34
Runway Length (feet)	7,500		1,934	
Displaced Threshold	None	None	None	None
Runway Width (feet)	150		30	
Runway Design Code (RDC)	D-III-VIS	D-III-2400	A-I-VIS	A-I-VIS
Critical Aircraft	Boeing 737-800		De Havilland Canada DHC-2 Beaver	
Approach Reference Code (APRC)	D/VI/VIS	D/VI/2400	N/A	N/A
Departure Reference Code (DPRC)	D-III	D-III	A-I	A-I
True Bearing (degrees)	114.21°	294.24°	180.68°	0.68°
Magnetic Declination (EPOCH Date 1/1/2020)	17° 08' 00" East ± 0° 27' changing 0° 14' 00" W per year			
Runway End Elevation (MSL) (feet)	42.3	43.7	51.6	40.5
Gradient	0.20%		0.53%	
Surface Type and Condition	Asphalt /Good		Gravel /Fair	
Surface Treatment	GRVD		None	
Pavement Classification Number (PCN)	94/F/A/X/T		None	
Weight Bearing Capacity (Thousands of pounds)				
Single Wheel (S):	90.0		--	
Dual Wheel (D):	153.0		--	
(2S)	--		--	
Dual Tandem Wheel (2D):	280.0		--	
Runway Markings and Condition	PIR Good	PIR Good	None	None
Visual Glideslope Indicator	VASI-4L	VASI-4L	None	None
Runway End Identifier Lights (REIL)	Yes	No	None	None
Approach Lighting System	Yes (ODALS)	Yes (MALSR)	None	None
Runway Edge Lights	HIRL		None	

Source: 2012 Airport Layout Plan; FAA Form 5010; AVN Datasheets.
Compiled by Michael Baker International, Inc, October 2020.

3.1.2 Runway Shoulders

Runway shoulders are an area adjacent to the defined edge of paved runways that provide a transition between the pavement and the adjacent surface. Runway 09-27 has 35-foot-wide

paved shoulders in good condition. This dimension exceeds the RDC D-III requirement of 25 feet.

3.1.3 Engineered Materials Arresting System

In 2007, an Engineered Materials Arresting System (EMAS) was installed within the westernmost portion of the Runway 09 blast pad as part of an FAA test program and is nearing the end of its useful life. The EMAS is currently in fair condition and is reported to experience occasional water intrusion and surface damage attributed to local wildlife activity. The EMAS condition is regularly monitored through the airport inspection process. Future options for this system will be addressed as part of the analysis of airport development alternatives.

3.1.4 Runway Blast Pad

Runway blast pads are paved areas that provide protection from blast erosion beyond the runway ends. A 300-foot long by 150-foot-wide blast pad is located at each end of Runway 09-27. However, the existing blast pads do not meet the RDC D-III required width of 200 feet. The blast pad pavement and markings are in good condition.

3.1.5 Runway Declared Distances

Declared distances represent the maximum distances available and suitable for meeting takeoff, rejected takeoff, and landing distance performance requirements for turbine powered aircraft. The declared distances are takeoff run available (TORA), takeoff distance available (TODA) which each apply to takeoff; accelerate stop distance available (ASDA), which applies to a rejected takeoff; and landing distance available (LDA), which applies to landing. By treating these distances independently, declared distances is a design methodology that results in declaring and reporting the TORA, TODA, ASDA and LDA for each operational direction.

The airport's runways are free of safety-related features and geometrically constrained setbacks that are typically caused by the existence of obstacles, incompatible land uses and/or environmental features. Therefore, the application and use of declared distances is not applicable or required at CDV. These distances, however, must be reported as part of the update of the ALP Drawing and related Data Sheet.

Each of the applicable Declared Distances for Runways 09-27 and 16-34 are listed in **Table 3-2**.

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Table 3-2: Runway Declared Distances				
Runway	Declared Distances			
	TORA	TODA	ASDA	LDA
09	7,500	7,500	7,500	7,500
27	7,500	7,500	7,500	7,500
16	N/A	N/A	N/A	N/A
34	N/A	N/A	N/A	N/A

Source: FAA Digital Chart Supplement Alaska, 10 SEP 2020 to 5 NOV 2020

3.1.6 Runway Protection Geometry

Safe and efficient operations at the airport require certain areas of the airfield to be clear of objects or restricted to objects with a certain function, composition, or height. A few areas and volumes of airspace have been defined to protect aircraft while operating on the runways. Except for the Runway Safety Area (RSA), which requires longitudinal and transverse grades, the runway protection geometry consists of imaginary areas of land and volumes of airspace intended to protect aircraft, and people and property on the ground. The dimensions of the runway protection geometry affect the on-airport land uses of developable land, as well as off-airport land uses in cases where portions of a runway protections zone may not be completely located within the airport property. The following sections describe these areas, their current associated standards, and any issues.

and A-I design standards for Runways 09-27 and 16-34, respectively. **Table 3-3** summarizes the existing dimensions of the runway protection geometry.

Table 3-3: Runway Design Standards				
Dimensions	Runway 09-27 RDC D-III		Runway 16-34 RDC A-I (Small)	
	09	27	16	34
Runway Design Code (RDC)	D-III-VIS	D-III-2400	A-I-VIS	A-I-VIS
Runway Safety Area (RSA)				
Length beyond departure end (feet):	1,000	1,000	240	240
Length prior to threshold (feet):	600	600	240	240
Width (feet):	500	500	120	120
Runway Object Free Area (ROFA)				
Length beyond runway end (feet):	1,000	1,000	240	240
Length prior to threshold (feet):	600	600	240	240
Width (feet):	800	800	250	250

Table 3-3: Runway Design Standards				
Dimensions	Runway 09-27 RDC D-III		Runway 16-34 RDC A-I (Small)	
	09	27	16	34
Runway Obstacle Free Zone (ROFZ)				
Length beyond runway end (feet):	200	200	200	200
Width (feet):	400	400	250	250
Inner-approach OFZ				
Length (feet):	N/A	2,400	N/A	N/A
Width (feet):	N/A	400	N/A	N/A
Slope:	N/A	50:1	N/A	N/A
Inner-transitional OFZ	N/A	Yes (3:1 Transitional)	N/A	N/A
Precision Obstacle Free Zone (POFZ)				
Length (feet):	N/A	200	N/A	N/A
Width (feet):	N/A	800	N/A	N/A
Approach Runway Protection Zone (RPZ)				
Length (feet):	1,700	2,500	1,000	1,000
Inner Width (feet):	500	1,000	250	250
Outer Width (feet):	1,010	1,750	450	450
Acres:	29.465	78.914	8.035	8.035
Departure Runway Protection Zone (RPZ)				
Length (feet):	1,700	1,700	1,000	1,000
Inner Width (feet):	500	500	250	250
Outer Width (feet):	1,010	1,010	450	450
Acres:	29.465	29.465	8.035	8.035

Source: FAA AC 150/5300-13A, Change 1

3.1.7 Runway Safety Area and Runway Object Free Area

The RSA is a surface surrounding the runway, prepared, or suitable, for reducing the risk of damage to airplanes in the event of an undershoot, overshoot, or excursion from the runway. The RSA also provides greater accessibility for firefighting and rescue equipment in emergency situations. The dimensions of the RSA are defined by the Runway Design Code

(RDC) and the criteria described in AC 150/5300-13A. The RSA is centered on the runway centerline. The dimensions of the existing RSA are shown in **Table 3-3**.

The RSA must meet the following standards:

- Be cleared and graded and not have potentially hazardous ruts, humps, depressions, or any other surface variation.
- Be drained by grading or storm sewers to prevent water accumulation.
- The RSA must be capable, under dry conditions, of supporting snow removal equipment, aircraft rescue and firefighting (ARFF) equipment, and the occasional passage of aircraft without causing damage to the aircraft.
- Be free of objects, except for objects that need to be located in the RSA because of their function.

3.1.8 Runway Protection Zone

The runway protection zone (RPZ) is a two-dimensional (i.e., ground level) land area designated for the protection of people and property on the ground. The RPZ is trapezoidal in shape and centered about the extended runway centerline. Generally, the RPZ begins at 200 feet beyond the end of the runway. However, the RPZ may begin at a location other than the runway end to meet other standards. When the RPZ begins at a location other than 200 feet beyond the end of the runway, two RPZs are required, a departure RPZ, and an approach RPZ. For Runways 09-27 and 16-34, each approach and departure RPZ begins 200 feet beyond each runway's threshold. The dimensions of the runway protection zones are shown in **Table 3-3**.

3.1.9 Runway Obstacle Free Zone

The runway obstacle free zone (ROFZ) is a three-dimensional volume of airspace which protects aircraft during the transition period to and from the runway. The OFZ clearing standards preclude taxiing and parked airplanes and object penetrations, except for frangible NAVAID locations that are fixed by function. Under certain circumstances, vehicles, equipment, and personnel may be authorized by air traffic control to enter the area. The OFZ is comprised of the inner-approach OFZ and the inner-transitional OFZ. However, the inner-approach OFZ applies only to runways equipped with an approach lighting system (ALS), and the inner-transitional OFZ only applies to runways with lower than ¾ stature mile approach visibility minimums. Therefore, the inner-approach OFZ and inner-transitional OFZ standards are only applicable to Runway 27. The dimensional requirements for the ROFZ for each runway end are shown in **Table 3-3**.

3.1.10 Precision Obstacle Free Zone

Runway 27 is served by both ILS and RNAV (GPS) LPV vertically-guided instrument approach procedures and requires the establishment and protection of a Precision Obstacle Free Zone (POFZ). The POFZ is the volume of airspace above an area beginning at the threshold, at the threshold elevation, and centered on the extended runway centerline 200 feet long and 800 feet wide. However, the POFZ is in effect only when all the operational conditions are met:

1. Vertically-guided approach in use (e.g., use of an LPV vertically-guided approach)

2. Reported ceiling is below 250 feet and/or visibility is less than ¾ statute mile (or RVR below 4,000 feet), and
3. An aircraft is on final approach within two miles of the runway threshold.

When the POFZ is in effect, a wing of an aircraft holding on a taxiway waiting for runway clearance may penetrate the POFZ; however, neither the fuselage nor the tail may infringe on the POFZ. The dimensions of the POFZ are shown in **Table 3-3**.

3.2 Taxiways and Apron Areas

3.2.1 Taxiways

The airport has three paved connector Taxiways B, C, and D located north of Runway 09-27. Taxiway B is located approximately 2,660 feet from the end of Runway 09 and is 70 feet wide and 900 feet in length. This ADG IV taxiway provides access to the US Coast Guard complex. According to a 2021 DOT&PF Pavement Inspection Report, Taxiway B is reported to have a weighted average PCI of 56.00 and corrective maintenance is recommended in the future.

Taxiway C is located approximately 4,130 feet from the end of Runway 09 and provides access to the main terminal area apron. Taxiway C is 50 feet wide by 691 feet long with a reported weighted average PCI of 95.00 and is classified as an ADG IV taxiway.

Taxiway D is located approximately 2,420 feet from the end of Runway 27 and is an ADG I taxiway with a width of 25 feet and length of 837 feet north of the taxilane, and a ADG III taxiway with a width of 50 feet and length of 805 feet for the section of the taxiway located south of the taxilane. Taxiway D is reported to have a weighted average PCI of 90.50 and only preventative maintenance is recommended at this time.

Taxilane L is a parallel ADG II taxilane that provides access to the passenger terminal apron and various hangars and buildings between Taxiways C and D and other general aviation facilities. The taxilane east of Taxiway D is 25 feet wide 775 feet in length. The taxilane west of Taxiway D is 50 feet wide and 895 feet in length. The taxilane is reported to have a weighted average PCI of 91.00, preventative maintenance is recommended.

Taxiway K is located approximately 2,020 feet from the end of Runway 27 and is an ADG I taxiway with a width of 25 feet and length of 425 feet. Taxiway K was constructed in 2019, and is reported to have a weighted average PCI of 95.00, only preventative maintenance is recommended at this time.

3.2.2 Apron Areas

The airport has three apron areas, a large apron that accommodates the larger jets and cargo aircraft, a paved itinerant taxilane/apron, and a paved general aviation tie-down area. All apron areas are located north of Runway 09-27.

The large apron is located near the midpoint of Runway 09-27 and has an area of approximately 210,000 square feet. Due to this apron area being the only suitable apron pavement to accommodate the larger jet passenger and cargo aircraft, it is mainly used by Alaska Airlines and all cargo operators to park their aircraft. Alaska Airlines utilizes the east

end of the apron (marked as a Security Identification Display Area [SIDA]) for parking, while all cargo carriers park on the west end. All other air carriers utilize the middle of the apron.

Located east of and adjacent to the larger apron, is the paved itinerant taxilane/apron. This apron has an area of approximately 22,000 square feet and is intended for smaller general aviation aircraft to use.

The paved general aviation tie-down area is located northeast of the intersection of Taxilane L and Taxiway K. This tie-down area has an area of approximately74,000 square feet and includes 15 marked tie-downs. This apron area is primarily used by based and transient aircraft.

According to DOT&PF's 2018 Pavement Inspection Report, the paved apron areas are reported to have a weighted average PCI of 100.00 and only preventative maintenance is recommended at this time.

3.3 Airfield Lighting, Signage, and Marking

Runway 09-27 is marked (Precision marking), signed, and fully satisfies current FAA airport design standards. The runway is equipped with High Intensity Runway Lighting (HIRL). Runway 09 is equipped with Runway End Identifier Lights (REILs) at the approach end of the runway to aid in the aircraft pilot's rapid and positive identification of the approach end of the runway. The system consists of a pair of synchronized flashing lights that are located laterally on each side of the runway threshold.

Runway 16-34 is a visual runway without any lighting, signage, or markings. Runway edge and threshold markings consist of 36-inch cones that are removed during the winter.

Taxiways B, C, and Taxiway L west of Taxiway D are equipped with Medium Intensity Taxiway Lights (MITL), while Taxiways D, K and L east of Taxiway D are not lighted.

3.4 Electronic, Visual, and Satellite Aids to Navigation

Electronic, visual, and satellite aids to navigation (NAVAIDS) increase the safety and utility of the airport. In addition, the availability of NAVAIDS is critical because it has a direct impact on the overall capacity of the airport. The availability of instrument approach and departure procedures, particularly the availability of specific approach and departure minimums is directly related to the availability of certain NAVAIDS. Existing navigational aids at CDV are discussed in the sections below.

3.4.1 Approach Lighting System

Runway 27 is equipped with a Medium Intensity Approach Lighting System with Runway Alignment Indicator Lights (MALSR). The availability of this approach lighting system provides visibility credit of ¼ statute mile, allowing the published vertically-guided visibility minimum of ½ statute mile similar to that offered as part of a precision Instrument Approach Procedure (IAP) traditionally provided by ground-based instrument landing systems. When this approach lighting system is unavailable, the visibility minimum increases to one statute mile.

Runway 09 is equipped with an Omni-Directional Approach Lighting System (ODALS) used as a simple approach lighting system for non-precision approach runways.

3.4.2 Airport Rotating Beacon

The airport's Airport Rotating Beacon is located just north of the Snow Removal Equipment Building, and adjacent to the Airport Rescue and Firefighting Facility and is in good condition. The colors of the beacon are alternating clear (white) and green indicating a Civil Airport. The beacon helps pilots identify the airport at night and operates from sunset to sunrise.

3.4.3 Wind Cone and Segmented Circle

The airport's Segmented Circle and Wind Cone are located north of Runway 09-27 approximately mid-field. Supplemental Wind Cones are also located north of the runway near the ends of Runways 09 and 27, and east of the end of Runway 16. The Wind Cone visually indicates prevailing wind direction and velocity. The Segmented Circle (with Traffic Pattern Indicators) provides rapid overhead identification of the Wind Cone location and indication that the airport traffic pattern operates with right- or left-hand turns. At CDV, Runway 09 has a right traffic pattern and Runway 27 has a left traffic pattern.

3.4.4 Visual Glideslope Indicator System

Runway 09-27 is served by 4-light visual approach slope indicators (VASIs). The VASI serving Runway 09 is located on the left side of the runway approximately 750 feet from the runway end and provides a threshold crossing height (TCH) of 41 feet along a 3-degree visual approach glide path. The Runway 09 VASI is reported to not provide obstruction clearance beyond 4 nautical miles. The VASI serving Runway 27 is located on the left side of the runway approximately 1,000 feet from the runway end and provides a TCH of 57 feet along a similar 3-degree visual approach glide path. **Table 3-4** summarizes the characteristics of the CDV VASI system.

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Table 3-4: Visual Glideslope Indicators		
Item	Runway 09-27	
	09	27
Type	VASI-4L	VASI-4L
Latitude	N60° 29' 45.13"	N60° 29' 21.89"
Longitude	W145° 29' 34.63"	W145° 27' 49.96"
Elevation (feet)	42.3	42.7
Distance from threshold (feet)	750	1,000
Angle	3.00°	3.00°
Threshold Crossing Height (TCH) (feet)	41.0	57.0
Aligned with RNAV (GPS) LPV descent angles	No	Yes

Source: FAA AVN Datasheets, 2020.

3.4.5 Non-Directional Beacon

A non-directional beacon (NDB) is a radio beacon that transmits nondirectional signals whereby the pilot of an aircraft properly equipped can determine bearings and navigate based on the station. At CDV, there is one NDB, Glacier River NDB, located north of the Copper River Highway.

The Glacier River NDB operates 24 hours a day and aids enroute navigation and provides guidance for approaches to Runway 09 and 27 in instrument meteorological conditions.

3.4.6 Automated Surface Observing System

The airport is equipped with an FAA-certified Automated Surface Observing System. The ASOS- provides automated sensor suites that are designed to serve meteorological and aviation observing needs. The ASOS system generally report at hourly intervals, but also report special observations if weather conditions change rapidly and cross aviation operation thresholds. The ASOS is located just inside of the Runway 27 approach RPZ adjacent to the airport's secondary windsock.

3.5 Passenger Terminal Building

The airport is served by a single Passenger Terminal Building that encompasses approximately 5,217 square feet. The single-story passenger terminal is owned and operated by Alaska Airlines and includes ticket and check-in counters, administrative offices, communications storage, passenger boarding area, and baggage claim. The various functions and approximate square footages of the existing facility are indicated below.

- Baggage Claim Area – The baggage claim area is approximately 500 square feet with a single baggage claim unit.
- Passenger Hold Room – The passenger hold room area is roughly 1,200 square feet and capable of accommodating about 60 passengers.
- Security Screening Area - The security screening area is approximately 610 square feet and is used for the screening of passengers immediately before boarding.

- Airline Space – Airline terminal space includes airline ticketing, airline office, and baggage hold rooms. There is 1,250 square feet of terminal space available for these functions.
- Restrooms – The men's and women's restrooms are a combined 210 square feet. These facilities are the only restrooms in the terminal building and meet the current needs of the traveling public and employees.

The current configuration of the passenger hold room and security screening area has limited area for passengers prior to boarding the plane and requires passengers to be screened immediately before boarding the flight.

3.6 Cargo Facilities

Alaska Airline's cargo handling and storage facilities are co-located with the passenger terminal building. This cargo facility is approximately 2,200 square feet and is owned by Alaska Airlines and operated under lease agreement with DOT&PF.

An additional 2,463 square foot cargo facility is located west of the passenger terminal and is owned by Alaska Central Express (ACE) and operated under lease agreement with DOT&PF.

3.7 Aircraft Storage Facilities

The airport currently has a total of 12 general aviation box hangars located along both sides of the hangar taxilane. These hangars are privately owned and maintained under individual lease agreements with DOT&PF. Additional leaseholds are available in this area for future hangar development.

3.8 Support Facilities

Several additional facilities are important to keeping the airport operational and for the provision of key capabilities at CDV. In general, support facilities ensure the smooth and efficient airport operation. Facilities not documented in other sections of this chapter include the Aircraft Rescue and Firefighting, airport maintenance and snow removal equipment facilities. The existing characteristics of these facilities are documented in this section for further use in subsequent phases of this master plan.

3.8.1 Airport/Airfield Maintenance, Equipment, and Facilities

Staff from DOT&PF are responsible for the day-to-day maintenance functions on the airfield, including record keeping, and repairs. Pavement maintenance includes crack sealing, seal coating, and striping. Other general maintenance responsibilities include safety area repairs, mowing, general electrical repairs, and snow removal. Equipment and materials to perform these general maintenance functions are available and stored in the corresponding maintenance equipment storage facilities. Airport maintenance/sand storage facilities and administrative offices are located within the Airport Maintenance Complex located ¼ mile from the airport on the north side of Copper River Highway near the entrance to the US Coast Guard facilities. The complex includes facilities for the storage and repair of maintenance equipment.

3.8.2 Snow Removal Equipment Storage

The airport currently has and maintains snow removal equipment (SRE) in accordance with their 14 CFR 139.313 Snow and Ice Control Plan. Snow removal and deicing of airfield pavements are only performed during maintenance duty hours. Snow removal equipment is stored in the maintenance complex and in a 2,400 square-foot Snow Removal Equipment Building (SREB) located just east of the Airport Rescue and Firefighting (ARFF) facility. The SREB is not equipped with a fire protection system; however, the facility is earthquake resistant. Construction of a replacement SREB/ARFF is planned for 2021 near the existing site. A listing of airport snow removal equipment is shown in **Table 3-5** below.

Table 3-5: Snow Removal Equipment Inventory

Equipment Type	Brand	Model	Mfg Year	Size/Capacity
Backhoe	Volvo			
Front End Loader	Case	921		With snow/dirt bucket and forks
Loader	Cat	966M	2020	
Snow Blower	Oshkosh		2010	3,000 tons/hour
Runway Broom	MB Companies, Inc.	Towed	2009	
Dump Truck with Front Plow, Belly Blade and Sander	International	6x6	2014	
4x4 Pickup Truck	Ford	F250	2015	
4x4 Pickup Truck	Chevy	½ Ton	2019	
Screen Plant	Factec Pro Wash		2008	
Plow Truck	Oshkosh		2009	
Grader	Caterpillar	160H	2006	
Water Rescue Trailer	Forest River		2011	25 ft Enclosed

Source: DOT&PF, 2020

3.8.3 Airport Rescue and Firefighting Facility

The Airport Rescue and Firefighting (ARFF) facility is approximately 5,680 square feet and is located just north of Taxiway D. CDV is currently classified as an ARFF Index B airport. The airport operates an Emergency One Titan 6X6 ARFF unit. This unit has a maximum capacity of 3,000 gallons water, 405 gallons of AFFF concentrate and 700 pounds of dry chemical. The unit is also equipped with a Hydro-Chemical roof and front bumper turret, both capable of discharging water and or foam at 600/1,200 gallons per minute and dry chemical at 15 pounds per second of dry chemical.

Water is supplied to the ARFF station by a well system. Due to the inadequate capacity of the water system, 5,500 gallons of water is stored in two large tanks, 3,000 and 2,500

gallons, respectively. Discharge is provided by a 750 GPM gasoline-driven water pump. There is also a large drainage ditch surrounding the entire runway that can be used as an emergency water supply for fighting fires. ARFF equipment is available during scheduled and permitted air carrier operations to operate a vehicle, meet response times, and meet minimum agent discharge rates required by 14 CFR Part 139.

ARFF equipment and personnel are provided by the DOT&PF. Details associated with the ARFF equipment is shown in Table 3-6 below.

Table 3-6: Existing ARFF Equipment

Model Year	Make/Model	Water Capacity (Gallons)	AFFF Capacity/ Concentration (Gallons)	Dry Chemical Type	Dry Chemical Capacity (Pounds)	Max. Turret Discharge Rate (Gallons per Minute)
2008	E-ONE/Titan	3,000	405 / 3%	Potassium -Based	700	750

Source: DOT&PF, 2020

3.8.4 United States Coast Guard Facility

The US Coast Guard maintains a facility encompassing approximately 768,000 square feet of area at the airport. This facility is accessible via Copper River Highway, or by Taxiway B. Every summer from April through September, Air Station Kodiak deploys MH-60 Jayhawk helicopter crews to CDV. Deploying to CDV is strategic in the fact that it allows crews to provide better response times and coverage to remote regions of Alaska during periods of increased maritime activity. Through the deployment in 2020, Kodiak MH-60 Jayhawk helicopter crews flew on 11 cases and saved four lives. Coast Guard personnel are also trained in emergency management and rescue operations and are incorporated into the airport's Emergency Plan.

The US Coast Guard maintains an aircraft hangar with and an adjacent helicopter parking area. The facility also has a 10,000-gallon water holding tank with a discharge pump capable of 250 GPM. The Coast Guard has 300 gallons of AFFF with direct injection into water at the discharge point.

3.8.5 Aircraft Fuel Storage

There are currently no commercial aviation fuel storage facilities at the airport. Several tenants maintain their own fuel supplies and the majority of general aviation operators obtain and carry their own avgas from a local distributor. Alaska Airlines maintains a Jet A fuel truck to service its aircraft.

Buried adjacent to their hangar facility, the Coast Guard has a single 10,000-gallon Jet A fuel tank.

3.9 Access, Circulation, and Parking

Access, circulation, and parking information contained in the following sections will be used by the CDV master plan team during alternatives development to address future facility and infrastructure needs.

3.9.1 Airport Access Roads

Figure 3-1 shows the existing airport access roads. Primary access to Merle K. (Mudhole) Smith Airport is provided from Copper River Highway. Copper River Highway runs through the airport property north of the airport terminal. Cabin Lake Road connects with Copper River Highway to provide direct access to the passenger terminal and parking areas. Access to general aviation facilities is provided via a general aviation access road. A third road provides access to the US Coast Guard Facility across from the entrance to the airport maintenance complex.

3.9.2 Vehicle Parking

Vehicular parking associated with the passenger terminal and rental car facilities were identified as part of the inventory of existing facilities. The information depicted in this section is used later in this study to identify future parking needs.

3.9.2.1 Passenger Terminal Parking

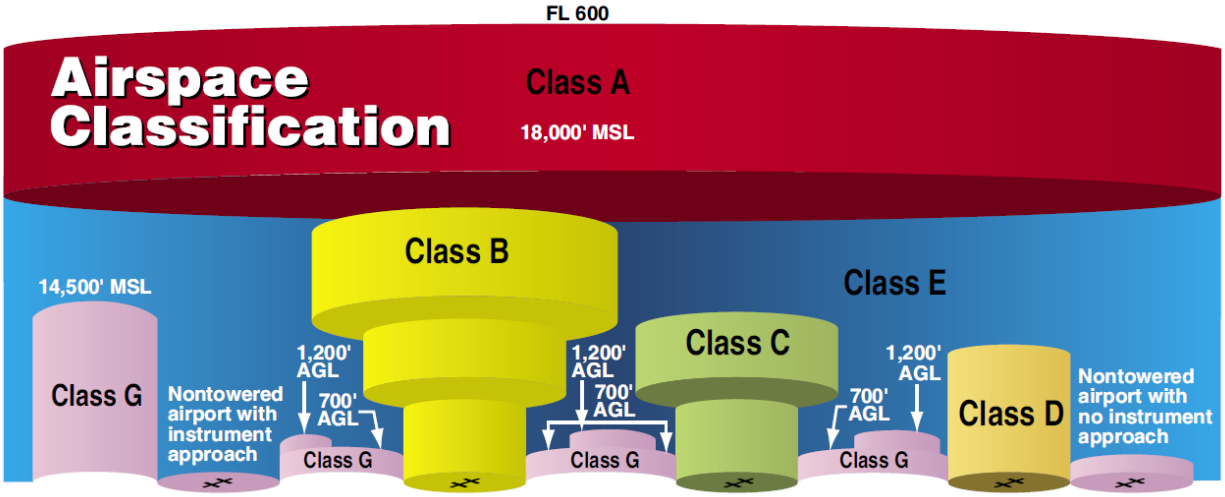
The Passenger Terminal Parking Lot is located directly in front of the Passenger Terminal and Cargo Building. This paved parking area encompasses approximately 43,000 square feet of paved parking area with a capacity of approximately 60 parking spaces. The area is accessible via the Cabin Lake Road. The parking lot is used for passenger terminal, employee, business, and rental car parking. During the inventory site visit, the pavement was observed to be in fair condition.

3.9.2.2 Long-Term Parking

The Long-Term (24-hour) Parking Lot is located on the east side of Cabin Lake Road prior to reaching the passenger terminal area. This gravel lot provides approximately 12,000 square feet of area capable of accommodating approximately 75 parking spaces. During the September 2020 inventory site visit, the gravel surface was observed to be in fair condition.

3.10 Protected Navigable Airspace and Instrument Approach Procedures

The National Airspace System (NAS) is an integrated set of control, procedures, and policies established and regulated by the FAA to maintain safe and efficient aircraft operations. However, it is the responsibility of the Airport Sponsor to take the appropriate actions to assure that the terminal airspace required to protect instrument and visual operations to the airport has been adequately cleared and protected by removing, lowering, relocating, marking, lighting, or other acceptable mitigation methods. In addition, establishment or creation of future hazards should be prevented. **Figure 3-3** shows the General Airspace Classification.



Source: Adapted from Pilot's Handbook of Aeronautical Knowledge (FAA-H-8083-25B)

Figure 3-3: General Airspace Classification

3.10.1 Navigable Airspace

To provide the required safety and management of Instrument Flight Rules (IFR), operations within the airspace above and around the airport is designated as being Class G uncontrolled airspace up to 700 feet AGL with overlying Class E airspace supporting a non-towered airport with instrument approaches. Merle K. (Mudhole) Smith Airport and nearby Cordova, Tatitlek and Valdez Airports are depicted on the FAA's Anchorage Section Chart as previously shown in **Figure 2-2.**

3.10.2 Civil Airport Imaginary Surfaces

Existing part 77 surfaces (14 CFR part 77 – *Safe, Efficient Use, and Preservation of the Navigable Airspace*) are summarized in **Table 3-7**. Temporary natural or man-made objects that penetrate the part 77 imaginary surfaces may be considered obstructions to air navigation and require analysis by the FAA. Once the analysis is completed, the FAA makes a determination and provides details of the findings. Good planning practices suggest that future airport facility developments should be planned to avoid penetrations to part 77 surfaces. Unmitigated penetrations to the part 77 imaginary surfaces may have an impact on the instrument procedures which may affect the overall capacity of the airport. Further analysis regarding CFR Part 77 will be discussed in the following chapters as part of the update of the Airport Master Plan and ALP Drawing Set.

3.10.3 Instrument Approach and Departure Protection Standards

The approach and departure standards described in this section are not to be confused with the approach surfaces defined in 14 CFR Part 77. Approach surfaces protect the use of the runway in both visual and instrument meteorological conditions near the airport. The approach surface typically has a trapezoidal shape that extends away from the runway along the centerline at a specific slope, expressed in horizontal feet by vertical feet, with a starting point at or near the runway threshold elevation. The specific size, slope, and starting point of

the trapezoid depends on the visibility minimums and the type of procedure associated with the runway end. For planning, objects must remain clear of the surfaces associated with the approach and departure standards listed in **Table 3-8** and shown on **Figures 3-4** and **3-5**. The FAA Flight Procedures Team mitigates existing obstacles that penetrate instrument procedures that cannot be removed, relocated, or lowered.

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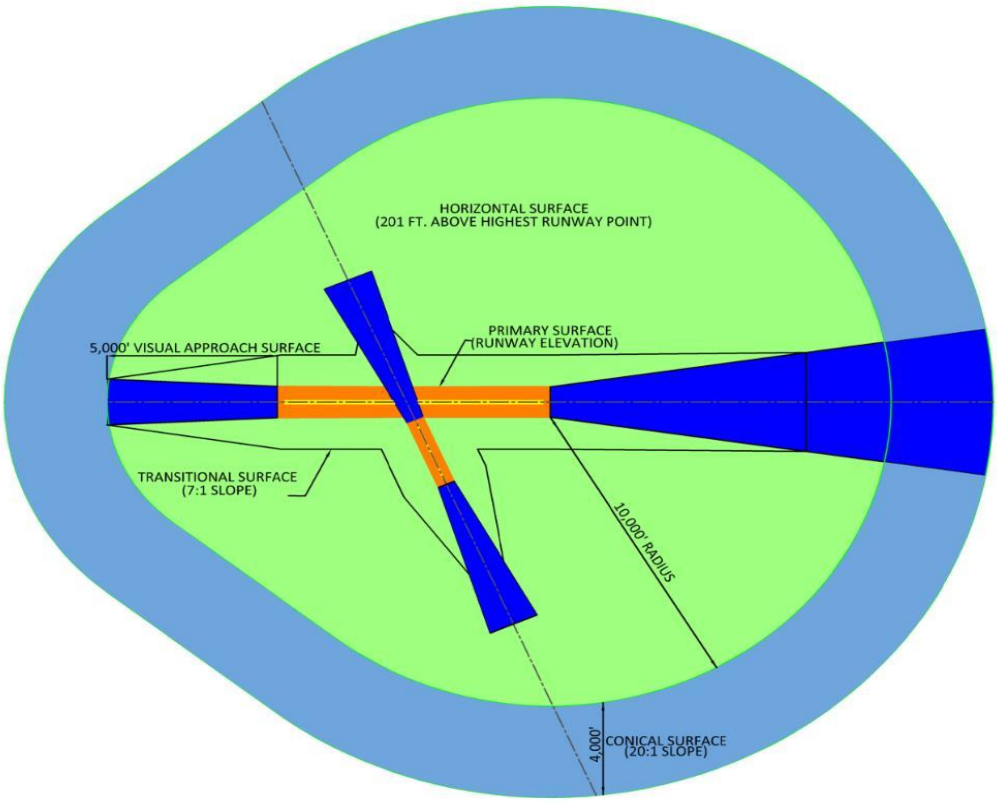
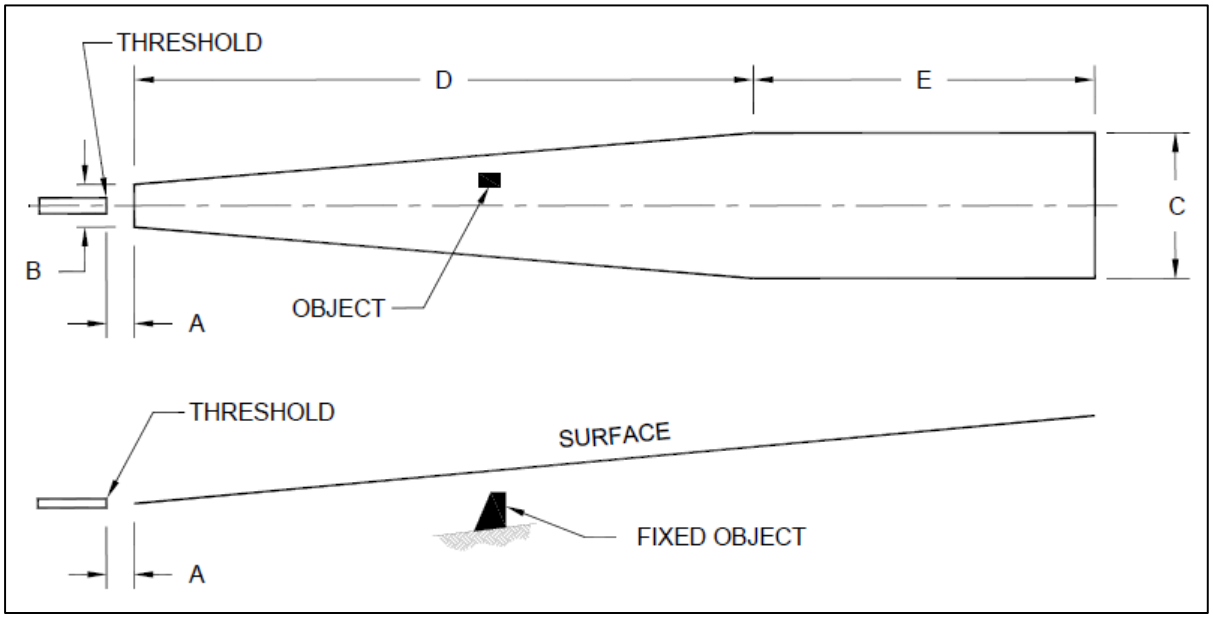
Table 3-7: CFR part 77 Civil Airport Imaginary Surfaces				
Item	Runway 09-27		Runway 16-34	
	09	27	16	34
Width of the primary surface and approach surface width at inner end (feet)	1,000	1,000	250	250
Radius of the horizontal surface (feet)	5,000	10,000	5,000	5,000
Approach surface width at end (feet)	1,500	16,000	1,500	1,500
Approach surface length (feet)	5,000	50,000	5,000	5,000
Approach slope	20:1	50:1	20:1	20:1
Conical surface (slope)	20:1	20:1	20:1	20:1
Transitional surface (slope)	7:1	7:1	7:1	7:1



Source: 14 CFR part 77

Table 3-8: CDV Approach and Departure Standards								
Runway	Runway Type		Dimensional Standards					
			A	B	C	D	E	Slope
09	4	Approach end of runway expected to accommodate instrument approaches having visibility greater than or equal to ¾ statute mile. (see Figure 3-4).	200	400	3400	10,000	0	20:1
	7	Departure runway ends used for any instrument operation (see Figure 3-5).	Runway Width (RW)	500 - ½ RW	7,512	12,152	6,160	40:1
27	5 & 6	Approach end of runways expected to accommodate instrument approaches with vertical guidance.	200 0	800 RW + 200	3400 1520	10,000	0	34:1 30:1
	7	Departure runway ends used for any instrument operation (see Figure 3-5).	Runway Width (RW)	500 - ½ RW	7,512	12,152	6,160	40:1
16	4	Approach end of runways expected to accommodate instrument approaches having visibility greater than or equal to ¾ statute mile.	200	400	3400	10,000	0	20:1
	7	Departure runway ends used for any instrument operation (see Figure 3-5).	Runway Width (RW)	500 - ½ RW	7,512	12,152	6,160	40:1
34	4	Approach end of runways expected to accommodate instrument approaches having visibility greater than or equal to ¾ statute mile.	200	400	3400	10,000	0	20:1
	7	Departure runway ends used for any instrument operation (see Figure 3-5).	Runway Width (RW)	500 - ½ RW	7,512	12,152	6,160	40:1

Source: FAA Engineering Brief 99A, July 24, 2020



Source: Adapted from FAA AC Airport Design Change 1

Figure 3-4: Standard Approach Surface Dimensions

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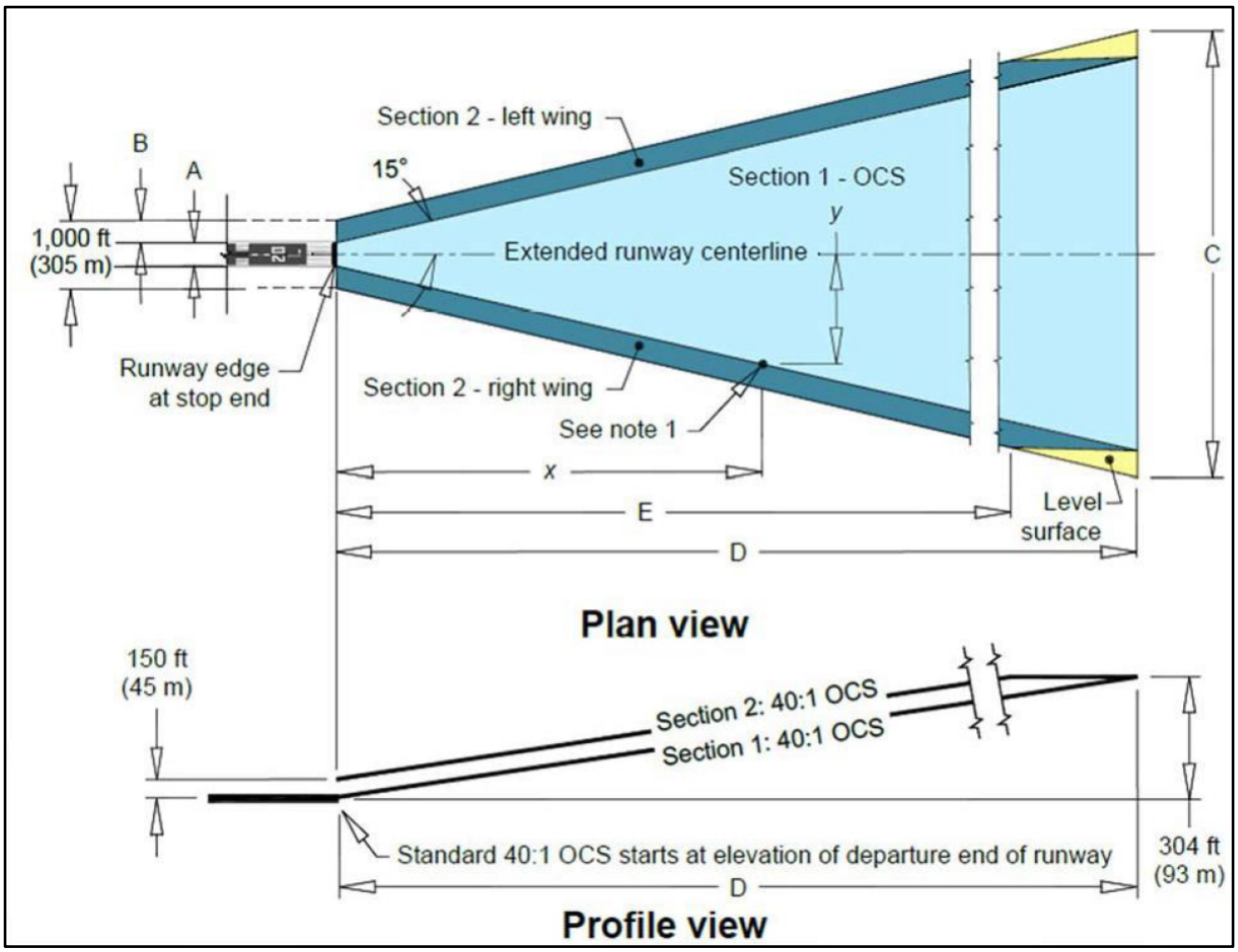

Source: FAA Engineering Brief 99A, July 24, 2020

Figure 3-5: Standard Departure Surface Dimensions

3.10.4 Standard Instrument Procedures

The FAA develops standard instrument procedures to facilitate safe navigation around obstructions and obstacles identified through the analysis of the airspace surfaces discussed previously. Standard instrument procedures are developed in accordance with 14 CFR Part 77, Standard Instrument Procedures, and FAA Order 8260.3D, United States Standard for Terminal Instrument Procedures (TERPS).

3.10.5 Published CDV Instrument Approach Procedures

Instrument approach procedures facilitate the transition from the airspace to the airport. IAPs are critical to the airport, because they may directly affect (enhance) the overall capability and capacity of the airport to handle aircraft operations during low ceilings and low visibility. IAPs may be affected due to penetrations of Part 77 imaginary surfaces or the obstacle clearance surfaces.

The airport has one non-precision circling instrument approach, and two precision instrument approaches, a LOC/DME, an RNAV (GPS) with LNAV/LPV, and RNAV (GPS)-B. The

current RNAV (GPS)-B allows operations with ceilings no lower than 500 feet above ground level (AGL) at 1-mile visibility. The RNAV (GPS) for the Runway 27 end allows operations with ceilings no lower than 328 feet at ½-mile visibility.

The ILS approach allows operations with ceilings no lower than 300 feet AGL at ½-mile visibility and the Localizer approach allows operations with ceilings no lower than 440 feet AGL at ½-mile visibility. Table 3-9 lists the IAPs available at CDV.

Table 3-9: CDV Instrument Approach Procedure Summary

Description	NAVAID Type	NAVAID Identifier	Amendment	Date
ILS or LOC	LOC/DME	CH 44 (110.7)	11C	04/29/2018
RNAV (GPS)	APP CRS	CH 82031	2A	07/24/2014
RNAV (GPS)-B	APP CRS	N/A	2	01/10/2013

Source: FAA Instrument Approach Procedures AK with effective date September 10, 2020 – November 5, 2020

The current published IAPs are depicted in Figures 3-6, 3-7, and 3-8.

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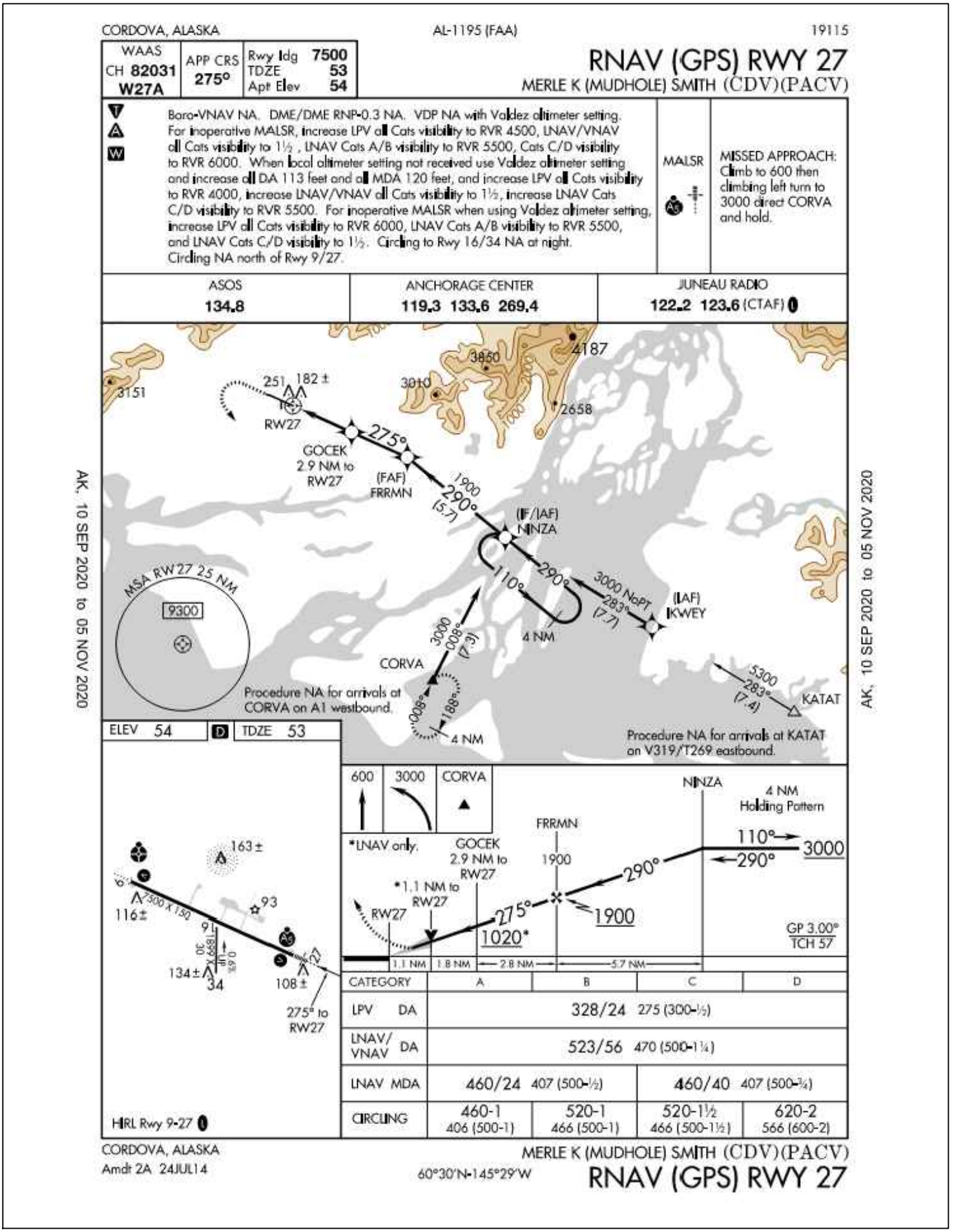
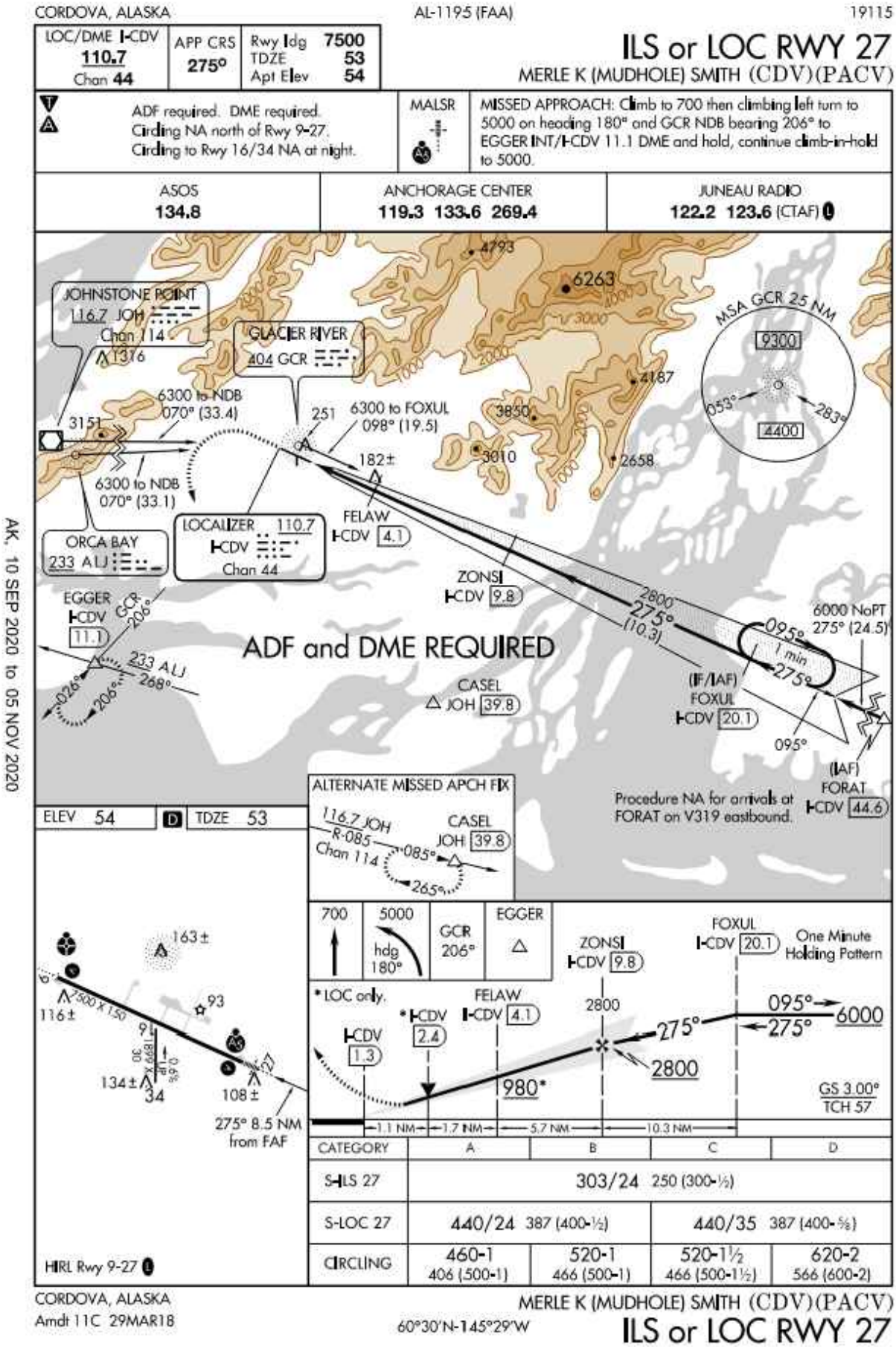
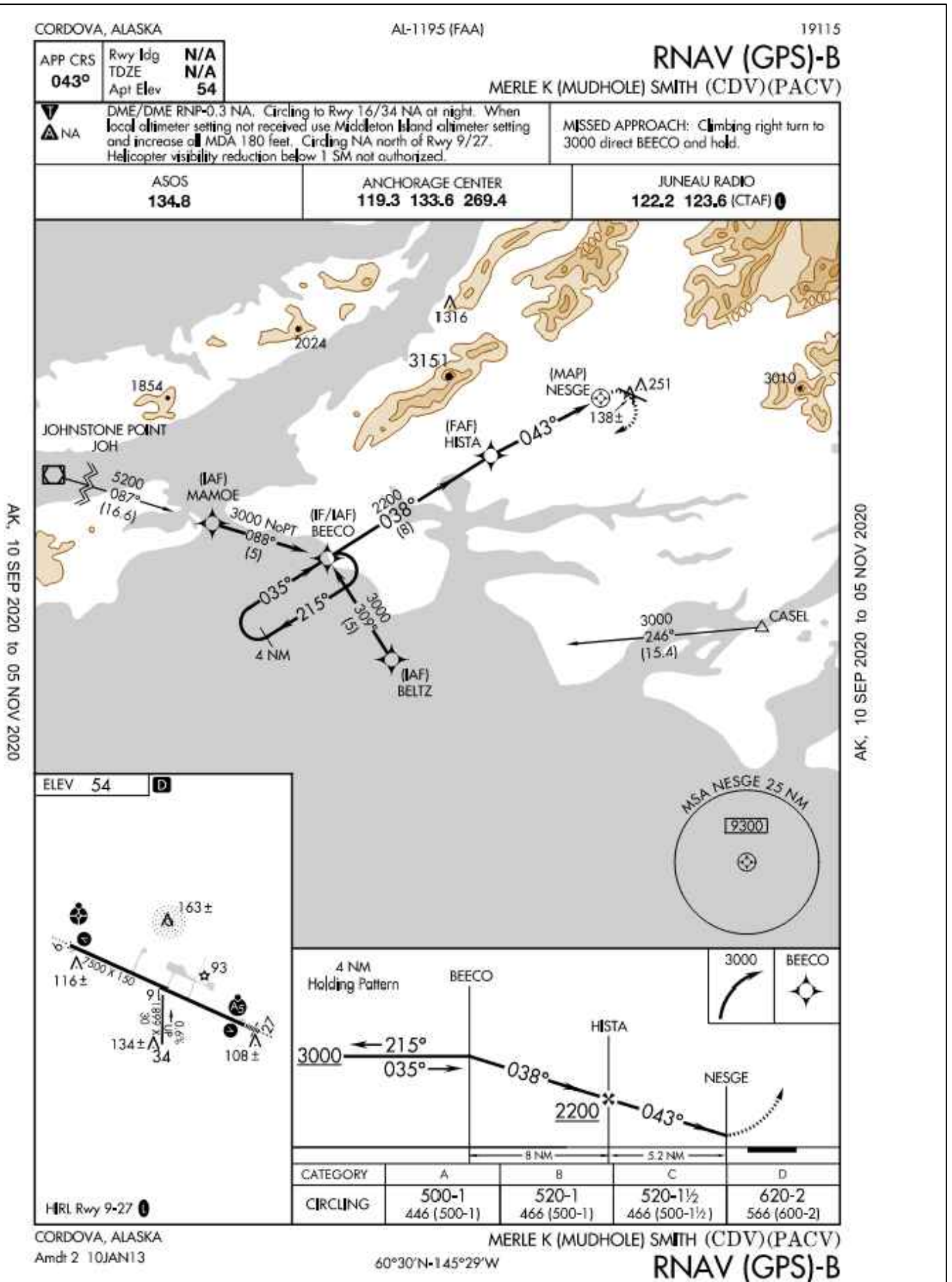

CORDOVA, ALASKA
AL-1195 (FAA)
19115
WAAS
CH 82031
W27A
APP CRS
275°
Rwy Idg 7500
TDZE 53
Apt Elev 54
RNAV (GPS) RWY 27
MERLE K (MUDHOLE) SMITH (CDV)(PACV)
Baro-VNAV NA. DME/DME RNP-0.3 NA. VDP NA with Valdez altimeter setting. For inoperative MALSR, increase LPV all Cats visibility to RVR 4500, LNAV/VNAV all Cats visibility to 1½ , LNAV Cats A/B visibility to RVR 5500, Cats C/D visibility to RVR 6000. When local altimeter setting not received use Valdez altimeter setting and increase all DA 113 feet and all MDA 120 feet, and increase LPV all Cats visibility to RVR 4000, increase LNAV/VNAV all Cats visibility to 1½, increase LNAV Cats C/D visibility to RVR 5500. For inoperative MALSR when using Valdez altimeter setting, increase LPV all Cats visibility to RVR 6000, LNAV Cats A/B visibility to RVR 5500, and LNAV Cats C/D visibility to 1½. Circling to Rwy 16/34 NA at night. Circling NA north of Rwy 9/27.
MALSR
MISSED APPROACH: Climb to 600 then climbing left turn to 3000 direct CORVA and hold.
ASOS
134.8
ANCHORAGE CENTER
119.3 133.6 269.4
JUNEAU RADIO
122.2 123.6 (CTAF)
AK, 10 SEP 2020 to 05 NOV 2020
AK, 10 SEP 2020 to 05 NOV 2020
3151
251
182 ±
RW27
GOCEK
2.9 NM to
RW27
275°
(FAF)
FRRMN
1900
290°
(5.7)
3850
3010
4187
2658
(IF/IAF)
NINZA
110°
290°
3000 NoPT
283°
(7.7)
(IAF)
KWEY
4 NM
3000
008°
(7.3)
CORVA
MSA RW27 25 NM
9300
Procedure NA for arrivals at CORVA on A1 westbound.
008°
188°
4 NM
5300
283°
(7.4)
KATAT
Procedure NA for arrivals at KATAT on V319/T269 eastbound.
ELEV 54
D
TDZE 53
600
3000
CORVA
NINZA
4 NM
Holding Pattern
*LNAV only.
GOCEK
2.9 NM to
RW27
FRRMN
1900
*1.1 NM to
RW27
RW27
275°
1020*
290°
110°
290°
3000
1900
GP 3.00°
TCH 57
1.1 NM
1.8 NM
2.8 NM
5.7 NM
163 ±
116±
7500 X 150
93
91
6899 X 150
0.6%
134 ±
34
108 ±
27
275° to
RW27
HIRL Rwy 9-27
CATEGORY
A
B
C
D
LPV DA
328/24 275 (300-½)
LNAV/ VNAV DA
523/56 470 (500-1¼)
LNAV MDA
460/24 407 (500-½)
460/40 407 (500-¾)
CIRCLING
460-1 406 (500-1)
520-1 466 (500-1)
520-1½ 466 (500-1½)
620-2 566 (600-2)
CORDOVA, ALASKA
Amdt 2A 24JUL14
MERLE K (MUDHOLE) SMITH (CDV)(PACV)
60°30'N-145°29'W
RNAV (GPS) RWY 27


CORDOVA, ALASKA
AL-1195 (FAA)
19115
LOC/DME I-CDV 110.7 Chan 44
APP CRS 275°
Rwy Idg 7500
TDZE 53
Apt Elev 54
ILS or LOC RWY 27
MERLE K (MUDHOLE) SMITH (CDV)(PACV)
ADF required. DME required.
Circling NA north of Rwy 9-27.
Circling to Rwy 16/34 NA at night.
MALSR
MISSED APPROACH: Climb to 700 then climbing left turn to 5000 on heading 180° and GCR NDB bearing 206° to EGGER INT/I-CDV 11.1 DME and hold, continue climb-in-hold to 5000.
ASOS 134.8
ANCHORAGE CENTER 119.3 133.6 269.4
JUNEAU RADIO 122.2 123.6 (CTAF)
4793
6263
3000
2000
JOHNSTONE POINT 116.7 JOH Chan 114
1376
GLACIER RIVER 404 GCR
MSA GCR 25 NM
9300
4400
053°
283°
4187
3850
3010
2658
6300 to NDB 070° (33.4)
6300 to NDB 070° (33.1)
6300 to FOXUL 098° (19.5)
3151
251
182±
ORCA BAY 233 ALJ
LOCALIZER 110.7 I-CDV Chan 44
FELAW I-CDV 4.1
ZONSI I-CDV 9.8
EGGER I-CDV 11.1
GCR 206°
233 ALJ
026°
206°
268°
2800
275°
(10.3)
095°
1 min
275°
6000 NoPT
275° (24.5)
ADF and DME REQUIRED
CASEL
JOH 39.8
(IF/IAF) FOXUL I-CDV 20.1
095°
(IAF) FORAT I-CDV 44.6
Procedure NA for arrivals at FORAT on V319 eastbound.
AK, 10 SEP 2020 to 05 NOV 2020
AK, 10 SEP 2020 to 05 NOV 2020
ELEV 54
D
TDZE 53
ALTERNATE MISSED APCH FIX
116.7 JOH
R-085
Chan 114
CASEL
JOH 39.8
085°
265°
700
5000
hdg 180°
GCR 206°
EGGER
ZONSI I-CDV 9.8
FOXUL I-CDV 20.1
One Minute Holding Pattern
*LOC only.
*I-CDV 2.4
I-CDV 1.3
FELAW I-CDV 4.1
2800
095°
6000
275°
275°
2800
980*
GS 3.00°
TCH 57
1.1 NM
1.7 NM
5.7 NM
10.3 NM
163±
116±
7500 X 150
93
1869 X 30
0.8%
134±
34
108±
275° 8.5 NM from FAF
CATEGORY
A
B
C
D
S-ILS 27
303/24 250 (300-½)
S-LOC 27
440/24 387 (400-½)
440/35 387 (400-⅝)
CIRCLING
460-1 406 (500-1)
520-1 466 (500-1)
520-1½ 466 (500-1½)
620-2 566 (600-2)
HIRL Rwy 9-27
CORDOVA, ALASKA
Amdt 11C 29MAR18
60°30'N-145°29'W
MERLE K (MUDHOLE) SMITH (CDV)(PACV)
ILS or LOC RWY 27


CORDOVA, ALASKA
AL-1195 (FAA)
19115
RNAV (GPS)-B
MERLE K (MUDHOLE) SMITH (CDV)(PACV)
APP CRS 043°
Rwy Idg N/A
TDZE N/A
Apt Elev 54
NA
DME/DME RNP-0.3 NA. Circling to Rwy 16/34 NA at night. When local altimeter setting not received use Middleton Island altimeter setting and increase all MDA 180 feet. Circling NA north of Rwy 9/27. Helicopter visibility reduction below 1 SM not authorized.
MISSED APPROACH: Climbing right turn to 3000 direct BEECO and hold.
ASOS 134.8
ANCHORAGE CENTER 119.3 133.6 269.4
JUNEAU RADIO 122.2 123.6 (CTAF)
AK, 10 SEP 2020 to 05 NOV 2020
1316
2024
3151
1854
(MAP) NESGE
251
3010
JOHNSTONE POINT
JOH
(FAF) HISTA
043°
138±
5200
087°
(16.6)
(IAF) MAMOE
3000 NoPT
088°
(5)
(IF/IAF) BEECO
2200
038°
(8)
035°
215°
3000
309°
(5)
4 NM
(IAF) BELTZ
3000
246°
(15.4)
CASEL
ELEV 54
D
MSA NESGE 25 NM
9300
163±
93
116±
7500 X 150
134±
34
108±
4 NM Holding Pattern
BEECO
3000
HISTA
3000
215°
035°
038°
2200
043°
NESGE
8 NM
5.2 NM
CATEGORY A B C D
CIRCLING 500-1 446 (500-1) 520-1 466 (500-1) 520-1½ 466 (500-1½) 620-2 566 (600-2)
HIRL Rwy 9-27
CORDOVA, ALASKA
Amdt 2 10JAN13
60°30'N-145°29'W
MERLE K (MUDHOLE) SMITH (CDV)(PACV)
RNAV (GPS)-B

3.11 Local Meteorological and Prevailing Wind Conditions

Prevailing meteorological conditions (maximum daily temperatures and precipitation) and the direction and velocity of wind directly affect aircraft performance during takeoffs and landings. Hottest day conditions increase the required available runway length requirements for most aircraft that typically operate at CDV. The wind direction affects the safe operation of aircraft during those same operations and dictates the directional layout of the runway to provide the greatest runway wind coverage with the least crosswind. These meteorological considerations will be used to evaluate the current ability of the airport's single runway to safety accommodate existing and projected future aircraft operations.

3.11.1 Mean-Maximum Hottest Day Temperatures

The mean-maximum hottest day temperatures for Cordova, Alaska as recorded by the National Oceanic and Atmospheric Administration's (NOAA's) National center for Environmental Information for the 30-year period (1981 to 2010) is shown in **Figure 3-9**.

The hottest month is August, having a mean-maximum daily temperature of 61.7 degrees Fahrenheit. This mean-maximum daily temperature will be used within the CDV Master Plan Update to determine required minimum runway takeoff lengths for the most demanding "Design" aircraft that regularly currently use, or are projected to use, the airport within the 20-year planning period.

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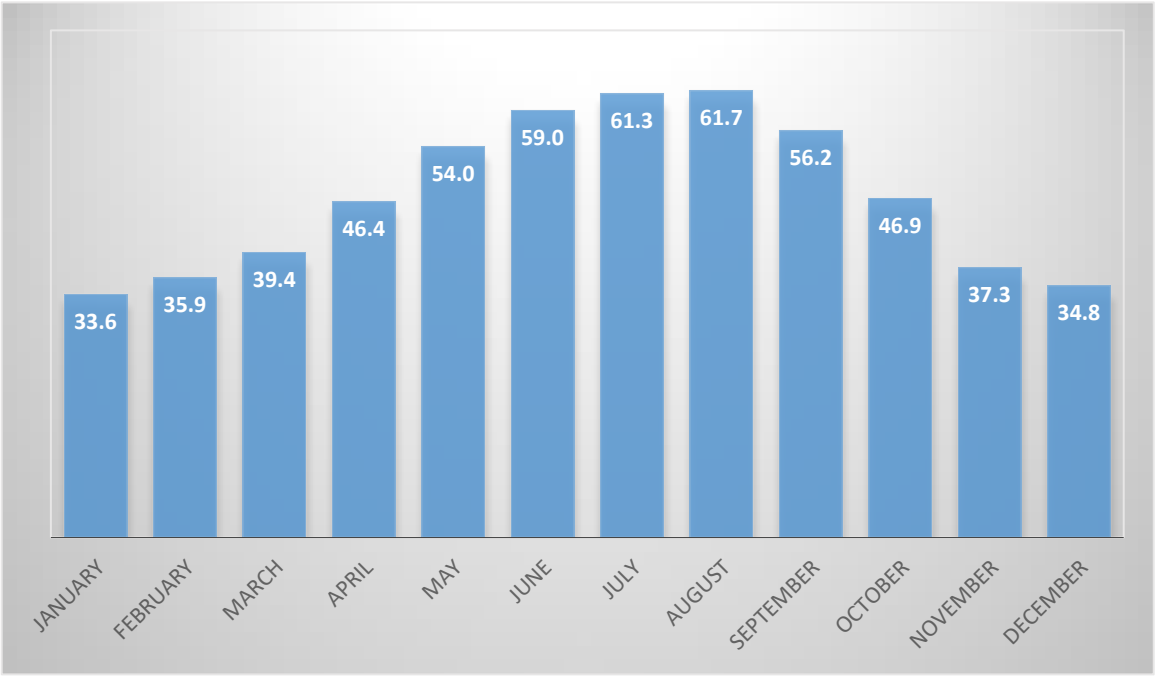

Source: NOAA 1981-2010 US Climate Normals, Cordova, Alaska

Figure 3-9: Mean-Maximum Hottest Day Temperatures

3.11.2 Local Aeronautical Meteorological Operating Conditions

For distinguishing meteorological conditions during flight operations to or from an airport, two locally-recorded meteorological conditions were documented; *visual meteorological conditions* (VMC) and *instrument meteorological conditions* (IMC). VMC occurs when the ceiling is greater than 1,000 feet, and visibility is greater than 3 miles. IMC occur when the ceiling is less than 1,000 feet and/or visibility is less than 3 miles.

Prevailing meteorological conditions for a 10-year period were recorded by the airport's ASOS facility. The weather observations shown in **Table 3-10** provide an approximate indicator representing the amount of time aircraft are capable of operating to and from the airport using Visual Flight Rules (VFR) or Instrument Flight Rules (IFR), respectively.

3.11.3 Runway Orientation and Wind Coverage

Runway orientation and runway wind coverage are key factors for safe and efficient operation of any airport. Local prevailing meteorological conditions such as wind direction, cloud ceiling heights, and visibility have a direct influence on the development, orientation, and use of an airport's runway system. In some circumstances, there may be the need for multiple runways to accommodate seasonal changes in local prevailing wind patterns. Ideally, any runway should be aligned with the prevailing winds that, to varying degrees, have a direct effect on all aircraft. Generally, the smaller the aircraft, the more it is affected by the wind, particularly crosswind components.

For airport planning, runway wind coverage is determined by measuring and statistically quantifying the wind direction, wind speed, cloud base ceiling, and visibility for each observation over a 10-year period using the airport's ASOS facility. By statistically analyzing

the runway's wind coverage and resultant crosswind components, the ability of the runway to safety accommodate aircraft operations can be measured and assessed.

The validation and update of the airport's runway wind coverage considered wind speed and direction of origin, and the orientation of the airport's runways during *VMC* and *IMC*.

The analysis was conducted for both bidirectional and single-direction using FAA/NOAA-recorded surface observation data compiled by the National Climatic Data Center (NCDC) located in Asheville, North Carolina. Statistical analysis of wind by velocity and direction of origin was analyzed using the FAA's Geographic Information System (GIS) Windrose Generator for the 2010 through 2019 calendar period. A total of 100,884 surface observations and wind observations were recorded and analyzed as part of this update of the airport's runway wind coverage analysis. The airport's surface observation data was obtained from the FAA's Airport Data and Information Portal, that can be accessed via website: (https://adip.faa.gov/agis/public/#/windAnalysisTools).

Since surface winds usually cross the runway at an angle during landings and takeoffs, the wind exerts both headwind and crosswind components. For operational safety considerations, pilots desire to use runways that, to the greatest extent practicable, offer the greatest headwinds and least crosswinds. Each aircraft (by factory design) has a maximum recommended demonstrated crosswind velocity limit, which is the crosswind component for which adequate control of the airplane was demonstrated during takeoff and landing. As a rule, most airplanes are limited to a crosswind component of 20 percent of the maximum certificated weight stall speed with recommended landing flaps. Runway wind coverage, as used in airport planning, measures the percent of time crosswind components are below maximum acceptable velocity limits.

The crosswind component is the resultant vector of the runway direction and existing wind that acts at a right angle to the runway. FAA Advisory Circular (AC) 150/5300-13A, *Appendix 2*, Wind Analysis recommends that at least 95 percent crosswind coverage be provided by the runway system (one or more runways) at any airport. If the runway wind coverage is less than 95 percent, an additional runway(s) should be provided, with an orientation such that the combination of all runways provides 95 percent or better bi-directional wind coverage. The most desirable runway orientation provides the greatest runway wind coverage with the least crosswind component.

Currently, Runway 09-27 is classified as having an RDC of D-III that can fully accommodate aircraft having AAC speeds of ranging from 141 knots up to, but not including 166 knots, and ADG III wingspans ranging from 79 feet up to, but not including 118 feet. Based on the RDC D-III capabilities, runway wind coverage for Runway 09-27 was determined by applying maximum crosswind components of 16.0 nautical miles per hour ("knots") and 20 knots.

Currently, Runway 16-34 is classified as having an RDC of A-I that can fully accommodate aircraft having AAC speeds less than 91 knots, and ADG I wingspans less than 49 feet. Based on the RDC A-I capabilities, runway wind coverage for Runway 16-34 was determined by applying maximum crosswind components of 10.5 nautical miles per hour ("knots").

Using current and proposed future airfield approach instrumentation capabilities, three separate meteorological scenarios of cloud ceiling height and horizontal visibility were used

to provide information required for the runway wind coverage analysis and the resultant operational (favorable, or adverse) impacts of winds on the airport's existing runway system:

- All Weather – All observed ceiling heights and horizontal visibility reported.
- VMC – Observed conditions when ceiling height was greater than, or equal to, 1,000 feet AGL and horizontal visibility was greater than, or equal to, three statute miles. Flight operations during these conditions may be conducted under VFR. VMC at the airport occur approximately 82.07 percent of the time.
- IMC – Observed conditions when ceiling height was less than 1,000 feet AGL and/or horizontal visibility was less than three statute miles. Flight operations during these conditions are conducted under IFR when aircraft pilots are required to conduct instrument approach operations to Runway 27 using the published RNAV (GPS) LPV IAP. IMC at the airport occurs 18.58 percent of the time.

It is important to note that reported VFR and IFR-scenario Surface Observation counts due not sum to match All Weather total.

Table 3-10 lists the runway wind coverage during three different meteorological conditions based on bidirectional operations and unidirectional runway heading. As shown, Runway 09-27's current orientation relative to local prevailing winds provides adequate (e.g., 95 percent or greater) runway wind coverage to safely accommodate the existing D-III and A-1 RDCs respectively without the need for an additional crosswind runway. The wind rose information presented in this section will be used to determine facility needs and formulate development alternatives in later chapters of this report. The three respective wind roses are shown in Figures 3-10, 3-11, and 3-12.

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Table 3-10: CDV Runway Wind Coverage

Meteorological Condition	Runway Designation	Wind Coverage Percentage (%)				Relative Percent of Occurrence
		Allowable Crosswind Component (Knots)				
		10.5	13	16	20	
All Weather	Bidirectional Operation					67,528 Observations 100%
	09-27	99.43	99.78	99.97	100.00	
	16-34	93.57	95.99	98.78	99.69	
	Combined	99.76	99.97	100.00	100.00	
	Unidirectional by Runway Heading					
	09	87.74	88.01	88.14	88.16	
	27	44.84	44.91	44.97	44.98	
	16	64.13	66.09	68.36	69.15	
	34	62.74	63.22	63.76	63.89	
Visual Meteorological Conditions (VMC)	Bidirectional Operation					55,422 Observations 82.07%
	09-27	99.50	99.80	95.83	98.59	
	16-34	94.78	96.75	84.64	84.64	
	Combined	99.80	99.98	84.64	84.64	
	Unidirectional by Runway Heading					
	09	88.71	88.94	89.05	89.07	
	27	53.20	53.28	53.34	53.35	
	16	68.43	70.00	71.86	72.48	
	34	68.91	69.33	69.79	69.89	
Instrument Meteorological Conditions (IMC)	Bidirectional Operation					12,549 Observations 18.58%
	09-27	99.56	99.83	99.96	100.00	
	16-34	93.01	95.62	98.42	99.51	
	Combined	99.76	99.96	100.00	100.00	
	Unidirectional by Runway Heading					
	09	92.53	92.77	92.88	92.92	
	27	48.45	48.49	48.51	48.51	
	16	71.88	74.11	76.49	77.44	
	34	62.68	63.06	63.50	63.66	

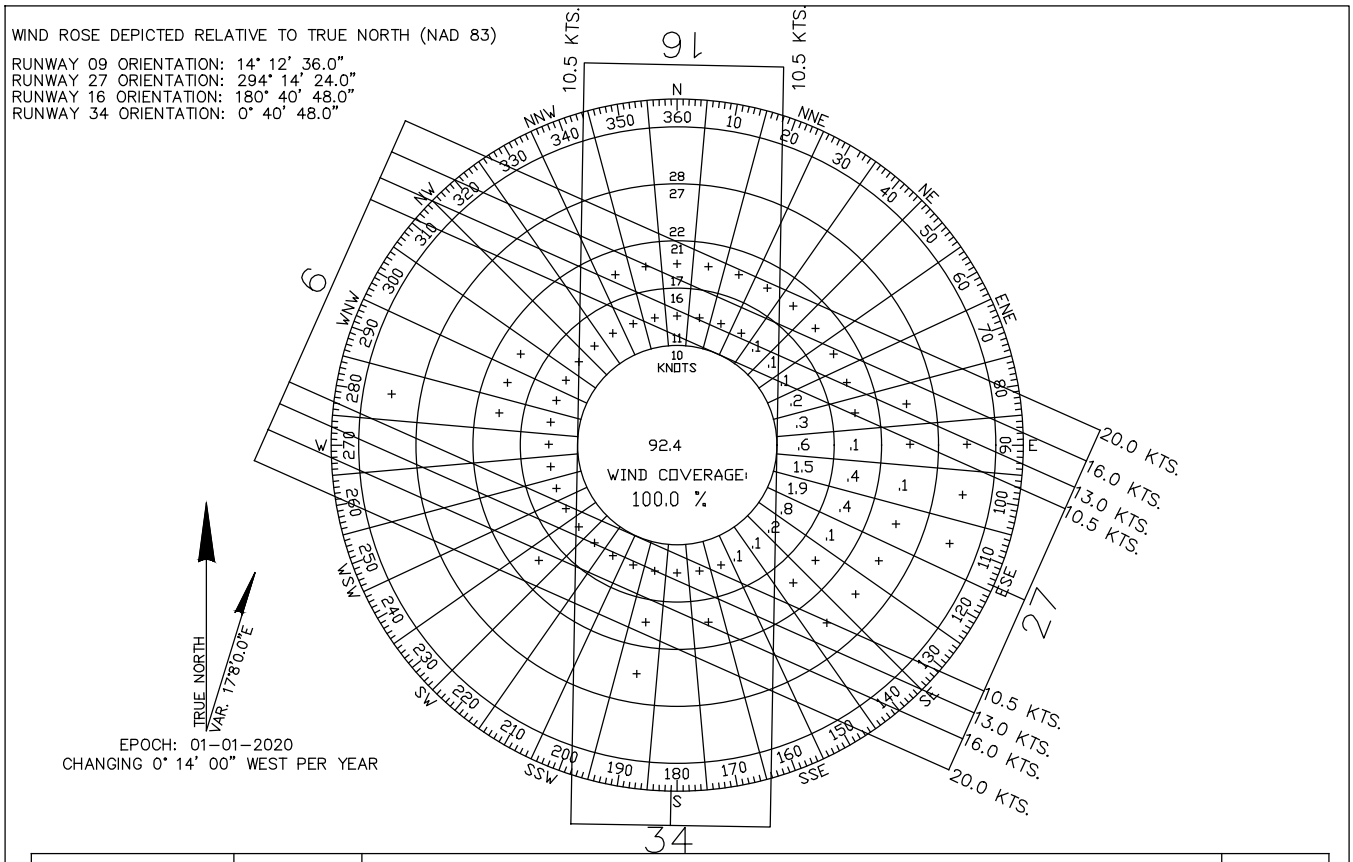
Source: FAA, Airport Data and Information Portal, https://adip.faa.gov/agis/public/#/windAnalysisTools, September 2020

Surface Observation Data Obtained from AWOS Weather Station: 702960, M.K. (Mudhole) Smith Airport, Cordova, AK;

Airport Identifier: (IATA: CDV, ICAO: PACV, FAA LID: CDV); Record Period: 2010-2019. Compiled by Michael Baker International, Inc.,

Note 1: Surface Observations exclude "Calm" conditions to reflect a more realistic relative percentile scenario split between VFR and IFR operating conditions at CDV.

Note 2: As reported, VFR and IFR-scenario Surface Observation counts due not sum to match All Weather total.



METEOROLOGICAL CONDITION	RUNWAY	RUNWAY WIND COVERAGE BY PERCENT				OBSERVATIONS
		10.5 KTS (12 MPH)	13 KTS (15 MPH)	16 KTS (18 MPH)	20 KTS (22 MPH)	
ALL WEATHER	BI-DIRECTIONAL OPERATION					67,528 100.00%
	09-27	99.43	99.78	99.97	100.00	
	16-34	93.57	95.99	98.78	99.69	
	COMBINED	99.76	99.97	100.00	100.00	
	SINGLE DIRECTION BY RUNWAY HEADING					
	09	87.74	88.01	88.14	88.16	
	27	44.84	44.91	44.97	44.98	
	16	64.13	66.09	68.36	69.15	
	34	62.74	63.22	63.76	63.89	

NOTES:

1. THIS GRAPHICAL CHART PLOTS, FOR THE DATA PERIOD LISTED, THE RECORDED OCCURRENCES (IN PERCENT) OF WIND BY DIRECTION AND SPEED WHILE THE RECTANGULAR BOXES REPRESENT THE MAXIMUM ACCEPTABLE CROSSWIND COMPONENTS OF 10.5, 13, 16, AND 20 KNOTS RESPECTIVELY. MAXIMUM ALLOWABLE CROSSWIND COMPONENT:

   10.5 KNOTS (RDC A-I AND B-I)
   13 KNOTS (RDC A-II AND B-II)
   16 KNOTS (RDC A-III, B-III, C-I THROUGH D-III, D-I THROUGH D-III)
   20 KNOTS (RDC A-IV AND B-IV, C-IV THROUGH C-VI, D-IV THROUGH D-VI, E-I THROUGH E-VI)

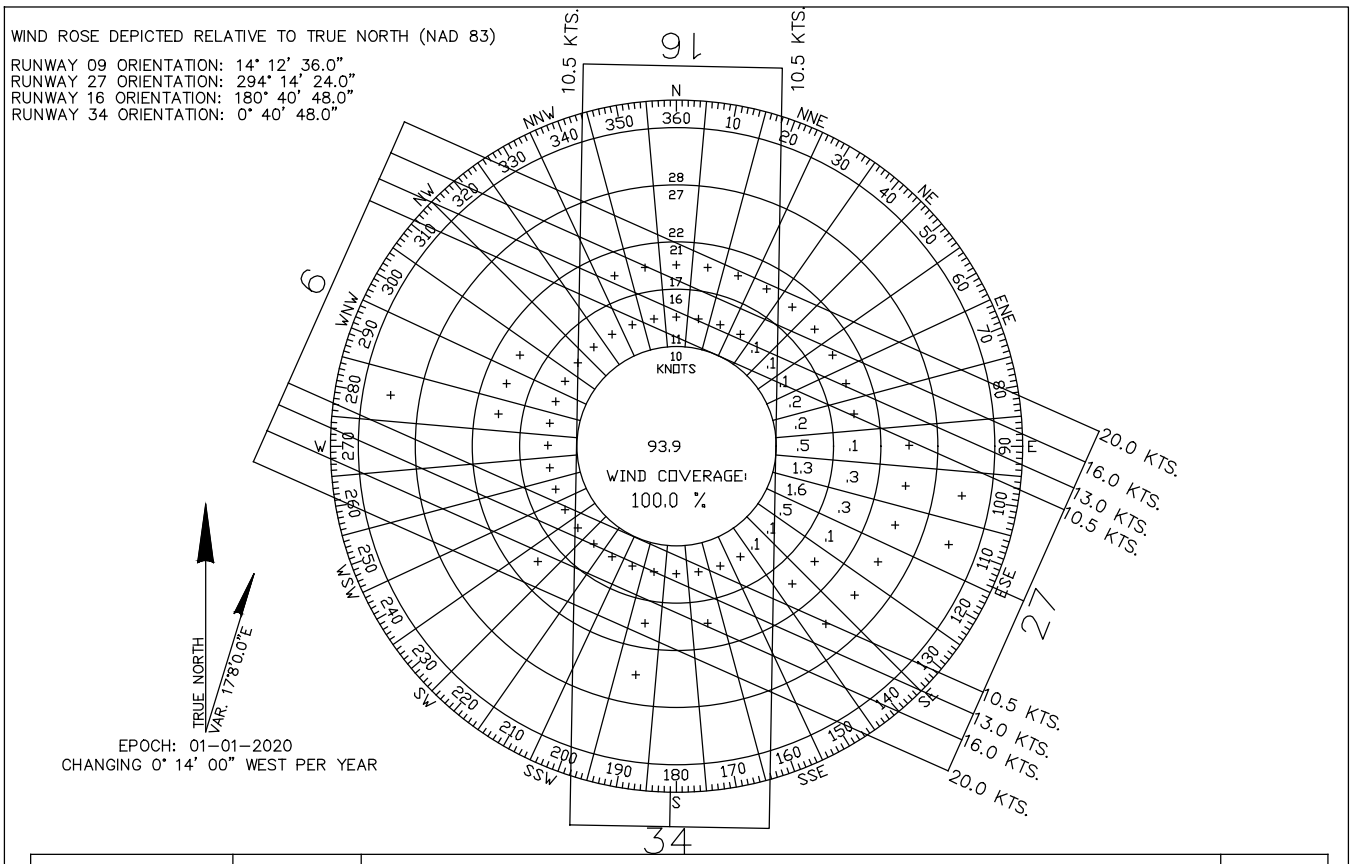
   THE AIRFIELD COVERAGE CAPABILITY FOR EACH RUNWAY IS THUS DETERMINED BY TOTALING ALL OCCURRENCES FALLING WITHIN THE APPROPRIATE CROSSWIND LIMITATION RECTANGLE.

2. RUNWAYS ARE NUMBERED USING MAGNETIC HEADINGS WHILE WIND DATA IS PRESENTED USING TRUE HEADINGS.

SOURCE:

FEDERAL AVIATION ADMINISTRATION, AIRPORT DATA AND INFORMATION PORTAL, https://adip.faa.gov/agis/public/#/windAnalysisTools
SURFACE OBSERVATION DATA OBTAINED FOR AWOS WEATHER STATION: 702960, M.K. (MUDHOLE) SMITH AIRPORT, CORDOVA, ALASKA
RECORD PERIOD: 2010-2019
ALL-WEATHER OBSERVATIONS: 100,884 (100% OF ALL OBSERVATIONS)
AIRPORT IDENTIFIER: (IATA: CDV, ICAO: PACV, FAA LID: CDV)

COMPILED BY MICHAEL BAKER INTERNATIONAL, SEPTEMBER 29, 2020



METEOROLOGICAL CONDITION	RUNWAY	RUNWAY WIND COVERAGE BY PERCENT				OBSERVATIONS
		10.5 KTS (12 MPH)	13 KTS (15 MPH)	16 KTS (18 MPH)	20 KTS (22 MPH)	
VISUAL	BI-DIRECTIONAL OPERATION					55,422 82.07%
	09-27	99.50	99.80	95.83	98.59	
	16-34	94.78	96.75	84.64	84.64	
	COMBINED	99.80	99.98	84.64	84.64	
	SINGLE DIRECTION BY RUNWAY HEADING					
	09	88.71	88.94	89.05	89.07	
	27	53.20	53.28	53.34	53.35	
	16	68.43	70.00	71.86	72.48	
	34	68.91	69.33	69.79	69.89	

NOTES:

1. THIS GRAPHICAL CHART PLOTS, FOR THE DATA PERIOD LISTED, THE RECORDED OCCURRENCES (IN PERCENT) OF WIND BY DIRECTION AND SPEED WHILE THE RECTANGULAR BOXES REPRESENT THE MAXIMUM ACCEPTABLE CROSSWIND COMPONENTS OF 10.5, 13, 16, AND 20 KNOTS RESPECTIVELY. MAXIMUM ALLOWABLE CROSSWIND COMPONENT:

   10.5 KNOTS (RDC A-I AND B-I)
   13 KNOTS (RDC A-II AND B-II)
   16 KNOTS (RDC A-III, B-III, C-I THROUGH D-III, D-I THROUGH D-III)
   20 KNOTS (RDC A-IV AND B-IV, C-IV THROUGH C-VI, D-IV THROUGH D-VI, E-I THROUGH E-VI)

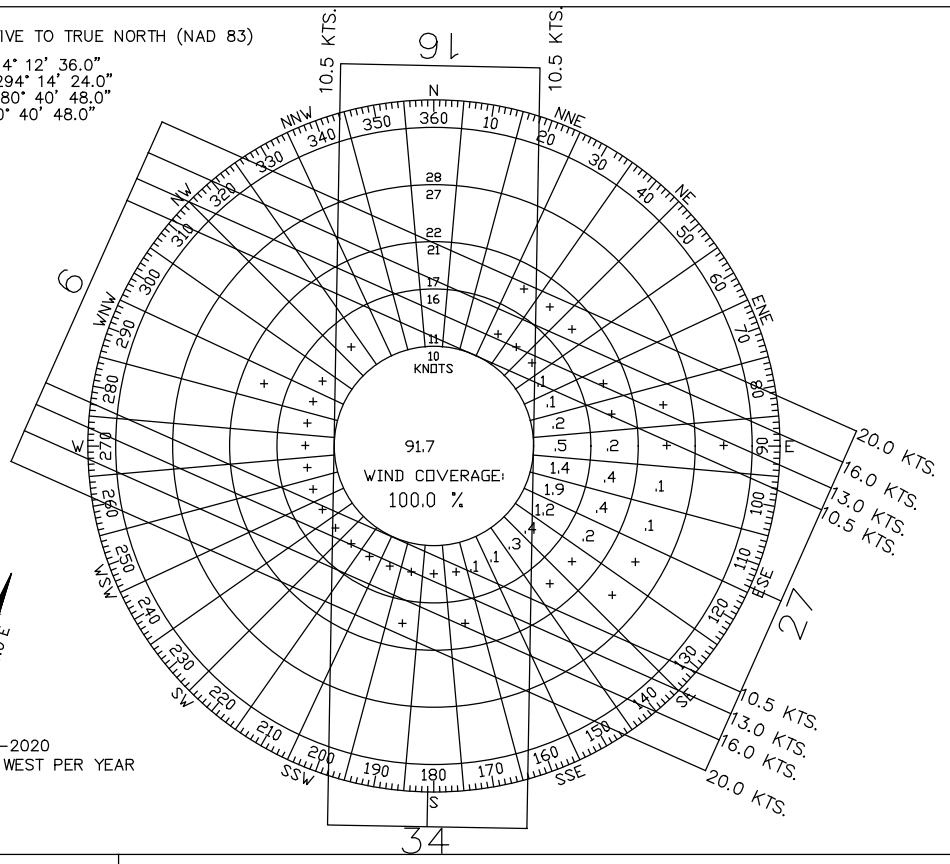
   THE AIRFIELD COVERAGE CAPABILITY FOR EACH RUNWAY IS THUS DETERMINED BY TOTALING ALL OCCURRENCES FALLING WITHIN THE APPROPRIATE CROSSWIND LIMITATION RECTANGLE.

2. RUNWAYS ARE NUMBERED USING MAGNETIC HEADINGS WHILE WIND DATA IS PRESENTED USING TRUE HEADINGS.

SOURCE:

FEDERAL AVIATION ADMINISTRATION, AIRPORT DATA AND INFORMATION PORTAL, https://adip.faa.gov/agis/public/#/windAnalysisTools
SURFACE OBSERVATION DATA OBTAINED FOR AWOS WEATHER STATION: 702960, M.K. (MUDHOLE) SMITH AIRPORT, CORDOVA, ALASKA
RECORD PERIOD: 2010-2019
VISUAL OBSERVATIONS: 96,125 (95.28% OF ALL OBSERVATIONS)
AIRPORT IDENTIFIER: (IATA: CDV, ICAO: PACV, FAA LID: CDV)

COMPILED BY MICHAEL BAKER INTERNATIONAL, SEPTEMBER 29, 2020



METEOROLOGICAL CONDITION	RUNWAY	RUNWAY WIND COVERAGE BY PERCENT				OBSERVATIONS
		10.5 KTS (12 MPH)	13 KTS (15 MPH)	16 KTS (18 MPH)	20 KTS (22 MPH)	
INSTRUMENT	BI-DIRECTIONAL OPERATION					12,548 18.58%
	09-27	99.56	99.83	99.96	100.00	
	16-34	93.01	95.62	98.42	99.51	
	COMBINED	99.76	99.96	100.00	100.00	
	SINGLE DIRECTION BY RUNWAY HEADING					
	09	92.53	92.77	92.88	92.92	
	27	48.45	48.49	48.51	48.51	
	16	71.88	74.11	76.49	77.44	
	34	62.68	63.06	63.50	63.66	

NOTES:

1. THIS GRAPHICAL CHART PLOTS, FOR THE DATA PERIOD LISTED, THE RECORDED OCCURRENCES (IN PERCENT) OF WIND BY DIRECTION AND SPEED WHILE THE RECTANGULAR BOXES REPRESENT THE MAXIMUM ACCEPTABLE CROSSWIND COMPONENTS OF 10.5, 13, 16, AND 20 KNOTS RESPECTIVELY. MAXIMUM ALLOWABLE CROSSWIND COMPONENT:

   10.5 KNOTS (RDC A-I AND B-I)
   13 KNOTS (RDC A-II AND B-II)
   16 KNOTS (RDC A-III, B-III, C-I THROUGH D-III, D-I THROUGH D-III)
   20 KNOTS (RDC A-IV AND B-IV, C-IV THROUGH C-VI, D-IV THROUGH D-VI, E-I THROUGH E-VI)

   THE AIRFIELD COVERAGE CAPABILITY FOR EACH RUNWAY IS THUS DETERMINED BY TOTALING ALL OCCURRENCES FALLING WITHIN THE APPROPRIATE CROSSWIND LIMITATION RECTANGLE.

2. RUNWAYS ARE NUMBERED USING MAGNETIC HEADINGS WHILE WIND DATA IS PRESENTED USING TRUE HEADINGS.

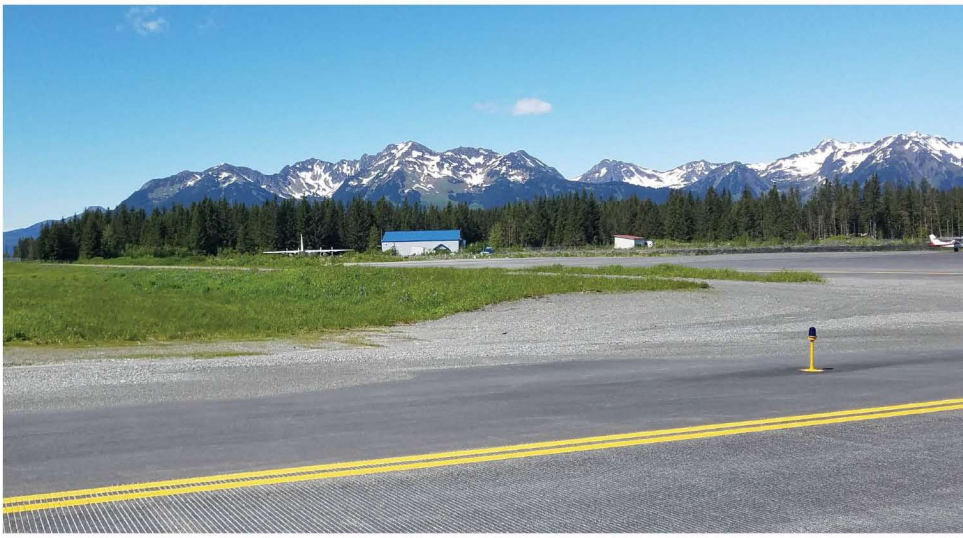
SOURCE:

FEDERAL AVIATION ADMINISTRATION, AIRPORT DATA AND INFORMATION PORTAL, https://adip.faa.gov/agis/public/#/windAnalysisTools
SURFACE OBSERVATION DATA OBTAINED FOR AWOS WEATHER STATION: 702960, M.K. (MUDHOLE) SMITH AIRPORT, CORDOVA, ALASKA
RECORD PERIOD: 2010-2019
INSTRUMENT OBSERVATIONS: 21,406 (21.22% OF ALL OBSERVATIONS)
AIRPORT IDENTIFIER: (IATA: CDV, ICAO: PACV, FAA LID: CDV)

COMPILED BY MICHAEL BAKER INTERNATIONAL, SEPTEMBER 29, 2020

Chapter 4
Forecasts of Aviation Activity

CORDOVA MERLE K. "MUDHOLE" SMITH
AIRPORT MASTER PLAN UPDATE



4 FORECASTS OF AVIATION ACTIVITY

4.1 Introduction and Background

Aviation activity forecasts (i.e., projections of future number of aircraft operations and locally-based aircraft) provide the basis for justifying the planning and proposed development identified in the airport sponsor's Airport Capital Improvement Program (ACIP). Aviation activity forecasts are typically prepared as part of an update of an airport's Master Plan, but may also be updated independently as the first step in assessing the relative impacts of changes in activity upon an airport's needs. Aviation activity forecasts should be realistic, based on the most recent data available, and reflect the current and anticipated future conditions at the airport.

Forecasts of future aviation activity for the Merle K. (Mudhole) Smith Airport (CDV), serves as key components of the airport sponsor's efforts to bring the airport up-to-date with current information, standards, and requirements. For example, an updated Airport Master Plan incorporates assessments of current airport facility and aircraft traffic activity levels, includes an update of the forecasts of future aviation activity specific to the airport, and assesses airfield design and safety-related measures relative to current Federal Aviation Administration (FAA) airport guidance and facility design standards.

Aviation activity forecasting actions, collectively, facilitate the prudent planning and timely development of airport facilities. They provide the platform for development decisions related to the purpose, size, location, and appropriate geometric design of planned and appropriately-phased airport facility development. These actions typically include, but are not limited to:

- airfield pavements (i.e., runways, taxiways, and itinerant ramp/aprons)
- visual and electronic navigational aids
- approach lighting systems
- airfield pavement edge lighting
- aircraft hangar and tiedown facilities
- airport traffic control towers
- landside facilities; and
- terminal space

Failure to properly plan for the future can result in negative consequences to an airport's capacity, activity, safety, and efficiency. A primary objective of forecasting is to provide information needed to determine whether existing airport facilities would adequately serve future needs. In most growth scenarios, the estimated levels of future demand may suggest the expansion, renewal, strengthening, or other improvements to airport structures or facilities.

Forecasts of future aviation activity levels at CDV not only serve to reveal potential future airport facility development needs, but also provides information regarding the approximate timing of airport facility capital expenditures. The last comprehensive forecasting effort was completed as part of the 2000 Merle K (Mudhole) Smith Airport Master Plan Update, with a planning period beginning in 2001 and extending through 2020.

The aviation activity forecast developed as part of the update of the CDV Airport Master Plan similarly projects commercial, general aviation, military, and air cargo activity over a 20-year planning period beginning with a 2019 ("Base Year") and extending through the year 2039, reflecting a five-year short-term (2019 through 2024), a second five-year intermediate-term (2025 through 2029), and a typical FAA-requested ten-year long-term (shown as two separate consecutive 5-year periods 2030-3034 and 2035-2039). This 20-year forecast of aviation activity will be subsequently referenced and used as part of the development of the Airport Master Plan's recommended phased-development of airport facility improvements and the commensurate ACIP.

4.2 City-Pair Air Service Activity

Through the use of the US Department of Transportation (DOT's) Bureau of Transportation Statistics (BTS) T-100 Domestic Segment database air transport activity for the forecast's Base Year 2019 were reviewed and provided the following data elements:

- Date of Aircraft Operation
- Origin/Destination Airport
- Air Carrier
- Aircraft Make/Model
- Departure/Arrival Seats, and
- Enplaned/Deplaned Passengers, Freight and Mail

As published within the BTS T-100 Domestic Segment database, during the 2019 calendar year, CDV was served by the following air carrier and air taxi/charter service providers:

4.2.1 Alaska Airlines

Operating as an air carrier, Alaska Airlines provided regularly-scheduled passenger, freight, and mail service utilizing a family of Boeing air carrier aircraft. Two of the four models of aircraft operated to and from CDV seven days per week with passenger service to Anchorage, Juneau, Seattle, and Yakutat. Through selected utilization of the four different series of the Boeing 737-family of aircraft, the airline provided regularly-scheduled passenger, freight, and mail service from the same three cities with additional freight from Bethel, Dillingham, and Sitka and additional mail service from Bethel.

Alaska Airlines operates at CDV (one of 59 Alaska communities) as part of the US DOT Essential Air Service program that subsidized air service under the EAS program to ensure that smaller communities retain a link to the national air transportation system with a Federal subsidy.

4.2.1.1 Boeing 737-700LR

This 124-seat aircraft provided approximately 63 percent of the scheduled air carrier service during the 2019 calendar year. This aircraft conducted 490 departures collectively to: Anchorage, Juneau, Seattle, and Yakutat; enplaned 1,337,834 pounds of freight, and 78,359 pounds of mail. This aircraft conducted 490 arrivals collectively from: Anchorage, Juneau, and Yakutat; deplaned 1,296,727 pounds of freight and 78,603 pounds of mail.

4.2.1.2 Boeing 737-800

This 159-seat aircraft provided approximately 35 percent of the of the scheduled air carrier service during the 12 months that same year. The aircraft conducted 268 departures collectively to Anchorage, Seattle, and Yakutat; enplaned 829,082 pounds of freight, and 46,606 pounds of mail. This aircraft conducted 268 arrivals collectively from: Anchorage, Juneau, and Yakutat; deplaned 671,682 pounds of freight, and 45,936 pounds of mail.

4.2.1.3 Boeing 737-900

This larger 178-seat aircraft provided less than 1 percent of the of the scheduled air carrier service operating only during the month of May with 2 departures to Seattle, and Yakutat; enplaning 16,696 pounds of freight, and 355 pounds of mail. The same aircraft conducted 2 arrivals from Anchorage; deplaned 6,258 pounds of freight, and 337 pounds of mail.

4.2.1.4 Boeing 737-900 ER

Operating all but during the three months of March, November, and December, this enhanced 178-seat version of the Boeing 737-900 aircraft provided approximately 2 percent of the of the scheduled air carrier service during that same year with 26 departures collectively to Anchorage, Juneau, and Yakutat; enplaned 28,792 pounds of freight, and 4,051 pounds of mail. The aircraft conducted collectively 26 arrivals from Anchorage and Yakutat. The same aircraft deplaned 23,489 pounds of freight, and 3,862 pounds of mail.

4.2.2 Alaska Central Express

Operating as a scheduled all-cargo carrier, Alaska Central Express (ACE) provided scheduled freight and mail and air taxi/charter passenger service utilizing the Beech 1900C 19-passenger pressurized twin-engine turboprop fixed-wing aircraft. ACE operates to and from CDV six days per week.

ACE provided:

- freight and mail service to Anchorage, Tatitlek, and Yakutat and freight only service to King Salmon, Sandpoint and Valdez.
- air taxi/charter passenger service to: Anchorage, King Salmon, Sandpoint, and Valdez,
- freight and mail service from Anchorage, Juneau, Ketchikan. and Petersburg and freight only service from King Salmon and Valdez.
- air taxi/charter passenger service from Anchorage, King Salmon, and Valdez.

4.2.3 Ravn Alaska

Ravn Alaska, previously owned by Corvus Airlines, provided regional airline passenger service utilizing a 34-seat de Havilland DHC-8-100 series turboprop-powered regional airliner to and from Anchorage. Ravn Alaska is currently owned by FLOAT Shuttle and does not have a scheduled flight to CDV.

4.2.4 Iliamna Air Taxi

Operating as a regional/commuter passenger and cargo service, Iliamna Air Taxi provided air taxi/charter passenger service (also referred to as air taxi service) to Homer and Iliamna utilizing a 9-seat Pilatus PC12 Single Engine Turboprop aircraft.

4.2.5 Maritime Helicopters, Inc.

Operating as an air taxi/charter passenger and freight service operator, Maritime Helicopters, Inc. provided passenger and freight service to Valdez and freight only service to Homer and Yakutat utilizing a family of 6-seat Bell helicopters. Air taxi/charter passenger service from Yakutat and freight service from Valdez, was also provided.

4.2.6 Northern Air Cargo Inc. and Lynden Air Cargo Airlines

Operating as air taxi/charter cargo airliners, Northern Air Cargo Inc. and Lynden Air Cargo Airlines both participate in the annual "fish haul". Prince William Sound Aquaculture estimated that air carriers enplane an estimated 250 tons of fish annually, from Cordova's local canneries. Northern Air Cargo Inc. provided freight service to Anchorage utilizing a Boeing 737-300 air cargo aircraft. Operating as an air taxi/charter cargo service provider, Lynden Air Cargo Airlines provided air cargo services to both Cape Yakataga and Anchorage and from Anchorage utilizing a Lockheed L100-30 Hercules air cargo aircraft. Large all-cargo aircraft also use CDV as part of the oil spill response exercises that are held twice a year.

4.2.7 Peninsula Airways, Inc.

Peninsula Airways Inc. (No longer in service) provided full-service passenger, freight and charter services. Peninsula Airways Inc. provided passenger service to Anchorage and King Salmon and from Anchorage utilizing a Saab 2000 twin-engine turboprop airliner.

4.2.8 Everts Air Cargo

Tatonduk Outfitters Limited d/b/a Everts Air Alaska and Everts Air Cargo provided air taxi /charter service utilizing MC Donnell Douglas DC-6A, DC-9-30, DC9 Super 80/MD81/82/83/88 and MD-80 air cargo aircraft to Anchorage and from Aniak and Bethel.

4.3 Approach to Forecasting Air Carrier and Air Cargo Demand

Recognizing that previous sophisticated and rigorous aviation demand forecasting studies have been conducted during the past updates of CDV's Airport Master Plans, or as a aggregated top-down approach to similar aviation activity forecasting developed as part of the Alaska Aviation System Plan, the projections of future demand for aviation activity at CDV have historically included relevant event- or factor-based considerations, that have included, but were not limited to:

- Petrochemical Exploration
- Potential for Ecotourism
- Potential for Fuel Price Escalation
- Likely Changes in Alaska Airline's Air Carrier (Life-cycle) Fleet Mix
- Levels of connecting passengers
- Military/Coast Guard Support Activities, and

- Potential for Accelerated Outmigration

The forecast (i.e., projection) of future aircraft activity at CDV as developed specifically for the update of this airport master plan takes a far less rigorous approach to the quantification of past, current, and future movements of scheduled air carrier or air taxi/charter passenger demand, related aircraft operations, air cargo volumes (freight and mail), local general aviation and itinerant military aircraft operations, and the local basing of general aviation aircraft.

4.3.1 Constraints to Aviation Activity

Unique to CDV, the forecast of aviation activity is primarily driven by, or because of the existence or prevalence of the following conditions and/or circumstances:

- Relative Location, Population and Economic Generating Industries of Cordova, Alaska, and
- Prevailing and Seasonal Weather Conditions (IMC at the airport occurs 21.22 percent of the time.)

While this update to the airport master plan will identify viable and prudent runway, taxiway and terminal apron facility development alternatives, the "existing conditions", and the forecast of aviation activity throughout the master plan's twenty-year planning horizon is predicated upon these constraints, some of which cannot be mitigated or ameliorated.

4.4 Forecast Assumptions

The development of a 20-year multi-term forecast of aviation activity for CDV includes considerations regarding past and anticipated future opportunities to provide properly-sized aircraft for the year-round and high seasonal activity of passengers, freight and mail air transport.

Because of the unique city-pair routes conducted by CDV's only CFR Part 121 operator, Alaska Airlines, using the four different Boeing 737 (B737) series of aircraft, use of airline activity data as presented by the BTS required careful attention and care. For example, BTS report activity by Alaska Airlines includes the entirety of enplaned and deplaned passengers based on the actual count of occupied seats during each arrival or departure to and from CDV, respectively. The BTS, however, does separately report, CDV-specific levels of enplaned and deplaned passengers. Because of this double reporting scenario, the use of passenger enplanement / deplanement aircraft load factors were not considered or utilized for the development of projected future aircraft departures or arrivals. Instead, based upon BTS's reporting of the historical 5-year steady-state level of passenger activity at CDV, a simplistic application of a static year-over-year growth scenario for the 20-year forecast period was utilized. It is recognized, however, that taking such a high-level and simplistic approach to forecasting passenger activity at CDV using a static annualized rate of growth would not provide for speculative assumptions regarding Alaska Airline's potential change in its relative use of the B737 family of aircraft that have historically operated at CDV over that same 5-year period.

For similar reasons of the potential change in Alaska Airline's relative use of its fleet of aircraft, or the entry of one or more additional air carriers or regional commuter airlines

could significantly affect projections of enplaned and deplaned passenger counts (by make and model of aircraft used and the associated aircraft seat configuration). Therefore, as presented in the forecast, passenger activity, aircraft activity and air cargo activity are projected forward within the 20-year forecast period utilizing static year-over-year percentile rates of annualized growth.

4.5 Historical 2019 Base Year Aircraft Operational and Passenger Activity

As shown in **Tables 4-1** through **4-4**, scheduled air carrier passenger activity is reported by aircraft arrivals and departures, passenger enplanements and deplanements, available seats, (both with all and CDV non-connecting passengers), and overall aircraft load factors. Non-commercial airline (Alaska Airline) passenger movements conducted by either regional commuter airline operators, or other providers of air taxi/charter service operating under CFR Part 135 are listed in **Tables 4-5** through **4-7**. The relatively small number of all other general aviation aircraft that were recorded as filing IFR flight plans to and from CDV are listed in **Tables 4-8** through **4-11.**

4.6 Historical Air Cargo Activity

Year-round commercial air freight and mail movements at CDV were primarily provided by Alaska Airlines as belly freight supplementing its regularly-scheduled passenger service. The airline also provided dedicated freight/mail and freight only air cargo service to accommodate demand during the Month of May as part of the annual Copper River salmon fishing season "fish haul" that runs May to July. Other outbound Alaska Airline freight only service from CDV occurred in February, April and December as demand dictated.

Other outgoing dedicated air cargo lift operations to accommodate this same seasonal demand was provided by Everts Air Cargo using McDonnell Douglas MD-80 series air cargo aircraft, Lynden Air Cargo Airlines using civilian C-130 aircraft, and Northern Air Cargo Inc. using McDonnell Douglas DC-9-10 air cargo aircraft. Alaska Central Express provides year-round freight and mail service using Beech 1900 aircraft. Air taxi/charter freight service was also provided by Maritime Helicopters, Inc. using a family of Bell and EURO BO-105 helicopters.

As reported by BTS, 2019 Base Year levels of enplaned and deplaned freight and mail as listed in **Table 4-12** (expressed in pounds) are assumed to reflect air cargo activity specific to CDV and not as connecting freight activity.

4.7 Review of General Aviation Activity

As previously discussed, general aviation activity at CDV is conducted under both CFR part 91 and CFR part 135 operating rules. For the expressed purpose of addressing general aviation operations at CDV, this forecast treats all current and projected future "local" activity generated by locally-based light single- and multi-engine propeller- driven aircraft that operate to and from other nearby Alaska community airports separately from larger private recreation and "for hire" cabin-class aircraft having far greater operating capabilities that are included within the regional air carrier activity forecasts. The forecast, therefore, assumes that general aviation activity generated by smaller locally-based general aviation

aircraft will continue to represent an important, albeit smaller segment of aviation activity at CDV.

While no published data or information is currently available for review and use, FAA's Traffic Flow Management System Counts (TFMSC) information that provided data and information regarding operations to and from CDV generated by CFR Part 91 general aviation operating to or from CDV under filed flight plans during the 2019 Base year were reviewed.

General aviation activity at CDV is primarily generated by itinerant (visiting) CFR Part 135 air taxi operators and by locally-based CFR Part 91 aircraft owner operators. For forecasting purposes, it was assumed that 32 percent of all general aviation operations were generated by itinerate (visiting) aircraft while 68 percent were generated locally within the local area, or within the airport traffic pattern. This assumed operational split was assumed to remain unchanged throughout the 20-year forecast period.

Table 4-1: 2019 Base Year
Itinerant Scheduled Air Carrier
Aircraft Operational Activity

Airliner Configuration	Arriving Aircraft	Departing Aircraft
B737-700 L/R (124 Seats)	490	490
B737-800 (159 Seats)	268	268
B737-900 (178 Seats)	2	2
B737-900 ER (178 Seats)	16	16
Total (All Aircraft)	**776**	**776**

Source: Air Carrier Statistics (Form 41 Traffic), All Carriers Database, CY 2019, Merle K (Mudhole) Smith Airport (CDV).
Compiled by Michael Baker International, Inc., December 2020.

Table 4-2: 2019 Base Year
Scheduled Air Carrier Passenger Activity (Includes connecting passengers)

Airliner Configuration	Departing Seats	Enplaned Passengers	Arriving Seats	Deplaned Passengers
B737-700 L/R (124 Seats)	54,684	23,253	54,684	22,727
B737-800 (159 Seats)	40,386	15,212	40,386	15,267
B737-900 (178 Seats)	356	101	356	97
B737-900 ER (178 Seats)	2,848	600	2,848	857
Saab 2000 (45 Seats)	90	45	90	42

Table 4-2: 2019 Base Year Scheduled Air Carrier Passenger Activity (Includes connecting passengers)				
Airliner Configuration	**Departing Seats**	**Enplaned Passengers**	**Arriving Seats**	**Deplaned Passengers**
Total (All Aircraft)	**98,364**	**39,211**	**98,364**	**38,990**

Source: Air Carrier Statistics (Form 41 Traffic), All Carriers Database, CY 2019, Merle K (Mudhole) Smith Airport (CDV).
Compiled by Michael Baker International, Inc., December 2020.

Table 4-3: 2019 Base Year Scheduled Air Carrier and Part 135 Charter Passenger Activity (Limited to originating or destination services at CDV)				
Airliner Configuration	**Departing Seats**	**Enplaned Passengers**	**Arriving Seats**	**Deplaned Passengers**
B737-700 L/R (124 Seats)	54,684	11,346	54,684	11,159
B737-800 (159 Seats)	40,386	7,422	40,386	7,496
B737-900 (178 Seats)	356	49	356	48
B737-900 ER (178 Seats)	2,848	293	2,848	420
BEECH 1900 (16 Seats)	160	88	160	52
DCH-8-100 (33 Seats)	66	-	66	31
PILATUS PC6A (6 Seats)	18	3	18	-
Saab 2000 (45 Seats)	90	45	90	42
BELL BHT 407 (4-6 Seats)	16	3	10	1
Total (All Aircraft)	**98,624**	**19,249**	**98,618**	**19,249**

Source: Air Carrier Statistics (Form 41 Traffic), All Carriers Database, CY 2019, Merle K (Mudhole) Smith Airport (CDV).
Compiled by Michael Baker International, Inc., December 2020.

Table 4-4: 2019 Base Year Itinerant Scheduled Air Carrier Passenger Load Factors (Includes air carrier connecting passengers)		
Airliner Configuration	**Deplaned**	**Enplaned**
B737-700 L/R (124 Seats)	41.56%	42.52%
B737-800 (159 Seats)	37.80%	37.67%
B737-900 (178 Seats)	27.25%	28.37%
B737-900 ER (178 Seats)	30.09%	21.07%

Source: Air Carrier Statistics (Form 41 Traffic), All Carriers Database, CY 2019, Merle K (Mudhole) Smith Airport (CDV).
Compiled by Michael Baker International, Inc., December 2020.

Table 4-5: 2019 Base Year General Aviation CFR Part 135 Air Taxi / Charter Aircraft Operational Activity		
Aircraft Seats Available	**Arriving Aircraft**	**Departing Aircraft**
BEECH 1900 (16 Seats)	10	10
BEECH 1900 (Cargo Only)	262	262
DCH-8-100 (33 Seats)	2	2
PILATUS PC6A (6 Seats)	2	3
BELL BHT 407 (4-6 Seats)	1	3
Total	**277**	**280**

Source: Air Carrier Statistics (Form 41 Traffic), All Carriers Database, CY 2015 through 2019, Merle K (Mudhole) Smith Airport (CDV).
Note: Discrepancies between arrival and departure counts due to BTS reporting discrepancies.
Compiled by Michael Baker International, Inc., December 2020.

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Table 4-6: 2019 Base Year
General Aviation CFR Part 135
Air Taxi / Charter Passenger Activity

Aircraft Seats Available	Arriving Seats	Deplaned Passengers	Departing Seats	Enplaned Passengers
BEECH 1900 (16 Seats)	160	52	160	88
DCH-8-100 (33 Seats)	66	31	66	-
PILATUS PC6A (6 Seats)	18	-	18	3
BELL BHT 407 (4-6 Seats)	10	1	16	3
Total	**254**	**84**	**280**	**94**

Source: Air Carrier Statistics (Form 41 Traffic), All Carriers Database, CY 2019, Merle K (Mudhole) Smith Airport (CDV).
Compiled by Michael Baker International, Inc., December 2020.

Table 4-7: 2019 Base Year
General Aviation CFR Part 135
Air Taxi / Charter Passenger Load Factors

Aircraft Seats Available	Deplaned	Enplaned
BEECH 1900 (16 Seats)	32.50%	55.00%
DCH-8-100 (33 Seats)	47.00%	00.00%
PILATUS PC6A (6 Seats)	00.00%	16.70%
BELL BHT 407 (4-6 Seats)	10.00%	18.75%

Source: Air Carrier Statistics (Form 41 Traffic), All Carriers Database, CY 2019, Merle K (Mudhole) Smith Airport (CDV).
Compiled by Michael Baker International, Inc., December 2020.

Table 4-8: 2019 Base Year
Itinerant CFR Part 91
IFR-Filed Aircraft Operational Activity

Landings and Takeoffs	Arriving Aircraft	Departing Aircraft
All Aircraft Types and Sizes	108	108

Source: FAA TFMSC Database CY 2019, Merle K (Mudhole) Smith Airport (CDV)
Notes:

1. *Limited to Makes and Models of general aviation aircraft not historically providing Regional Commuter and/or Air Taxi/Charter Operations to or from CDV.*
2. *Does not reflect activity by locally-based small light single- and multi-engine CFR Part 91 general aviation aircraft.*

Compiled by Michael Baker International, Inc., December 2020.

Table 4-9: 2019 Base Year
Itinerant CFR Part 91
IFR-Filed General Aviation Passenger Activity

	Arriving Seats	Deplaned Passengers	Departing Seats	Enplaned Passengers
All Aircraft Types and Sizes	413	277	413	277

Source: FAA TFMSC Database CY 2019, Merle K (Mudhole) Smith Airport (CDV)

Note: Limited to Makes and Models of general aviation aircraft not historically providing Regional Commuter and/or Air Taxi/Charter Operations to or from CDV. Does not reflect activity by locally-based small light single- and multi-engine general aviation aircraft.

Aircraft/Passenger Load Factors assumed and held constant (67 percent) for all operations.

Compiled by Michael Baker International, Inc., December 2020.

Table 4-10: 2019 Base Year
Itinerant CFR Part 91
General Aviation Passenger Load Factors

	Deplaned	Enplaned
All Aircraft Types and Sizes	67.07%	67.07%

Source: FAA TFMSC Database CY 2015-2019, Merle K (Mudhole) Smith Airport (CDV)

Note: Aircraft/Passenger Load Factors assumed and held constant.

Does not reflect activity by locally-based small light single- and multi-engine CFR part 91 general aviation aircraft.

Compiled by Michael Baker International, Inc., December 2020.

Table 4-11: 2019 Base Year
Air Cargo Freight Activity

	Deplaned (Pounds)	Enplaned Freight (Pounds)
All Aircraft Types and Sizes	2,186,919	2,757,629

Source: Air Carrier Statistics (Form 41 Traffic), All Carriers Database, CY 2019, Merle K (Mudhole) Smith Airport (CDV).

Compiled by Michael Baker International, Inc., December 2020.

Table 4-12: 2019 Base Year
Air Cargo Mail Activity

	Deplaned Mail (Pounds)	Enplaned Mail (Pounds)
All Aircraft Types and Sizes	529,243	232,976

Source: Air Carrier Statistics (Form 41 Traffic), All Carriers Database, CY 2019, Merle K (Mudhole) Smith Airport (CDV).

Compiled by Michael Baker International, Inc., December 2020.

4.8 Review of Military Activity

Each year during the six months of May through October, a single US Coast Guard (USCG) MH-60 Jayhawk helicopter and crew temporarily forward deploys from Air Station Kodiak to operate at Cordova. During this period, the crews operate seven days per week typically conducting three to five sorties per day in the Gulf of Alaska and Prince William Sound to provide better response times and coverage to remote regions of Alaska during periods of increased maritime activity. Other functions include law enforcement patrol and logistic support to other units in the area. The US Coast Guard has a single hangar facility and adjacent ramp to support their mission to support the fishing fleet providing search and rescue assistance when needed. The Coast Guard at CDV provides fuel to transient military aircraft that stop at CDV about once a month. Supplies are delivered to the Coast Guard base by C-130 aircraft about twice per week in fishing season and once per month off-season. Military operations at CDV are primarily related to USCG's role in providing maritime and air support missions. Based upon the role and function of the USCG operations, it was assumed that, on average, approximately 1,820 MH-60 Jayhawk helicopter operations are generated during that 6-month deployment period to and from CDV.

Referencing the FAA's 2019 calendar year TFMSC data, 114 C-130, 6 K35R - Boeing KC-135 Stratotanker and 34 C17 - Boeing Globemaster fixed wing aircraft operations were recorded. The TFMSC captured only eight operations generated by the USCG's H60 - Sikorsky SH-60 Seahawk during that same period. It is likely that the USCG operations are not fully recorded within the TFMSC and were, therefore, undercounted.

4.9 Review of Local Based Aircraft Levels

For the 2019 Base Year, the 29 aircraft reported as being based at CDV comprised 27 single-engine fixed-wing and 2 helicopter rotor-wing aircraft. A review of the FAA's TAF for CDV gives indication that the number of locally-based aircraft has remained stable between 29 and 30 aircraft over the past ten years. It is anticipated that the number of based aircraft would likely increase as new aircraft hangar storage facilities are developed.

4.10 Summary of 2019 Base Year Aviation Activity

The entirety of BTS-reported passenger, freight, mail transport, general aviation, military activity, air carrier as generated by Alaska Airlines (includes connecting enplaned and deplaned) and all other CFR Part 135 operators for the Base Year 2019 is listed in **Tables 4-13** and **4-14**. The number of listed arrival or departure operations generated by each respective make and model of the Alaska Airlines B737 series varies between the two tables. This reflects the fact that when reporting passenger enplanements and deplanements, BTS includes the number of available seats. When these aircraft are used to transport freight and/or mail exclusively, seat availability values are not provided. Therefore, the actual number of available seats per aircraft make and model are listed in **Table 4-14** only.

4.11 Review of FAA Terminal Area Forecast

The FAA's February 2020 release of its Terminal Area Forecast (TAF) for CDV was inspected for possible use in developing a forecast of aircraft operational activity for the 20-year forecast period and is shown in **Table 4-15**. As is evident, all but historical reporting of past air carrier and air taxi passenger enplanements were presented at static levels for both historical periods and through the year 2045 and was, therefore, considered to offer no significant or meaningful information for the immediate need to update the master plan forecast. This information, however, will be later compared to this forecast as part of the FAA's forecast of aviation activity review and approval process.

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Table 4-13: 2019 Base Year Scheduled Air Carrier and CFR Part 135 Charter Activity						
Commercial Airline / Charter	**Aircraft Operations**	**Seats**	**Passenger Movements**	**Load Factor**	**Freight**	**Mail**
Enplanements						
Alaska Airlines Inc. Scheduled Part 121 Air Carrier B737-700 L/R	490	54,684	23,253	43.00%	1,337,834	78,359
Alaska Airlines Inc. Scheduled Part 121 Air Carrier B737-800	268	40,386	15,212	38.00%	829,082	46,606
Alaska Airlines Inc. Scheduled Part 121 Air Carrier B737-900	2	356	101	28.00%	16,696	355
Alaska Airlines Inc. Scheduled Part 121 Air Carrier B737-900 ER	16	2,848	600	21.00%	20,274	3,834
Alaska Central Express Scheduled Cargo/Charter (16 Seats) Passenger	272	160	88	55.00%	94,943	103,705
Corvus Airlines, Inc d/b/a Era Aviation d/b/a Ravn Alaska Regional Commuter (33 Seats)	2	66	0	0.00	0	0
Iliamna Air Taxi /Charter (9 Seats)	2	18	3	17.00%	0	0
Lynden Air Cargo Airlines Dedicated Freight Charter	2	0	0	0.00	62,299	0
Maritime Helicopters, Inc. Air Taxi/Charter (4-5 Seats)	3	16	3	19.00%	50	0
Peninsula Airways Inc Regional Commuter Saab 2000 (45 Seats)	2	90	45	50.00%	0	0
Tatonduk Outfitters Limited d/b/a Everts Air Alaska and Everts Air Cargo	13	0	0	0.00%	366,371	117
Northern Air Cargo Inc.	1	0	0	0.00%	29,780	0
Deplanements						
Alaska Airlines Inc. Scheduled Part 121 Air Carrier B737-700 L/R	490	54,684	22,727	42.00%	1,296,727	78,603

Table 4-13: 2019 Base Year
Scheduled Air Carrier and CFR Part 135 Charter Activity

Commercial Airline / Charter	Aircraft Operations	Seats	Passenger Movements	Load Factor	Freight	Mail
Alaska Airlines Inc. Scheduled Part 121 Air Carrier B737-800	268	40,386	15,267	38.00%	671,682	45,936
Alaska Airlines Inc. Scheduled Part 121 Air Carrier B737-900	2	356	97	27.00%	6,258	337
Alaska Airlines Inc. Scheduled Part 121 Air Carrier B737-900 ER	16	2,848	857	30.00%	23,489	3,862
Alaska Central Express Scheduled Cargo/Charter (16 Seats) Passenger	272	160	52	33.00%	163,055	400,388
Corvus Airlines, Inc d/b/a Era Aviation d/b/a Ravn Alaska Regional Commuter (33 Seats)	2	66	31	47.00%	0	0
Iliamna Air Taxi/Charter (9 Seats)	2	18	0	0.00%	0	0
Lynden Air Cargo Airlines Dedicated Freight Charter	2	0	0	0.00%	2,139	0
Maritime Helicopters, Inc. Air Taxi/Charter (4-5 Seats)	2	10	1	10.00%	50	0
Peninsula Airways Inc. Regional Commuter Saab 2000 (45 Seats)	2	90	42	47.00%	0	0
Tatonduk Outfitters Limited d/b/a Everts Air Alaska and Everts Air Cargo	15	0	0	0.00%	23,519	117

Source: Air Carrier Statistics (Form 41 Traffic), All Carriers Database, CY 2019, Merle K (Mudhole) Smith Airport (CDV).
Compiled by Michael Baker International, Inc., December 2020.

Table 4-14: 2019 Base Year Aviation Activity Summary					
Scheduled Air Carrier					
Item	Operations	Seats	Average Seats (Seats ÷ Operations)	Passengers	Load Factor (Passengers ÷ Seats)
Arrival/Passenger Deplanement Factors					
B737-700 L/R (124 Seats)	441	54,684	124	22,727	41.56%
B737-800 (159 Seats)	254	40,386	159	15,267	37.80%
B737-900 (178 Seats)	2	356	178	97	27.25%
B737-900 ER (178 Seats)	16	2,848	178	857	30.01%
Total All Air Carrier Aircraft	**776**	**98,274**	**Not Calculated**	**38,948**	**39.63%**
Departure/Passenger Enplanement Factors					
B737-700 L/R (124 Seats)	441	54,684	124	23,253	42.52%
B737-800 (159 Seats)	254	40,386	159	15,212	37.67%
B737-900 (178 Seats)	2	356	178	101	28.37%
B737-900 ER (178 Seats)	16	2,848	178	600	21.07%
Total All Air Carrier Aircraft	**776**	**98,274**	**Not Calculated**	**39,166**	**39.85%**

Source: BTS T-100 Domestic Segment Database
Note: Limited to CY 2019 Scheduled Regional Commuter Airline Operators Reporting Passenger Enplanements/ Deplanements, Merle K (Mudhole) Smith Airport (CDV).
Compiled by Michael Baker International, Inc., December 2020

Table 4-14: 2019 Base Year Aviation Activity Summary					
CFR Part 135 General Aviation Air Taxi/Charter					
Item	Operations	Seats	Average Seats (Seats ÷ Operations)	Passengers	Load Factor (Passengers ÷ Seats)
Arrival/Passenger Deplanement Factors					
BEECH 1900 (16 Seats)	10	160	16	52	32.50%
DCH-8-100 (33 Seats)	2	66	33	31	47.00%
PILATUS PC6A (6 Seats)	2	18	9	0	00.00%
BELL BHT 407 (4-6 Seats)	2	10	5	1	10.00%
Total	**16**	**254**	**63**	**84**	**33.07%**
Departure/Passenger Enplanement Factors					
BEECH 1900 (16 Seats)	10	160	16	88	55.00%
DCH-8-100 (33 Seats)	2	66	33	0	00.00
PILATUS PC6A (6 Seats)	2	18	6	3	16.67%
BELL BHT 407 (4-6 Seats)	3	16	5	3	18.75%
Total	**17**	**260**	**60**	**94**	**36.15%**
Total CFR Part 135 Air Taxi/Charter Factors					
Total	**33**	**514**	**123**	**178**	**34.63%**
CFR Part 121 and Part 135 Air Cargo (Dedicated and Belly)					
Item		Operations (Freight and/or Mail)		Freight (Pounds)	
Inbound/Deplaned					
Freight		326		2,186,919	
Mail				529,243	

Table 4-14: 2019 Base Year Aviation Activity Summary		
Outbound/Enplaned		
Freight	341	2,757,629
Mail		232,976

Source: BTS T-100 Domestic Segment database
Note: Limited to CY 2019 Scheduled Regional Commuter and CFR Part 135 Charter operators reporting Freight and /or Mail, Merle K (Mudhole) Smith Airport (CDV)l.
Compiled by Michael Baker International, Inc., December 2020

Itinerant / Local Military	
Item	**Operations**
Itinerant Operations / % of Total	2,004 / 100.00%
Local Operations / % of Total	0 / 0.00%
Total Operations	**2,004 / 100.00%**

Sources: Traffic Flow Management System Counts (TFMSC), Aviation System Performance Metrics (ASPM), CY 2019 Merle K (Mudhole) Smith Airport (CDV)
Interview of USCG at CDV during typical 6-month deployment
Compiled by Michael Baker International, Inc., December 2020.

CFR Part 91 General Aviation	
Item	**Operations**
Itinerant and Local Operations	
Itinerant Operations / % of Total	1,900 / 31.67%
Local Operations / % of Total	4,100 / 68.33%
Total Operations	**6,000**
Operations by Aircraft Type (Itinerant and Local)	
Single-Engine Piston	3,900 / 65.00%
Multi-Engine Piston	600 / 10.00%
Turboprop	600/ 10.00%

Table 4-14: 2019 Base Year Aviation Activity Summary	
Light Cabin-Class Jet	600 / 10.00%
Helicopter	300 /5.00%
Total Operations	**6,000/100**.00%
Based Aircraft by Type	
Single-Engine Piston	27
Multi-Engine Piston	0
Turboprop	0
Jet	0
Helicopter	2
Ultralight	0
Total Based Aircraft	**29**

Source: Number and split between Local / Itinerant General Aviation operations at Merle K (Mudhole) Smith Airport (CDV) Estimated by Michael Baker International, December 2020

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Table 4-15: FAA 2019 Terminal Area Forecast
Merle K (Mudhole) Smith Airport

Year	Enplanements		Itinerant (IT) Activity						Local (LOC) Activity				Total Operations
	Air Carrier	Air Taxi	Air Carrier	Air Taxi	GA	Military	IT Total	% Total	Civil	Military	LOC Total	% Total	
2000	11,096	8,484	2,300	1,500	2,000	1,000	6,800	60.18%	4,500	0	4,500	39.82%	11,300
2001	11,561	5,967	2,300	1,500	2,000	1,000	6,800	60.18%	4,500	0	4,500	39.82%	11,300
2002	13,992	2,839	2,300	1,500	2,000	1,000	6,800	60.18%	4,500	0	4,500	39.82%	11,300
2003	10,167	9,144	2,300	1,500	2,000	1,000	6,800	60.18%	4,500	0	4,500	39.82%	11,300
2004	9,983	9,343	2,300	1,500	2,000	1,000	6,800	60.18%	4,500	0	4,500	39.82%	11,300
2005	11,236	8,725	2,490	4,000	2,000	1,000	9,490	67.83%	4,500	0	4,500	32.17%	13,990
2006	10,953	6,883	2,490	4,000	2,000	1,000	9,490	67.83%	4,500	0	4,500	32.17%	13,990
2007	11,179	5,326	2,490	4,000	2,000	1,000	9,490	67.83%	4,500	0	4,500	32.17%	13,990
2008	10,631	6,325	2,490	4,000	2,000	1,000	9,490	67.83%	4,500	0	4,500	32.17%	13,990
2009	10,431	4,947	2,490	4,000	2,000	1,000	9,490	67.83%	4,500	0	4,500	32.17%	13,990
2010	12,106	5,107	2,540	4,000	2,000	1,000	9,540	67.95%	4,500	0	4,500	32.05%	14,040
2011	12,484	5,476	2,540	4,000	2,000	1,000	9,540	67.95%	4,500	0	4,500	32.05%	14,040
2012	12,551	4,179	2,540	4,000	2,000	1,000	9,540	67.95%	4,500	0	4,500	32.05%	14,040
2013	11,724	3,658	2,540	4,100	1,855	1,010	9,505	69.86%	4,100	0	4,100	30.14%	13,605
2014	11,775	3,011	2,540	4,100	1,855	1,010	9,505	69.86%	4,100	0	4,100	30.14%	13,605
2015	13,127	3,481	2,540	4,100	1,855	1,010	9,505	69.86%	4,100	0	4,100	30.14%	13,605
2016	13,805	4,731	2,540	4,100	1,855	1,010	9,505	69.86%	4,100	0	4,100	30.14%	13,605
2017	13,699	4,447	2,540	4,100	1,855	1,010	9,505	69.86%	4,100	0	4,100	30.14%	13,605
2018	17,455	241	2,540	4,100	1,855	1,010	9,505	69.86%	4,100	0	4,100	30.14%	13,605
2019	17,992	59	2,540	4,100	1,855	1,010	9,505	69.86%	4,100	0	4,100	30.14%	13,605

Table 4-15: FAA 2019 Terminal Area Forecast
Merle K (Mudhole) Smith Airport

Year	Enplanements		Itinerant (IT) Activity						Local (LOC) Activity				Total Operations
	Air Carrier	Air Taxi	Air Carrier	Air Taxi	GA	Military	IT Total	% Total	Civil	Military	LOC Total	% Total	
CAAGR 2000-2019	2.58%		0.52%	5.43%	-0.40%		0.05%	-0.49%	-0.49%	0	-0.49%		0.98%

Sources: FAA 2019 Terminal Area Forecast for Merle K (Mudhole) Smith Airport (CDV), Issued January 2020
Compiled by Michael Baker International, Inc., December 2020.

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4.12 Forecast of Air Carrier Passenger Movements

As previously discussed in Section 4-4, and shown in **Table 4-16**, BTS reports passenger enplanement/deplanement activity for Alaska Airlines based on the actual number enplaned and deplaned passengers that are on each aircraft when arriving or departing. To derive the net count of passengers specific to CDV, a 5-year historical review of BTS-reported data for CDV that reported enplanement / deplanement levels for all passengers, and for passengers originating and deplaning at CDV when utilizing Alaska Airline's B737-700L/R or B737-800 series aircraft represent approximately 98 percent of total lift capacity at CDV. That review indicated, the non-connecting share of respective enplanement and deplanements at CDV, was, on average, approximately 49 percent of all passengers and is shown in **Table 4-17**. As reported by BTS for the five-year period 2015 through 2019, originating CDV passenger arrival activity was robust at a Compound Average Annual Growth Rate (CAAGR) of 7.88 percent, while passenger departure activity from CDV increased at a CAAGR of 5.41 percent. Collectively, these reported passenger movements at CDV were higher than a comparative 5.5 percent as reported by the FAA's for system-wide domestic passenger movements.

A review and inspection of the FAA's *Aerospace Forecast for Fiscal years 2020-2040* confirms that similar robust year-over-year passenger movement occurred system-wide for that same period, however, the FAA's Aerospace Forecast 20-year outlook indicates a more conservative anticipated future annualize rate of passenger movement growth that has a CAAGR averaging approximately 2 percent.

Following the FAA's forecasting assumptions, annualized year-over-year growth passenger enplanement and deplanement levels at CDV was projected to increase annually at a rate of 2 percent throughout the Master Plan's 20-year forecast period.

4.13 Forecast of Air Taxi/Charter Passenger Movements

As shown in **Table 4-18**, the forecast of CFR Part 135 general aviation air taxi/charter passenger movements (enplanements and deplanements) was projected to increase annually at a slightly more aggressive rate of 5.5 percent throughout the 20-year forecast period. This demand will most likely vary over time as demand for air taxi/charter service to and from CDV dictates.

4.14 Forecast of Air Carrier Operations

As shown in **Table 4-19**, the forecast of air carrier CFR Part 121 operations was projected to increase annually at rate of 1 percent throughout the 20-year forecast period.

4.15 Forecast of Air Taxi/Charter Operations

As shown in **Table 4-20**, the forecast of air carrier CFR Part 135 air taxi/charter operations was projected to increase annually at a similar rate of 1 percent throughout the 20-year forecast period. This demand will most likely vary over time as demand for on-demand (air taxi/charter) service to and from CDV dictates.

4.16 Forecast of Air Cargo Freight Movements

The forecasts of total weight (in pounds) of freight and mail as collectively carried by CFR Part 121 and Part 135 operators are listed in **Tables 4-21** and **4-22**, respectively, and are each projected to similarly increase annually at a similar rate of 1 percent throughout the 20-year forecast period.

4.17 Forecast of General Aviation Operations

The forecasts of CFR Part 91 general aviation operations by year, by aircraft type, and by type of itinerant or local operation are listed in **Tables 4-23, 4-24, and 4-25**, respectively, and are projected to increase annually at a similar rate of just over 1 percent throughout the 20-year forecast period.

Table 4-16: Forecast of Part 121 Air Carrier Passenger Movements (With Connecting Enplanements/Deplanements)

Aircraft	Enplanements	Deplanements	Total
2019			
B737-700 L/R (124 Seats)	23,253	22,727	45,980
B737-800 (159 Seats)	15,212	15,267	30,479
B737-900 (178 Seats)	101	97	198
B737-900 ER (178 Seats)	600	857	1,457
Total	**39,166**	**38,948**	**78,114**
2024			
B737-700 L/R (124 Seats)	25,673	25,092	50,765
B737-800 (159 Seats)	16,795	16,856	33,651
B737-900 (178 Seats)	112	107	219
B737-900 ER (178 Seats)	662	946	1,608
Total	**43,242**	**43,001**	**86,243**
2029			
B737-700 L/R (124 Seats)	28,345	27,704	56,049
B737-800 (159 Seats)	18,543	186,10	37,153
B737-900 (178 Seats)	123	118	241
B737-900 ER (178 Seats)	731	1,045	1,776
Total	**47,742**	**47,477**	**95,219**
2034			
B737-700 L/R (124 Seats)	31,295	30,588	61,883
B737-800 (159 Seats)	20,473	20,547	41,020
B737-900 (178 Seats)	136	131	267

Table 4-16: Forecast of Part 121 Air Carrier Passenger Movements (With Connecting Enplanements/Deplanements)			
Aircraft	**Enplanements**	**Deplanements**	**Total**
B737-900 ER (178 Seats)	808	1,153	1,961
Total	**52,712**	**52,419**	**105,131**
2039			
B737-700 L/R (124 Seats)	34,553	33,771	68,324
B737-800 (159 Seats)	22,604	22,686	45,290
B737-900 (178 Seats)	150	144	294
B737-900 ER (178 Seats)	892	1,273	2,165
Total	**58,199**	**57,874**	**116,073**
CAAGR 2019-2039	**2.00%**	**2.00%**	**2.00%**

Source: Michael Baker International, Inc., December 2020

Table 4-17: Forecast of Part 121 Air Carrier Passenger Movements (CDV Proportional Share ~49% of Total Enplanements/Deplanements)			
Aircraft	**Enplanements**	**Deplanements**	**Total**
2019			
B737-700 L/R (124 Seats)	11,346	11,159	22,505
B737-800 (159 Seats)	7,422	7,496	14,918
B737-900 (178 Seats)	49	48	97
B737-900 ER (178 Seats)	293	420	713
Total	19,061	**19,123**	**38,223**
2024			
B737-700 L/R (124 Seats)	12,600	12,400	25,000
B737-800 (159 Seats)	8,300	8,300	41,600
B737-900 (178 Seats)	55	55	110
B737-900 ER (178 Seats)	330	330	660
Total	**21,285**	**21,085**	**43,370**
2029			
B737-700 L/R (124 Seats)	13,950	13,700	27,650
B737-800 (159 Seats)	9,200	9,200	18,400
B737-900 (178 Seats)	60	60	120
B737-900 ER (178 Seats)	365	365	730
Total	**23,575**	**23,325**	**46,900**

Table 4-17: Forecast of Part 121 Air Carrier Passenger Movements (CDV Proportional Share ~49% of Total Enplanements/Deplanements)			
2034			
B737-700 L/R (124 Seats)	15,400	15,150	30,550
B737-800 (159 Seats)	10,500	10,150	20,650
B737-900 (178 Seats)	70	70	140
B737-900 ER (178 Seats)	405	410	815
Total	**26,375**	**25,780**	**52,155**
2039			
B737-700 L/R (124 Seats)	17,000	16,750	33,750
B737-800 (159 Seats)	11,600	1,200	23,800
B737-900 (178 Seats)	80	80	160
B737-900 ER (178 Seats)	450	450	900
Total	**29,130**	**29,480**	**58,610**
CAAGR 2019-2039	**2.14%**	**2.19%**	**2.16%**

Source: Michael Baker International, Inc., December 2020

Note: CDV originating and deplaning values based on 2019 actual proportional split between all connecting enplanements/deplanements and CDV actual of (approximately) 49 percent. Future enplaned/deplaned values calculated rounded upward.

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Table 4-18: Forecast of CFR Part 135 General Aviation Air Taxi/Charter Passenger Movements			
Aircraft	**Enplanements**	**Deplanements**	**Total**
2019			
BEECH 1900 (16 Seats)	88	52	140
DCH-8-100 (33 Seats)	0	31	31
PILATUS PC6A (6 Seats)	3	-	3
BELL BHT 407 (4-6 Seats)	3	1	4
Total	**94**	**84**	**178**
2024			
BEECH 1900 (16 Seats)	110	60	170
DCH-8-100 (33 Seats)	5	35	40
PILATUS PC6A (6 Seats)	5	5	10
BELL BHT 407 (4-6 Seats)	5	5	10
Total	**125**	**105**	**230**
2029			
BEECH 1900 (16 Seats)	125	70	195
DCH-8-100 (33 Seats)	10	40	50
PILATUS PC6A (6 Seats)	10	10	20
BELL BHT 407 (4-6 Seats)	10	10	20
Total	**155**	**130**	**285**
2034			
BEECH 1900 (16 Seats)	140	80	220
DCH-8-100 (33 Seats)	15	50	65
PILATUS PC6A (6 Seats)	15	15	30
BELL BHT 407 (4-6 Seats)	15	15	30
Total	**185**	**160**	**345**
2039			
BEECH 1900 (16 Seats)	160	90	250
DCH-8-100 (33 Seats)	20	60	80
PILATUS PC6A (6 Seats)	20	20	40
BELL BHT 407 (4-6 Seats)	20	20	40
Total	**220**	**190**	**410**
CAAGR 2019-2039	**4.69%**	**6.69%**	**5.52%**

Source: Michael Baker International, Inc., December 2020

Table 4-19: Forecast of Air Carrier CFR Part 121 Operations			
Year	**Departures**	**Arrivals**	**Total**
2019	776	776	1,552
2024	815	815	1,630
2029	856	856	1,712
2034	900	900	1,800
2039	946	946	1,892
CAAGR 2019-2039	**1.00%**	**1.00%**	**1.00%**

Source: Michael Baker International, Inc., December 2020

Table 4-20: Forecast of General Aviation CFR Part 135 Air Taxi/Charter Operations			
Year	**Departures**	**Arrivals**	**Total**
2019	297	297	594
2024	312	312	624
2029	328	328	656
2034	345	345	690
2039	362	362	724
CAAGR 2019-2039	**1.00%**	**1.00%**	**1.00%**

Source: Michael Baker International, Inc., December 2020

Table 4-21: Forecast of Part 135 and 121 Air Cargo Freight Movements (Pounds)			
Year	**Deplanements**	**Enplanements**	**Total**
2019	2,186,919	2,757,329	4,944,548
2024	2,298,474	2,898,296	5,196,770
2029	2,415,719	3,046,138	5,461,857
2034	2,538,945	3,201,522	5,740,467
2039	2,668,457	3,364,831	6,033,288
CAAGR 2019-2039	**1.00%**	**1.00%**	**1.00%**

Source: Michael Baker International, Inc., December 2020

Table 4-22: Forecast of Parts 135 and 121 Air Cargo Mail Movements (Pounds)			
Year	Enplanements	Deplanements	Total
2019	233,016	529,243	762,219
2024	244,860	556,240	801,100
2029	257,350	584,614	841,964
2034	270,478	614,435	884,913
2039	284,275	645,777	930,052
CAAGR 2019-2039	**1.00%**	**1.00%**	**1.00%**

Source: Michael Baker International, Inc., December 2020

Table 4-23: Forecast of CFR Part 91 General Aviation Operations			
Year	Departures	Arrivals	Total
2019	3,000	3,000	6,000
2024	3,200	3,200	6,400
2029	3,400	3,400	6,800
2034	3,600	3,600	7,200
2039	3,800	3,800	7,600
CAAGR 2019-2039	**1.19%**	**1.19%**	**1.19%**

Source: Michael Baker International, Inc., December 2020

Table 4-24: Forecast of CFR Part 91 General Aviation Operations by Aircraft Type						
Year	Single-Engine Piston	Multi-Engine Piston	Turboprop	Jet	Helicopter	Total GA Operations
2019	5,280	120	300	300	180	6,000
2024	5,440	128	320	320	192	6,400
2029	5,780	136	340	340	204	6,800
2034	6,120	144	360	360	216	7,200
2039	6,460	152	380	380	228	7,600
CAAGR 2019-2039	**1.01%**	**1.19%**	**1.19%**	**1.19%**	**1.19%**	**1.19%**

Source: Michael Baker International, Inc., December 2020

Table 4-25: Forecast of Local/Itinerant CFR Part 91 General Aviation Operations					
Year	Itinerant (IT)		Local (LOC)		Total GA Operations
	Operations	% Total	Operations	% Total	
2019	1,920	32.00	4,080	68.00	6,000
2024	2,048	32.00	4,352	68.00	6,400
2029	2,176	32.00	4,624	68.00	6,800
2034	2,3,04	32.00	4,896	68.00	7,200
2039	2,432	32.00	5,168	68.00	7,600
CAAGR 2019-2039	**1.19%**	-	**1.19%**	-	**1.19%**

Source: Michael Baker International, Inc., December 2020.

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4.18 Forecast of Military Operations

The forecasts of both itinerant and local military operations by year is listed in **Table 4-26**. Because CDV does not operate as one of the nation's 21 Joint Use Airports, federal law does not allow FAA to consider forecasts of aviation activity that would be part and parcel of airport facility improvement considerations that, by nature of the project or improvement, may potentially solely benefit another federal agency (e.g., the Department of Defense). Therefore, based upon FAA guidance regarding the forecast of military activity at civilian airports, the USCG-reported number of 2019 calendar year military operations as reported by the TFMSC and though assume sorties to and from CDV were held constant at 2,000 total operations per year (i.e., 180 itinerant and 1,820 local annual operations) throughout the 20-year forecast period.

4.19 Forecast Summary of Combined Operations

A forecast summary of combined aircraft operations is listed in **Table 4-27**.

4.20 Forecast Based Aircraft

The forecast of locally-based CFR Part 91 general aviation aircraft is shown in **Table 4-28** by aircraft type. Collectively, the total number of based aircraft is projected to increase annually at a rate of almost 3 percent throughout the 20-year forecast period.

4.21 Forecast of Aircraft Operational Peaking Characteristics

The derivative peaking forecast of aircraft operational activity is used to determine terminal area, apron and landside improvements space and related protection needs during the 20-year planning period at CDV. Peaking forecasts as defined below were identified for operations to evaluate whether the airport's infrastructure will require improvements. The operational peaking forecasts for all operations were developed using the procedures outlined below and are summarized in **Table 4-29.**

- Average Peak Month (APM) – Through a review of historical activity records, it was found that the APM represented 10.0 percent of annual activity in 2019 (the peak aircraft operational activity occurred in July).
- Average Day Peak Month (ADPM) – For 2019, activity data was pulled for the 31 days of the month of July.
- Average Day Peak Hour (ADPH) – The ADPH was estimated at approximately 15 percent of the ADPM. The itinerant and local peak hours were also calculated based on the same percentage of their respective peak day forecast.

It is anticipated that itinerant terminal apron area space demand will become critical during the 20-year forecast period that would likely be associated with anticipated future increased simultaneous peak hour demand by larger itinerant air carrier and air cargo operators.

Table 4-26: Forecast of Local/Itinerant Military Operations					
Year	Itinerant (IT)		Local (LOC)		Total Military Operations
	Operations	% Total	Operations	% Total	
2019	180	9.00	1,820	91.00	2,000
2024	180	9.00	1,820	91.00	2,000
2029	180	9.00	1,820	91.00	2,000
2034	180	9.00	1,820	91.00	2,000
2039	180	9.00	1,820	91.00	2,000
CAAGR 2019-2039	0.00%	-	0.00%	-	0.00%

Source: Michael Baker International, Inc., December 2020.

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Table 4-27: Forecast of Combined Aircraft Operations

Year	Itinerant (IT)						Local (LOC)				Total Operations
	CFR Part 121 Air Carrier	CFR Part 135 Air Taxi/Charter	CFR Part 91 General Aviation	Military	Total	Percent	Military	CFR Part 91 Local General Aviation	Total	Percent	
2019	1,552	594	1,920	180	4,246	41.85	1,820	4,080	5,900	58.15	10,146
2024	1,630	624	2,048	180	4,482	42.07	1,820	4,352	6,172	57.93	10,654
2029	1,712	652	2,176	180	4,720	42.28	1,820	4,624	6,444	57.72	11,164
2034	1,800	690	2,304	180	4,974	42.55	1,820	4,896	6,716	57.45	11,690
2039	1,892	724	2,432	180	5,228	42.80	1,820	5,168	6,988	57.20	12,216
CAAGR 2019-2039	**1.00%**	**0.99%**	**1.19%**	**0.00%**	**1.05%**	-	**0.00%**	**1.19%**	**0.85%**	-	**0.93%**

Compiled by Michael Baker International, Inc., December 2020.

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Table 4-28: Forecast of Based Aircraft by Type							
Year	Single-Engine Piston	Multi-Engine Piston	Turboprop	Jet	Helicopter	Ultra-Light	Total GA Based Aircraft
2019	25	0	0	0	2	0	27
2024	27	1	1	1	2	0	32
2029	29	1	1	1	3	0	35
2034	31	2	3	2	3	0	41
2039	33	2	4	2	4	0	46
CAAGR 2019-2039	**1.40%**				**3.52%**	**0.00%**	**2.70%**

Source: FAA Master Record - Merle K (Mudhole) Smith Airport (CDV)
Compiled by Michael Baker International, Inc., December 2020.

Table 4-29: Forecast of Aircraft Operations Peaking				
Year	Total Operations	Peak Month (July 10%)	ADPM	ADPH (15% of ADPM)
2019	10,146	1,015	32.74	5
2024	10,654	1,065	34.35	5
2029	11,164	1,116	36.00	5
2034	11,690	1,169	37.71	6
2039	12,216	1,222	39.42	6
CAAGR 2019-2039	**0.93%**	**0.93%**	**0.93%**	**0.92%**

Source: Michael Baker International, Inc., December 2020.

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4.22 Terminal Area Forecast Comparison

The FAA has a responsibility to review and approve aviation activity forecasts developed by others that are submitted to the agency in conjunction with airport planning, including Airport Master Plans and associated environmental studies. The FAA reviews such forecasts with the objective of including them in its Terminal Area Forecast (TAF) prepared specifically for CDV, and the National Plan of Integrated Airport Systems (NPIAS). In addition, aviation activity forecasts are an important input to benefit-cost analyses associated with airport development. The FAA reviews these analyses when Airport Sponsor-based requests for federal funding are submitted.

As developed specifically for this update of the CDV Airport Master Plan, the review and approval of the aviation activity falls upon the FAA's Alaskan Region Airports Division (AAL-600) located in Anchorage, Alaska.

The FAA reviews the sponsors' data with a particular focus on the justification and timing of proposed development projects. Along with airport operators, sponsors include state and local planning agencies. The federally-funded plans must be consistent with FAA forecasts of aeronautical activity, follow FAA guidelines, and be reviewed and accepted by FAA personnel familiar with local conditions and should be:

- realistic
- based on the latest available data
- reflect the current conditions at the airport
- supported by information in the study, and
- provide an adequate justification for airport planning and development.

As defined in FAA Order 5090.5, *Formulation of the National Plan of Integrated Airport Systems (NPIAS) and the Airports Capital Improvement Plan (ACIP*), the regional office must approve the Airport Sponsor's aviation activity forecasts and the determination of one or more Critical Design Aircraft. Aviation activity forecasts supplied by the Airport Sponsor should be consistent with the FAA's TAF published for the airport.

Forecasts of annual scheduled commercial air carrier service and/or air taxi/charter passenger enplanements, number of locally-based aircraft, and total aircraft operations (a landing or takeoff) are considered consistent with the TAF if the forecasts differ by less than 10 percent in the 5-year forecast period, and 15 percent in the 10-year forecast period. If the forecast is not consistent with the TAF, differences must be resolved if the forecast is to be used in FAA decision-making. This may involve revisions to the airport sponsor's submitted forecasts, adjustments to the TAF, or both.

The FAA's forecast approval process typically constitutes an approval for planning only, which allows the Airport Sponsor to plan future airport facility improvement projects that are considered to be consistent with the long-term growth expectations as graphically depicted and denoted on the FAA-Conditionally-approved Airport Layout Plan Drawing (ALD) and (ALP) Drawing Set. In most cases, prior to issuing a federal funding Grant, the FAA will require updated information demonstrating that a proposed project is justified by activity at the time, or by activity that would directly result from the implementation of the proposed project. This policy helps to ensure that funding is directed towards critical projects throughout the United States.

Because the CDV TAF issued in January 2020 reflects static (i.e., nonchanging without annualized increased or decreases) beyond 2019, all comparisons between the Airport Master Plan's forecast of passenger enplanements, aircraft operations and based general aviation aircraft and that presented in the CDV TAF, reflect increasing differences beyond 2019 and through the forecast year 2039. As shown in **Table 4-30**, all but the comparisons for passenger enplanements for the 5- and 10-year forecast years far exceed the FAA's 10- and 15- percent forecast comparison exceedance limits.

Table 4-30: Terminal Area Forecast (TAF) Comparison Table

Item	2019	2024	2029	2034	2039	CAAGR 2019-2039
Enplanements						
Master Plan	19,155	21,515	23,860	26,720	29,540	2.19%
2019 TAF	18,051	18,051	18,051	18,051	18,051	0.00%
Difference	1,104	3,464	5,809	8,669	11,489	
Percent	6.12	19.19	32.19	48.03	63.65	
Operations						
Master Plan	10,146	10,654	11,164	11,690	12,216	0.93%
2019 TAF	13,605	13,605	13,605	13,605	13,605	0.00%
Difference	3,459	2,951	2,441	1,915	1,389	
Percent	25.42	21.69	17.94	14.08	10.21	
Based Aircraft						
Master Plan	27	32	35	41	46	2.70%
2019 TAF	29	29	29	29	29	0.00%
Difference	2	3	6	12	17	
Percent	6.90	10.34	20.69	41.38	58.62	

Source: Michael Baker International, Inc., December 2020.

4.23 Identification of Critical Design Aircraft

The FAA's standards and recommendations for the geometric layout and engineering design of runways, taxiways, aprons, and other airfield facilities at civil airports are prescribed in FAA AC 150/5300-13A, *Airport Design*, (Changes inclusive). However, when airport airfield geometric designs are solely based upon the existing fleet or mix of aircraft that typically operate at an airport, failure to anticipate or project operational needs of future aircraft can severely limit the ability the airport to expand and fully accommodate future requirements needed of larger, more demanding aircraft.

The FAA's airport geometric design standards reference three aircraft operational and dimensional parameters specifically: *Aircraft Approach [speed] Category* (AAC), *Airplane Design Group* (ADG) addressing aircraft wingspan, and/or tail heights, and *Taxiway Design*

Group (TDG) addressing aircraft wheelbase width and main gear location. These standards are used for the design of runways and taxiways, their centerline separation, safety-related setbacks, and the protection of people and property on the ground beyond each runway end.

To determine the appropriate airport design standards for CDV for existing conditions and for the planning of future anticipated airfield facility improvements, the existing and future *Critical Aircraft* (also stated as Critical Design Aircraft) was determined.

The Critical Aircraft is defined by the FAA as representing either a specific aircraft make and model, or composite or family of several aircraft having similar operational and physical characteristics that currently operate at, or are anticipated to make regular use of the airport. According to FAA Order 5090.5, *Formulation of the NPIAS and Airport Capital Improvement Program (ACIP)*, the Critical Aircraft is used to identify the appropriate Airport Reference Code for airport design criteria (such as dimensional standards and appropriate pavement strength) and is contained within FAA AC 150/5300-13A. The specific rules and guidelines for determining the applicable critical aircraft is contained in the current version of FAA AC 150/5000-17, *Critical Aircraft and Regular Use Determination*.

The Critical Aircraft is the most demanding aircraft type, or grouping of aircraft with similar characteristics, that make regular use of the airport. Regular use is 500 annual operations, including both itinerant and local operations but excluding touch-and-go operations. An operation is either a takeoff or landing. Similar characteristics refers to the practice of grouping aircraft by comparable operational performance and/or physical dimensions. This is to recognize that it is sometimes necessary for airfield planning and development to group aircraft with similar characteristics together instead of requiring a single aircraft type to exceed the regular use threshold alone. For example, aircraft with similar wingspans and/or approach speeds may be grouped to determine the most demanding AAC and/or ADG, respectively. Aircraft with similar runway length requirements can be grouped to determine the future runway length at an airport.

The identification and determination of the CDV 2019 Base Year Critical Aircraft was accomplished through inspection and use of the 2019 calendar year TFMSC records for CDV. The TFMSC report reflects aircraft operational activity either that operated either to, or from CDV as conducted under Instrument Flight Rules (IFR) and documented through the required origin airport-to-destination airport filing of an IFR Flight Plan. Through the review and use of the TFMSC aircraft operational data, it was recognized that most, if not all aircraft activity to or from CDV were included in the 2019 TFMSC data. As listed in **Table 4-31**, the make and model of each TFMSC-reported aircraft operation at CDV is listed along with the respective number of annual operations, AAC, and ADG.

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Table 4-31: 2019 Base Year Aircraft Activity by RDC, Make, and Model				
RDC	**FAA ID/Aircraft Make/Model**	**Operations**	**Subtotal**	**Percent**
A-I	P210 - Riley Super P210	2		
	M20P - Mooney M-20C Ranger	2		
	PA31 - Piper Navajo PA-31	6		
	C240 - Cessna TTx Model T240	2	12	0.46%
A-II	PC12 - Pilatus PC-12	13	13	0.50%
B-I	C25B - Cessna Citation CJ3	2		
	BE99 - Beech Airliner 99	16	18	0.69%
B-II	B190 - Beech 1900/C-12J	751		
	B350 - Beech Super King Air 350	6		
	BE20 - Beech 200 Super King	99		
	BE30 - Raytheon 300 Super King Air	4		
	C441 - Cessna Conquest	6		
	C560 - Cessna Citation V/Ultra/Encore	4		
	SW4 - Swearingen Merlin 4/4A Metro2	3		
	F2TH - Dassault Falcon 2000	2		
	F900 - Dassault Falcon 900	6		
	C208 - Cessna 208 Caravan	5	886	34.20%
B-III	DC6 - Boeing (Douglas) DC 6	8		
	DH8A - Bombardier DHC8-100	4		
	SB20 - Saab 2000	4	16	0.62%
C-I	LJ31 - Bombardier Learjet 31/A/B	6		
	LJ60 - Bombardier Learjet 60	6		
	LJ45 - Bombardier Learjet 45	28	40	1.54%
C-II	CL30 - Bombardier (Canadair) Challenger 300	2		
	CL35 - Bombardier Challenger 300	11	13	0.50%
C-III	B733 - Boeing 737-300	2		
	B734 - Boeing 737-400	1		
	B737 - Boeing 737-700	979		
	DC93 - Boeing (Douglas) DC 9-30	4		
	MD82 - Boeing (Douglas) MD 82	4	990	38.21%
C-IV	C130 - Lockheed 130 Hercules	3	3	0.12%
D-I	LJ35 - Bombardier Learjet 35/36	6	6	0.23%

Table 4-31: 2019 Base Year Aircraft Activity by RDC, Make, and Model				
RDC	FAA ID/Aircraft Make/Model	Operations	Subtotal	Percent
D-II	GLF4 - Gulfstream IV/G400	6	6	0.23%
D-III	B734 - Boeing 737-800	536		
	B739 - Boeing 737-900	36		
	GLF5 - Gulfstream V/G500	2		
	MD83 - Boeing (Douglas) MD 83	14	588	22.70%
		2,591	2,591	100.00%

Source: FAA CY 2019 Traffic Flow Management System Counts (TFMSC) - 01/2019 To 12/2019, Merle K (Mudhole) Smith Airport (CDV)
Notes:
TFMSC Military operations not counted or reflected in totals.
TFMSC operational totals will not necessarily match BTS T-100 Totals.
Compiled by Michael Baker International, Inc., December 2020

As shown in Tables 4-32 and 4-33, 500 or more annual operations at CDV were generated by aircraft having AAC D approach speeds and ADG III wingspans and/or tail heights. This statistical reporting clearly indicates that the current Critical Aircraft (Boeing 737-800) for Runway 09-27 has these operational and physical characteristics. In an effort to determine the Critical Aircraft for Runway 16-34, aircraft operational data was analyzed over a five-year period. FAA's TFMSC shows a total of 68 A-I piston propellor-driven aircraft operating to and from CDV for the period 2015 through 2019. This is likely a major undercount as many smaller GA aircraft do not file IFR flight plans to land on a small gravel strip like Runway 16-34 at CDV. Therefore, airport management provided additional information to confirm that the DeHavilland Canada DHC-2 Beaver (RDC A-I) represents the Critical Aircraft associated with Runway 16-34 operations. In the winter small aircraft on ski's use Runway 16-34 (weather dependent), and aircraft on wheels use it as soon as the snow is gone (late March-November). According to airport management, an average of 6 to 12 ADG A-I aircraft operations occur on Runway 16-34 daily.

In 2020, airports around the world faced a series of operational challenges due to the COVID-19 public health emergency. Section 4.24 identifies some of the impacts related to the aircraft fleet mix and operational activity at CDV in 2020. Due to these changes and the potential impact upon this critical aircraft analysis, the planning team reached out to Alaska Airlines to verify the air carrier's plans to continue using the Boeing 737-800 and 737-900ER at CDV in the future. According to Alaska Airlines, it was necessary for the air carrier to make operational adjustments in the aircraft fleet at CDV in 2020 due to the COVID-19 public health emergency. Looking forward, the airline intends to resume operating an aircraft fleet mix similar to that reported in 2019.

Therefore, it is anticipated that the relative mix of aircraft operating at CDV will remain unchanged. Accordingly, for the purpose of the CDV Master Plan Update, all future airfield planning, layout, and design considerations should fully reference and adhere to RDC D-III airport design criteria for Runway 09-27 and RDC A-I for Runway 16-34, as prescribed in FAA AC 150/5300-13A throughout the 20-year master planning period.

Table 4-32: 2019 Base Year Aircraft Activity by Operational and Physical Characteristics		
Aircraft Approach Category (AAC)	**Operations**	**Percent**
A	25	0.97%
B	920	35.55%
C	1,046	40.30%
D	600	23.18%
Total	**2,591**	**100%**
Airplane Design Group (ADG)	**Operations**	**Percent**
I	76	2.94%
II	912	35.47%
III	1,594	61.59%
IV	3	0.00%
Total	**2,591**	**100%**

Source: FAA CY 2019 Traffic Flow Management System Counts (TFMSC) - 01/2019 To 12/2019, Merle K (Mudhole) Smith Airport (CDV)
Notes:
TFMSC Military operations not counted or reflected in totals.
TFMSC Operational totals will not necessarily match BTS T-100 Totals.
Compiled by Michael Baker International, Inc., December 2020

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Table 4-33: 2019 Base Year Aircraft Activity by Aircraft Activity by RDC and Type Operation															
Type User	**A-I**	**A-II**	**B-I**	**B-II**	**B-III**	**B-IV**	**C-I**	**C-II**	**C-III**	**C-IV**	**D-I**	**D-II**	**D-III**	**Total**	**Percent**
Air Carrier					4				982				572	1,558	60.13%
General Aviation	12	13	18	886	12		40	13	8	3	6	6	16	1,033	39.87%
Military	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00%
Total	12	13	18	886	16	0	40	13	990	3	6	6	588	2,591	100.00%
Percent	0.46%	0.50%	0.69%	34.20%	0.62%	0.00%	1.54%	0.50%	38.21%	0.12%	0.23%	0.23%	22.69%	100.00%	

Source: FAA CY 2019 Traffic Flow Management System Counts (TFMSC) - 01/2019 To 12/2019 Merle K (Mudhole) Smith Airport (CDV)

Notes:

TFMSC Military operations not counted or reflected in totals.

TFMSC operational totals will not necessarily Match BTS T-100 Totals.

Compiled by Michael Baker International, Inc., December,2020

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4.24 Effects of COVID-19 Public Health Emergency on Scheduled Air Carrier Activity at CDV

To assess and report the apparent direct influential effects of the COVID-19 public health emergency on scheduled and non-scheduled air carrier passenger and air cargo activity at CDV, the DOT's BTS T-100 Domestic Segment Air Transport Activity Database was utilized. This database provided meaningful statistical data upon which year-over-year comparisons of aviation activity at CDV could be readily made between the two sequential calendar years 2019 and 2020. As part of that comparative assessment, the following data elements were analyzed:

- Aircraft Operations (Arrivals and Departures)
- Available Payload Capacity
- Available Seats
- Deplaned and Enplaned Passengers
- Freight (Pounds), and
- Mail (Pounds)

In 2019, scheduled and non-scheduled passenger and air cargo lift was provided by the following air carrier operators:

- Alaska Airlines, Inc.
- Alaska Central Express
- Iliamna Air Taxi
- Tatonduk Outfitters Limited d/b/a Everts Air Alaska and Everts Air Cargo
- Lynden Air Cargo Airlines
- Maritime Helicopters, Inc.
- Corvus Airlines, Inc. d/b/a Era Aviation d/b/a Ravn Alaska
- Peninsula Airways, Inc.

During this 12-month period, collectively, Alaska Airlines and Alaska Central Express generated virtually all of the following reported measurable activities:

- 97.6% of aircraft operations
- 97.8% of available payload capacity
- 99.8% of available seats
- 99.8% of passenger movements
- 90.1% of freight movements, and
- 99.9% of mail movements

During the 2020 calendar year, scheduled and non-scheduled passenger and air cargo lift was provided by the following air carrier operators:

- Alaska Airlines, Inc.
- Alaska Central Express
- Iliamna Air Taxi
- Katmai Air
- Maritime Helicopters, Inc.

Similar to 2019, Alaska Airlines and Alaska Central Express provided virtually all of the following reported measurable activities:

- 99.2% of aircraft operations
- 99.6% of available pounds of payload capacity
- 99.9% of available seats
- 99.9% of passenger movements
- 98.2% of freight movements, and
- 100.0% of mail movements.

To assess the relative change in aviation activity that would likely be directly associated with and influenced by the COVID-19 public health emergency, year-over-year comparisons of aviation activity was limited to annual activity levels respectively generated between the two predominant airlines: Alaska Airlines and Alaska Central Express.

Alaska Airlines operates a family of Boeing 737 air carrier aircraft that are equipped and configured to primarily provide scheduled passenger service, but also provides on-demand dedicated B737 freighter air cargo services. A total of four different models are used by the airline at CDV as demand and load factors dictate and include the B737-700 L/R, B737-800, B737-900, and B737-900 ER.

Alaska Central Express operates a smaller Beechcraft 1900C aircraft exclusively and primarily provides single-stop scheduled air cargo service Monday through Saturday. The airline also provides on-demand passenger service, equipment availability and configuration permitting.

Changes in aviation activity at CDV between 2019 and 2020 are summarized below:

All Airlines and On-Demand Passenger and Cargo Services

- 6.32% (134) Increase in aircraft operations
- 2.83% (1,676,499) increase in available pounds of payload capacity
- 3.23% (6,231) increase in available seats
- 46.86% (35,665) decrease in passenger movements
- 0.18% (8,642) decrease in pounds of freight movements, and
- 12.89% (97,586) decrease in pounds of mail movements

Alaska Airlines

- 0.59% (9) increase in aircraft operations
- 3.34% (1,835,100) increase in available pounds of payload capacity
- 3.21% (6,174) increase in available seats
- 47.07% (35,696) decrease in passenger movements
- 3.82% (158,587) decrease in pounds of freight movements, and
- 60.28% (152,180) decrease in pounds of mail movements

Alaska Central Express

- 28.68% (156) increase in aircraft operations
- 28.92% (868,384) increase in pounds of available payload capacity
- 100% (320) increase in available seats
- 101.43% (142) increase in passenger movements
- 211.21% (544,925) increase in pounds of freight movements, and
- 10.88% (54,828) increase in pounds of mail movements

4.24.1 Findings

4.24.1.1 Alaska Airlines

Examination of the BTS data revealed that during the 2020 calendar year, Alaska Airlines, likely in measured response to changes in passenger demand and shifts in aircraft passenger load factors within the entirety of their overall City-Pair network, modified its use and scheduling of its fleet of Boeing 737 airliner aircraft. During that year, the airline's use of the B737-700 L/R and the B737-900 remained relatively unchanged, but with a 47 percent downward change in the relative share use of the B737-800. The airline's use of the B737-900 ER, however, increased slightly during that period.

Per the BTS Transtat Report for CDV for calendar year 2019, 536 operations were generated by the B737-800 aircraft. During the 2020 calendar year, however, the number of B737-800 operations were 280 representing a 47 percent downward change. This relative year-over-change in the use of the B737-800 was questioned and investigated through discussions with the airline. Of concern was that this particular model of B737 aircraft was identified within the Aviation Activity Forecast Base Year (2019) as representing the Design Critical Aircraft having ARC D-III operational and physical characteristics.

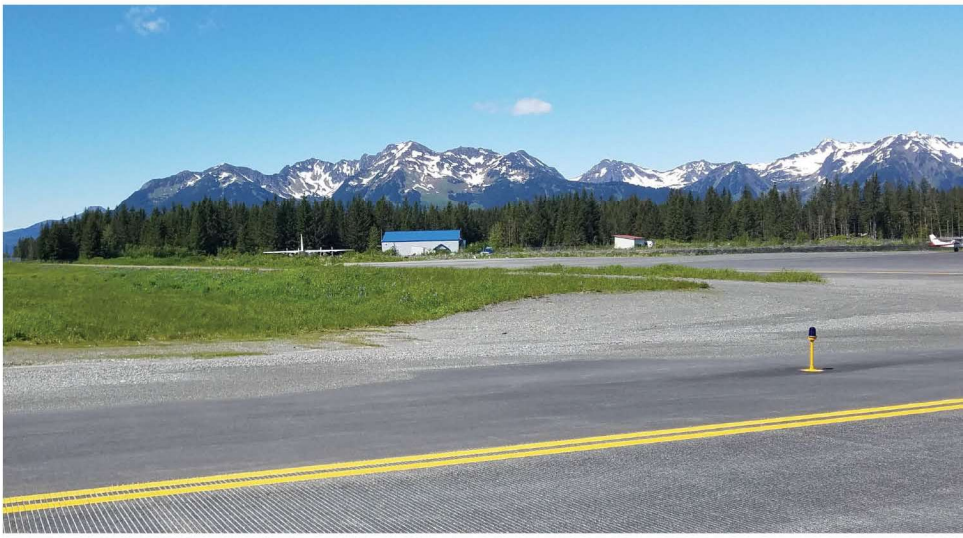
Alaska Airlines reported that these 2020 changes in B737 fleet use reflected an anomaly and were due to a variety of different models of their B737 aircraft fleet being strategically parked and placed temporarily out of service in response to the COVID-19 public health emergency. These changes were wholly instituted by Alaska Airlines throughout their entire City-Pair network in direct response to apparent changes in scheduled air lift demand within different City-Pair regions, or when the airline identified the opportunity to make short-term transitions within their fleet for use as dedicated air cargo aircraft. It was further reported by the airline, that these B737 fleet changes were strategic and temporary in nature and that their relative (model-specific) fleet of aircraft at CDV would return to pre-COVID-19 levels.

4.24.1.2 Alaska Central Express

During the 12-month 2020 calendar year, Alaska Central Express provided increased airlift capacity and service to CDV. Perhaps in direct response to changes in passenger and belly cargo lift previously provided by Alaska Airlines prior to the COVID-19 public health emergency. As evidenced in the above stated statistics, the airline experienced substantial increases in aircraft operations and the associated delivery of available payload capacity, available seats, freight movements, and mail movements.

Chapter 5
Airport Capacity Assessment and Facility Requirements

CORDOVA MERLE K. "MUDHOLE" SMITH AIRPORT MASTER PLAN UPDATE



5 AIRPORT CAPACITY ASSESSMENT AND FACILITY REQUIREMENTS

5.1 Introduction

The purpose of the airport capacity assessment and identification of facility needs is to evaluate the runway airfield system and supporting landside facilities to accommodate existing and future projected aviation activity at Merle K. (Mudhole) Smith Airport (CDV).

The airport capacity assessment serves to identify annual service volume and hourly capacity, as well as aircraft operational delay for future airport operations planning. Airfield design standards were also reviewed to identify current design standards and future needs. Facility requirements for current and future aviation demand were evaluated.

5.2 Measure of Annual and Hourly Runway Throughput Capacity

FAA Advisory Circular (AC) 150/5060-5, *Airport Capacity and Delay*, is just one of many tools that airport planners utilize to develop reasonable estimates of available airfield capacity. Airfield capacity is measured and reported as a calculated estimate of aircraft operation that occur, or are projected to occur within an established measurable period of time (e.g., hourly, daily, and yearly). When aircraft operational demand exceeds the calculated runway throughput capacity of a single runway, or a system of interconnected runways, aircraft operation delay is incurred. As aircraft operational demand increased over time, without commensurate increases in available capacity, unacceptable levels of aircraft operational delay are incurred.

The development and use of this Advisory Circular and it suggested methodologies is most approximately suited for airfields having one or more runways supported by full-length parallel taxiways and multiple exit taxiway connectors. When considering the current and projected future levels of aircraft operations for a 12-month period, and the potential to accommodate a wide range of aircraft the Advisory Circular suggests that airports having a single runway may, inherently, offer aircraft operational throughput capacities ranging from 230,000 to 240,000 annual aircraft operations without the incurrence of unacceptable levels of average aircraft operational delay. These capacity values are based upon varying relative percentiles levels of operations generated by large and heavy aircraft. These stated theoretical throughput values, however, are based upon the following current or planned future conditions:

- Percentage of arriving aircraft equals the percentage of departing aircraft
- Touch-and-Go operations are less than 50 percent of all operations
- A full-length parallel taxiway having ample and optimally-place runway entrance/exit taxiways
- No airspace limitations
- Available Instrument Landing System
- Available Airport Traffic Control

While CDV's runway system does not fully offer or have the associated benefit of all of these attributes, Figure 2-1, *Capacity and ASV for long range planning* of that Advisory Circular was referenced for comparative master planning purposes.

The aircraft fleet mix for CDV during the airport Master Plan's Base Year 2019 was determined using aircraft information provided by the FAA's Traffic Flow Management System Counts (TFMSC) data base and the Bureau of Transportation Statistics (BTS) information presented in Chapter 4 of this technical report. For purposes of this airfield capacity analysis, the aircraft mix discussed in this section is the relative percentage of operations conducted by each of four classes of aircraft shown in Table 5-1, based upon maximum certified takeoff weight and wake turbulence classification. These classes should not be confused with aircraft approach categories referenced later in this chapter.

Table 5-1: Aircraft Classifications

Aircraft Class	Maximum Certified Takeoff Weight (pounds)	Number Engines	Wake Turbulence Classification
A	12,500 or less	Single	Small
B		Multi	
C	12,500 - 300,000	Multi	Large
D	Over 300,000	Multi	Heavy

Source: FAA AC 150/5060-5, Airport Capacity and Delay.

The FAA's handbook methodology uses the term "Mix Index" to describe an airport's fleet mix. The FAA defines the Mix Index as the percentage of Class C operations plus three times the percentage of Class D operations. By applying this calculation to the fleet mix percentages for the airport, a Mix Index of 99.0 percent is obtained per the following equation:

Class C Operations (99.0%) + (3 * Class D Operations (0%)) = Mix Index (99.0%)

The Annual Service Volume (ASV) is a reasonable estimate of an airport's annual capacity. ASV considers differences in runway use, aircraft mix, weather conditions, and other factors that would be encountered over a year. Based upon the runway configuration and mix index for CDV, the ASV is determined to be 210,000 operations per year with an hourly capacity of 55 VFR operations per hour and 53 IFR operations per hour.

5.2.1 Aircraft Operational Delay

Aircraft operational delay is the difference in time between a constrained and an unconstrained aircraft operation. As the level of aircraft operations increase as a relative proportion of the calculated ASV value, aircraft operational delay increases. The level of aircraft operations at CDV for the year 2019 represented approximately 4.80 percent of the calculated ASV (10,146/210,000), thus indicating virtually no associated aircraft operational delay. At the end of the 20-year forecasting period (2039), this relative percentage will be approximately 5.80 percent (12,216/210,000), continuing to reflect little or no associated aircraft operational delay.

The aircraft operations forecast for CDV indicates that projected aircraft operations (12,216 operations annually in 2039) through the 20-year planning period are not expected to exceed the ASV (210,000 operations annually). Therefore, the capacity of the airfield system

will not be exceeded and will be able to fully satisfy existing and projected future aircraft operational demand for the forecast period without induced adverse effects to aircraft operations and associated aircraft operational delay.

Therefore, the relative benefit of developing a full-length parallel taxiway system, or the addition of strategically-located exit taxiways appears to be extremely low.

5.3 Runway Orientation and Wind Coverage

As previously discussed in Section 3.11.3 and listed in Table 3-10, the orientation of Runway 9-27 relative to local prevailing winds provides the adequate (95 percent or greater) wind coverage needed to safely accommodate existing RDCs D-III and A-I Small respectively under all-weather, visual and IMC conditions. However, Runway 16-34 is used regularly by RDC A-I Small aircraft under crosswind conditions. According to the critical aircraft analysis discussed in Section 4, D-III aircraft operations account for approximately 38.21 percent of CDV's annual operations in 2019.

5.4 Protection of Navigable Airspace

5.4.1 CFR Part 77 Civil Airport Imaginary Surfaces

As previously discussed in Section 3.10, DOT&PF has elected to establish the protection of navigable airspace to accommodate future development and implementation of published instrument approach procedures to one or both runway ends. Future development of instrument approach procedures to each runway end and instrument departures from each runway end are to be protected to the extent necessary to meet CFR Part 77 Civil Airport Precision Instrument Approach and Approach and Departure Standards.

5.4.2 Runway 9-27 and 16-34 End Siting Requirements

When establishing each runway end (i.e., approach and departure end), the requirements of FAA Order 8260.3E, *United States Standard for Terminal Instrument Procedures* (TERPS), and the TERPS-defined approach and departure surfaces listed in AC 150/5300-13A, Change 1, *Airport Design*, Table 3-2, Approach/Departure Standards, and Table 3-4, Standards for Instrument Approach Procedures, must be considered. Other surfaces associated with electronic and visual NAVAIDs should also be considered, such as keeping Visual Glideslope Indicator (VGSI) surfaces clear of penetration by natural and/or man-made objects. The approach surfaces defined in this paragraph are not the approach surfaces defined in CFR Part 77.

The existing CDV Obstacle Clearance Surfaces (OCS) established for each runway end were evaluated. DOT&PF should continue to monitor and review all proposals for the erection of temporary or permanent objects in proximity to the airport as filed by proponents via the FAA's 7460-1 and Obstruction Evaluation/Airport Airspace Analysis (OE/AAA) notification process. The last tree removal activities were completed in 2017, additional tree removal is needed to meet FAA airspace and obstruction removal requirements. Obstructions to be removed are identified in the FAR Part 77 Surface Obstruction Table found on Sheet 13 of the ALP Set. Further, DOT&PF should maintain its current pro-active role within this review

process, with the goal of reducing or eliminating any potential penetrations to the various approach and departure surfaces to preserve the safe and efficient use of the airport.

5.5 Runway Design Standards Analysis

Runway design standards are provided by FAA AC 150/5300-13A, Change 1, *Airport Design* and FAA Advisory Circular 150/5325-4B, *Runway Length Requirements for Airport Design*. As shown below, with the exception of the Runway Safety Area (RSA), Runway 9-27 meets current RDC D-III runway design standards. Runway 16-34 does not meet all A-I Small runway design standards.

5.5.1 Runway Length Requirements

5.5.1.1 FAA Runway Length Planning Guidance

Runway length requirements for CDV were evaluated in accordance with FAA AC 150/5325-4B, *Runway Length Requirements for Airport Design*. This AC provides guidelines for airport designers and planners to determine recommended runway lengths for new runways or extensions to existing runways. The FAA's mandatory use of this AC and its standards and guidelines are recommended strictly for use in the design of civil airport runway improvement projects receiving federal funding.

When planning for the required physical geometric design and layout of airfield pavements (i.e., runway and taxiways), aircraft operational aspects such as aircraft approach speeds and wingspan widths are considered. For runway length considerations, however, aircraft operational weights are used as part of the FAA's recommendations regarding runway lengths that would be required to fully accommodate the safe operation of aircraft during takeoff and landing operations.

Minimum runway takeoff and landing lengths as discussed within this update of the Airport Master Plan include the design approach of individual large airplanes having maximum gross takeoff weights of 12,500 pounds or more, or regional jets. These types and sizes of aircraft have historically and are anticipated to continue serving CDV throughout the 20-year planning period.

Within Chapter 4 of the AC, Runway Lengths for Regional Jets and Those Airplanes with a Maximum Certificated Takeoff Weight of More Than 60,000 Pounds, FAA recommended runway lengths are based upon the:

- Critical design airplane's Airport Planning Manual (APM),
- The maximum certificated takeoff weight or takeoff operating weight for short-haul routes,
- Maximum certificated landing weight,
- Airport elevation above mean sea level,
- Effective runway gradient,
- and the mean daily maximum temperature of the hottest month at the airport.

Taking the FAA's "design approach," recommended runway lengths for this weight category of airplanes is based on performance curves developed from United States Federal Aviation Regulations (FAR) and Certification Specifications (CS).

Based on CDV's mean daily maximum temperature of 61.7 degrees Fahrenheit (F) during the hottest month and above sea level elevation of 53.6 feet, and the FAR Takeoff Runway Length Requirements for the Boeing 737-800 (Critical Aircraft), a minimum runway length of 7,000 feet is recommended. Based solely on the 737 Airplane Characteristics for Airport Planning found on the Boeing website, the current available runway length of 7,500 feet satisfies the FAA's recommended minimum runway length needed to fully accommodate the fleet of individual large air carrier aircraft weighing between 12,500 and 60,000 pounds.

5.5.1.2 Aircraft-Specific Runway Takeoff and Landing Length Requirements

Inspection of FAA's TFMSC database for the historical 5-year period 2015 through 2019 revealed that 500 or more annual operations at CDV were generated by aircraft having Aircraft Approach Category (AAC) D approach speeds and Airplane Design Group (ADG) III wingspans and/or tail heights. This statistical reporting supports the current Critical Aircraft (Boeing 737-800) for Runway 9-27 as having these operational and physical characteristics. To determine the critical aircraft for Runway 16-34, aircraft operational data was analyzed over the same five-year period. The TFMSC database shows a total of 68 RDC A-I Small piston propellor driven aircraft operating to and from CDV for the period 2015 through 2019. General aviation aircraft do not typically file IFR flight plans for gravel strips such as Runway 16-34. This makes it likely the 68 RDC A-I Small aircraft reported to be an undercount. Additional information provided by airport management confirmed the DeHavilland Canada DHC-2 Beaver (RDC A-I Small) represents the Critical Aircraft associated with Runway 16-34 operations.

Published aircraft data for specific makes and models of large aircraft and regional turboprop airliner aircraft detailing available seats, maximum gross takeoff weight, approach speeds and wingspans were used to determine the minimum required runway takeoff and landing lengths for each respective aircraft at CDV and were calculated by utilizing information specific to CDV that included:

- Above Mean Sea Level Elevation: 53.60
- International Standard Atmosphere (ISA) Temp at Sea Level: 59.00 degrees F
- Mean Daily Maximum Hottest Day temperature: 61.70 degrees F, and
- Runway Slope: 0.20%.

The minimum required runway takeoff length for each of the critical aircraft were based upon manufacturer-published aircraft runway takeoff lengths that were upwardly adjusted for CDV's above mean sea level elevation, hottest day temperature, and slope.

Similarly, the minimum required runway landing length for each of the same aircraft were based upon manufacturer-published aircraft runway landing lengths that were upwardly adjusted for CDV's above mean sea level elevation, hottest day temperature, and optional wet (contaminated) condition.

According to the flight manual runway takeoff and landing length requirements for the DHC-2 Beaver, a runway length of 1,250 feet is required. Therefore, the Runway 16-34 length of 1,934 feet satisfies this requirement.

According to **Figure 5-1**, the FAR Takeoff Runway Length Requirements chart for the B737-800 indicates that a runway length of 7,000 feet is needed to accommodate the aircraft's takeoff operations. The same process was used to determine the 5,700-foot requirement as shown in **Figure 5-2** for the landing distance as well. The 7,500 feet of existing runway pavement for Runway 9-27 properly accommodates the safe and efficient takeoff and landing of the critical aircraft. **Figures 5-1** and **5-2** show the F.A.R. Takeoff and Landing Runway Length Requirements Charts for the B737-800.

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3.3.48 F.A.R. Takeoff Runway Length Requirements - Standard Day + 27°F (STD + 15°C), Dry Runway: Model 737-800/-800W/BBJ2 (CFM56-7B27-B1 Engine at 26,000 LB SLST)

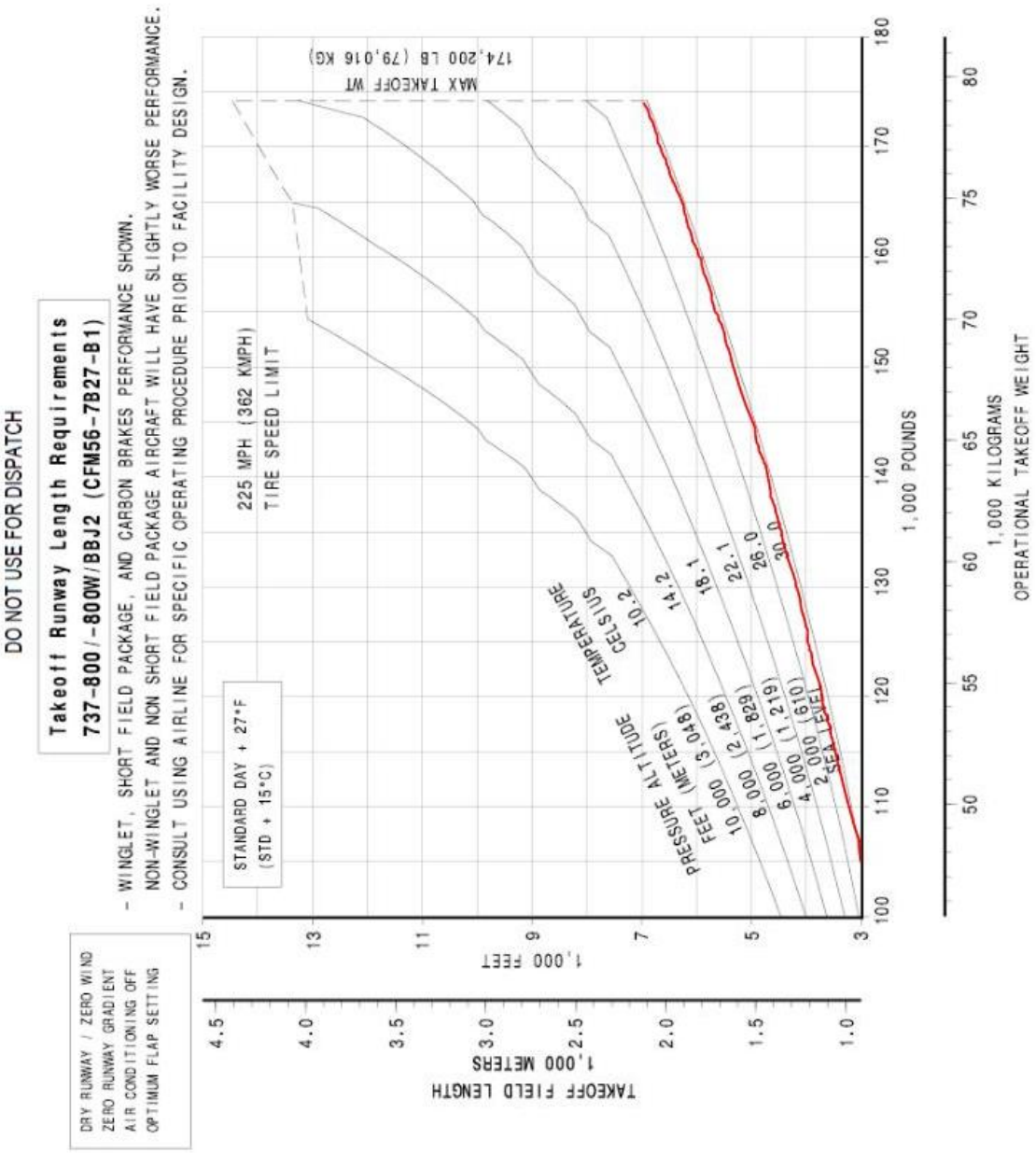

Figure 5-1: FAR Takeoff Runway Length Requirements for Boeing 737-800
Source: Boeing Airplane Characteristics for Airport Planning, 2020

3.4.21 F.A.R. Landing Runway Length Requirements - Flaps 30: Model 737-800

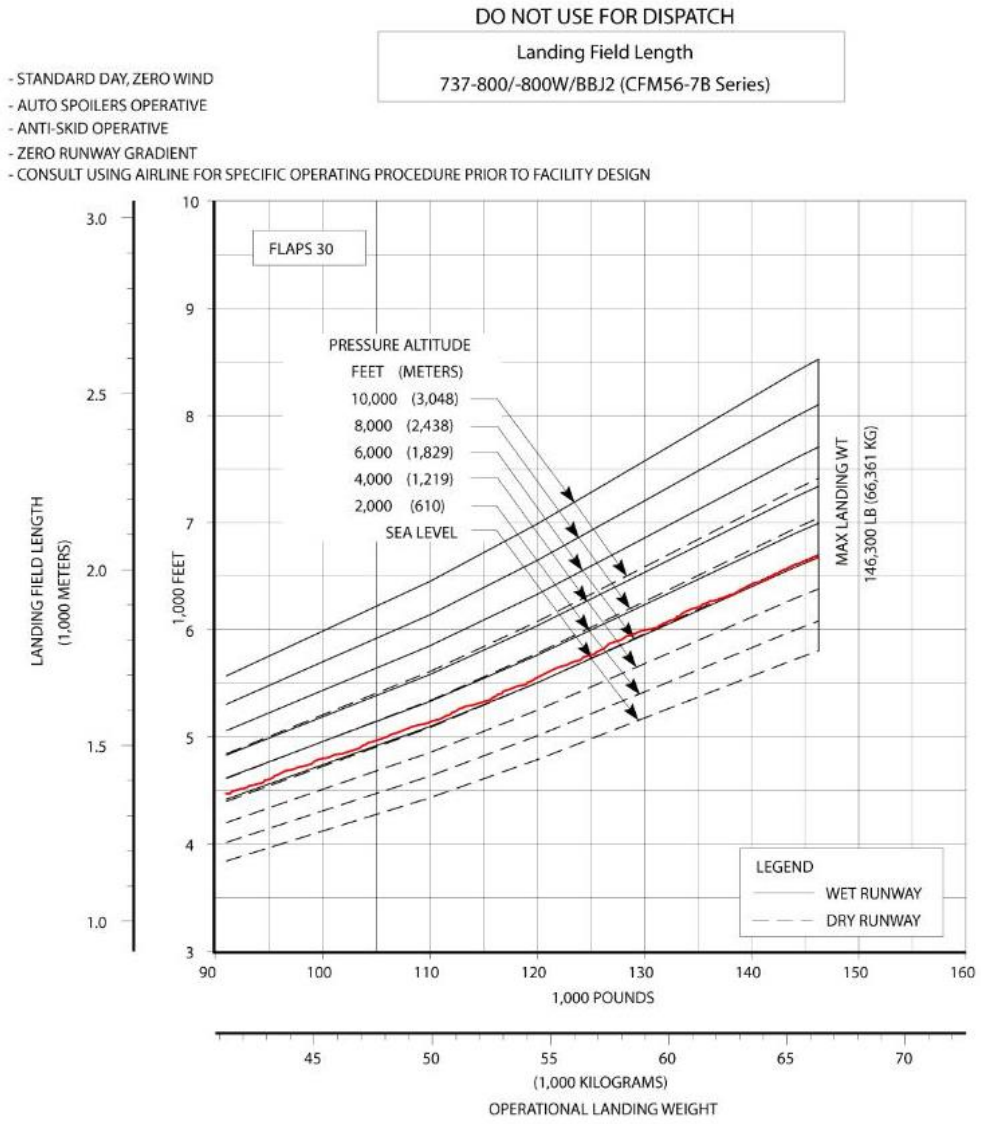

Figure 5-2: FAR Landing Runway Length Requirements for Boeing 737-800
Source: Boeing Airplane Characteristics for Airport Planning, 2020

5.5.2 Runway Shoulders

Runway shoulders provide resistance to blast erosion and accommodate the passage of maintenance and emergency equipment and the occasional passage of an aircraft veering from the runway. A stabilized surface, such as turf, normally reduces the possibility of soil erosion and engine ingestion of foreign objects. Soil not suitable for turf establishment requires a stabilized or low-cost paved surface.

Paved shoulders are required for runways accommodating ADG-IV and higher aircraft and are recommended for runways accommodating ADG-III aircraft.

CDV currently has 35-foot-wide paved shoulders in good condition. This exceeds the 25-foot width recommended for accommodating ADG D-III aircraft operations.

5.5.3 Runway End Blast Pad

Paved runway blast pads provide blast erosion protection beyond runway ends. Blast pads at runway ends should extend across the full width of the runway plus the shoulders.

A 300-foot long by 150-foot-wide blast pad is located at each end of Runway 9-27. However, the existing blast pads do not meet the RDC D-III design guideline of 200 feet in width. Standard D-III runway blast pads are recommended for each runway end in the future.

5.5.4 Runway Line of Sight

FAA AC 150/5300-13A, Change 1, *Airport Design*, identifies runway line-of-sight requirements to facilitate coordination among aircraft, and between vehicles that are operating on active runways. For runways without full-parallel taxiways like CDV, the FAA's line-of-sight standard states that any point five feet above the runway must be mutually visible with any other point five feet above the runway centerline.

At CDV, the Runway 9-27 profile does not meet the line-of-sight requirement. The profile point at Taxiway C is between 2.3 and 8.3 feet higher than the runway ends of Runway 9-27. Potential solutions to remedy this deficiency will be further evaluated as part of the Airport Alternatives analysis component of the Master Plan Update.

5.6 Runway Protection Standards

Runway protection standards are provided by FAA AC 150/5300-13A, Change 1, *Airport Design* and FAA Advisory Circular 150/5325-4B, *Runway Length Requirements for Airport Design.* As designed and quantified, the runway protection geometry at CDV meets RDC D-III and A-I Small design standards for Runways 9-27 and 16-34, respectively. These items are discussed in further detail in the upcoming sections.

5.6.1 Runway Safety Area

The Runway Safety Area (RSA) is a defined surface surrounding the runway prepared or suitable for reducing the risk of damage to aircraft in the event of an undershoot, overshoot, or excursion from the runway. The RSA must be cleared and graded and have no potentially hazardous ruts, humps, depressions, or other surface variations. The required size of the RSA for Runway 9-27 applicable RDC of D-III-VIS and D-III-2400, and Runway 16-34 applicable RDC of A-I Small-VIS design standards are listed in **Tables 5-2**, **5-3** and **5-4**. The

RSA for Runway 9-27 is a full 500 feet wide; however, there is a ditch located beyond the RSA along the southern side of the runway. The RSA at the Runway 9 threshold is 500 feet beyond the runway threshold, falling short of the required 1,000 feet.

To compensate for the nonstandard RSA, an Engineered Material Arresting System (EMAS) was installed beyond the Runway 9 threshold in 2007. An EMAS is an FAA-approved system of crushable blocks placed on an airport's RSA to stop an aircraft in the event of a runway overrun. High speed runway excursions have the potential to cause aircraft damage and loss of human life. The most common of these incidents are overruns. The arresting system is intended for use where it is impractical to obtain standard RSAs, and other alternatives are not feasible. FAA Order 5200.9, *Financial Feasibility and Equivalency of Runway Safety Area Improvements and Engineered Material Arresting Systems (EMAS)*, states that a standard EMAS installation provides a level of safety that is generally equivalent to a full RSA constructed to the standards of AC 150/5300-13A, *Airport Design*.

The existing EMAS at CDV is in fair condition and is regularly monitored as the system approaches the end of its useful service life. In addition, the EMAS is reported to experience occasional water intrusion and surface damage attributed to local wildlife activity. Therefore, future options for this system will be addressed as part of the analysis of airport development alternatives.

5.6.2 Runway Object Free Area

The object free area is an area centered on the ground on a runway, taxiway, or taxilane centerline provided to enhance the safety of aircraft operations by remaining clear of objects, except for objects that need to be located in the OFA for air navigation or aircraft ground maneuvering. The Runway 9 Runway Object Free Area (ROFA) extends 500 feet beyond the runway end and does not meet the standard 1,000 feet beyond the runway end. The required size of the ROFA for Runway 9-27 for the applicable RDC of D-III-VIS and D-III-2400, and Runway 16-34 for the applicable RDC of A-I Small-VIS design standards is listed in **Tables 5-2, 5-3** and **5-4**.

5.6.3 Runway Obstacle Free Zone

The Obstacle Free Zone (OFZ) is the three-dimensional airspace along the runway and extended runway centerline. It is required to be clear of obstacles for protection of aircraft landing or taking off from the runway and for missed approaches. The required size of the applicable Runway Obstacle Free Zones for large aircraft (over 12,500 pounds) are listed in **Tables 5-2** and **5-3**.

5.6.4 Approach/Departure Runway Protection Zones

The Runway Protection Zone (RPZ) in an area at ground level prior to the threshold or beyond the runway end that is designed to enhance the safety and protection of people and property on the ground. The required size of each Approach or Departure RPZ for each runway for the applicable RDC of D-III-VIS, D-III-2400, and A-I Small-VIS design standards (i.e., for Runways 9-27 and 16-34, respectively) is listed in **Tables 5-2, 5-3** and **5-4.** The Copper River Highway is an existing incompatible land use inside the RPZ of Runway 09 and Runway 27. This incompatible land use is to remain.

5.6.5 Runway Separation Standards

5.6.5.1 Runway-to-Parallel Taxiway Centerline Separation

The runway centerline to parallel taxiway centerline separation standard for an RDC of D-III-VIS and D-III-2400 is 400 feet. Although the airport currently has no parallel taxiway system, the FAA-current approved ALP and Master Plan recommends a parallel taxiway system to service Runway 9-27. This recommended parallel taxiway system will be revisited during the Airport Alternatives process.

5.6.5.2 Aircraft Holding Position

The runway centerline to aircraft holding position standard for an RDC of D-III-VIS and D-III-2400 is 250 feet. With the current Runway 9-27 centerline to aircraft holding position distance of 250 feet, CDV currently meets this design standard.

5.6.5.3 Aircraft Parking Area

The runway centerline to closest aircraft parking position separation standard for an RDC of D-III-VIS and D-III-2400 is 500 feet. With the current centerline separation of 520 feet, CDV meets this design standard.

5.6.6 Runway Design Standard Compliance Needs Summary

The runway design standards for CDV are summarized in **Tables 5-2**, **5-3** and **5-4**. With the exception ROFA length beyond the end of Runway 9, the runways fully satisfy current ARC D-III-VIS, D-III-2400, and A-I Small-VIS airport design standards.

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Table 5-2: Runway Design Standard Matrix – Runway 9 Runway Design Code (RDC): D-III-VIS			
Item	**Standard**	**Existing**	**Satisfies Requirements**
Runway Design			
Runway Length	7,000 ft	7,500 ft	Yes
Runway Width	150 ft	150 ft	Yes
Shoulder Width	25 ft	35 ft	Yes
Blast Pad Width	200 ft	150	No
Blast Pad Length	200 ft	300	Yes
Crosswind Component	16 knots	16 knots	Yes
Runway Protection			
Runway Safety Area (RSA)			
Length Beyond Departure End	1,000 ft	1,000 ft	Yes
Length Prior to Threshold[1]	600 ft	500 ft	No
Width	500 ft	500 ft	Yes
Runway Object Free Area (ROFA)			
Length Beyond Runway End	1,000 ft	1,000 ft	Yes
Length Prior to Threshold	600 ft	600 ft	Yes
Width	800 ft	800 ft	Yes
Runway Obstacle Free Zone (ROFZ)			
Length	200 ft	200 ft	Yes
Width	400 ft	400 ft	Yes
Approach Runway Protection Zone (RPZ)			
Length	1,700 ft	1,700 ft	Yes
Inner Width	500 ft	500 ft	Yes
Outer Width	1,010 ft	1,010 ft	Yes
Area (Acres)	29.465	29.465	Yes
Departure Runway Protection Zone (RPZ)			
Length	1,700 ft	1,700 ft	Yes
Inner Width	500 ft	500 ft	Yes
Outer Width	1,010 ft	1,010 ft	Yes
Area (Acres)	29.465	29.465	Yes
Runway Separation			
Runway Centerline to:			
Holding Position	250 ft	250 ft	Yes

Table 5-2: Runway Design Standard Matrix – Runway 9 Runway Design Code (RDC): D-III-VIS			
Item	**Standard**	**Existing**	**Satisfies Requirements**
Parallel Taxiway / Taxilane Centerline	400 ft	400 ft	NA
Aircraft Parking Area	500 ft	525 ft	Yes

Sources:
FAA Advisory Circular 150/5325-4B, Runway Length Requirements for Airport Design.
FAA Advisory Circular 150/5300-13A, Change 1, Airport Design.
[1]Nonstandard RSA length prior to threshold approved by FAA.

Table 5-3: Runway Design Standard Matrix – Runway 27 Runway Design Code (RDC): D-III-2400			
Item	**Standard**	**Existing**	**Satisfies Requirements**
Runway Design			
Runway Length	7,000 ft	7,500 ft	Yes
Runway Width	150 ft	150 ft	Yes
Shoulder Width	25 ft	35 ft	Yes
Blast Pad Width	200 ft	150 ft	No
Blast Pad Length	200 ft	300 ft	Yes
Crosswind Component	16 knots	16 knots	Yes
Runway Protection			
Runway Safety Area (RSA)			
Length Beyond Departure End[1]	1,000 ft	500 ft	No
Length Prior to Threshold	600 ft	600 ft	Yes
Width	500 ft	500 ft	Yes
Runway Object Free Area (ROFA)			
Length Beyond Runway End	1,000 ft	1,000 ft	Yes
Length Prior to Threshold	600 ft	600 ft	Yes
Width	800 ft	800 ft	Yes
Runway Obstacle Free Zone (ROFZ)			
Length	200 ft	200 ft	Yes
Width	400 ft	400 ft	Yes
Approach Runway Protection Zone (RPZ)			
Length	2,500 ft	2,500 ft	Yes
Inner Width	1,000 ft	1,000 ft	Yes

Table 5-3: Runway Design Standard Matrix – Runway 27 Runway Design Code (RDC): D-III-2400			
Item	**Standard**	**Existing**	**Satisfies Requirements**
Outer Width	1,750 ft	1,750 ft	Yes
Area (Acres)	78.914	78.914	Yes
Departure Runway Protection Zone (RPZ)			
Length	1,700 ft	1,700 ft	Yes
Inner Width	500 ft	500 ft	Yes
Outer Width	1,010 ft	1,010 ft	Yes
Area (Acres)	29.465	29.465	Yes
Runway Separation			
Runway Centerline to:			
Holding Position	250 ft	250 ft	Yes
Parallel Taxiway / Taxilane Centerline	400 ft	N/A	
Aircraft Parking Area	500 ft	525 ft	Yes

Sources: FAA Advisory Circular 150/5325-4B, Runway Length Requirements for Airport Design.
FAA Advisory Circular 150/5300-13A, Change 1, Airport Design.
[1]Nonstandard RSA Length beyond departure end approved by FAA.

Table 5-4: Runway Design Standard Matrix – Runway 16-34 Runway Design Code (RDC): A-I-Small VIS			
Item	**Standard**	**Existing**	**Satisfies Requirements**
Runway Design			
Runway Length	1,250 ft	1,934 ft	Yes
Runway Width	60ft	30 ft	No
Shoulder Width	10 ft	0 ft	No
Blast Pad Width	80 ft	0 ft	No
Blast Pad Length	60 ft	0 ft	No
Crosswind Component	10.5 knots	10.5 knots	Yes
Runway Protection			
Runway Safety Area (RSA)			
Length Beyond Departure End	240 ft	240 ft	No
Length Prior to Threshold	240 ft	240 ft	No
Width	120 ft	120 ft	No

Table 5-4: Runway Design Standard Matrix – Runway 16-34 Runway Design Code (RDC): A-I-Small VIS			
Item	**Standard**	**Existing**	**Satisfies Requirements**
Runway Object Free Area (ROFA)			
Length Beyond Runway End	240 ft	240 ft	Yes
Length Prior to Threshold	240 ft	240 ft	Yes
Width	250 ft	250 ft	Yes
Runway Obstacle Free Zone (ROFZ)			
Length	200 ft	200 ft	Yes
Width	250 ft	250 ft	Yes
Approach Runway Protection Zone (RPZ)			
Length	1,000 ft	1,000 ft	Yes
Inner Width	250 ft	250 ft	Yes
Outer Width	450 ft	450 ft	Yes
Area (Acres)	8.035	8.035	Yes
Departure Runway Protection Zone (RPZ)			
Length	1,000 ft	1,000 ft	Yes
Inner Width	250 ft	250 ft	Yes
Outer Width	450 ft	450 ft	Yes
Area (Acres)	8.035	8.035	Yes
Runway Separation			
Runway Centerline to:			
Holding Position	125 ft	N/A	
Parallel Taxiway / Taxilane Centerline	150 ft	N/A	
Aircraft Parking Area	125 ft	525 ft	Yes

Sources: FAA Advisory Circular 150/5325-4B, Runway Length Requirements for Airport Design.
FAA Advisory Circular 150/5300-13A, Change 1, Airport Design.

5.6.7 Runway Pavement Strength

One of the most important features of airfield pavement is its ability to withstand repeated use by the most weight-demanding aircraft operating at the airport. As currently reported within the airport's Airport Master Record (FAA Form 5010-1), and based on the results of DOT&PF's 2018 Pavement Inspection Report, the runway asphalt is reported to have a weighted average PCI of 76.00 (good condition), and was considered sufficient to provide the required minimum single-wheel (S) load bearing capacity of 90,000 pounds and two single wheels in tandem type landing gear (2S) load bearing capacity of 153,000 pounds throughout the 20-year planning period.

5.7 Taxiway Design Standards

5.7.1 Taxiway Width

Taxiway pavement requirements are based on the dimensions of the airplane's undercarriage, which includes the Main Gear Width (MGW) and Cockpit to Main Gear (CMG). For Taxiway Design Group (TDG) 2 and 3 taxiways, the design standard for width is 35 feet, and 50 feet, respectively. Taxiway B is a 70-foot wide by 900-foot-long taxiway that connects the runway to the US Coast Guard complex, and Taxiway C is a 75-foot wide by 691 foot-long taxiway that provides access from the runway to the main terminal area apron. Both taxiways exceed current TDG-3 width design standards. Taxiway D has a width of 25 feet and a length of 837 feet for the southern portion of the taxiway, then increases to a width of 35 feet for another 837 feet. Both sections of Taxiway D meet the TDG-1 and 2 design standards for width. Taxilane L is a parallel taxilane that provides access to the passenger terminal apron and various hangars and buildings used primarily by smaller GA aircraft ADG-II and smaller. Taxilane L is 35 feet wide and 895 feet in length, meeting TDG-2 design standards. Taxiway K provides access to an area planned for future hangar development. Taxiway K is located approximately 2,020 feet from the end of Runway 27 and is currently an ADG I taxiway with a width of 25 feet and length of 425 feet.

According to the 2020 DOT&PF Pavement Inspection Report, Taxiway B is reported to have a weighted average PCI of 66.00 and corrective maintenance is recommended in the future. Taxiways C and D is reported to have a weighted average PCI of 100.00 and only preventative maintenance is recommended. Taxilane L is reported to have a weighted average PCI of 70.00, preventative maintenance is recommended.

5.7.2 Taxiway Design Group

Taxiway width and fillet standards, and in some instances, runway to taxiway and taxiway separation requirements, are determined by TDG. Previous guidance on taxiway design was based only on Airplane Design Groups (ADG). ADGs are based on wingspan and tail height, but not the dimensions of the aircraft undercarriage. The design of pavement fillets must consider such undercarriage dimensions. Thus, the following guidance establishes TDGs, based on the overall MGW and the CMG Distance. TDG standards can be found in Advisory Circular 150/5300-13A, Change 1, *Airport Design*, Table 4-2.

TDG 3 design characteristics are applicable and existing Taxiway B and C pavements can fully accommodate taxi movements by CDV's current Critical Aircraft (B-737-800), which requires TDG 3 taxiway intersection fillet geometries. **Table 5-5** lists the design standards for taxiways based on the TDG.

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Table 5-5: Design Standards Based on Taxiway Design Group								
Type	**1A**	**1B**	**2**	**3**	**4**	**5**	**6**	**7**
Taxiway Width	25 ft	25 ft	35 ft	50 ft	50 ft	75 ft	75 ft	82 ft
Taxiway Edge Safety Margin	5 ft	5 ft	7.5 ft	10 ft	10 ft	15 ft	15 ft	15 ft
Taxiway Shoulder Width	10 ft	10 ft	15 ft	20 ft	20 ft	30 ft	30 ft	40 ft

Source: AC 150/5300-13A, Table 4-2. Design standards based on Taxiway Design Group (TDG)

5.7.3 Taxiway Shoulders

Unprotected soils adjacent to taxiways are susceptible to erosion, which can result in engine ingestion problems for jet engines that overhang the edge of the taxiway pavement. Soil with turf not suitable for this purpose requires a stabilized or low-cost paved surface.

CDV currently does not have taxiway shoulders on Taxiway B, but has 20-foot paved taxiway shoulders on Taxiway C and 15-foot paved shoulders on Taxiway D. In the future, a minimum 20-foot-wide paved shoulder is recommended for pavement accommodating ADG-III aircraft taxi operations.

5.7.4 Taxiway Safety Area

The Taxiway Safety Area (TSA) is a defined surface alongside the taxiway centered about the taxiway centerline and is prepared or suitable for reducing the risk of damage to an aircraft deviating from the taxiway. The TSA also provides a suitable travel surface and area for rescue and fire-fighting operations. The current width of the TSA along Taxiways B and C is established at a width of 171 feet (ADG-IV). The current width of the TSA for Taxiway D of 79 feet meets the standards required to fully protect taxiway movements of aircraft having ADG-II wingspans.

5.7.5 Taxiway Object Free Area

The Taxiway Object Free Area (TOFA) is centered on the taxiway centerline. The TOFA clearing standards prohibit service vehicle roads, parked aircraft, and other objects, except for objects that need to be located in the OFA for air navigation or aircraft ground maneuvering. The current width of the TOFA along Taxiways B and C is established at a width of 259 feet (ADG-IV). This designated width provides the 259-foot TOFA required to fully protect taxiway movements of aircraft having ADG-IV wingspans. The current width of the TOFA along Taxiway D is established at a width of 131 feet meeting ADG-II standards. The TOFA along Taxilane L is established at 115 feet, meeting the design standards for ADG-II Taxilane OFA.

5.7.6 Taxiway Edge Safety Margin

Prior to the FAA's issuance of AC 150/5300-13A, *Airport Design*, taxiway intersection design guidance referenced and used pre-established ADGs that were based on aircraft wingspan and tail height, but not the dimensions of the aircraft's undercarriage. The updated AC 150/5300-13A, Change 1 defines and references TDGs that relate to the undercarriage

dimensions of the aircraft and the need to assure that the aircraft's inner-most main gear turning path remains with a defined (i.e., 10-foot wide) Taxiway Edge Safety Margin (TESM), and the extent of remaining full-strength pavement situated within the limits of the required TESM.

When considering taxiway design to regularly accommodate CDV's Critical Aircraft (B737-800) having a cockpit-to-main gear (CMG) length of 56.42 feet, and a main gear (i.e., outer-to-outer) width of 22.96 feet, the application and use of TDG 3 taxiway design criteria having a minimum TESM width of 10 feet is required. This requirement is based on identification of a Critical Aircraft as the most demanding aircraft type, or grouping of aircraft with similar characteristics, that make regular use of the airport as defined by FAA AC 150/5000-17, *Critical Aircraft and Regular Use Determination*. Regular use is 500 annual operations, including both itinerant and local operations, but excluding touch-and-go operations. An operation is either a takeoff or landing. Inspection of FAA's TFMSC for CDV during 2019 identified 1,594 total operations by aircraft having TDG 3 design characteristics, well above the FAA's Regular Use threshold.

5.7.7 Aircraft Wingtip Clearance

As discussed previously, Taxiways B, and C, D are wide enough to fully accommodate TDG-3 aircraft taxi movements. Based on Taxiway B's current width of 75 feet, and Taxiway C's current width of 75 feet, these existing taxiways currently provide the ADG-III required wingtip clearance of 34 feet. Taxiway D and Taxilane L are wide enough to fully accommodate ADG-II aircraft taxi movements as well, and currently provide the ADG-II required wingtip clearance of 26 feet for taxiways and 18 feet for taxilanes.

5.7.8 Taxiway Centerline to Fixed or Moveable Object

The Taxiway Centerline to Fixed or Moveable Object distance associated with ADG-III aircraft movements is 93 feet. Taxiways B and C currently meet the recommended ADG-III wingtip clearance. Taxiway D currently meets the ADG-II requirement of 65.5, and Taxilane L meets the Taxilane Centerline to Fixed or Moveable object distance associated with ADG-II of 57.5 feet.

5.7.9 Taxiway Design Standard Compliance Needs Summary

CDV meets the of ADG-III and TDG 3 taxiway design standards, based on the design aircraft at the airport. Taxiway D is designed to ADG-II and TDG 2 taxiway design standards. This taxiway is only used by ADG-II aircraft and smaller. The development of TDG 3 width and taxiway intersection geometries, and paved shoulders is also recommended adjacent to paved surfaces accommodating taxi movements of ADG-III aircraft. For CDV, the recommended taxiway shoulder width is 20 feet.

The need to modify or build paved shoulders adjacent to paved surfaces to satisfy their respective TDG recommended design standards will be addressed further as part of the airport alternatives analysis phase of the Master Plan.

5.8 Airfield Facility Requirements

5.8.1 Lighting

Runway 9-27 is equipped with High Intensity Runway Lights (HIRLs) located along the edge of Runway 9-27. The Runway 9 end is also equipped with Runway End Identifier Lights (REILs), and an Omni-Directional Approach Lighting System (ODALS) used as a simple approach lighting system for non-precision approach runways. Runway 27 is equipped with a Medium Intensity Approach Lighting System with Runway Alignment Indicator Lights (MALSR). Runway 16-34 is a visual runway without any lighting. Taxiways B and C are the only taxiways equipped with Medium Intensity Taxiway Lights (MITL). As airfield lights reach the end of their useful life, new lights should be considered in conjunction with other new development and rehabilitation projects.

5.8.2 Marking and Signage

Advisory Circular 150/5340-1M, *Standards for Airport Markings,* contains standards for markings used on airport runways, taxiways, and aprons. Runway 9-27 is properly marked for precision instrument approach capabilities. With the exception of the Runway Holding Positions, taxiways are all properly marked and in good condition. The runway holding position markings and associated signage will need to be relocated/remarked to 250 feet from the runway centerline to comply with the RDC D-III standard. No other non-standard dimensional, placement, orientation or location issues with the current airfield signage were identified.

5.9 Aircraft Hangar and Apron Tiedown Space Requirements

Although the airport is currently designed to fully accommodate it's 27 based aircraft, (25 single engine pistons and 2 helicopters), It is expected that the number of jets and turboprop aircraft based at the airport will increase. Accordingly, hangar and apron tie-down/parking space needs for based aircraft must be identified to accommodate the parking and sheltering needs of these aircraft throughout the 20-year planning period.

5.9.1 Hangar Facility Needs

Based on the number and type of hangar facilities at CDV, there is a current and anticipated future need for additional aircraft storage space for single-engine aircraft, multi-engine aircraft, turboprops, jets, and helicopters over the 20-year planning period.

Projections of future based aircraft hangar storage and apron tie-down needs were developed using the FAA-approved aviation activity forecast for this Master Plan Update and the 2019 Base Year distribution of aircraft storage at the airport by aircraft type. As shown in Table 5-6 and for space planning purposes only, the distribution of based aircraft represents a CAAGR of 4.69 percent over the 20-year planning period.

The identification of additional based aircraft hangar space, or the location, layout and spacing for apron tie-downs are primarily based on the type, make, and model of aircraft that are known to currently operate, or that are anticipated to operate at the airport.

Table 5-6: CDV Forecast of Based Aircraft					
Type	**2019**	**2024**	**2029**	**2034**	**2039**
Single-Engine (Non-Jet)	25	27	29	31	33
Multi-Engine (Non-Jet)	0	1	1	2	2
Helicopter	2	2	3	3	4
Turboprops	0	1	1	3	4
Jets	0	1	1	2	2
Ultra-Light	0	0	0	0	0
Total Based Aircraft	**27**	**32**	**35**	**41**	**46**

Source: Michael Baker International, Inc., October 2020

The 20-year forecast of based aircraft identifies the need to accommodate the storage needs of 19 additional aircraft (e.g., nine single engine, two multi-engine, two helicopters, four turboprops, and two jets).

5.9.2 Itinerant Aircraft Apron and Tiedown Space Requirements

The itinerant apron (GA parking) provides for the movement and parking of visiting general aviation aircraft that operate at CDV. Itinerant apron space determinations are typically based on calculated current and projected future Peak Month Average Day (PMAD) aircraft activity levels, relative percentage mix of local and transient operations, and aircraft type and size. Using industry accepted FAA planning guidance, the following procedural planning steps were used to identify required itinerant aircraft apron space:

- Step 1. Determine PMAD general aviation aircraft operations for the 2019 base year and all forecast planning years.
- Step 2. Increase PMAD aircraft operations by 10 percent.
- Step 3. Determine the relative percentage mix of local and itinerant aircraft operations as listed in Section 4.17, Table 4-25 Forecast of Local/Itinerant General Aviation Operations (32.00 percent of the total aircraft operations were determined as itinerant).
- Step 4. Derive total itinerant operations by multiplying the value derived in step 2 by the itinerant percentage value.
- Step 5. Assume that 100 percent of all itinerant arrival operations require apron space.
- Step 6. Increase the value derived in step 4 by 10 percent.

Table 5-7 shows the itinerant aircraft apron area needs assessment for the 20-year planning period.

Table 5-7: CDV Itinerant Apron Area Needs Assessment						
Step		2019	2024	2029	2034	2039
1	Peak Month Average Day Operations	32.74	34.35	36.00	37.71	39.42
2	Increase by 10%	36	38	40	41	43
3	Percent Itinerant Traffic (Assumed to Remain Constant)	32.00%	32.00%	32.00%	32.00%	32.00%
4	Total Itinerant Operations	12	12	13	13	14
5	Assumed 100% Need Transient Apron Space	12	12	13	13	14
6	Increase by 10%	13	13	14	14	15
	Total Itinerant Aircraft Requiring Apron	**13**	**13**	**14**	**14**	**15**

Source: Michael Baker International, Inc, 2020

Table 5-8 distributes the itinerant aircraft operations by type for the 20-year planning period. When mathematically distributing assignment of aircraft by type, whole numbers were used for conservative planning.

Table 5-8: Itinerant Aircraft Occupancy Needs by Aircraft Type					
Fiscal Year	Single Engine	Multi Engine/ Turboprop	Jet Engine	Helicopter	Total
2019	11	1	1	0	13
2024	11	1	1	0	13
2029	12	1	1	0	14
2034	12	1	1	0	14
2039	13	1	1	0	15

Source: Michael Baker International, Inc, 2020

Table 5-9 shows the spacing requirements in square yards for the aircraft fleet mix. The basis for this spacing was determined by analyzing ADG B-I and B-II aircraft that are known and anticipated to operate at CDV. This includes both the tie-down space and the required taxilane OFA to and from the tie-down position.

Table 5-9: Itinerant Aircraft Apron Area Needs by Aircraft Type				
	Single Engine	Multi Engine/ Turboprop	Jet Engine	Helicopter
Apron Space Needs (Square Yards)	713	972	1,890	713

Source: Michael Baker International, Inc, 2020

Since the total number of transient aircraft requiring apron parking is small, the larger spacing requirement for jet engine aircraft was used for planning purposes. Approximately 12,111 square yards is needed throughout the 20-year planning period. The existing itinerant apron area is currently 41,767 square yards. Therefore, it is anticipated that additional itinerant apron area is not needed today and through the 20-year planning period. Table 5-10 shows the aircraft specific and total itinerant apron area needs.

Table 5-10: Itinerant Aircraft Total Apron Area Needs by Aircraft Type

Year	Single Engine	Multi Engine/Turboprop	Jet Engine	Helicopter	Total	Existing	Surplus/ (Deficit)
2018	7,843	972	1,890	0	10,705	41,767	31,062
2019	7,843	972	1,890	0	10,705	41,767	31,062
2023	8,556	972	1,890	0	11,418	41,767	30,349
2028	8,556	972	1,890	0	11,418	41,767	30,349
2038	9,269	972	1,890	0	12,131	41,767	29,636

Source: Michael Baker International, Inc, 2020

5.9.3 Navigational Aids and Approach Procedures

Navigational Aids are used for airport approaches and allow pilots to navigate to the airport and runway ends. Runway 27 is served with a MALSR, the availability of this approach lighting system provides visibility credit of ¼ statute mile, allowing the published vertically-guided visibility minimum of ½ statue mile similar to that offered as part of a precision Instrument Approach Procedure (IAP) traditionally provided by ground-based instrument landing systems.

The FAA is solely responsible for the operation and maintenance of the MALSR, ODALs, REILs, Glide Slope, Localizer, VASIs and off-airport NDB/DME navigational facilities.

The REILs and VASIs serving Runways 9 and 27, Airport Rotating Beacon, and the ASOS are all reported to be in good working order and without need of repair. These facilities are not anticipated to require upgrade or replacement within the 20-year planning period.

The existing approach procedures identified in Chapter 3 are sufficient, however it is recommended to establish a Local Area Augmentation System (LAAS) for a Global Positioning Satellite (GPS) approach to Runway 27 and improve the approach lighting system on Runway 9 with the establishment of a MALSR. The LAAS provides greater location accuracy to the current GPS approach to Runway 27. The MALSR would improve runway visibility at night and during poor weather conditions, replacing the current Omnidirectional Approach Lighting System (ODALS) on Runway 9. The possibility of providing such improvements at CDV in the future will be considered as part of the Alternatives Analysis.

5.9.4 Windcone/Segmented Circle

The segmented circle and windcone and supplemental wind cones are in good condition and are anticipated to adequately serve the airport through the 20-year planning period.

5.10 Passenger Terminal Area

5.10.1 Terminal Apron

The Terminal Apron is located north of the middle of Runway 9-27. It consists of approximately 210,000 square yards of asphalt pavement for the parking and maneuvering of commercial aircraft utilizing the nearby passenger terminal and cargo facilities. Aircraft access this area by way of Taxiway C.

Currently, there is only one dedicated hardstand for aircraft to park on the terminal apron. This condition is not ideal for aircraft or the pavement being used in this area. After speaking with representatives from Alaska Airlines and cargo carriers, it is recommended that up to three commercial aircraft parking positions be developed to accommodate additional flights and irregular operations that take place at the airport and the terminal apron. According to airport staff and the air carriers, the existing terminal apron is inadequate to accommodate multiple commercial aircraft (i.e., B737, MD80, and C-130) parking under these conditions. However, there is a vacant parcel that is adjacent to and west of the existing terminal apron that is currently unusable for parking due to its lack of durability. The potential of developing this parcel to accommodate additional commercial aircraft and Ground Support Equipment (GSE) parking will be further evaluated as part of the Airport Alternatives phase of the Master Plan.

5.10.2 Passenger Terminal Building

The airport is served by a single Passenger Terminal Building that encompasses approximately 5,217 square feet. The single-story passenger terminal is owned and operated by Alaska Airlines and includes ticket and check-in counters, administrative offices, communications storage, passenger boarding area, and baggage claim.

In 2016, the interior of the facility was renovated by Alaska Airlines. The airline has stated there are no current plans to update the passenger terminal within the 20- year planning period.

5.10.3 Automobile Parking Requirements

5.10.3.1 Public Parking

Merle K. (Mudhole) Smith Airport is a commercial service airport, as such there is a need for parking passengers as well as visitors. Due to the frequency and nature of the scheduled airline and passenger charter operations, existing vehicle parking is reported to be sufficient during peak operational periods. Pavement is in fair condition and should be regularly maintained in accordance with the airport's pavement maintenance program. Currently, there are no markings to delineate the parking area. Marking of individual vehicle parking spaces is recommended in order to maximize the parking capacity of these areas in the future.

5.10.3.2 Employee Parking

Employee parking associated with the passenger terminal operation is accommodated in westernmost portion of the Passenger Terminal Parking Lot. In addition, airport employees

utilize other parking areas associated with administration, operations and maintenance facilities at the airport. Existing employee parking facilities were determined to be sufficient and no additional capacity is required during the planning period.

Ample parking is provided adjacent to existing tenant facilities throughout the airport. In the future, all parking facilities associated with new development proposed in this Airport Master Plan must meet applicable local code requirements.

5.10.3.3 Rental Car Parking

Currently, rental car services are available on airport. Rental car ready/return and storage spaces are collocated within the northernmost portion of the Passenger Terminal Parking Lot, adjacent to the rental car office. Additional rental car storage is accommodated in the lot east of the Long-Term Parking lot. According to FAA AC 150/5360-13A, *Airport Terminal Planning*, a minimum of 10 ready/return spaces for each rental car agency is recommended. Additional parking may be added when actual demand is demonstrated to exceed the current capacity.

5.10.3.4 Long-Term Parking

The Long-Term Parking Lot is located on the east side of Cabin Lake Road prior to reaching the passenger terminal area. This gravel lot provides approximately 12,000 square feet of area capable of accommodating approximately 75 parking spaces. During the September 2020 inventory site visit, the airport's Long-Term Parking gravel lot was observed to be in fair condition. Maintenance to this gravel lot is recommended over the next 20-year planning period.

5.11 Cargo Facilities

Alaska Airline's cargo handling and storage facilities are co-located with the passenger terminal building. This cargo facility is approximately 2,200 square feet and operated under lease agreement with DOT&PF.

An additional 2,463 square foot cargo facility is located west of the passenger terminal and is owned by Alaska Central Express (ACE) and operated under lease agreement with DOT&PF. ACE primarily transports mail, freight, UPS and seafood. Cargo movement between CDV and Cordova is transferred directly between ACE B1900 aircraft and trucks operated by a contract agent. Aircraft parking is sufficient as ACE typically operates in the morning when Alaska Airlines is not present. However, during poor weather conditions there is a need for additional terminal apron space to accommodate aircraft movement and parking.

Related development options will be considered during the alternative evaluation phase of the master plan.

5.12 Support Facilities

As described in AC 150/5070-6B, *Airport Master Plans*, support facilities include a wide range of functions intended to ensure the smooth, efficient, and safe operation of the airport. The FAA provides design guidelines for these facilities in a variety of Advisory Circulars and Airport Cooperative Research Program (ACRP) reports. However, the requirements for these facilities were also based on interviews with airport staff, airport

tenants, and users which facilitated a better understanding of the existing and future facility requirements.

5.12.1 Airport/Airfield Maintenance, Equipment, and Facilities

Staff from DOT&PF are responsible for the day-to-day maintenance functions on the airfield, including record keeping, and repairs. Pavement maintenance includes crack sealing, seal coating, and striping. Other general maintenance responsibilities include safety area repairs, mowing, general electrical repairs, and snow removal. Equipment and materials to perform general airport maintenance functions are available and stored in the corresponding maintenance equipment storage facilities. Airport maintenance/sand storage facilities and administrative offices are located within the Airport Maintenance Complex located ¼ mile from the airport on the north side of Copper River Highway near the entrance to the US Coast Guard facilities. The complex includes facilities for the storage and repair of maintenance equipment. These facilities are in good condition and well maintained. Beyond regular maintenance, no additional expansion of these facilities is required during the planning period.

5.12.2 Snow Removal Equipment

FAA AC 150/5220-20A, *Airport Snow and Ice Control Equipment,* provides guidance regarding the selection of the appropriate snow and ice control equipment for airport use. As a general requirement, runways and taxiways should be maintained, if possible, to a no worse than wet condition. In other words, there should be no accumulation of contaminants (snow or ice) during winter storms.

The minimum snow and ice control equipment requirements are defined by two parameters, the total square footage of the Priority 1 paved area, and the airport's service classification area. The Priority 1 airfield clearing area is described in the CDV Snow and Ice Control Plan (SICP), and includes the following areas:

- Runway 9-27
- Taxiway C
- Primary apron area
- ARFF access route
- Airfield NAVAIDS

Priority 2 airfield clearing area includes:

- Taxiway D, Taxiway L
- Other apron areas
- Face of all signs and runway lights (kept clear of snow and ice at all times)

FAA AC 150/5200-30D, *Airport Field Condition Assessments and Winter Operations Safety*, defines the minimum clearance times for commercial service airports. The clearance times for commercial service airports are determined by the total annual airplane operations (including cargo operations). Over the 20-year planning period, the total annual aircraft operations are forecasted to increase from 10,146 operations in 2019 to 12,216 operations in 2039. According to this operational level, the minimum time to clear 1 inch of

falling snow weighing up to 25 lb/ft^3 on the Priority 1 areas is between 1 to 1½ hours. The SICP indicates that the current clearance time for the Priority 1 areas is typically 2 hours.

Table 5-11 shows the minimum snow removal equipment requirements described in FAA AC 150/5220-20A. Table 3-5, Snow Removal Equipment Inventory, shows the existing inventory of snow removal equipment as of 2020. The current snow and ice removal equipment at CDV meets the minimum requirements. Future equipment requirements are dependent upon the square footage of the future Priority 1 area, which may increase as new critical areas such as taxiways and aprons are developed in the future.

Table 5-11: Minimum Required Snow Removal Equipment

Equipment	Minimum Required
High-Speed Rotary Plow	1
Displacement Plows	2
Sweeper	1[1]
Hopper Spreader	1[2]
Liquid deicing/anti-icing chemical Spraying Vehicle	1
Front End Loader	1[3]

Source: Snow and Ice Control Plan, DOT&PF. FAA AC 150/5220-20A Airport Snow and Ice Control Equipment
Notes:
1. *One per 750,000 square feet pavement*
2. *One hopper spreader per 750,000 square feet of pavement*
3. *One front end loader per 500,000 square feet of critical apron space*

5.12.3 Aircraft Rescue and Firefighting Services

The airport is currently a 14 CFR Part 139, Class I certificated airport, categorized as ARFF Index B. Construction of a new ARFF/SREB facility is anticipated to be finished during the short-term planning period; however, the project is currently facing Polyfluoroalkyl Substances (PFAS) issues that are expected to delay construction of the project for an undetermined period of time. Over the 20-year planning horizon, a requirement to increase the ARFF Index is not expected. The availability of this equipment is expected to continue over the 20-year planning horizon. Therefore, there are no additional ARFF requirements.

5.12.4 Aircraft Fueling Storage Requirements

Currently, there are no commercial aviation fuel storage facilities at the airport. Several tenants maintain their own fuel supplies and the majority of general aviation operators obtain and carry their own avgas from a local distributor. Alaska Airlines maintains a Jet A fuel truck to service its aircraft.

The Coast Guard has a single 10,000-gallon Jet A fuel tank buried adjacent to their hangar facility.

5.13 Summary of Facility Requirements

Table 5-12 identifies and summaries CDV's facility requirements. The following table presents recommendations to satisfy these facility requirements.

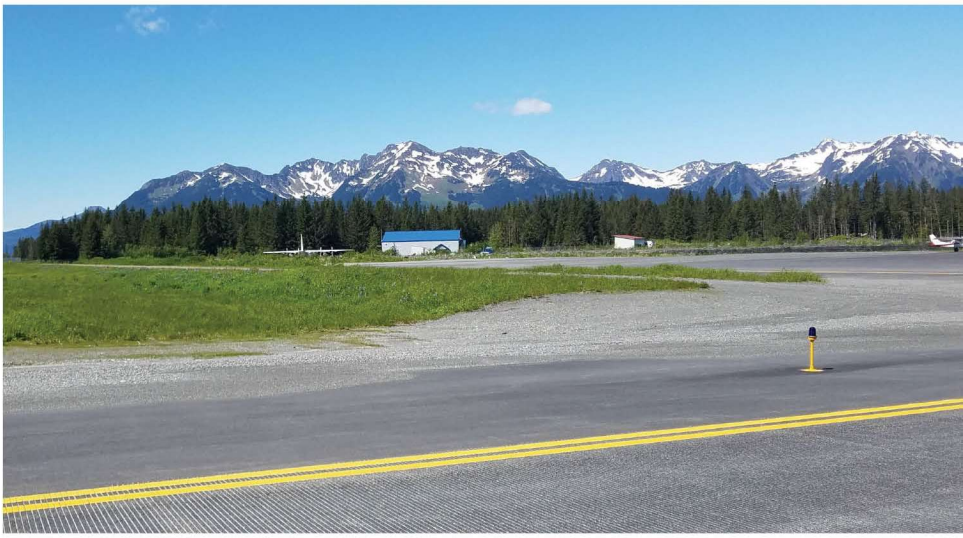
Table 5-12: Summary of Facility Requirements

Category	Requirements
Airfield Capacity and Configuration	No Improvements Recommended
Design Aircraft and Airport Reference Code (ARC)	Existing - B737-800 (D-III)/Future – B737-800 (D-III)
Runway Orientation and Wind Coverage	No Improvements Recommended
Runway Length	No Improvements Recommended
Runway Strength	No Improvements Recommended
Protection of Navigable Airspace	No Improvements Recommended
Instrument Approaches and Runway End Siting	IAPs - To be determined in alternatives analysis Potential OCS penetrations to be resolved during the Alternatives Analysis
Runway Design Standards	Runway Blast Pads
Runway Protection Standards	Analysis of EMAS on Runway 9 end and RSA for both Runways in Alternatives
Taxiway/Taxilane Design Standards	Taxiway Shoulders Recommended
Airfield Lighting	No Improvements Recommended
Airfield Markings	No Improvements Recommended
Airfield Signage	No Improvements Recommended
Visual Navigational Aids	MALSR and LAAS Recommended
Aircraft Terminal Apron	Reconfiguration and expansion recommended to accommodate Alaska Airlines and cargo aircraft parking.
Based Aircraft Storage and Tiedown Space	Additional hangars recommended for based aircraft in the future
Fueling Facilities	To be determined in alternatives analysis
Automobile Access	Regular maintenance of pavement and markings.
Automobile Parking	Regular maintenance of pavement and markings.

Source: Michael Baker International, Inc., 2021

Chapter 6
Airport Alternatives

CORDOVA MERLE K. "MUDHOLE" SMITH AIRPORT MASTER PLAN UPDATE



6 AIRPORT ALTERNATIVES

This section includes the development of graphical alternatives which depict methods to either resolve deficiencies or to construct new facilities as necessary to meet future demand expectations at Merle K. (Mudhole) Smith Airport (CDV). The alternatives include potential improvements to both airside and landside facilities and also include a review of surrounding land use compatibility.

This chapter introduces the preliminary alternatives for CDV, which are intended for discussion purposes between the various stakeholders including DOT&PF, the Working Group for this project, and the public. The individual components of each preliminary alternative were evaluated to aid in the selection of a preferred airport development alternative that represents the desired development plan for the 20-year planning period. For that reason, the preliminary alternatives should be viewed as flexible development plans that may be refined or combined to best satisfy the needs of the airport's stakeholders. The main intent of the preliminary alternatives is to evaluate realistic airfield development options that would satisfy the facility requirements identified in the previous chapter and to analyze the aviation and non-aviation development and redevelopment possibilities for available airport property. The preferred airport development alternative, as presented in Chapter 7, will also illustrate the recommended layout of all landside developments, such as the passenger terminal, air cargo facilities, hangars, aprons, and support facilities. The preliminary alternatives should subsequently be viewed as a broad examination of relationships between required and desired airside and landside developments in order to provide a clear understanding of the airport's possibilities and limitations.

The following elements are covered within this chapter:

- Development Constraints
- Runway Analysis
- Instrument Approach Analysis
- Terminal Area (Passenger Terminal and Air Cargo)
- General Aviation
- Support Facilities

6.1 Alternatives Analysis Process

The alternatives analysis process is based on guidance provided in the Federal Aviation Administration (FAA) Advisory Circular (AC) 150/5070-6B, *Airport Master Plans*. The development and analysis of alternatives incorporates input from DOT&PF, stakeholders, and the general public. An organized approach to identifying and evaluating a variety of alternatives is essential to effective planning. This includes identifying a standard set of evaluation criteria based on the goals and objectives of the master plan and existing constraints which will impact the development of alternatives.

6.1.1 Evaluation Criteria

In AC 150/5070-6B, the FAA recommends a standard set of criteria to evaluate development alternatives according to an airport’s unique situation. The evaluation process should feature “generally accepted planning principles, be replicable, consistently applied,

and documented." As a result, a set of evaluation criteria were established for use in this alternatives analysis. The criteria are strategic, qualitative, and quantitative to ensure that the evaluation process remained at a master planning level of detail. The selected criteria shown in Table 6-1 Evaluation Criteria include:

Table 6-1: Evaluation Criteria

Criteria	Definition
Achievement of Objective	This criterion is based on achieving the specific need identified in the Facility Requirements chapter. Alternatives are assessed based on the degree to which they satisfy the objective.
Airport Design Standards	The proposed development should satisfy applicable airport design standards and maintain or improve the safety and efficiency of the airport.
Flexibility	The alternative should support a reasonable level of flexibility to accommodate changes in demand and include the ability to expand in the future.
Collateral Impacts	This criterion evaluates the extent to which an alternative requires changes or improvements to existing airport facilities which otherwise would not require changes or improvements (e.g. Relocation of a road that is impacted by a general aviation alternative is considered a collateral impact).
Probable Cost	The preferred alternative should be cost effective, within the means of DOT&PF to secure funding, and minimize the long-term financial commitment by DOT&PF or its tenants.
Efficiency of Construction Phasing	Construction of the proposed improvements should be implemented without undue interference to existing operations.
Environmental Compatibility	The preferred alternative should be consistent with environmental regulations and minimize impacts to the environmental impact categories identified in FAA Orders 1050.1F, *Environmental Impacts: Policies and Procedures Desk Reference*, and 5050.4B, *National Environmental Policy Act (NEPA) Implementing Instructions for Airport Actions*. Future development should support growth while minimizing impacts to the environment.

Source: AC 150/5070-6B; Michael Baker International, 2021

6.2 Development Constraints

Land on and near the airport property consists of airport-related infrastructure and generally undeveloped, native terrain. Land around the airport property is owned or managed by the State, Native corporation, or Federal agencies such as the US Forest Service (shown in **Appendix A, Figure A-2**). According to the Cordova Comprehensive Plan, future land use at the airport is intended for "Community Facilities" while the land surrounding the airport is undesignated for any future use (City of Cordova, 2019). All other future land uses lie closer to the central township, which is 13 miles west of the study area.

Potential environmental concerns are more fully discussed in Appendix A, Environmental Overview. If possible, new development should be avoided within these areas. Specific development areas identified in this analysis are more fully addressed in Chapter 7, Refinement of Alternatives. In addition, there is the potential for threatened and endangered species to be present in these areas.

6.3 Runway Analysis

This section presents a series of runway improvements that address the capacity, efficiency, safety, and line-of-sight requirements identified in Chapter 5, Facility Requirements. As a result, the runway alternatives discussed in this section will be designed to maintain the 7,500 feet of runway pavement needed to accommodate the safe and efficient takeoff and landing of the Boeing 737-800 critical aircraft. In addition, the following improvements are recommended to maintain compliance with FAA Airplane Design Group (ADG) III and Taxiway Design Group (TDG) 3 design standards associated with the critical aircraft.

Two runway design alternatives were investigated for addressing shifting Runway 9-27, replacing the airport's aging EMAS, and addressing existing line-of-sight deficiencies. **Table 6-2** highlights the advantages and disadvantages of each option.

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Table 6-2: Runway Option Comparison		
Option	**Highlights**	
	Advantages	**Disadvantages**
1. Extend Runway to the East	• Full length 1,000-foot RSAs are achieved • Alleviates flooding concerns - localizer, runway pavement and runway end/edge lights would be above elevation 46.0 feet. • Avoids impacting connector taxiways or crosswind runway elevations (no additional pavement reconstruction would be required). • Avoids new EMAS and associated construction and maintenance/ rehabilitation costs. • Avoids impacting crosswind runway and connector taxiway operations during construction.	• Impacts to wetlands and anadromous water bodies could involve an extensive environmental analysis. • Requires relocation of localizer and glideslope • Increased cost associated with additional earthwork and pavement required
2. Replace EMAS	• EMAS, localizer, runway pavement, and runway end/edge lights would be above elevation 46.0 feet (addresses flooding/standing water and line-of-sight issues) • Avoids impacting connector taxiways or crosswind runway elevations (no additional pavement reconstruction would be required) • Lower construction cost compared to Option 1 (less pavement reconstruction and less earthwork) • Avoids impacting crosswind runway and connector taxiway operations during construction. • Maintains existing horizontal threshold locations and has minimal impacts to airspace procedures • Reduced environmental impacts compared to Option 1	• Impacts to wetlands and anadromous water bodies. • Requires new EMAS and associated construction and maintenance/ rehabilitation costs. • Susceptible to damage caused by wildlife • One product supplier • Requires relocation of localizer and glideslope

Source: Michael Baker International, Inc., July 2021

6.3.1 Runway Option 1 – Shift Runway 9-27 to the East

Runway Option 1, shown in **Figure 6-1**, includes shifting Runway 9-27 500 feet to the east to accommodate standard ADG-III RSA's on both runway ends. The runway length of 7,500 feet would be maintained. As part of this development option, the runway line-of-sight deficiency would be addressed by elevating the grade of both runway ends. The grade of the runway's west end would be raised to a minimum of 46 feet MSL in response to the impacts associated with the height of the water table in in this area, and the end of Runway 27 would be raised accordingly to 49.5 feet MSL to resolve existing line-of-sight deficiencies. The central portion of the runway profile would be maintained to avoid impacts to existing taxiway connections and Runway 16-34. This option would also include relocating the localizer and glideslope facilities. All new embankments, and infrastructure would be constructed using standard construction methods. Lateral portions of the runway safety area along the last 1,200 feet on the runway's west end would also be improved.

Runway Option 1 would impact environmental resources, most notably wetlands and anadromous water bodies. This would require culverting or realigning the existing channels on the east.

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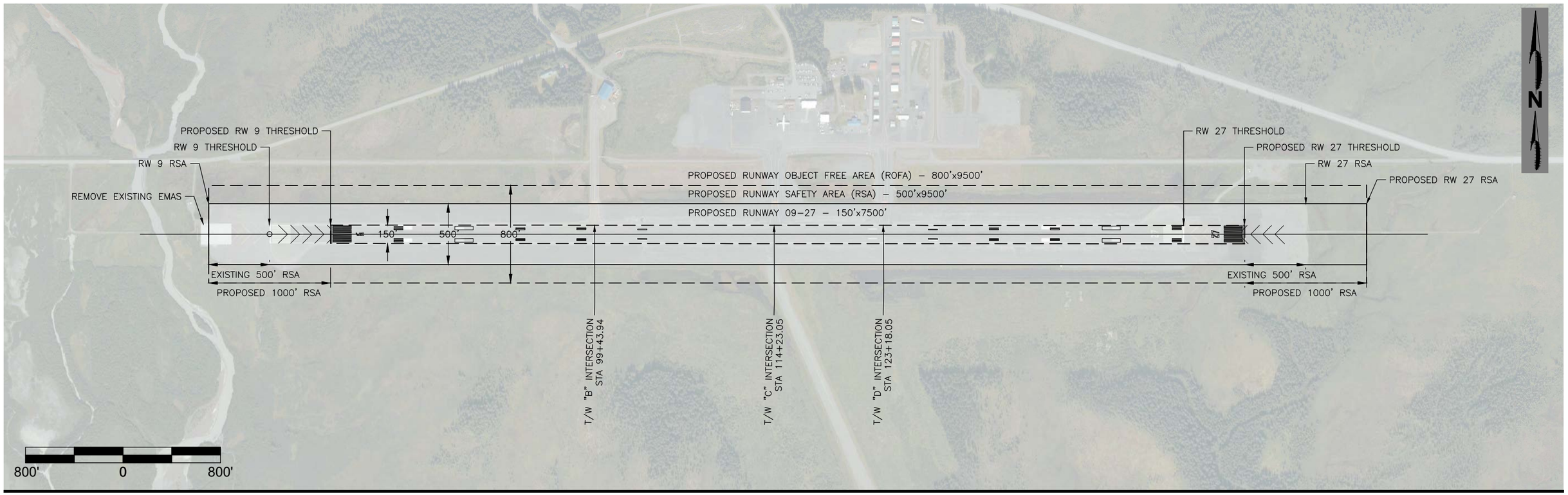

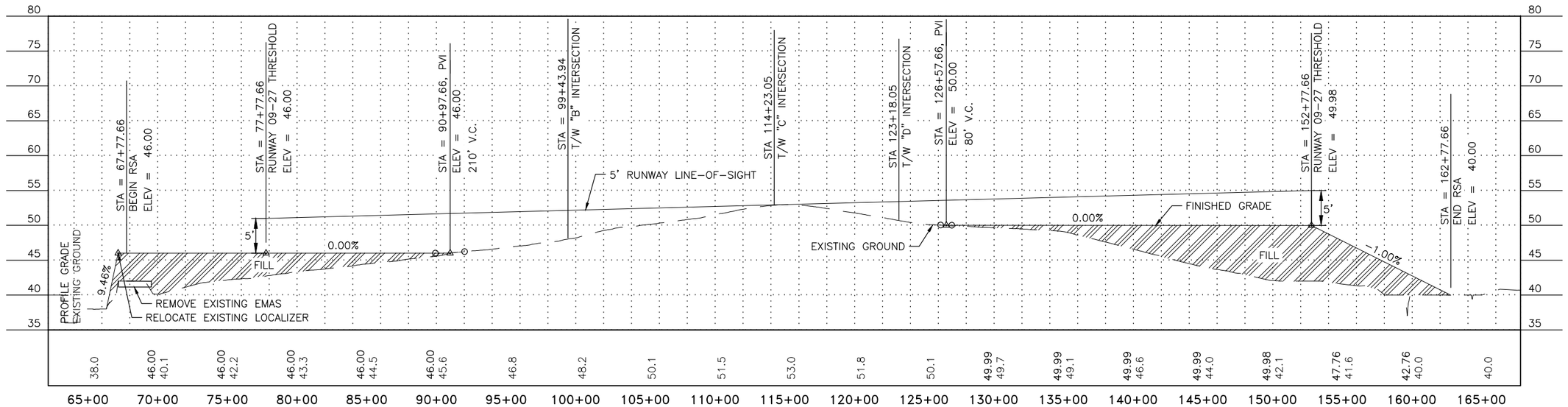

Michael Baker INTERNATIONAL

Runway Option 1 - Shift Runway 9-27 To The East

Figure 6-1

6.3.2 Runway Option 2 – Replace EMAS

Runway Option 2, shown in **Figure 6-2**, provides a 66-knot EMAS system off the end of Runway 9 to minimize and meet FAA RSA standards. The runway thresholds would be located in their current locations to maintain the existing 7,500-foot runway length; however, the runway end elevation of Runway 9, associated safety area beyond the threshold, and the initial 1,200 feet of runway would be raised to 46 feet MSL to address the previously discussed water table issues. The end of Runway 27 would be raised accordingly to 49.5 feet MSL to resolve existing line-of-sight deficiencies. As in the previous alternative, the central portion of the runway profile would be maintained to avoid possible impacts to existing taxiway connections and Runway 16-34. This option would also include relocating the localizer and glideslope facilities. Laying out the required geometry for this alternative results in the Runway 9-27 and EMAS infrastructure to sufficiently "fit" without minimal impacts to the surrounding wetlands.

6.3.2.1 EMAS Assessment

EMAS is a system of crushable blocks placed on the Runway Safety Area (RSA) of an airport to stop an aircraft in the event of an overrun of the runway. High speed runway excursions have the potential to cause aircraft damage and loss of human life. The most common of these incidents are overruns. Current FAA standards of RDC D-III airport designs include a 1,000-foot RSA around the runway end for overrun protection. Prior airport design standards allowed obstacles such as bodies of water, highways, railroads, populated areas, or even a severe terrain gradient to be located at the runway end. Because of this, many airports are not able to achieve the full standard RSA. EMAS was developed to mitigate damage and injuries resulting from an aircraft overrun at airports without a suitable RSA. The EMAS is located at the end of the runway and can vary in size and height based on site specific requirements.

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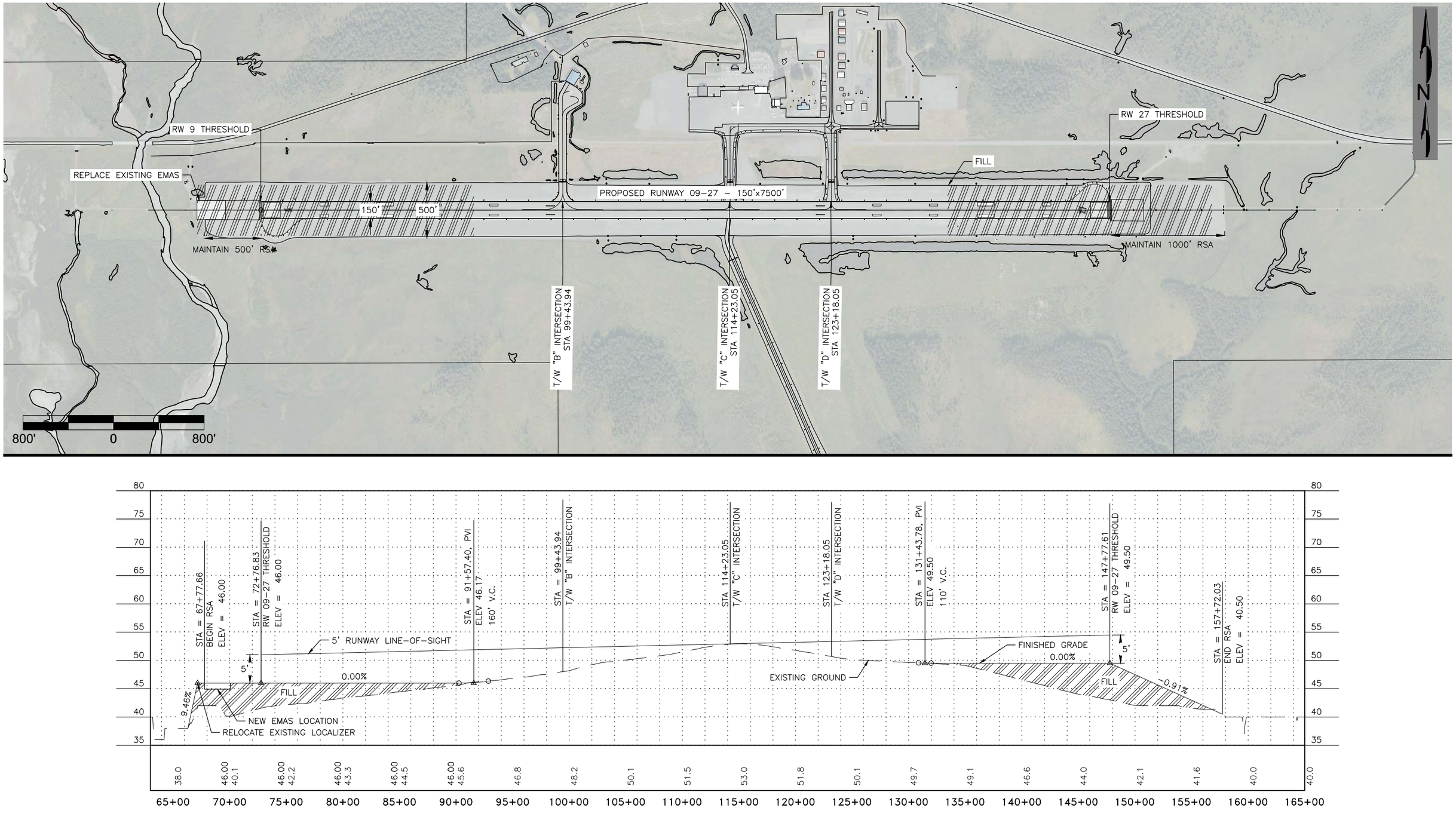

RW 9 THRESHOLD
REPLACE EXISTING EMAS
150'
500'
MAINTAIN 500' RSA
PROPOSED RUNWAY 09-27 – 150'x7500'
FILL
RW 27 THRESHOLD
MAINTAIN 1000' RSA
T/W "B" INTERSECTION STA 99+43.94
T/W "C" INTERSECTION STA 114+23.05
T/W "D" INTERSECTION STA 123+18.05
N
800'
0
800'
STA = 67+77.66 BEGIN RSA ELEV = 46.00
STA = 72+76.83 RW 09-27 THRESHOLD ELEV = 46.00
STA = 91+57.40, PVI ELEV 46.17 160' V.C.
STA = 99+43.94 T/W "B" INTERSECTION
STA 114+23.05 T/W "C" INTERSECTION
STA 123+18.05 T/W "D" INTERSECTION
STA = 131+43.78, PVI ELEV 49.50 110' V.C.
STA = 147+77.61 RW 09-27 THRESHOLD ELEV = 49.50
STA = 157+72.03 END RSA ELEV = 40.50
5' RUNWAY LINE-OF-SIGHT
5'
0.00%
9.46%
FILL
NEW EMAS LOCATION
RELOCATE EXISTING LOCALIZER
EXISTING GROUND
FINISHED GRADE
0.00%
5'
FILL
-0.91%
80
75
70
65
60
55
50
45
40
35
38.0
46.00 40.1
46.00 42.2
46.00 43.3
46.00 44.5
46.00 45.6
46.8
48.2
50.1
51.5
53.0
51.8
50.1
49.7
49.1
46.6
44.0
42.1
41.6
40.0
40.0
65+00
70+00
75+00
80+00
85+00
90+00
95+00
100+00
105+00
110+00
115+00
120+00
125+00
130+00
135+00
140+00
145+00
150+00
155+00
160+00
165+00

The system is made of high energy absorbing materials and is similar in concept to the runaway truck ramps made of sand or gravel. The RSA is 500 feet wide and extends 1,000 feet beyond each end of the runway. It provides a graded area in the event that an aircraft overruns, undershoots, or veers off the side of the runway. Many airports were built before the current RSA standard was adopted approximately 20 years ago. In some cases, it is not practicable to achieve the full standard RSA because there may be a lack of available land. There also may be obstacles such as bodies of water, highways, railroads, and populated areas or severe drop-off of terrain. A standard EMAS installation can stop an aircraft from overrunning the runway at approximately 80 miles per hour. The tires of the aircraft sink into the lightweight material and the aircraft is decelerated as it rolls through the material. An EMAS arrestor bed can be installed to help slow or stop an aircraft that overruns the runway, even if less than a standard RSA length is available.

The FAA began conducting research in the 1990s to determine how to improve safety at airports where the full RSA cannot be obtained. Working in concert with the University of Dayton, the Port Authority of New York and New Jersey, and the Engineered Arresting Systems Corporation (ESCO) a system of crushable material was developed and extensively tested. Runway Safe, Inc. purchased the assets of ESCO in February 2020 and is now the sole FAA approved provider of EMAS.

EMASMAX® is the latest version of Runway Safe's block based EMAS, developed with and technically accepted by the FAA. EMASMAX arrestor beds are composed of blocks of lightweight, crushable cellular cement material designed to safely stop airplanes that overshoot runways. EMAS is located at the end of the runway and is typically the full width of the runway. The length depends on the airport configuration and the aircraft fleet using the airport. The FAA must still review and approve each EMAS installation.

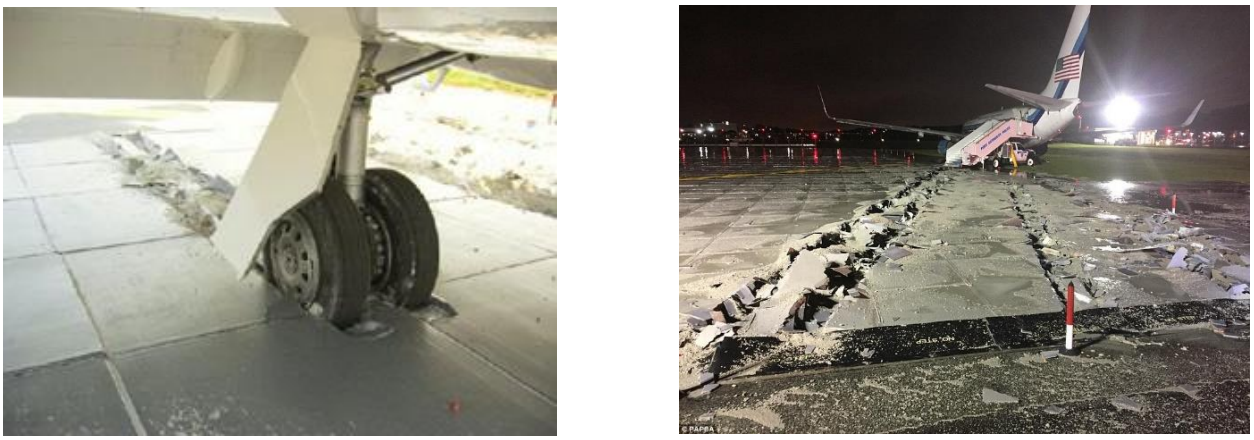


Figure 6-3: EMAS In Use

ESCO, now Runway Safe, originally configured the EMAS at CDV in August of 2005 for the Boeing 737-400 to be arrested at 70 knots (@ Max Take Off Weight, MTOW). The current bed, installed in 2007, begins 280 feet from runway end and extends to 575 feet from runway end making the bed 295 feet long.

At the time, the manufacturer also considered the Boeing 737-900 as a potential future Alaska Airlines operation and consequently included it's predicted performance in the original configuration report. Interestingly, the weight of the 737-900 used happens to be identical to the 737-800 and thus the performance of the -800 can be expected to be similar as was predicted for the B737-900.

For the existing EMAS installation, Runway Safe expects the B737-800/-900 at MTOW of 174,200 pounds to be arrested at a runway exit speed of 66 knots (MTOW) vs 70 knots for the B737-400 (MTOW). At 80% MLW the -800/-900 would be expected to perform +1 knot better than -400.

In the event the EMAS was sized to provide 70 knot performance for the 737-800/900 (+4 knots better than current bed); Runway Safe expects an additional 32 feet of EMASMAX is needed to retain 70 knot performance.

Table 6-3: Current Predicted EMAS Arresting Performance - MTOW

Aircraft Model	Category	MTOW (LB)	Design Case (knots)
DHC 8-300	Fleet	41,100	78
Boeing 737-400	Fleet/Design	144,000	70
Boeing 737-900/-800	Low Ops	174,200	66

Sources: Various Aircraft Operating Manuals; Runway Safe Group
Compiled by Michael Baker International, 2021

Table 6-4: Current Predicted EMAS Arresting Performance - 80% MLW

Aircraft Model	Category	80% MLW (LB)	Design Case (knots)
DHC 8-300	Fleet	32,000	71
Boeing 737-400	Fleet	99,200	73
Boeing 737-900/-800	Low Ops	117,040	74

Sources: Various Aircraft Operating Manuals
Compiled by Michael Baker International, 2021

Runway Option 2 provides minimally acceptable 66 knot performance (IAW FAA Order 5200.9) within the shortest RSA in order to minimize impacts to the surrounding environment. Using an RSA with a total length of 500 feet and the above EMAS can provide a 66-knot performance for the fleet mix at MTOW and 74-knot performance at 80% MLW, as shown in Tables 6-3 and 6-4.

The existing EMAS at CDV is now 14 years old and with a 20-year life expectancy needs a specialized field strength testing to determine if it is still capable of performing as expected. Like most pavement systems on the airfield, EMAS is designed for 20 years of service.

However, FAA Part 139 inspectors expect this testing to be performed as the bed ages so it is recommended that DOT&PF perform a Field Strength Test (FST) in the short term. For the purposes of this Master Plan, a bed replacement is needed within the next 6 to 7 years.

This is the most desirable EMAS option because it allows the EMAS and the existing 7,500-foot-long runway to fit inside the existing envelope with minimal impacts to the surrounding environment.

6.4 Instrument Approach Analysis

As part of the airfield alternatives analysis, established instrument approach procedures and implementation of new precision approach technologies were considered for the existing ends of both runways.

It is recommended to establish a Local Area Augmentation System (LAAS) for a Global Positioning Satellite (GPS) approach to Runway 27 and improve the approach lighting system on Runway 9 with the establishment of a MALSR. The LAAS provides greater location accuracy to the current GPS approach to Runway 27. The MALSR would improve runway visibility at night and during poor weather conditions, replacing the current Omnidirectional Approach Lighting System (ODALS) on Runway 9. The possibility of providing such improvements at CDV in the future will be further considered as part of the Alternatives Refinement process pending the results of the Runway Development Options.

6.5 Terminal Area

As RDC D-III design standards continue to be implemented at CDV, portions of the existing terminal apron will be unavailable for aircraft parking, requiring future expansion of the Terminal Apron and Passenger Terminal/Cargo areas. In the future, the Terminal Apron will need to accommodate movement and parking for at least three ADG D-III passenger and cargo aircraft (i.e., Boeing 737-800/900, C-130, MD-80 aircraft). No improvements are required or anticipated for the passenger terminal; however, the ability to simultaneously park two Boeing 737-800/900 aircraft was identified during this planning process.

Two separate Terminal Area alternatives were developed to support projected RDC D-III operations at the airport. In addition to facility needs identified in Chapter 5, recommendations from the previous master planning effort were also revalidated and considered. The following key elements were considered in the development of the terminal area alternatives:

- Maximizing the use of existing terminal area facilities
- Providing power-in/power-out parking positions for ADG III aircraft adjacent to the Passenger Terminal and within the expanded apron area
- Providing for ADG-III/TDG 3 aircraft movement on the existing and expanded Terminal Apron areas
- Adding/improving taxiway connections to meet Taxiway Design Group (TDG) 3 standards
- Removing portions of existing taxiway pavement to eliminate direct access to the runway from the Terminal Apron

- Improving automobile parking capacity to support Terminal Area facilities

Table 6-5 highlights the advantages and disadvantages of each option.

Table 6-5: Terminal Area Development Comparison

Option	Highlights	
	Advantages	Disadvantages
Terminal Area Concept 1	• 6 additional ADG-III parking positions • More apron area available for future tenants on the north side of the apron expansion	• Impacts to the local environs that would likely require filling wetlands and will require culverting or redirecting portions of the waterway. • Possible Hangar Relocation
Terminal Area Concept 2	• 5 additional ADG-III parking positions • No impact to existing hangars • Apron could be expanded to the north in the future if needed	• Impacts to the local environs that would likely require filling wetlands and will require culverting or redirecting portions of the waterway. • Less apron area available for future tenants on the north side of the apron expansion

Source: Michael Baker International, Inc., July 2021

6.5.1 Passenger Terminal Aircraft Parking Positions

The planning team evaluated the ability to add additional parking for the B737-8 critical aircraft that regularly operates at the airport, while providing apron space for other cargo aircraft to park and operate concurrently. As a result of this analysis, shifting the existing parking position northeast and relocating it closer to the Alaska Airlines Passenger Terminal is proposed. Shifting this parking position will allow for a second parking position with the same orientation located to the west. The passenger aircraft parking positions allow the aircraft to park at an angle adjacent to the Passenger Terminal with the passenger and pilot doors facing the facility. The respective taxilane lead in lines for these aircraft parking positions are approximately 182 feet apart to provide space for the aircraft to power in and power out without entering the safety envelopes required to service the aircraft while parked. The proposed parking positions also allow aircraft to power in and power out while maintaining the necessary wingtip clearances required for ADG-III aircraft movement. This configuration also provides the space needed to park cargo aircraft at the west end of the existing terminal apron. The existing Secure Identification Display Area (SIDA) is expanded to accommodate the proposed expansion. This proposed aircraft parking configuration and expanded SIDA is depicted in **Figure 6-4**.

A second option is also presented for consideration in the event tug equipment becomes available at CDV in the future. **Figure 6-5** depicts a push back option capable of accommodating two Boeing 737-800 parking position. This configuration results in a smaller

aircraft parking and SIDA footprint. This option would also free up existing apron for the movement and parking of other aircraft.

6.5.2 Terminal Area Vehicle Parking

As discussed in Chapter 5, Facility Requirements, CDV is a commercial service airport that accommodates the need for parking passengers as well as visitors. The Long-Term Parking Lot is currently located on the east side of Cabin Lake Road prior to reaching the passenger terminal area. This gravel lot provides approximately 12,000 square feet of area capable of accommodating approximately 75 parking spaces.

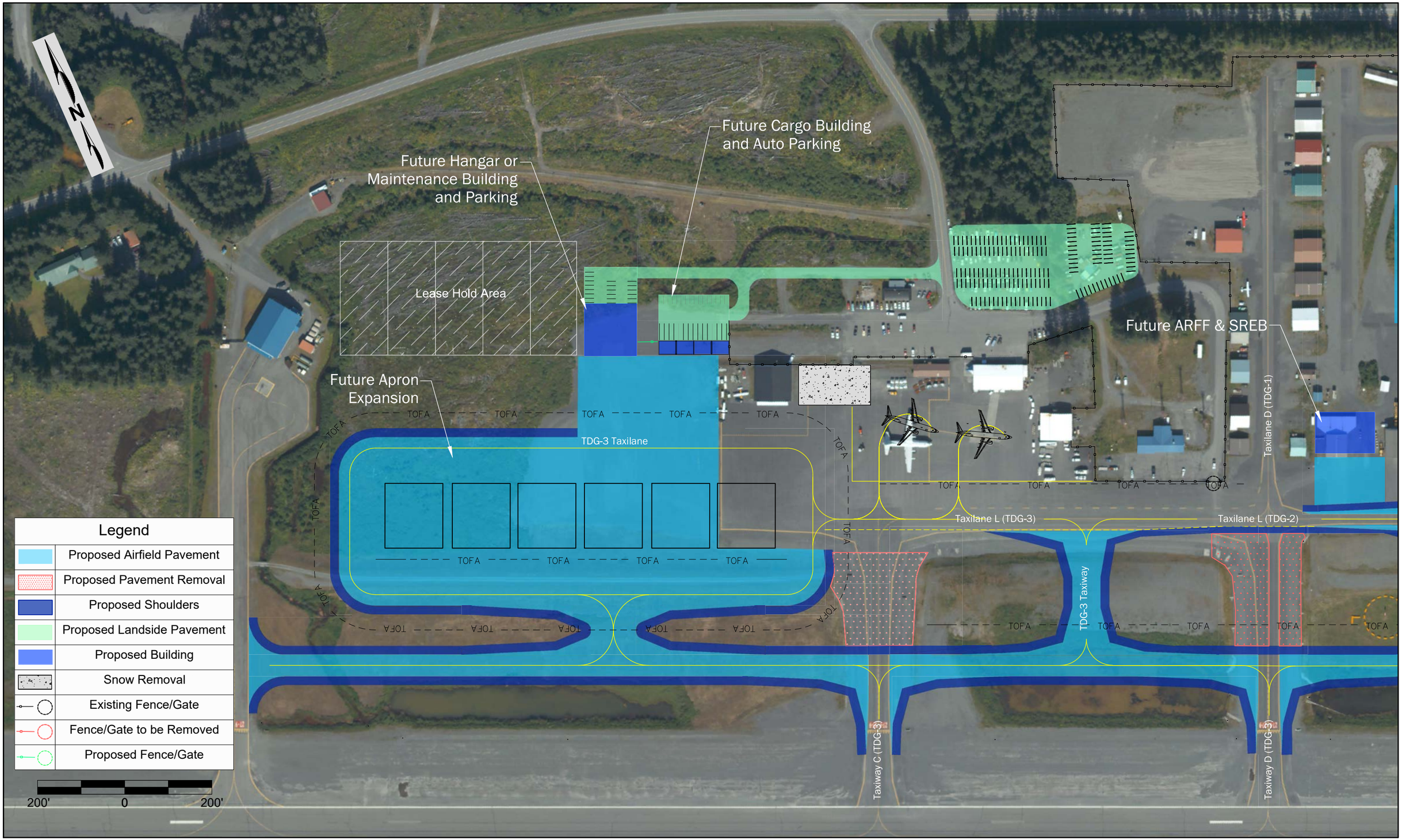
Due to the frequency and nature of the scheduled airline and passenger charter operations, existing vehicle parking was reported to be sufficient during peak operational periods. However, as part of the stakeholder review process, the planning team was asked to identify the potential for expanding the Long-Term Parking Lot in the future. Therefore, expansion of the Long-Term Parking Lot is incorporated into the Terminal Area concepts discussed in the following sections.

6.5.3 Terminal Area Concept 1

As shown in **Figure 6-4**, Terminal Area Concept 1 is designed to maximize the use of existing airport property to accommodate future passenger and cargo activity at the airport. This development alternative proposes extending a portion of the apron area approximately 140 feet to the south toward the runway. Extending the apron to the south allows for the development of additional parking spaces for larger ADG-III aircraft (i.e., Boeing 737-800, MD-80, and C-130 aircraft) on the terminal apron. Terminal Area Concept 1 also shows an expansion of the terminal apron to the west by developing the open area currently situated between Taxiway B (which leads to the US Coast Guard lease area) and the existing terminal apron.

Access to the apron expansion is provided by a proposed partial parallel taxiway (which extends from Taxiway B to the general aviation area via Taxiway K), and a series of existing and proposed taxiway connectors. Portions of Taxiways C and D between Taxilane L and the proposed parallel taxiway would be removed to reduce runway and taxiway incursions by eliminating direct access between the Terminal Apron and Runway 9-27. However, A portion of Taxiway D will be maintained as a service road to meet the airport's ARFF response requirement. The taxiways/taxilanes serving the Terminal Area would be designed to meet ADG-III/TDG 3 design standards.

This proposed expansion provides a new apron taxilane system that facilitates the movement of ADG-III/TDG 3 aircraft while accommodating six ADG-III power-in/power-out aircraft parking positions adjacent to an area reserved for future cargo, hangar, and other aeronautical facilities. The parking layout shown in this alternative is oriented east to west and runs across the approximately 47,078 SY apron expansion. The parking configuration allows aircraft to power in and power out facing the runway and provides additional developable area to the north.


N
Future Hangar or Maintenance Building and Parking
Future Cargo Building and Auto Parking
Lease Hold Area
Future Apron Expansion
Future ARFF & SREB
TOFA
TDG-3 Taxilane
Taxilane D (TDG-1)
Taxilane L (TDG-3)
Taxilane L (TDG-2)
TDG-3 Taxiway
Taxiway C (TDG-3)
Taxiway D (TDG-3)
Legend
Proposed Airfield Pavement
Proposed Pavement Removal
Proposed Shoulders
Proposed Landside Pavement
Proposed Building
Snow Removal
Existing Fence/Gate
Fence/Gate to be Removed
Proposed Fence/Gate
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200'

The alternative supports commercial development opportunities associated with air cargo, aircraft maintenance, and other aeronautical activities. For example, a 5,000 square-foot Air Cargo Terminal with associated parking and loading-unloading zone areas is proposed. The Air Cargo Terminal could be built in phases and possibly serve multiple service providers depending upon demand and tenant requirements. Also, a 14,400 square-foot hangar is proposed adjacent to the proposed cargo terminal to support future aircraft storage and/or maintenance needs. Access to these facilities is provided via a relocated service road. This concept provides expansion potential beyond the 20-year planning horizon and provides areas for future lease lot expansion.

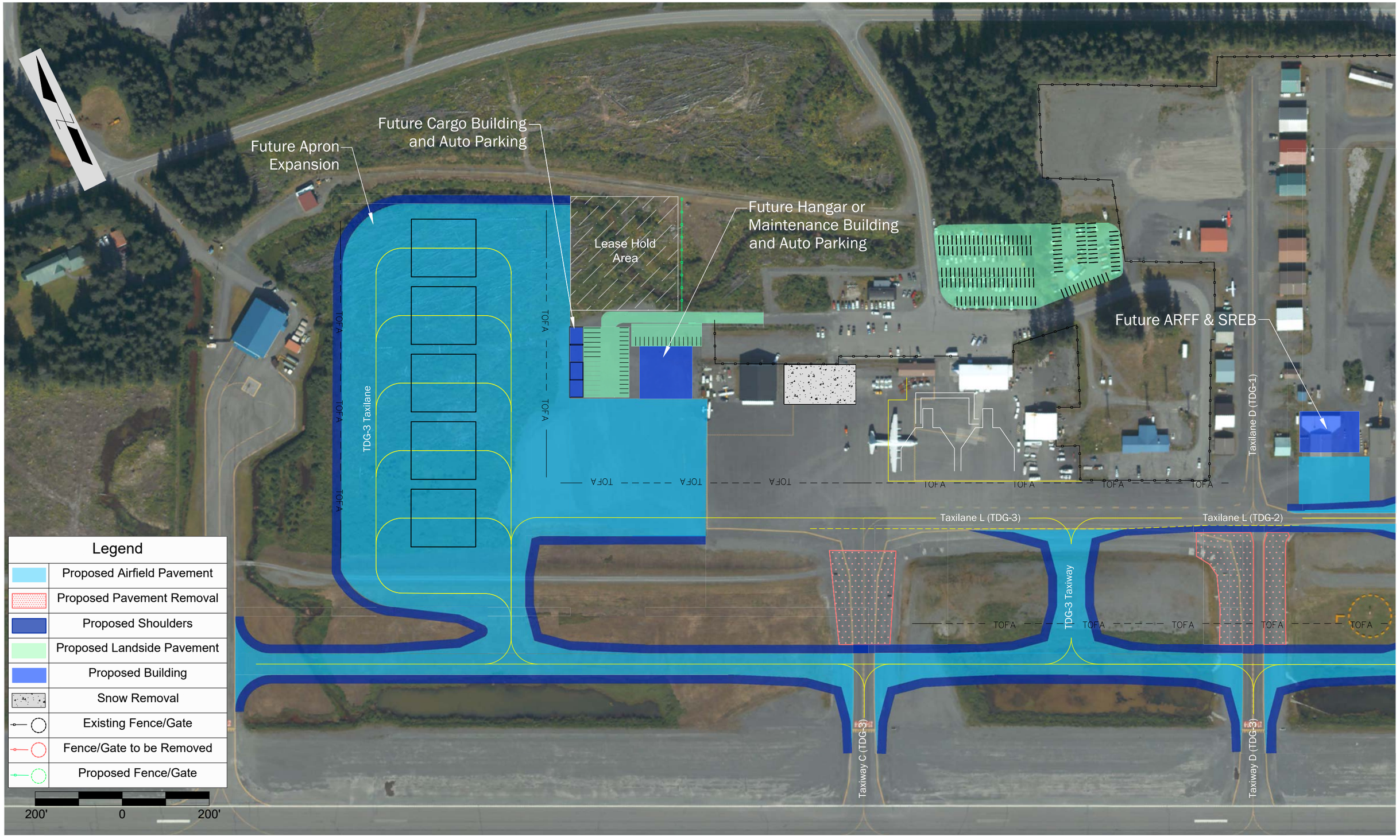
In Terminal Area Concept 1, the proposed facilities are aligned parallel to Runway 9-27 and the proposed apron configuration and located further north to provide additional area in front of the proposed cargo terminal and hangar to facilitate aircraft movement, parking, and equipment storage. However, it is important to note that this proposed concept would impact current tenant activities (Alaska Wilderness Outfitting Company) since the associated taxilane object free area (TOFA) would impact the ability to park aircraft and store equipment in front of and adjacent to the existing hangar. Therefore, relocation of this hangar to another location on the airport is recommended if this concept is selected as the preferred development concept.

Terminal Area Concept 1 exceeds the future aircraft parking needs and optimizes the use of the existing developable area. This alternative accommodates future needs beyond the 20-year planning horizon on existing airport property and can be phased as warranted by future demand and market conditions.

Terminal Area Concept 1 would have potential impacts to the local environs. It would likely require filling wetlands and will require culverting or redirecting portions of the waterway.

6.5.4 Terminal Area Concept 2

As shown in **Figure 6-5**, Terminal Area Concept 2, the terminal area is reconfigured to meet/exceed future terminal area needs and provides for future lease lot expansion. Similar to the previous concept, Terminal Area Concept 2 provides a new apron taxilane system that facilitates the movement of ADG III/TDG 3 aircraft while accommodating five ADG-III power-in/power-out aircraft parking positions adjacent to an area reserved for future cargo and hangar facilities, and other aeronautical development lease lots. The parking layout shown in this alternative is oriented north to south and is situated across approximately 62,422 SY of new apron. Vehicular access and parking areas are provided to support the proposed facilities.


Future Apron Expansion
Future Cargo Building and Auto Parking
Lease Hold Area
Future Hangar or Maintenance Building and Auto Parking
Future ARFF & SREB
TDG-3 Taxilane
TDG-3 Taxiway
Taxilane L (TDG-3)
Taxilane L (TDG-2)
Taxilane D (TDG-1)
Taxiway C (TDG-3)
Taxiway D (TDG-3)
TOFA
Legend
Proposed Airfield Pavement
Proposed Pavement Removal
Proposed Shoulders
Proposed Landside Pavement
Proposed Building
Snow Removal
Existing Fence/Gate
Fence/Gate to be Removed
Proposed Fence/Gate
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Terminal Area Concept 2 proposes a new Cargo Terminal and a future hangar with the same characteristics as proposed in the previous alternative; however, in Concept 2 the buildings are aligned with the existing facilities, providing enough space to the north to accommodate parking lots for each facility without impacting the nearby stream. In this development option, the perpendicular orientation of the aircraft parking positions results in more space in front of the proposed hangar without impacting the operation of the existing hangar tenant (Alaska Wilderness Outfitting Company).

Terminal Area Concept 2 also exceeds the future aircraft parking needs and optimizes the use of the existing developable area. This alternative accommodates future needs beyond the 20-year planning horizon on existing airport property and can be phased to meet future demand and market conditions.

Terminal Area Concept 2 would have potential impacts to the local environs. It would likely require filling wetlands and will require culverting or redirecting portions of the waterway.

General Aviation Area

The recommended facilities for general aviation operations include additional aircraft storage and parking facilities. Due to the existing topography and the resulting amount of developable area available, it is important to consider the needs of both airport support and general aviation facilities in this area of the airport. At airports serving scheduled air carrier operations, it is customary to separate general aviation activity and facilities from larger commercial aircraft activities to enhance airport safety, security, and efficiency.

In the future, additional general aviation hangars and itinerant aircraft parking facilities for larger general aviation aircraft are needed at CDV. Currently, larger general aviation jets (ADG II) frequenting CDV must use the Terminal Apron. During peak periods there have been issues associated with the movement and parking of commercial and general aviation aircraft within a constrained Terminal Apron Area. This was identified in Chapter 5, Facility Requirements, and confirmed by stakeholders during the public engagement process of this project. As a result, this master plan takes a fresh look at accommodating future general aviation and airport support facilities.

Two separate General Aviation Area Concepts were developed to support projected ADG I and ADG II operations at the airport. In addition to facility needs identified in this master plan, recommendations from the previous master planning effort were also revalidated and considered. The following key elements were considered in the development of the general aviation area alternatives:

- The ability to accommodate up to ADG-II/TDG 2 general aviation aircraft movements and itinerant parking needs
- Optimize hangar development to accommodate more based aircraft
- Improve public access to hangars and the itinerant apron area while maintaining airside security.

- Improve the services offered by the airport (Fixed Base Operator (FBO), Fueling, Parking, and support services)

The following alternatives recommend the consolidation of general aviation facilities on the east side of the airport, maximizing hangar development and adding the capability of accommodating ADG-II aircraft movement and parking needs in the future. To achieve these objectives, it is necessary to upgrade taxiway/taxilane access to better serve this area. The width of Taxilane L will need to be expanded to 35 feet to accommodate larger ADG-II/TDG 2 aircraft movements. As a result, the TOFA will be increased from 79 feet to 115 feet, requiring a shift of the existing itinerant tie-down positions to the north.

Currently, Taxiways D and K, and Taxilane L are 25 feet wide. These taxiways/taxilane would need to be 35-feet wide to comply with TDG 2 standards. It is possible to expand the width of Taxilane L and Taxiway K without impacting any existing infrastructure. However, the northern portion of Taxiway D will continue to be classified as a TDG 1 taxiway due to its proximity to existing hangars along the taxiway. Additionally, 15-foot-wide shoulders are recommended along the taxiways and taxilanes to enhance operational safety.

The previously discussed topics are common to the two general aviation alternatives discussed in this section. Table 6-6 highlights the advantages and disadvantages of each concept.

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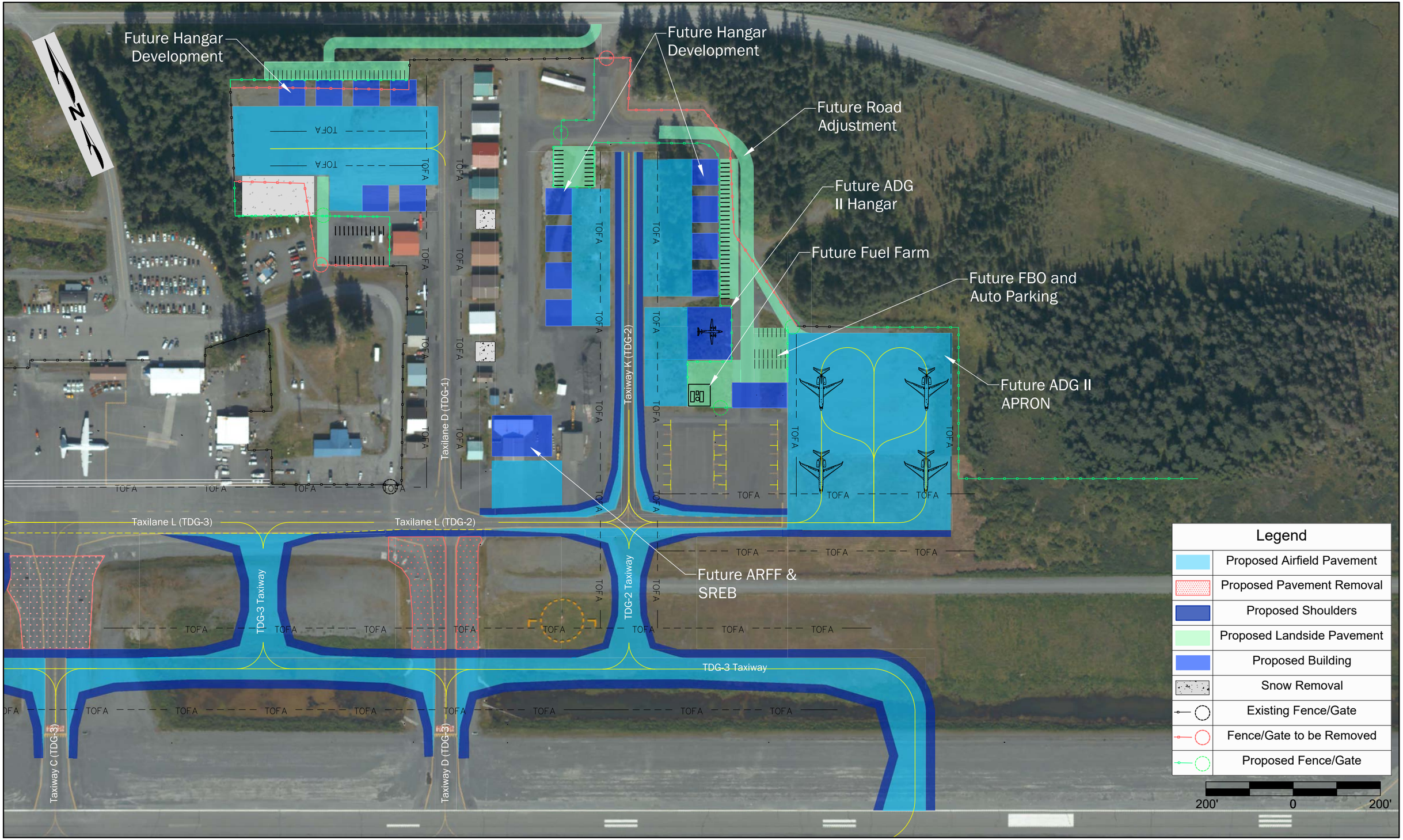
Table 6-6: General Aviation Area Development Comparison		
Option	Highlights	
	Advantages	Disadvantages
General Aviation Area Concept 1	• Provides 18,833 SY apron capable of accommodating 4 ADG-II/TDG-2 aircraft parking positions. • Provides 8 ADG-I Hangars (60x60) along Taxiway K. • Provides 1 ADG-II (120x100) Hangar. • Public access closer to the General Aviation Ramp. • Provides 6 ADG-I hangars at the northwest general aviation area. • Identifies site for Fuel Farm • Provides a 7,200 SF FBO	• Parallel taxiway improvements proposed in this development concept would likely incur substantial wetland impacts and might also impact anadromous waterways. • Access to hangars along Taxiway D not accessible to the public.
General Aviation Area Concept 2	• Provides 24,333 SY apron capable of accommodating 4 ADG-II/TDG-2 aircraft parking positions. • Provides 11 ADG-I Hangars (60x60) along Taxiway K. • Provides 1 ADG-II (120x120) Hangar. • Public access closer to the General Aviation Ramp. All hangars are publicly accessible. • Provides 6 ADG-I hangars at the northwest general aviation area. • Identifies site for Fuel Farm. • Provides a 7,200 SF FBO	• Parallel taxiway improvements proposed in this development concept would likely incur substantial wetland impacts and might also impact anadromous waterways.

Source: Michael Baker International, Inc., July 2021

6.5.5 General Aviation Area Concept 1

As shown in **Figure 6-6**, General Aviation Area Concept 1 includes an 18,833 SY itinerant apron capable of accommodating four ADG-II aircraft (i.e., Gulfstream 650) parking positions oriented perpendicular to Taxilane L. Next to the apron, a 7,200 square-foot FBO terminal is proposed to provide aviation services in support of based and itinerant general aviation aircraft activity at the airport.

Along the improved Taxiway K, eight 3,600 square-foot ADG-I hangars and one 12,000 square-foot ADG-II corporate hangar are proposed. Each hangar will have ample apron space available in front to accommodate aircraft parking and equipment storage without penetrating the TOFA. The road leading to the existing itinerant apron is realigned and paved to accommodate future hangar development, provide public access to the proposed General Aviation Apron, and address foreign object debris (FOD) concerns, as depicted in **Figure 6-6**.


Future Hangar Development
Future Hangar Development
Future Road Adjustment
Future ADG II Hangar
Future Fuel Farm
Future FBO and Auto Parking
Future ADG II APRON
Future ARFF & SREB
Taxilane D (TDG-1)
Taxiway K (TDG-2)
Taxilane L (TDG-3)
Taxilane L (TDG-2)
TDG-3 Taxiway
TDG-2 Taxiway
TDG-3 Taxiway
Taxiway C (TDG-3)
Taxiway D (TDG-3)
TOFA
Legend
Proposed Airfield Pavement
Proposed Pavement Removal
Proposed Shoulders
Proposed Landside Pavement
Proposed Building
Snow Removal
Existing Fence/Gate
Fence/Gate to be Removed
Proposed Fence/Gate
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A vehicular parking lot is proposed near the General Aviation Apron to serve the parking/rental car needs of the FBO, Itinerant Apron, and proposed hangar facility. Additional parking is proposed adjacent to the 3,600 square-foot hangars (east of Taxiway K) and a consolidated parking lot is provided north of the middle row of hangars located west of Taxiway K. Self-service fueling facilities are proposed adjacent to the existing itinerant tie- down apron.

Within the northwest corner of the general aviation area, six 3,600 square-foot hangars are provided with two dedicated parking lots. Paved public access to these parking areas is recommended via Copper River Highway and from the Passenger Terminal area to reduce FOD. In addition, a snow storage area is proposed at this location.

One of the main concerns identified during the planning process is the challenge associated with providing public access to existing and future hangar facilities and the itinerant apron area. Access to existing hangars and the air operations area (AOA) in general is controlled by a series of gates. As depicted in **Figure 6-6**, installation of new fence/gates and reconfiguration of portions of the existing fence is recommended to provide improved public access to the Itinerant Apron and FBO/General Aviation Apron areas and restrict access to the AOA. However, in this alternative, vehicular access to the hangars between Taxilane D and Taxiway K will remain restricted to vehicles/drivers with the appropriate training and permit. Currently, itinerant pilots and visitors must walk long distances to existing gates serving the general aviation area. Therefore, portions of the new fence/gates should be installed in the short-term planning period to provide improved public access to the existing Itinerant Apron. The alignment of this phase of the fence project is further discussed in the alternatives refinement phase of the master plan.

The parallel taxiway improvements proposed in this development concept would likely incur substantial wetland impacts and might also impact anadromous waterways.

The general aviation development proposed in this concept exceeds future aircraft hangar storage needs beyond the 20-year planning period. Although forecast general aviation needs are addressed in this option, phasing and development of proposed facilities will ultimately be market driven.

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6.5.6 General Aviation Area Concept 2

As shown in **Figure 6-7**, General Aviation Area Concept 2 includes a 24,333 SY itinerant apron capable of accommodating four ADG-II aircraft (i.e., Gulfstream 650) parking positions similar to the previous development concept. This configuration is oriented parallel to Taxilane L and provides area along the north side of the apron suitable for other aeronautical development. This concept also proposes a 7,200 square-foot FBO terminal to provide aviation services in support of based and itinerant general aviation aircraft activity at the airport.

Along the north side of the General Aviation Apron, a 14,400 square-foot ADG-II hangar is proposed with enough space in front of the building for parking/maneuvering of fixed-wing aircraft, helicopters, and equipment storage without conflicting with the apron parking positions. In addition, a fuel farm is proposed at the northeast corner of the future General Aviation Apron.

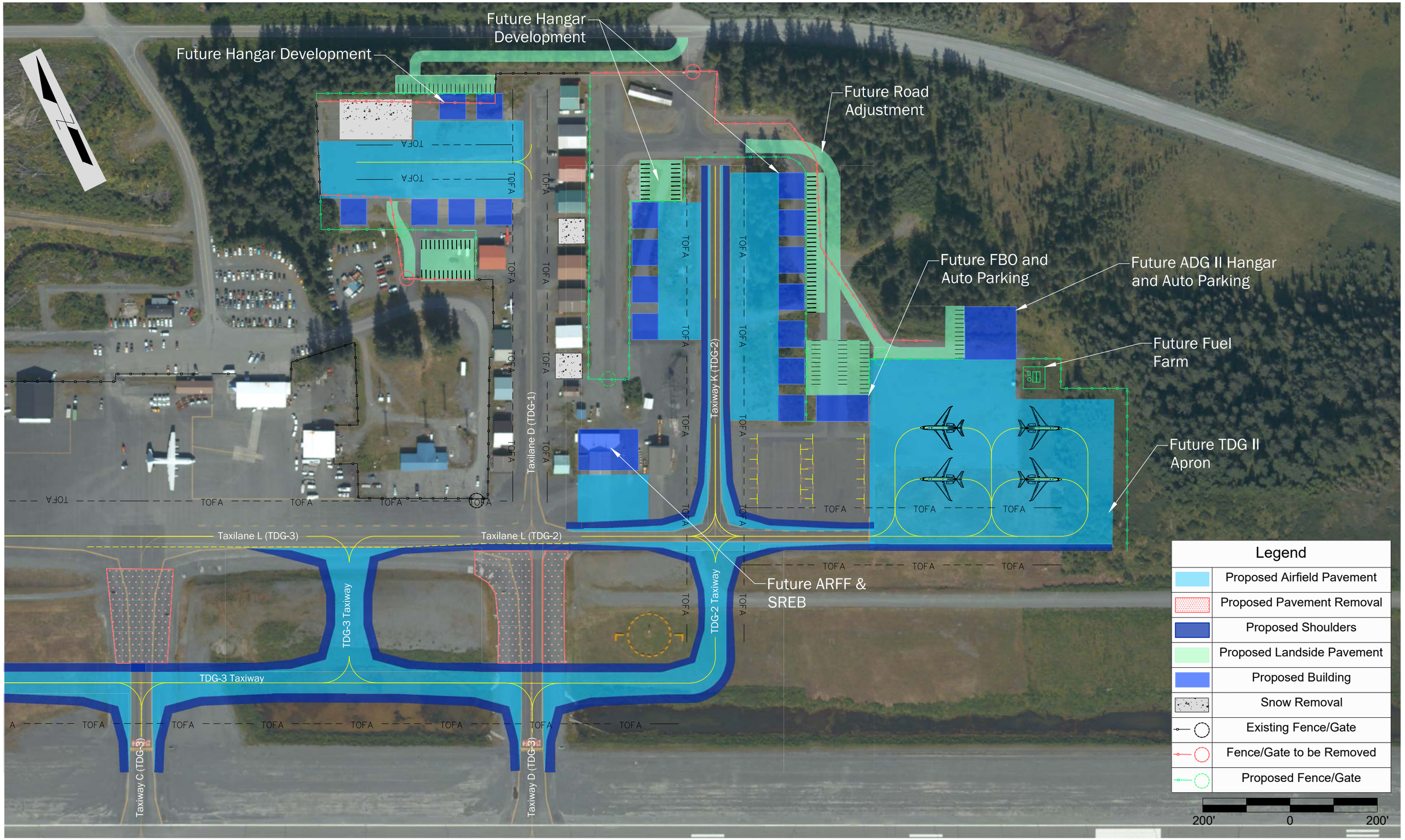
As discussed previously, Taxiway K will be expanded to 35 feet to comply with TDG-2 design standards. General Aviation Area Concept 2 accommodates eleven 3,600 square-foot ADG-I hangars along Taxiway K with sufficient apron space in front of each building to accommodate aircraft parking and equipment storage.

As depicted in **Figure 6-7**, the road leading to the existing itinerant apron is realigned and paved to accommodate future hangar development, provide public access to the proposed General Aviation Apron, and address foreign object debris (FOD) concerns.

Similar to the previous alternative, vehicular parking is proposed near the General Aviation Apron to serve the parking/rental car needs of the FBO, Itinerant Apron, and proposed hangar facility. Additional parking is also proposed adjacent to the 3,600 square-foot ADG-I hangars (east of Taxiway K) and a consolidated parking lot is provided north of the middle row of hangars located west of Taxiway K.

Within the northwest corner of the general aviation area, six 3,600 square-foot ADG-I hangars are provided with two dedicated parking lots. Paved public access to these parking areas is recommended via Copper River Highway and from the Passenger Terminal area to reduce FOD. In addition, a snow storage area is proposed at this location. This configuration is similar to the previous alternative; however, the layout is altered to account for an alternate snow storage area location.

As depicted in **Figure 6-7**, installation of new fence/gates and reconfiguration of portions of the existing fence is recommended to provide improved public access to the Itinerant Apron and FBO/General Aviation Apron areas and restrict access to the AOA. In this alternative, all hangars are publicly accessible to address the previously discussed concerns. Gates are proposed at the General Aviation Apron, ARFF/SREB area, and the northeast hangar area.



General Aviation Area - Concept 2

Figure 6-7

The parallel taxiway improvements proposed in this development concept would likely incur substantial wetland impacts and might also impact anadromous waterways.

The general aviation development proposed in this concept exceeds future aircraft hangar storage needs beyond the 20-year planning period. Although forecast general aviation needs are addressed in this option, phasing and development of proposed facilities will ultimately be market driven.

6.6 Support Facilities

As described in earlier chapters of the plan, support facilities include a wide range of functions intended to ensure the smooth, efficient, and safe operation of the airport. Design guidelines for these facilities are provided in a variety of FAA Advisory Circulars and Airport Cooperative Research Program (ACRP) reports. However, the requirements for these facilities were also based on interviews with airport staff, airport tenants, and users which facilitated a better understanding of the existing and future facility requirements. Provisions for locating existing support facilities are depicted in **Figures 6-6** and **6-7**. This includes facilities to accommodate future ARFF/SREB facility and the proposed fuel farms.

6.6.1 Fuel Storage Facilities

As discussed in Chapter 5, Facility Requirements, there are no commercial aviation fuel storage facilities currently at the airport. Several tenants maintain their own fuel supplies and the majority of general aviation operators obtain and carry their own avgas from a local distributor. Based upon input received from stakeholders during the master planning process, it was requested that the planning team evaluate potential sites for a future fuel farm. As shown in **Figures 6-6** and **6-7**, two potential locations were presented as part of the General Aviation Area development alternatives for further consideration.

6.6.2 Aircraft Rescue and Firefighting Facility and Snow Removal Equipment Building

The existing Aircraft Rescue and Firefighting Facility (ARFF)/Snow Removal Equipment Building (SREB) facility is currently under construction and is anticipated to be finished during the short-term planning period. However, the project is currently facing PFAS issues that are expected to delay construction of the project for an undetermined period of time. The location of this facility is reflected accordingly in the previous General Aviation Area concepts. It is important to note that the planning team has taken steps to ensure that the alternatives considered in this plan do not impact the proposed facility design. This facility is anticipated to meet the airport's ARFF and snow removal equipment storage needs over the 20-year planning horizon.

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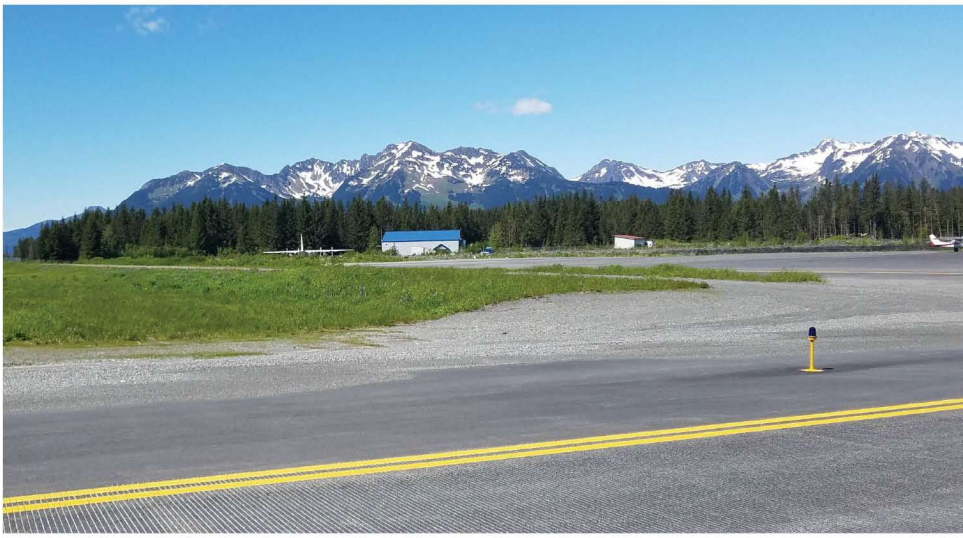
Chapter 7
Airport Alternatives Refinement

CORDOVA MERLE K. "MUDHOLE" SMITH AIRPORT MASTER PLAN UPDATE



7 AIRPORT ALTERNATIVES REFINEMENT

Based on input from DOT&PF staff and working group members, as well as comments from the public, refinements to the line of sight for Runway 9-27, terminal area alternatives, and general aviation area/support facility alternatives are needed to address issues raised or direction received during the review process. The revision of individual or combined multiple airport facility development options or the combination of individual alternatives into a new airport-owner preferred airport facility development alternative for implementation are a result of this refinement process.

During the alternative refinement process the FAA updated its current airport design standards advisory circular. The preferred alternative and the ALP drawings reflect the changes, new standards and technical requirements presented in the AC 150/5300-13B.

This chapter identifies and documents the rationale for the refinement of the preferred alternative, and each refinement is discussed and reviewed using similar criteria to that was used to evaluate the initial set of alternatives. At the conclusion of this process, the revised analysis focuses on the Master Plan's recommendations. In addition to these recommendations, a more detailed list of capital improvement projects is documented in **Chapter 8**. The preferred development concept will serve as the foundation for developing the Airport Layout Plan (ALP) Drawing Set for Merle K. (Mudhole) Smith Airport (CDV).

7.1 Preferred Airport Development

The Master Plan Update focuses on aircraft likely to use the airport in the next 20 years. After consultation with airport users, the City of Cordova, the Federal Aviation Administration (FAA), and other project stakeholders, DOT&PF has selected a preferred Airport Facility Improvement Program that includes, but is not limited to:

- Forecasts of Future Airport Operational Demand
- Identification of a Representative Family of One or More Critical Design Aircraft
- Enhancement of Runway 9-27 to Meet Line of Sight Requirements
- Expansion of Terminal Apron and Enhancement of Aircraft Movement Areas and Parking Schemes
- Enhancement and Expansion of General Aviation Apron and Aircraft Storage Facilities.
- Perimeter Security Fence
- Construction of a New Snow Removal Equipment Building (SREB) and Ramp

As shown in **Figure 7-1**, the figure includes a combination of the airfield and landside development alternatives that were presented in Chapter 6, Airport Alternatives, and further refined in this chapter. A detailed listing of airport projects that are anticipated during the 20-year planning period is presented within the Capital Improvement Program (CIP) included in Chapter 8, Implementation Plan.

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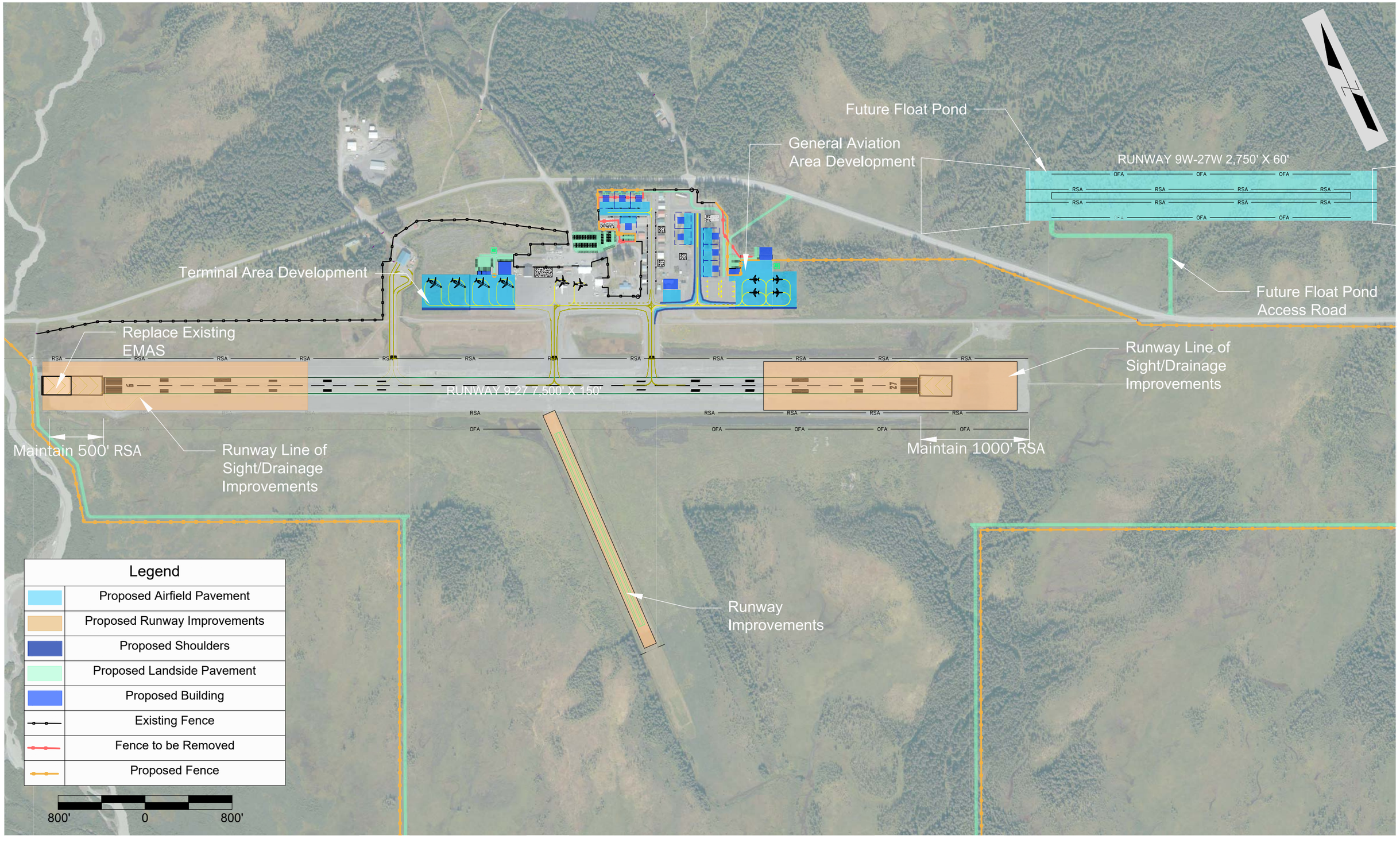
Future Float Pond
General Aviation
Area Development
RUNWAY 9W-27W 2,750' X 60'
OFA
RSA
Terminal Area Development
Future Float Pond
Access Road
Replace Existing
EMAS
Runway Line of
Sight/Drainage
Improvements
RUNWAY 9-27 7,500' X 150'
9
27
Maintain 500' RSA
Runway Line of
Sight/Drainage
Improvements
Maintain 1000' RSA
Runway
Improvements
Legend
Proposed Airfield Pavement
Proposed Runway Improvements
Proposed Shoulders
Proposed Landside Pavement
Proposed Building
Existing Fence
Fence to be Removed
Proposed Fence
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7.1.1 Runway Improvements

The primary airfield recommendation is to develop and update a runway and taxiway system that meets current FAA design standards as prescribed by AC 150/5300-13B, *Airport Design*, to facilitate unrestricted and sustained operations by aircraft having Airplane Design Group (ADG) III/Taxiway Design Group (TDG) 3 operational and dimensional characteristics. Recognizing that the preservation and enhancement of aircraft operational safety at the CDV is a priority, recommendations of this Master Plan Update will, individually or collectively, identify airport facility improvements needed to further enhance the safe and efficient use of the airport.

7.1.1.1 Runway 9-27 Improvements

During the alternatives review process, members of the working group requested further refinement to the Engineered Materials Arresting System (EMAS) Alternative (Option 2) previously discussed in Chapter 6, Airport Alternatives. The shift of Runway 9-27 (Option 1) is not being considered further due to overall cost and associated environmental concerns.

The overall goal of the refinement effort is to address runway line-of-sight issues, reduce the amount of overall cut/fill and cost, and avoid or limit potential impacts to existing taxiway connections and the crosswind runway intersection. Also, representatives from Alaska Airlines requested the team to verify the ability of the EMAS to accommodate the Boeing 737-900ER as presented. Both the original EMAS Alternative (Option 2) and a refined EMAS development (Option 3) are presented in this section for consideration. Both options have the following common characteristics:

- Resolves line-of-sight issues.
- Refined to reflect a 70-knot EMAS system off the end of Runway 9 to address airline needs while meeting FAA RSA standards.
- The thresholds for Runway 9-27 are located in their current geographic locations to maintain the existing 7,500-foot runway length.
- The runway end elevation of Runway 9, associated safety area beyond its threshold, and the initial 1,200 feet of runway would be raised to 46 feet MSL to address the water table issues discussed in Chapter 6.
- Both options were refined to increase the longitudinal grade beyond the Runway 27threshold to 2 percent, which is less than the FAA maximum allowable longitudinal grade. This reduces the earthwork required and the eastern extents of the embankment.
- Both options would also include relocating the localizer and glideslope facilities.
- Negligible difference in environmental impacts between the two runway options.
- Overall costs of both options are comparable.

<u>EMAS Bed</u>

During the alternatives review process, Alaska Airlines informed the planning team that they have future plans to replace their existing Boeing 737-700 aircraft with Boeing 737-800/-900/-900ER series aircraft at CDV. Therefore, the more demanding Boeing 737-900ER aircraft was modeled for a 7,500-foot runway using an adjusted Maximum

Takeoff Weight (MTOW) of 174,000 pounds, and Maximum Landing Weight (MLW) at 80% of 125,840 pounds to determine the size of the replacement EMAS bed. The following results were obtained:

- If the FAA requires an immediate standard 70 knot solution for the Boeing-900ER, the front ramp (112 feet) of the current bed where it starts at 6 inches deep and goes to 20 inches deep would be removed. Then, the concrete beam at the front of the bed would have to be relocated 8 feet closer to runway (reducing the set back from 310 feet to 302 feet). The contractor would then reinstall the ramp over 112 feet. and add 2 rows of 20-inch blocks, increasing the bed size from its current length of 250 feet to 258 feet.
- If the EMAS is decommissioned and replaced in approximately 7 years (near the end of its 20-year useful life), the new 258-foot bed would start 302 feet from the runway end and extend to 560 feet where the current bed ends.

For the purpose of this evaluation, a new 258-foot EMAS bed is shown in **Figure 7-2** and **Figure 7-3**.

Replace EMAS Option

The refined alternative (Option 2) shown in **Figure 7-2**, and described in this section, has been refined to reflect a 70-knot EMAS system off the end of Runway 9 to meet FAA RSA standards. The end of Runway 27 would be raised accordingly to 49.5 feet MSL to resolve existing line-of-sight deficiencies. In this option, the central portion of the runway profile would be maintained to avoid impacts to the existing taxiway and Runway 16-34 connections. Laying out the required geometry for this alternative allows the Runway 9-27 and EMAS infrastructure to sufficiently "fit" within the area currently occupied by the existing runway. Approximately 169,585 CY total of borrow is required under this development option. However, the runway may be able to remain open throughout the construction period with some aircraft operating weight restrictions.

Compared to the runway development option discussed in the following section, this option includes the following advantages and disadvantages:

Advantages

- Limited or no impacts to taxiway and Runway 16-34 connections
- Runway 9-27 would remain open during construction (with restrictions)
- Runway 16-34 would remain open during construction

Disadvantages

- Increased fill required (primarily associated with eastern end of the runway) from offsite sources

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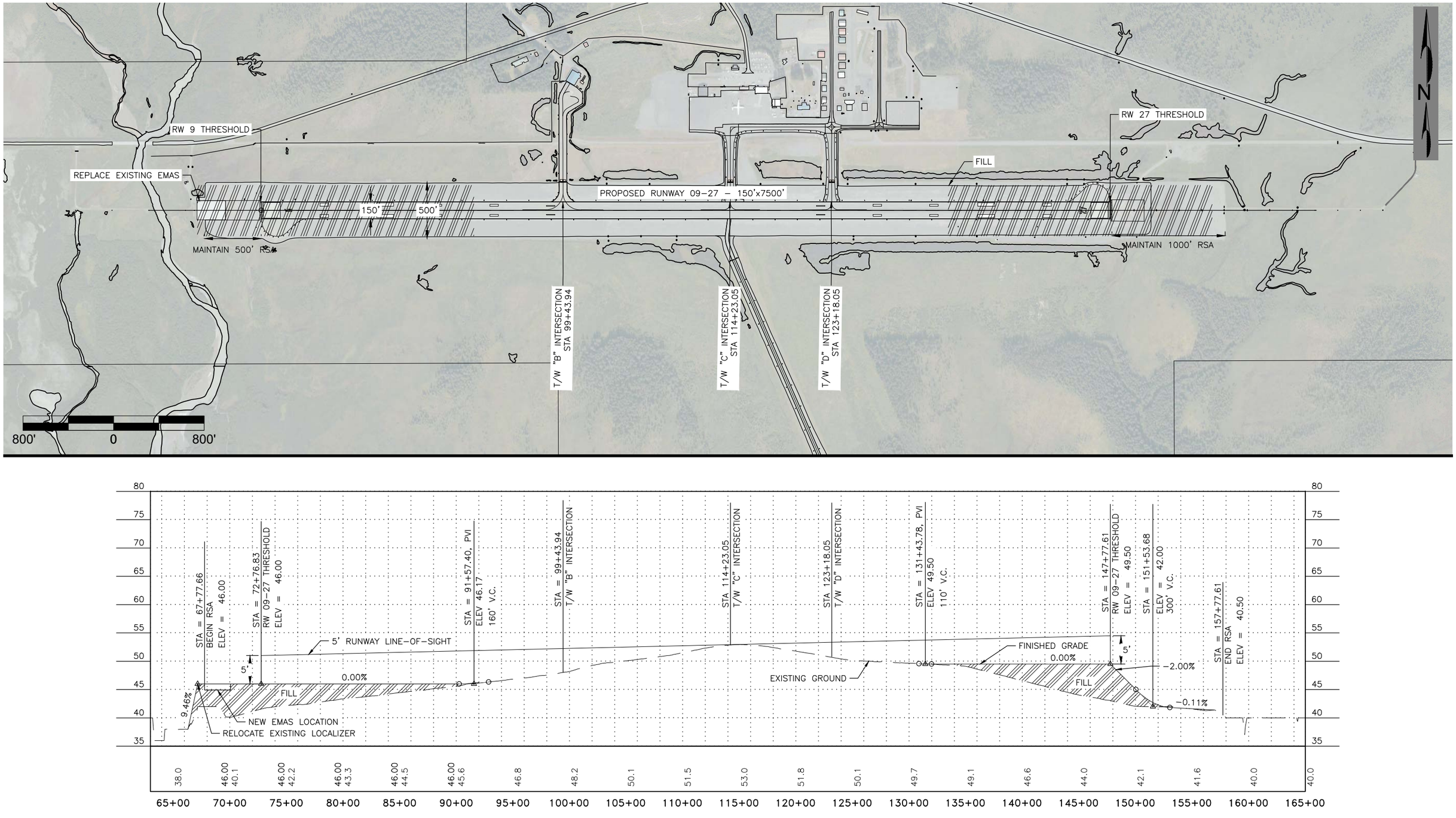

Michael Baker INTERNATIONAL

Replace EMAS

Figure 7-2

Replace EMAS and Runway Hump Removal Option

The refined alternative (Option 3) shown in **Figure 7-3**, and described in this section, is similar to the previous development option. However, Option 3 considers reducing the elevation of the center portion of the runway by approximately one foot. Using the minimum vertical curve associated with ADG C and D aircraft (1,000 feet for every 1.0 percent of change), the refined alternative includes approximately 160,000 CY of cut that can be used to meet fill requirements of approximately 128,000 CY. This alternative assumes that the excavation required for reducing the center portion is useable for fill material and will be stockpiled for the project. However, reconstructing portions of Runway 9-27 and Taxiway C, with the associated electrical improvements, offsets the savings from having onsite soils that can be used for embankment. With approximately 60 to 75 percent of the runway being reconstructed under this development option, at least 50 percent more pavement will be required. Also, Option 3 will likely require the extended complete closures of Runways 9-27 and 16-34 and will impact Taxiway C operations during construction.

Compared to the previous development option, Option 3 - Replace EMAS and Runway Hump Removal (see **Figure 7-3**) includes the following advantages and disadvantages:

Advantages

- Reduced borrow material (approximately 32,000 CY) as compared to Option 2

Disadvantages

- More impactful to operations during construction:
  - Increased operational impacts include complete closure of Runway 9-27, Runway 16-34, and Taxiway C during construction
  - Difficult to construct and keep open on a daily basis during construction
- Requires reconstructing a portion of Taxiway C
- Requires reconstructing eastern, central, and western portions of Runway 9-27 (Approximately 50 percent additional new pavement is required)
- Reconstruction of midfield pavement and airfield electrical offsets the savings from having onsite soils that can be used for embankment

Summary

Both Runway 9-27 development options have minimal or no associated environmental impacts, and are comparable in costs overall. However, Option 2 is less impactful to airport operations during construction. Therefore, Option 2, Replace EMAS, is recommended to be incorporated into the preferred airport development plan.

At the time of this report, DOT&PF has started a Runway Rehab design project to improve drainage and lighting, extend the service life of the pavement, and construct safety area improvements. This rehab project does not address the line of sight issue, that is included in the preferred runway alternative.

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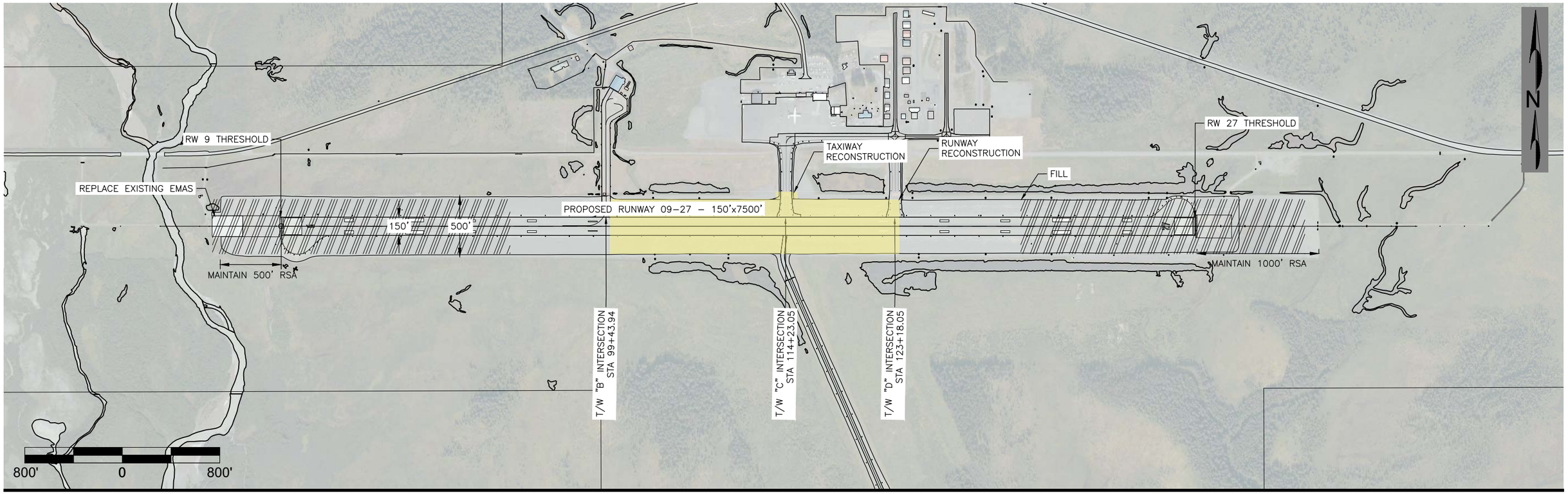

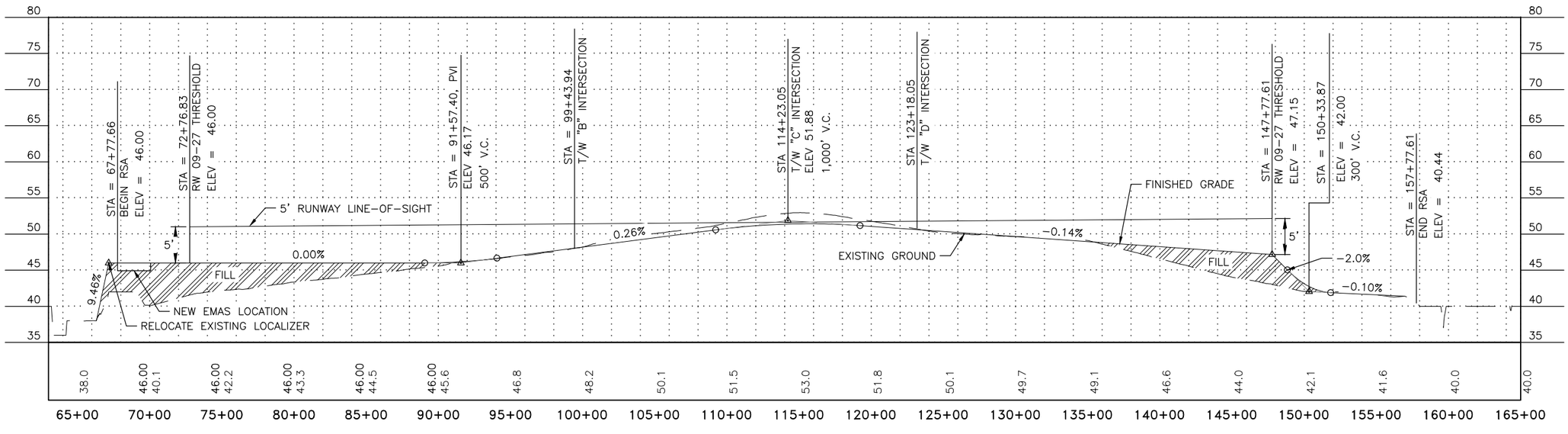

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Replace EMAS and Runway Hump Removal

Figure 7-3

7.1.1.2 Float Pond

During the public involvement process, the working group and members of the community requested a look into potential facilities to accommodate float plane activity at CDV. The working group provided multiple areas of interest to first determine if float plane activity could be accommodated at the airport. The design for a float pond is based upon the type of float plane aircraft known to operate within the Cordova area. Based upon input from airport management and further confirmed by CDV tenants, the Piper Super Cub, Cessna 185, Cessna 205, and the DeHavilland Beaver were considered as the family of critical aircraft used to develop the size of the float pond considered for future development. These aircraft are all classified as Airport Approach Category (AAC) A and Airplane Design Group (ADG) I.

The length and width required for the float pond was determined by using the guidelines set forth in AC 150/5325-4B, *Runway Length Runway Requirements for Airport* Design and AC 150/5395-1B, *Seaplane Bases*. According to the Runway Length AC, the previously mentioned A-I aircraft types fall into the small airplanes with approach speeds of 50 knots or more with maximum certificated takeoff weight of 12,500 pounds or less category. Using Figure 2-1 in AC 150/5325-4B (95 percent of fleet), a runway length of 2,750 feet and width of 60 feet is recommended for airplanes in the A-I category.

The following locations were evaluated for future float pond development:

- Option 1 - East of the general aviation area and southwest of the Copper River Highway
- Option 2 - South of Runway 9-27 and east of Runway 16-34
- Option 3 - Northeast of Runway 9-27 and north of the Copper River Highway

Option 1 considered the location directly east of the existing/proposed itinerant apron areas due to its proximity to the general aviation area. To provide enough distance for the departure and approach surfaces of the runway to clear the obstacles presented by the proposed general aviation itinerant apron expansion and associated fence improvements, a runway length of 960 feet was determined to be the longest runway that this area can accommodate. Therefore, this alternative was eliminated from further consideration as it does not meet the 2,700-foot runway length requirement.

Option 2 considers an area about 900 feet south of Runway 9-27 and east of Runway 16-34. Some members of the working group liked this location's ability to accommodate the float pond and meet airspace requirements, but expressed concern about the logistics of transporting (non-amphibious) aircraft from the float pond to the airport's existing maintenance/hangar facilities. In addition, placing the float pond in this location would require constructing a road within the approach to Runway 27 to provide access to the general aviation area and Copper River Highway. Option 2 would impact environmental resources, most notably wetlands and anadromous water bodies. This would require culverting or realigning the existing channels.

The northeast location (**Option 3**) was determined to be the preferred choice over the previous options as it meets size and airspace requirements and provides improved and reduced road access from the float pond to the airport's existing maintenance/hangar facilities. Aircraft owners can use Copper River Highway to access the existing Airport Access Road to transport their aircraft between the float pond ramp and the existing

maintenance/hangar facilities located in the general aviation area. The proposed location of this float pond provides a 40-foot-wide docking area around the pond for aircraft to dock to and still be clear of the ROFZ of the runway. This 40-foot docking area was developed to ensure that the longest aircraft anticipated to use the float pond (DeHavilland DHC-2 Beaver length of 30.25 feet) will have enough room to dock alongside the float pond. Option 3 would impact environmental resources, most notably wetlands and anadromous water bodies.

Following conversations with the working group and other members of the community, the northeast site (Option 3) depicted in **Figure 7-1** was determined to be the preferred float pond location. However, the current aviation forecast does not warrant construction of a float pond during the 20-year planning horizon. DOT&PF decided to identify the preferred float pond location as future aeronautical use, in order to preserve the area and airspace for a future float pond.

7.1.2 Taxiway Improvements

During the preliminary alternatives evaluation process the initial taxiway improvements included the construction of a partial parallel taxiway system, in addition to improvements to the fillet geometry along taxilanes and taxiways to support ADG II/TDG 2 aircraft in the general aviation area.

FAA AC 150/5300-13B, *Airport Design,* gives instruction that taxiways should not be designed to lead directly from an apron to a runway without requiring a turn. Such airfield geometry can confuse pilots and lead to incursions by accidentally entering the runway environment. The intent of the partial parallel taxiway system is to eliminate the direct access currently provided by Taxiways C and D. By using a parallel taxiway, this proposed taxiway configuration would eliminate direct access by requiring at least one turn from Taxiways C and D before gaining access to Runway 9-27.

During the alternatives refinement process, the working group expressed concern that current and forecast operations at CDV do not justify the need for a partial parallel taxiway system over the 20-year planning period. Although the parallel taxiway was proposed to eliminate direct access between the terminal and general aviation areas and the runway environment, DOT&PF and other members of the working group recommended that this development be revisited when demand supports its need in the future. The working group requested that the proposed parallel taxiway not be shown in the preferred airport development plan, and further recommended that this area be preserved for future taxiway improvements to eliminate direct access to the runway.

In an effort to provide access to future apron areas, improvements to extend Taxilane L in the terminal and general aviation areas are included as shown in **Figure 7-1** Taxilane L will be extended in phases matching the timeline of the future terminal apron improvements. This is discussed further in the Terminal Area Improvements section of this chapter. Currently, the taxiways and Taxilane L located on the general aviation side of the airport are all designed to ADG I/TDG-1B standards. The FAA AC 150/5300-13B modifies the TDG splitting TDG 2 into TDG 2A and TDG 2B and reduces dimensions for TOFA and taxiway separation (taxiway separation, taxiway centerline to fixed or moveable object, and wingtip clearance). The improvements in the general aviation area involve adding pavement to

enlarge the fillet geometry to comply with the ADG-II/TDG-2B design standard recommendations. Design standards by aircraft and taxiway design groups applicable to CDV are listed in **Tables 7-1** and **7-2**. The intent of these improvements will allow for the traffic flow of ADG-II/TDG-2B aircraft to taxi and access the general aviation apron areas and maximize use of the proposed facilities located on the general aviation side of the airport.

Table 7-1: Design Standard based on ADG

Design Standard	ADG I	ADG II	ADG III	ADG IV
TSA	49 ft	79 ft	118 ft	171 ft
Taxiway OFA	89 ft	124 ft	171 ft	243 ft
Taxilane OFA	79 ft	110 ft	158 ft	224 ft
Taxiway Centerline to Parallel Taxiway Centerline	70 ft	101.5 ft	144.5 ft	207 ft
Taxilane Centerline to Parallel Taxilane Centerline	64 ft	94.5 ft	138 ft	197.5

Source: FAA AC 150/5300-13B. Table 4-1.

Table 7-2: Design Standard based on TDG

Design Standard	TDG-1B	TDG–2A	TDG-2B	TDG-3
Taxiway Width	25 ft	35 ft	35 ft	50 ft
Taxiway Edge Safety Margin	5 ft	7.5 ft	7.5 ft	10 ft
Taxiway Shoulder	10 Ft	15 ft	15 ft	20 ft

Source: FAA AC 150/5300-13B. Table 4-2.

7.1.3 Terminal Area Improvements

The alternatives presented in Chapter 6 provided an overview of the airport's vision and capabilities to accommodate future traffic. This is essential to supporting systematic and organized airport growth by determining which areas should be reserved for future development.

As a result, two different apron development concepts were proposed where the capacity shown exceeds the parking positions needed over the 20-year planning period. Based upon feedback from the working group and the local community, Terminal Area Development Concept 2 (Figure 6-5) was used as the basis for the future development of this area. This option was further refined to only show development anticipated over the 20-year planning period. The proposed 29,000 square yards of apron expansion shown in **Figure 7-4** is designed to accommodate four (4) ADG III aircraft parking positions, and an additional area of 18,600 square yards will be reserved for future apron expansion. Additionally, the Preferred Terminal Area Development Plan supports two power in and power out parking positions capable of accommodating up to Boeing 737-900ER aircraft in front of the Passenger Terminal. This aircraft type reflects aircraft fleet mix changes anticipated by Alaska Airlines in the future.

The preferred option also includes the proposed development of air cargo and aircraft maintenance buildings facing the future apron expansion. Both facilities will have enough space in front without impacting the operation of existing nearby hangar tenants. Associated parking is provided and the existing access road will be expanded to provide access to the proposed facilities without impacting the nearby stream. During the public involvement process, members of the local community and stakeholders indicated the added need and desire for additional fuel storage facilities within the terminal area. Therefore, fuel farm facilities are proposed north of the terminal area access road to support fueling activities in support of commercial aircraft operations.

The proposed Terminal Area vehicle parking expansion proposed in Chapter 6, Airport Alternatives, is included in the Preferred Terminal Area Plan depicted in **Figure 7-4.**

In summary, the preferred plan includes the following actions:

- Reconfiguration of two (2) power in/power out passenger terminal parking positions (Boeing 737-900ER)
- Expansion of the terminal area apron (29,000 SY) to accommodate four (4) ADG III aircraft parking positions
- Expansion/reconfiguration of long-term parking lot (8,258 SY)
- Construction of associated access road improvements (approximately 520 linear feet)
- Construction of a 14,400 SF aircraft maintenance facility/hangar with associated vehicular parking
- Construction of 3,800 SF air cargo facilities with associated vehicular parking
- 18,600 SY area reserved for future apron expansion (capable of accommodating two [2] additional ADG III aircraft parking positions)
- Miscellaneous vehicular access, parking, and snow dump improvements to support proposed terminal area facilities

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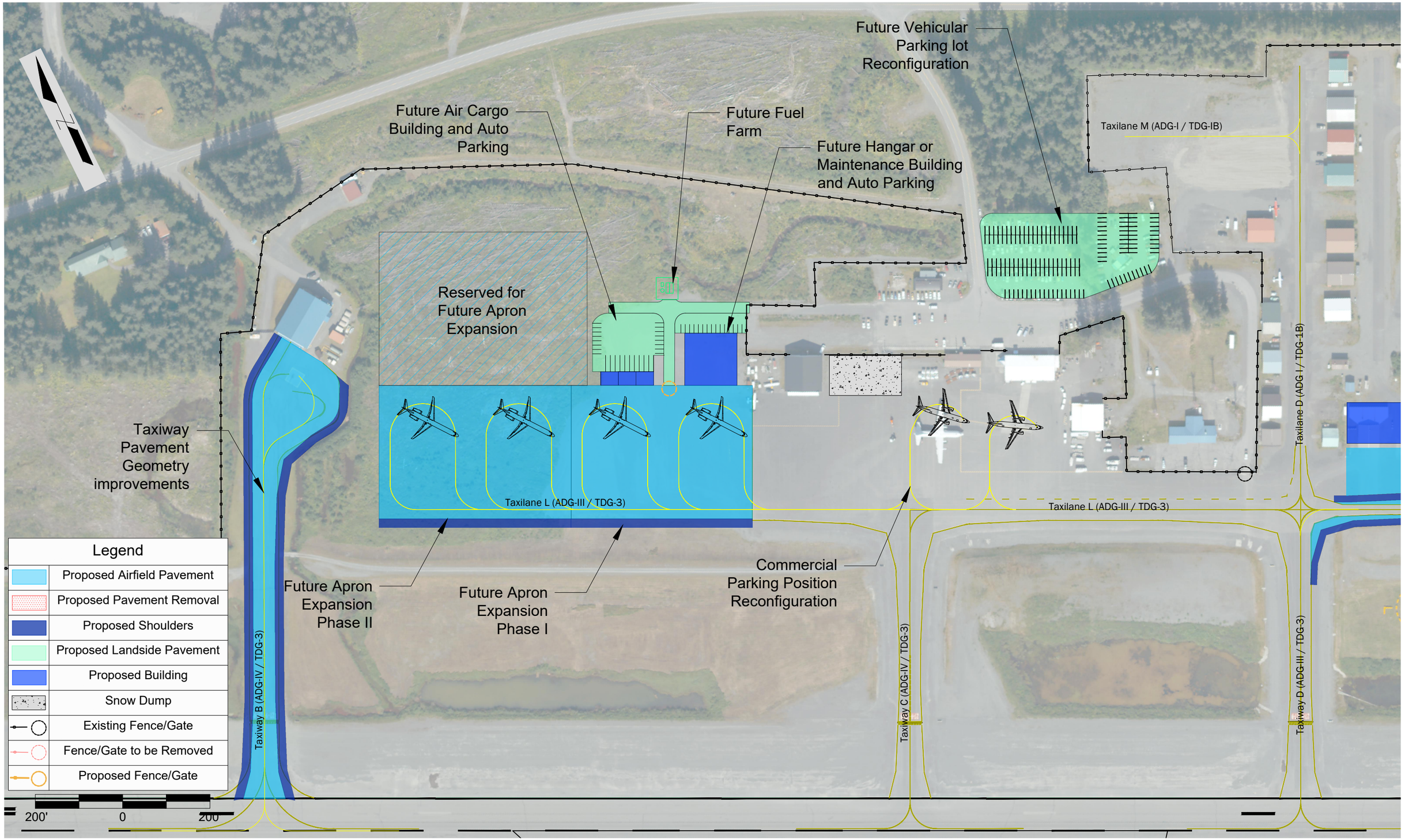

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Preferred Terminal Area Development

Figure 7-4

7.1.4 General Aviation Improvements

As shown in **Figure 7-5,** the Preferred General Aviation Area development discussed in this section supports the master plan's primary objective of separating general aviation activity and facilities from commercial aircraft activities to enhance safety.

The Preferred General Aviation Development Plan addresses the critical elements identified during the facility requirements analysis. It further refines the options presented in Chapter 6, Airport Alternatives, including the need for additional general aviation hangars and itinerant aircraft parking for ADG-II aircraft (i.e., Gulfstream 450). Based upon feedback from the working group and the local community, General Aviation Area Development Concept 2 (Figure 6-7) was used as the basis for the future development of this area. This option was further refined to only show development anticipated over the 20-year planning period.

The preferred option consists of a 24,000-square-yard itinerant apron that is designed to accommodate four ADG-II aircraft parking positions. The proposed apron also has the flexibility of being developed in phases as warranted by future demand. Taxiway K and Taxilane L will be expanded to 35 feet wide to comply with TDG-2B design standards.

During the refinement process, DOT&PF requested that standard 150 ft by 150 ft hangar development parcels be incorporated into the General Aviation Development Plan. This would accommodate the development of future hangar facilities and support the equipment and snow storage needs of tenants. The Preferred General Aviation Development Plan presents three areas to be reserved for developing a total of nine (9) 3,600 square-foot ADG-I hangars, five (5) of them along Taxiway K and four (4) additional in the northwest corner of the general aviation area. The construction phasing of those buildings is assumed to be market driven.

The preferred option combines the fence concepts presented in the airport alternatives analysis (see Chapter 6) by creating a more suitable near-term solution to improve public access to hangars and the existing itinerant apron area while maintaining airside security. More detailed phasing of the proposed fencing improvements is further discussed in Chapter 8, Implementation Plan. The preferred development option also proposes constructing a new road leading to the itinerant apron; however, this road will be located outside the airport fence and a new gate will be provided closer to the itinerant apron adjacent to a public parking lot. This development will reduce the current walking distance of pilots and visitors who do not have vehicular access to the itinerant apron. Controlled vehicular access to the hangars between Taxilane D and Taxiway K will remain restricted to vehicles/drivers with the appropriate permit and training.

The existing gravel road inside the airport fence should be paved to consolidate vehicular access to the future eastside hangar development. This road will also support the airport's maintenance activities and allow authorized/trained drivers to access the existing Itinerant Apron area.

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Additional snow dumps are proposed along the general aviation area, including one at the northeast side of Taxiway K. In summary, the Preferred General Aviation Development Plan shown in **Figure 7-5** includes the following:

- Construction of two (2) roads from Copper River Highway to the transient apron (approximately 1,600 linear feet)
- Expansion of Taxilane L and Taxiway K to comply with TDG 2B design standards
- Construction of an itinerant aircraft parking apron (24.000 SY) capable of accommodating parking for four (4) ADG B-II aircraft and one helicopter parking position
- Construction of a Fixed Base Operator (FBO) facility (6,600 SF)
- Construction of one (1) ADG-II Hangar (14,400 SF for larger, multi-aircraft capability) and vehicular parking
- Construction of nine (9) ADG-I Hangars (3,600 SF) for general aviation aircraft storage
- Reconfiguration of airport security fence and gates
- Vehicular access, parking, and snow dump improvements to support proposed facilities

7.1.5 Support Facilities Improvements

The alternatives presented in Chapter 6 include the development of support facilities to address the airport's needs identified through interviews with airport staff and tenants. The proposed concepts depicted in this section incorporate the refinements necessary to support the development proposed in the previous sections of this chapter.

7.1.5.1 Fuel Storage Facilities

Currently, there are no aviation fuel storage facilities at CDV. As previously discussed in Section 7.1.3, a fuel storage facility with associated access improvements to provide fuel truck service to commercial aviation is proposed on the north side of the future Terminal Area expansion, as shown **Figure 7-4.** Also, alternatives discussed in Chapter 6 considered two additional areas to develop fuel farm facilities in the general aviation development area. Based upon feedback from the working group and the local community, the preferred development shown in **Figure 7-5** includes future fuel storage facilities in the northeast corner of the itinerant apron expansion, providing the option of self-service.

7.1.5.2 Aircraft Rescue and Firefighting Facility and Snow Removal Equipment Building

As discussed in previous chapters, the Aircraft Rescue and Firefighting Facility (ARFF)/Snow Removal Equipment Building (SREB) facility is currently under construction. Therefore, the proposed design and location of this facility are incorporated into the Preferred Development Plan.

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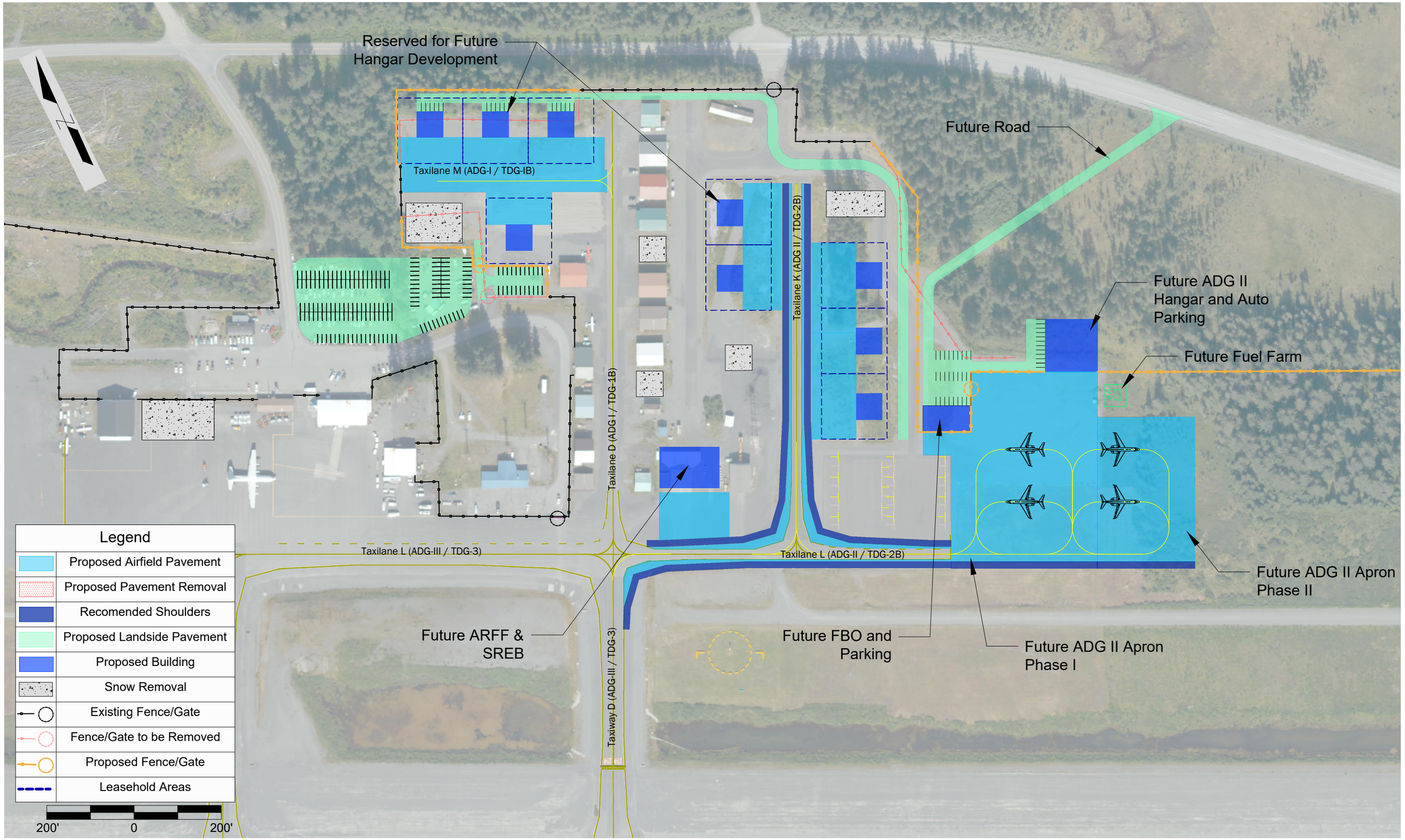
Reserved for Future Hangar Development
Future Road
Taxilane M (ADG-I / TDG-IB)
Taxilane K (ADG II / TDG-2B)
Taxilane D (ADG I / TDG-1B)
Future ADG II Hangar and Auto Parking
Future Fuel Farm
Taxilane L (ADG-III / TDG-3)
Taxilane L (ADG-II / TDG-2B)
Future ADG II Apron Phase II
Future ARFF & SREB
Future FBO and Parking
Future ADG II Apron Phase I
Taxiway D (ADG-III / TDG-3)
Legend
Proposed Airfield Pavement
Proposed Pavement Removal
Recomended Shoulders
Proposed Landside Pavement
Proposed Building
Snow Removal
Existing Fence/Gate
Fence/Gate to be Removed
Proposed Fence/Gate
Leasehold Areas
200'
0
200'

7.2 Summary of Potential NEPA Documentation and Anticipated Environmental Permits

The following paragraphs detail the anticipated level of documentation associated with the preferred development plan and its projects, in accordance with the National Environmental Policy Act (NEPA). This section will discuss:

- Anticipated NEPA Class of Action,
- Potential environmental impacts anticipated from the implementation of each construction project, and
- State and federal permit and approval processes that may be necessary to support the project components of the preferred alternative.

7.2.1 Potential NEPA Documentation and Class of Action

FAA Order 1050.1F serves as the FAA guidance on compliance with NEPA requirements with regards to all activities or projects approved or funded by FAA. As projects are implemented, FAA Order 1050.1F or any subsequent and overriding orders should be followed. The order indicates the three NEPA Classes of Action (COA), and what types of projects typically fall under each COA. The COAs are as follows:

- Categorical Exclusion: This level of NEPA documentation is reserved for standard, frequent and typically very minimal efforts that FAA has determined, based on multiple prior iterations and reviews, will have no significant impacts on the human environment or relevant resources, unless unusual or extraordinary circumstances are present.
- Environmental Assessment: This level of NEPA document is typically applied when FAA or other agencies require further analysis and review to determine whether any of the potential impacts from the proposed action will be significant.
- Environmental Impact Statement: This category of NEPA document applies to those actions that are expected to have significant impacts to resources within the human environment.

Order 1050.1F, Section 5-2 describes 'Extraordinary Circumstances'. These are factors or circumstances in which a normally categorically excluded action may have significant environmental impacts. There are twelve such circumstances listed to assist in identifying that situation. Several of these circumstances refer to special purpose laws that may require screening, analysis and/or consultations, and may be relevant to the CDV project area. The presence of historic and cultural resources (1050.1F, 5-2b.1), properties protected by Section 4(f) (1050.1F, 5-2b.2), and wetlands (1050.1F, 5-2b.4) may influence the necessary level of NEPA documentation to address proposed projects. Implementing multiple projects at once may have a cumulative effect requiring a review or elevation of the anticipated COA.

7.2.2 Potential Regulatory Permits

Local, state, and Federal regulations may apply to specific resources in the project area, and may require permitting for the projects proposed under the preferred alternative. The

permits and regulated resources listed below include those that may be required for some of the proposed projects:

- US Army Corps of Engineers (USACE) Section 404 Clean Water Act permit for Fill in Waters of the United States. This USACE permit covers fill in wetlands and other waters. A wetland delineation may be required to determine precise wetland presence and boundaries within the project area; however, the National Wetlands Inventory and initial aerial photo interpretation indicate that wetlands are present around CDV.
- AK State Historic Preservation Office (SHPO) review and concurrence under Section 106 of the National Historic Preservation Act. There are known historic resources within the project area; further review by a qualified professional may be required prior to a determination of eligibility for listing on the National Register of Historic Places (NRHP).
- US Department of Transportation Act Section 4(f) review. This law requires FAA to pay additional attention to wildlife and waterfowl refuges; public parks and recreational areas, and cultural or historic sites on or eligible for listing on the NRHP and sites of cultural significance. Should any of these resources be in proximity to or otherwise potentially affected by the proposed project development, FAA is required to identify any feasible and prudent alternative(s) to avoid the Section 4(f) property. If no such avoidance alternatives exist, then FAA must ensure that the project includes all possible planning to minimize potential effects to the Section 4(f) property.
- AK Department of Fish & Game (ADFG), Title 16 Fish Habitat Permit. ADFG regulates impacts to waterways that host anadromous ('salmon-bearing') or resident fish populations. According to the ADFG Freshwater Fish Inventory, there are numerous anadromous waterways within the CDV area.
- APDES Alaska General Permit for storm water discharge during construction; applies to all project impacting more than one acre. These permits are issued by ADEC.
- ADEC Section 401 (Clean Water Act) Water Quality Certification. Updates to the EPA rule in 2020 require coordination with ADEC.
- Recommended consultation with ADEC Contaminated Sites to ensure that Contaminated Soils & Water Management Plan is sufficient in the event of encountering contaminants during construction.

The following regulatory permits and authorizations have been considered for applicability to the projects proposed under the preferred alternative, and determined to be non-applicable:

- US Fish & Wildlife Service (FWS) consultation under Section 7 of the Endangered Species Act
- USACE Section 10 (Rivers & Harbors Act) permitting

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7.2.3 Preferred Alternative Projects

The projects proposed under the preferred alternative have been reviewed using geographic information systems (GIS) software with recent aerial photo imagery to indicate the degree to which each project might impact previously disturbed or developed areas, undisturbed lands, wetlands, waterways, potential historic properties, contaminated sites and other regulated resources or resources of concern. **Table 7-2** below, describes each proposed project in the short-, medium- and long-range plan for the preferred alternative, identifies the anticipated COA applicable for each alternative, and lists the potential or expected regulatory agency permitting or approval that may be required. Permitting approvals that are anticipated to be addressed by standard design measures, construction timing or best management practices (BMPs) are not included in the list.

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Table 7-3: Potential Environmental Impacts Associated with the Preferred Airport Development

Preferred Development	Proposed Action	Land Area Impacted (Acres)	Water of the US	Protected Species	Contaminant Potential / Concerns	Historic Resources	Potential NEPA Class of Action	FAA Order 1050.1F Citation	Anticipated Agency Consultations/Permits/Approvals
Airfield	Runway 9-27 line of sight improvements	49.16	Y	N	N	P	CATEX/EA	5-6.4e	USACE: Section 404 ADFG: Title 16 ADEC: Section 401 FAA/DOT: Section 4(f) SHPO: Section 106
Airfield	Perimeter Fence	36.92	Y	N	N	P	EA		USACE: Section 404 ADFG: Title 16 ADEC: Section 401 FAA/DOT: Section 4(f) SHPO: Section 106
Airfield	Float pond construction and access road	35.90	Y	N	N	P	EA		USACE: Section 404 ADFG: Title 16 ADEC: Section 401 FAA/DOT: Section 4(f) SHPO: Section 106
Airfield	Taxiway K and Taxilane L TDG-2B improvements - Includes Tie-Dow Re-marking	1.67	N	N	Y	P	CATEX/EA	5-6.4e	ADEC: Contaminated Sites FAA/DOT: Section 4(f) SHPO: Section 106
Terminal Area	Commercial Aircraft Parking Position reconfiguration	0.01	N	N	N	N	CATEX	5-6.4e	
Terminal Area	Vehicular parking lot reconfiguration	1.71	P	N	N	P	CATEX/EA	5-6.4f	USACE: Section 404 ADEC: Section 401 FAA/DOT: Section 4(f) SHPO: Section 106
Terminal Area	Access road improvements	0.29	P	N	N	N	CATEX/EA	5-6.4a	USACE: Section 404 ADEC: Section 401 ADFG: Title 16
Terminal Area	Construction of a new maintenance building (Building E) and vehicular parking	0.50	N	N	N	N	CATEX	5-6.4f	
Terminal Area	Apron expansion	5.99	P	N	Y	N	CATEX/EA	5-6.4f	USACE: Section 404 ADEC: Section 401 ADEC: Contaminated Sites
Terminal Area	Air Cargo (Building J) and vehicular parking lot	0.75	N	N	N	N	CATEX	5-6.4h	
GA Area	Construction of a new road outside the airport fence, paved the existing gravel road, and Snow Dump site	1.20	P	N	N	P	CATEX/EA	5-6.4a,f	USACE: Section 404 FAA/DOT: Section 4(f) SHPO: Section 106
GA Area	Fence relocation east (2,712 linear feet)	0.62	P	N	N	P	CATEX/EA	5-6.4f	USACE: Section 404 FAA/DOT: Section 4(f)

Table 7-3: Potential Environmental Impacts Associated with the Preferred Airport Development

Preferred Development	Proposed Action	Land Area Impacted (Acres)	Water of the US	Protected Species	Contaminant Potential / Concerns	Historic Resources	Potential NEPA Class of Action	FAA Order 1050.1F Citation	Anticipated Agency Consultations/Permits/Approvals
									SHPO: Section 106
GA Area	Construction of public parking lot	0.25	P	N	N	N	CATEX	5-6.4h	USACE: Section 404 ADEC: Section 401
GA Area	Itinerant Apron expansion	4.96	P	N	N	N	CATEX/EA	5-6.4e	USACE: Section 404 ADEC: Section 401
GA Area	Construction of an FBO	0.15	N	N	N	N	CATEX	5-6.4f	
GA Area	Box Hangar (ADG-II), Access route and parking	0.59	P	N	N	N	CATEX	5-6.4a,e,f	USACE: Section 404 ADEC: Section 401
GA Area	Box Hangar (ADG-I) and Ramp	0.28	N	N	P	P	CATEX/EA	5-6.4e,f	ADEC: Contaminated Sites FAA/DOT: Section 4(f) SHPO: Section 106
GA Area	Box Hangar (ADG-I) and Ramp	0.28	N	N	P	P	CATEX/EA	5-6.4e,f	ADEC: Contaminated Sites FAA/DOT: Section 4(f) SHPO: Section 106
GA Area	Box Hangar (ADG-I) and Ramp)	0.28	N	N	P	P	CATEX/EA	5-6.4e,f	ADEC: Contaminated Sites FAA/DOT: Section 4(f) SHPO: Section 106
GA Area	Box Hangar (ADG-I) and Ramp	0.28	P	N	P	P	CATEX/EA	5-6.4e,f	USACE: Section 404 ADEC: Section 401 ADEC: Contaminated Sites FAA/DOT: Section 4(f) SHPO: Section 106
GA Area	Box Hangar (ADG-I) and Ramp	0.28	P	N	P	N	CATEX	5-6.4e,f	USACE: Section 404 ADEC: Section 401 ADEC: Contaminated Sites
GA Area	Northwest GA Apron	1.65	P	N	N	N	CATEX	5-6.4e	USACE: Section 404 ADEC: Section 401
GA Area	Fence reconfiguration	958.33 LF	P	N	N	N	CATEX	5-6.4f	USACE: Section 404 ADEC: Section 401
GA Area	Northwest GA vehicular parking and access road - Copper River Highway	0.27	P	N	N	N	CATEX	5-6.4a,h	USACE: Section 404 ADEC: Section 401
GA Area	Central GA Vehicular parking and road relocation - Airport Road	0.08	N	N	N	N	CATEX	5-6.4a,h	
GA Area	Box Hangar (ADG-I) and Ramp	0.08	N	N	N	N	CATEX	5-6.4e,f	
GA Area	Box Hangar (ADG-I) and Ramp	0.08	N	N	N	N	CATEX	5-6.4e,f	

Table 7-3: Potential Environmental Impacts Associated with the Preferred Airport Development									
Preferred Development	**Proposed Action**	**Land Area Impacted (Acres)**	**Water of the US**	**Protected Species**	**Contaminant Potential / Concerns**	**Historic Resources**	**Potential NEPA Class of Action**	**FAA Order 1050.1F Citation**	**Anticipated Agency Consultations/Permits/Approvals**
GA Area	Box Hangar (ADG-I) and Ramp	0.08	N	N	N	N	CATEX	5-6.4e,f	
GA Area	Box Hangar (ADG-I) and Ramp	0.08	N	N	N	N	CATEX	5-6.4e,f	
Support Facilities	Construction of a new SREB and ramp	0.68	N	N	Y	N	CATEX	5-6.4e,f,v	ADEC: Contaminated Sites
Support facilities	Terminal Area Fuel Farm	0.06	P	N	Y	N	CATEX/EA	5-6.4u	USACE: Section 404 ADFG: Title 16 ADEC: Section 401 ADEC: Contaminated Sites

Source: Michael Baker International, 2021.

Note: In cases where it is a CATEX or EA is noted: a field verification of the presence and extent of wetland disturbance and; a cultural resources survey and subsequent determination of eligibility, will determine whether these projects comply with the CATEX criteria in Section 5-6 or whether they require an EA.

NEPA Documentation Requirements:

CatEx indicates that project is eligible for a CatEx.

EA indicates that project is likely to require an EA based on the nature of the project, regardless of potential impacts.

Abbreviations:

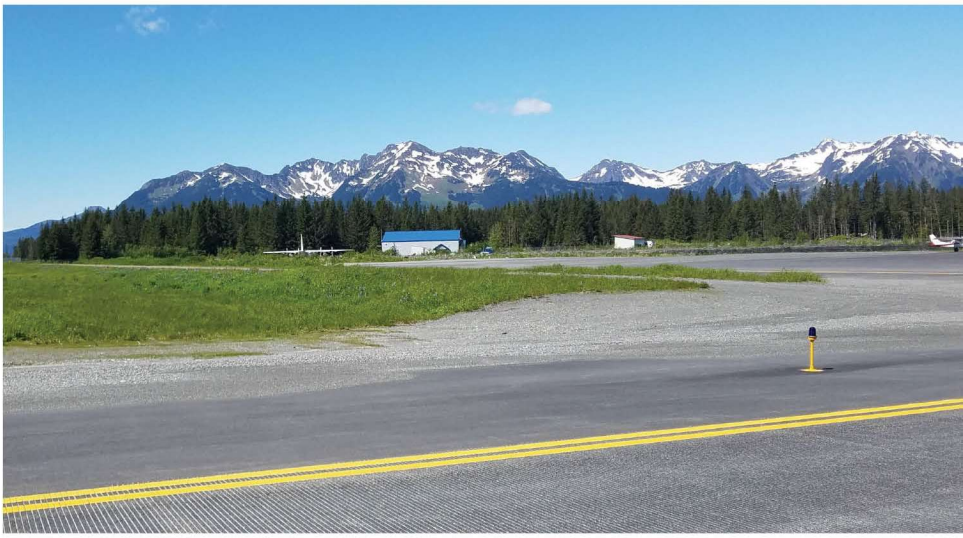
Y - Yes

N- - No

P - Possible

Chapter 8
Implementation Plan

CORDOVA MERLE K. "MUDHOLE" SMITH AIRPORT MASTER PLAN UPDATE



8 IMPLEMENTATION PLAN

8.1 Introduction

The primary objective of this chapter is to develop a long-term Capital Improvement Program (CIP) for the Merle K. (Mudhole) Smith Airport (CDV). The CIP presented herein describes the staging of proposed improvements and identifies potential sources of funding for the improvements in the future. It is the intent of this Implementation Plan to provide general financial guidance to DOT&PF for making policy decisions regarding the recommended development of the airport over the 20-year development period. The information in this chapter presents a preliminary review of the CIP for CDV.

8.2 Financial Context

Lease income accounts for all DOT&PF revenue associated with CDV operations. Consistent with other state-operated rural Alaska airports, DOT&PF does not charge any airport user or landing fees at CDV. The following describes the most significant leases on DOT&PF owned land at CDV. All state operations use a fiscal year (FY) accounting basis, ending June 30 of each year.

8.2.1 Airport Cash Flow

Cash flow describes airport revenue and expenses incurred during a fiscal year. Airports must have revenues in excess of operations and maintenance expenses (positive cash flows) and/or unrestricted reserves to be a credible source of project funding.

In general, rural airports owned and operated by DOT&PF are not self-sustaining. Rural airport revenue and expenses are accounted for using the state's general fund.

8.2.1.1 CDV Historical Financial Information

The study period for the feasibility analysis is state fiscal year (SFY) 2016 through SFY2020. Historical revenue and expenses for the study period are shown in **Table 8-1**. Total operating revenue grew at a compound annual growth rate (CAGR) of 6.37% annually during the study period and total maintenance and operations expenses grew at a CAGR of 6.03%.

Lease revenue grew over the study period as rates were adjusted per lease agreements. In SFY2020, total revenue earned by DOT&PF from leases at Merle K. (Mudhole) Smith Airport totaled $69,554. Maintenance and operations expenses were variable during the study period.

CDV incurred maintenance and operations expenses in excess of revenue in each year of the study period, with an average deficit of $671,907 between SFY2016 and SFY2021. Airport operating revenue is not a likely source of funding for the projects as outlined in this plan.

Table 8-1: Historical Revenue and Expenses, Merle K. (Mudhole) Smith Airport, SFY2016-SFY2021							
	SFY2016	SFY2017	SFY2018	SFY2019	SFY2020	SFY2021	CAGR[1]
Operating Revenue							
Lease Revenue	$58,632	$56,567	$60,189	$65,486	$69,554	$79,843	**6.37%**
Total Operating Revenue	**$58,632**	**$56,567**	**$60,189**	**$65,486**	**$69,554**	**$79,843**	**6.37%**
Operating Expenses							
Maintenance & Operations Expenses[2]	$584,327	$813,436	$740,569	$756,216	$744,006	$783,156	6.03%
Total Expenses	**$584,327**	**$813,436**	**$740,569**	**$756,216**	**$744,006**	**$783,156**	**6.03**
Operating Surplus (Deficit)	**($525,695)**	**($756,869)**	**($680,380)**	**($690,730)**	**($674,452)**	**($703,313)**	

1 Compound annual growth rate

2 In FY2016-FY2021, facilities costs were included in the maintenance and operations expenses, including personnel, utilities, fuel for equipment, runway lights, building repairs, electricity, and heating fuel.

Source: Alaska Department of Transportation & Public Facilities, 2022

Compiled by Michael Baker International, Inc.

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8.2.2 CDV Lease Revenue

DOT&PF holds various lease agreements related to CDV land for use in aircraft storage, maintenance, and repair, among other uses.

8.3 Sources of Funding

Large-scale development projects at an airport are typically beyond the normal annual budget capacity and cannot be supported solely with self-generated funds. In these situations, it is not uncommon for an airport to seek funding from outside sources. These sources can either provide funding for projects outright or be combined with one another to reach the necessary funding level.

In some cases, funding sources are capped on an annual or lifetime basis, such as with Federal Aviation Administration (FAA) entitlements. On an annual cap basis, it is not uncommon for airports to phase projects on an annual basis and apply for grants to collect the funding necessary. Most sources do not guarantee funding and applicable projects must compete against one another.

Funding sources for this Implementation Plan were analyzed and summarized from various governing bodies, including the Federal Government, State Government, Local Government, and through activity at CDV. These potential funding sources include:

- Federal Government:
  - FAA Airport Improvement Program
  - Federal Highway Administration
  - FAA Passenger Facility Charges
- State Government:
  - Rural Airport Improvement Program
  - Landing Fees
- City of Cordova
- Private Development and Public/Private Partnerships

As an airport, CDV is in a unique position to take advantage of funding sources from both governmental agencies and negotiating with tenants to fund projects that will directly benefit their operations. The identified possible funding sources listed are not all encompassing, as grants programs tend to open and close due to government funding availability. It is recommended that, when DOT&PF is prepared to begin the initial planning for any project listed, planning should be coordinated with the sponsoring department for any intended grants to discuss the project's justification and benefits.

8.3.1 Federal Funding: FAA Airport Improvement Program

Federal funding for airports is coordinated through the FAA. Airport Improvement Program (AIP) funding is generated through taxes on passenger tickets and aviation fuel and is typically prioritized to enhance safety, security, and capacity, and to mitigate noise.

The two major sources of funding managed by the FAA are a part of the AIP which, according to the FAA, "provides grants to public agencies — and, in some cases, to private owners and

entities — for the planning and development of public-use airports that are included in the National Plan of Integrated Airport Systems (NPIAS)." The two sources of AIP funding are entitlements and discretionary funding. It is estimated that about two-thirds of the AIP's annual funds are allocated to airports via entitlement grants. Discretionary funding, the remaining one-third, is set aside for specific projects based on their overall importance and priority. AIP Grants are designated to be used for eligible capital projects, equipment, and certain types of planning and environmental studies. The funds are programmed to cover 95% of eligible project costs, depending on statutory requirements, at CDV. They cannot be used for airport operating expenses or debt financing.

Accepting these grants from the FAA includes the acceptance of certain obligations and conditions associated with the FAA's Grant Assurances. According to the FAA, these obligations generally include operating and maintaining the airport in a safe and serviceable condition, not granting exclusive rights, mitigating hazards to airspace, and using airport revenue properly.

As of the 2021-2025 NPIAS report, the FAA classified CDV as a Commercial Service Primary Non-hub airport, meaning the airport is a publicly owned airport with at least 2,500 annual enplanements and scheduled air carrier service receiving less than 0.05% but more than 10,000 of the US commercial enplanements. As a non-hub airport, CDV also fulfills the principal role of a community airport, providing a means for private general aviation flying, linking the community with the national airport system, and making other unique contributions. For example, CDV is one of two ways to access the community as well as providing emergency response access, such as emergency medical or firefighting and mail delivery. This impacts the amount of funding from the FAA AIP entitlement fund allocated to DOT&PF based on CDV activity on an annual basis, which is $1 million annually.

The CIP identifies recommended projects and associated cost estimates for the 20-year planning period at CDV. FAA Order 5100.38D, *Airport Improvement Program (AIP) Handbook*, sets forth the official policy and procedures to be used in the administration of AIP grants. **Table 8-2** lists typical examples of eligible and ineligible AIP projects. Currently, CDV is authorized to receive 95% FAA AIP funding for eligible project costs with the sponsor responsible for the remaining 5%. CDV's allocation of primary entitlement funds from the FAA, is pooled to fund airport projects within Alaska's Rural Airport Program. DOT&PF also applies for additional FAA discretionary funding to fund projects in the Rural Airport System AIP Spending Plan.

DOT&PF owns and operates many of Alaska's rural public airports, assuming the responsibility of administering AIP funds allocated to NPIAS airports classified as non-primary commercial service, reliever, and general aviation. Federal funding for primary airports in the NPIAS continues to be allocated and administered by the FAA.

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Table 8-2: Examples of Eligible vs. Ineligible AIP Projects	
Eligible Projects	**Ineligible Projects**
Runway construction/rehabilitation	Maintenance equipment and vehicles
Taxiway construction/rehabilitation	Office and office equipment
Apron construction/rehabilitation	Fuel farms*
Airfield lighting	Landscaping
Airfield signage	Artworks
Airfield drainage	Aircraft hangars*
Land acquisition	Industrial park development
Weather observation stations (AWOS)	Marketing plans
NAVAIDs such as REILs and PAPIs	Training
Planning studies	Improvements for commercial enterprises
Environmental studies	Maintenance or repairs of buildings
Safety area improvements	
Airport layout plans (ALPs)	
Access roads only located on airport property	
Removing, lowering, moving, marking, and lighting hazards	
Glycol Recovery Trucks/Glycol Vacuum Trucks**	
Snow Removal Equipment	
ARFF Equipment	

Source: FAA AIP Overview, https://www.faa.gov/airports/aip/overview/#eligible_projects

**May be eligible. Contact your local Airport District or Regional Office for more information.*

***To be eligible, the vehicles must be owned and operated by the Airport and meet the Buy American Preference specified in the AIP grant. Contact your local Airport District or Regional Office for more information.*

In addition, the following must also apply for FAA to consider a project for AIP funding:

- *The project sponsorship requirements have been met.*
- *The project is reasonably consistent with the plans of planning agencies for the development of the area in which the airport is located.*
- *Sufficient funds are available for the portion of the project not paid for by the Federal Government.*
- *The project will be completed without undue delay.*
- *The airport location is included in the current version of the NPIAS.*
- *The project involves more than $25,000 in AIP funds.*
- *The project is depicted on a current airport layout plan approved by FAA.*

8.3.2 Federal Funding: Federal Highway Administration

Federal highway funding is a potential funding source for road projects in this CIP. Federal-aid highway funding is granted to states by the US Department of Transportation Federal Highway Administration (FHWA) based on the Fixing America's Surface Transportation (FAST) Act, which provides for transportation funding through formula programs including National Highway Performance Program, Surface Transportation Block Grant Program, Highway

Safety Improvement Program, Congestion Mitigation and Air Quality Improvement Program, and others. Funding is allocated to states for maintenance and development of surface transportation infrastructure, and used for surface projects along interstate, state, and some local highways, bridges, ferries, and public transportation.

FHWA funds apportioned to Alaska totaled $541,507,940 in FFY2019. A 9% minimum state match is required for FHWA funding.

Alaska DOT&PF administers FHWA funding through the Statewide Transportation Improvement Program (STIP).

8.3.3 Passenger Facility Charges

Airports controlled by public agencies may participate in the FAA Passenger Facility Charge (PFC) program in which airports collect fees up to $4.50 per eligible passenger to fund FAA-approved projects that enhance safety, security, or capacity, reduce noise, or increase air carrier competition. PFC revenues may be used to pay all or part of FAA-approved project costs; pay debt service and financing costs associated with bond issuance in addition to AIP funds; and as AIP matching funds.

PFCs are collected by air carriers at time of ticket sale and remitted to the airport, with carriers retaining a fee of $0.11 per PFC collected.

For airports classified as large or medium primary hubs collecting a PFC, passenger entitlement funds are reduced based on the level of approved PFCs. CDV is designated as a non-hub airport and the airport's passenger entitlement grants would not be subject to this reduction.

Based on passenger volume in 2019 and the maximum PFC of $4.50 (less carrier retention), implementing a PFC at CDV could result in about $86,198 in funding. While the addition of a PFC is not expected to generate sufficient revenue to fund projects in this CIP, fees could provide a supplemental source of revenue to offset capital costs.

The State of Alaska has not previously applied to impose a PFC at CDV.

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8.3.4 State Government: Alaska Department of Transportation & Public Facilities - Rural Airport Improvement Program

The state owns 242 airports within the Rural Airport System. Airports are capital-intensive enterprises, requiring significant resources to fund land acquisition, airfield development, and supporting infrastructure to successfully meet the operational demands of the airlines and the service demands of the traveling public.

DOT&PF receives federal funding through the AIP. In general, AIP funds are used for projects that enhance airport safety, capacity, and security, and address environmental concerns. Most airfield capital improvements, repairs, property acquisition, and professional services (such as planning, surveying, and design) are eligible.

All projects must meet FAA regulatory and policy requirements regarding adequate justification and compliance with FAA design standards, in addition to meeting all federal environmental, permitting, and procurement requirements.

DOT&PF maintains the Rural Airport System AIP Spending Plan, which outlines projects to be funded at state-owned rural airports over a five-year period. The plan is developed as follows.

Proposed airport project needs are collected and entered into DOT&PF's Alaska Airport Needs Directory and AIP Needs list through input from aviation interests, community representatives, FAA staff, the Alaska State Legislature, and DOT&PF staff. Regional planning sections perform an initial project evaluation based on aviation criteria and guidance, and then prepare detailed project nomination sheets and estimates for most major construction projects. The project nomination goes through a regional screening and then is evaluated by the Aviation Project Evaluation Board (APEB). This board scores project nominations for all rural airports statewide. Airfield improvements are ranked on 16 criteria including safety, health, quality of life, economic development, maintenance and operations issues, and local capital contribution to project cost. The highest scoring projects are ranked competitively, and the highest-ranking projects are considered for inclusion in the AIP Spending Plan. In some cases, projects are included in the Spending Plan based on federal requirements from the FAA or the Transportation Security Administration.

CDV has received $12.5 million in FAA grant funding through this process between FFY2011 and FFY2019, as shown previously in **Table 2-2**. State of Alaska airport capital funding is limited to the state's AIP program match, and the state operates no grant program to supplement federal funding for improvements.

8.3.5 Landing Fees

Airports often charge landing fees based on aircraft certified maximum gross take-off weight. The State of Alaska currently charges no landing fees at any of the state's primary Part 139 certificated airports. A study commissioned by DOT&PF examined the potential landing fee revenue at select rural airports based on a $2.00 per 1,000-pound fee. This study estimated theoretical landing fee revenue of $247,994 at CDV based on airport activity in 2012. The

study also concluded that "the residential population would bear most of the burden of any carrier business model changes adopted as a result of landing fee implementation".[1]

The addition of a landing fee is not expected to generate sufficient revenue to fund projects in this CIP. However, fees could provide a supplemental source of revenue to offset capital costs.

8.3.6 Municipal Contributions

In Alaska, several municipalities contribute financially to the non-FAA share of AIP-eligible airport improvement projects. Contributions may be direct financial funding using the municipality's revenue or participating in a loan agreement to secure financing. Other municipal contributions that may be used include land donations or tax incentives. Local capital contributions positively impact project scores assigned by APEB, influencing a project's ranking in the statewide AIP Spending Plan.

The City of Cordova may be positioned to contribute to some projects outlined in this plan that are considered beneficial to the community. Further discussion between DOT&PF and the City would be required in the future.

8.3.7 Public Private Partnerships / Third Party / Private Development

Public Private Partnerships are arrangements, typically medium to long term, between the public and private sectors whereby some of the services that fall under the responsibilities of the public sector are provided by the private sector, with clear agreement on shared objectives for delivery of public infrastructure and/or public services. These arrangements provide airports an opportunity to develop projects crucial to growth, without absorbing the financial burden of the construction and operation costs.

However, these arrangements also require airports to work closely with outside operators and could potentially result in less airport involvement during certain capital development projects. Many airports use private or third-party investment when the planned improvements are primarily used by a private business or other organization. Such projects are not ordinarily eligible for federal funding. Projects of this kind typically include hangars, fixed based operator facilities, fuel storage, exclusive aircraft parking aprons, industrial aviation use facilities, non-aviation office/commercial/industrial developments, and other similar projects. Private development proposals are considered on a case-by-case basis. Often, airport funds for infrastructure, preliminary site work, and site access are required to facilitate privately developed projects on airport property.

FAA AIP funding cannot be used to develop hangar or terminal facilities at CDV. Based on projects under the preferred alternative, DOT&PF could solicit a private partner to develop

[1] State of Alaska Department of Transportation & Public Facilities. *Landing Fee Report*. December 2013.

hangar facilities on state-owned leased airport land. Lease revenue and terms would depend on the size of leasehold and development stipulations.

The Eyak Corporation, Cordova's village corporation created pursuant to the Alaska Native Claims Settlement Act (ANCSA), is a key landowner of parcels adjacent to CDV and could be a potential private partner for those developments and projects that do not qualify for FAA AIP funding.

8.4 Capital Improvement Program

The CIP includes cost estimates and development phasing for the various projects identified over the 20-year development period. The proposed development is also identified within the Airport Layout Plan (ALP) drawing found in Chapter 9. Cost projections are based on 2021 dollars and include estimated engineering fees and contingencies. The projections should be used for planning purposes only and do not imply that funding will be available. Each year indicates the initiation of design and/or environmental efforts and it is assumed that construction would be undertaken either in that same year or the following year.

The CIP projects shown in **Figures 8-1, 8-2, 8-3,** and **Table 8-3** have been segregated into Short-Term Development Period (2020-2024), Mid-Term Development Period (2025-2029) and Long-Term Development Period (2030-2039).

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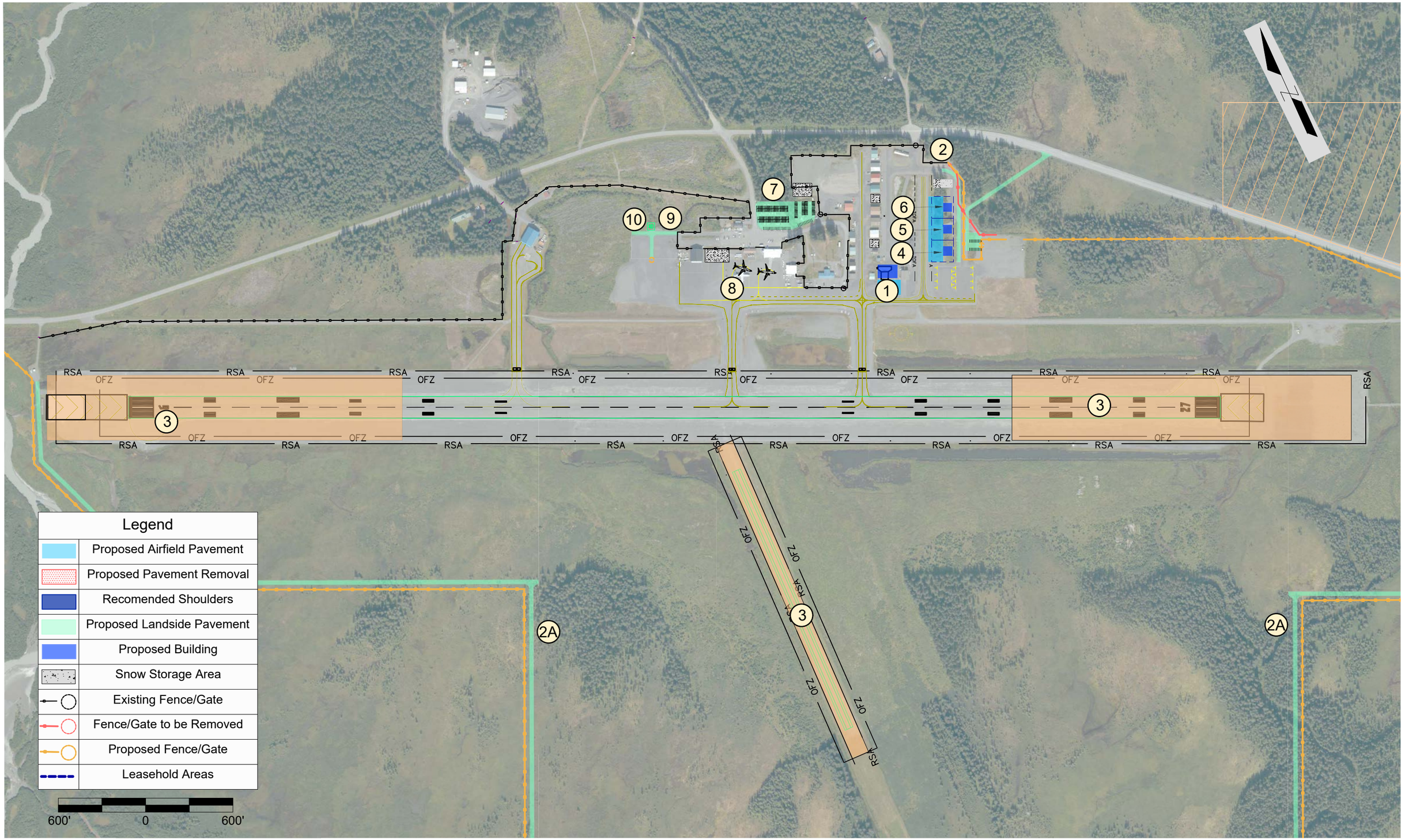
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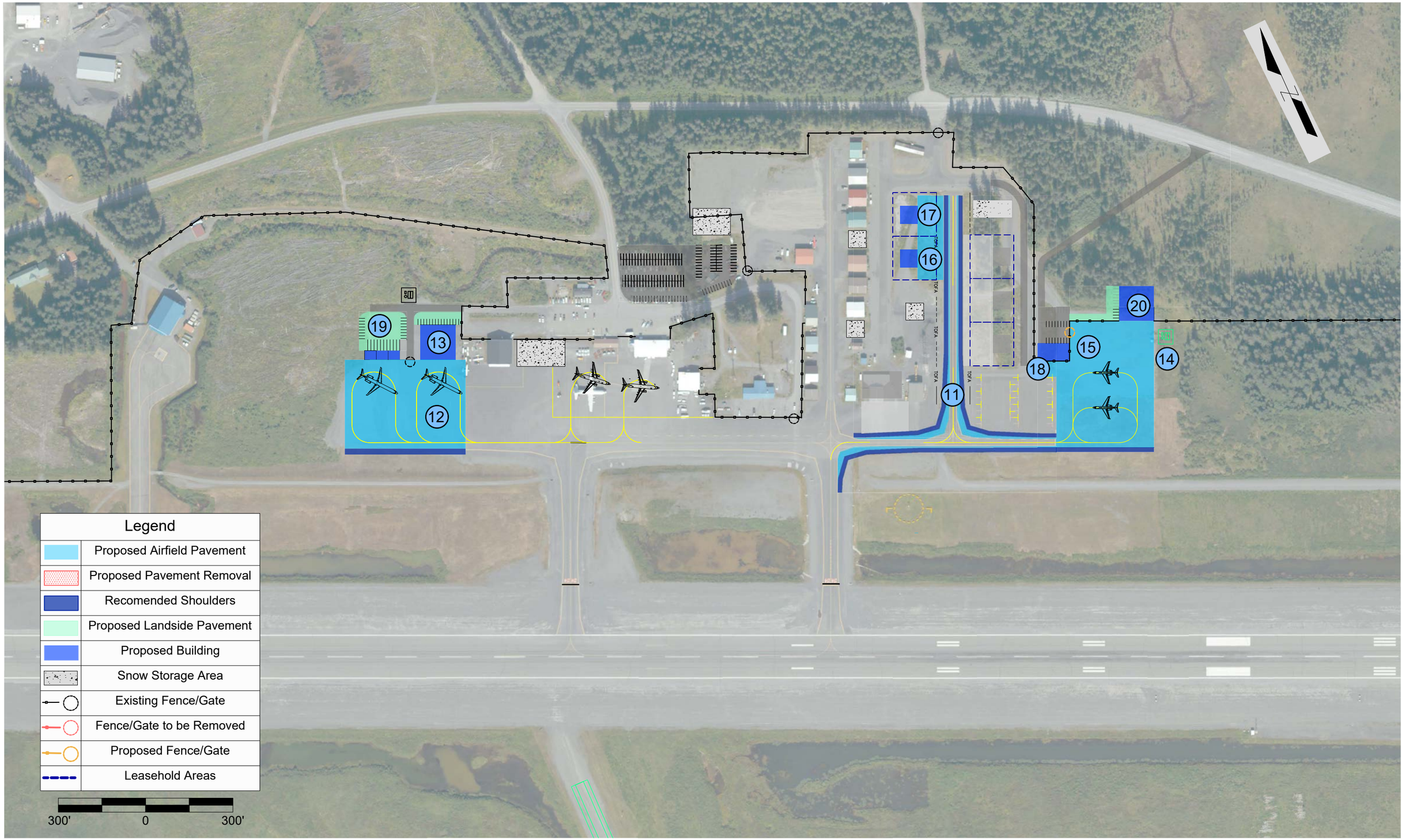
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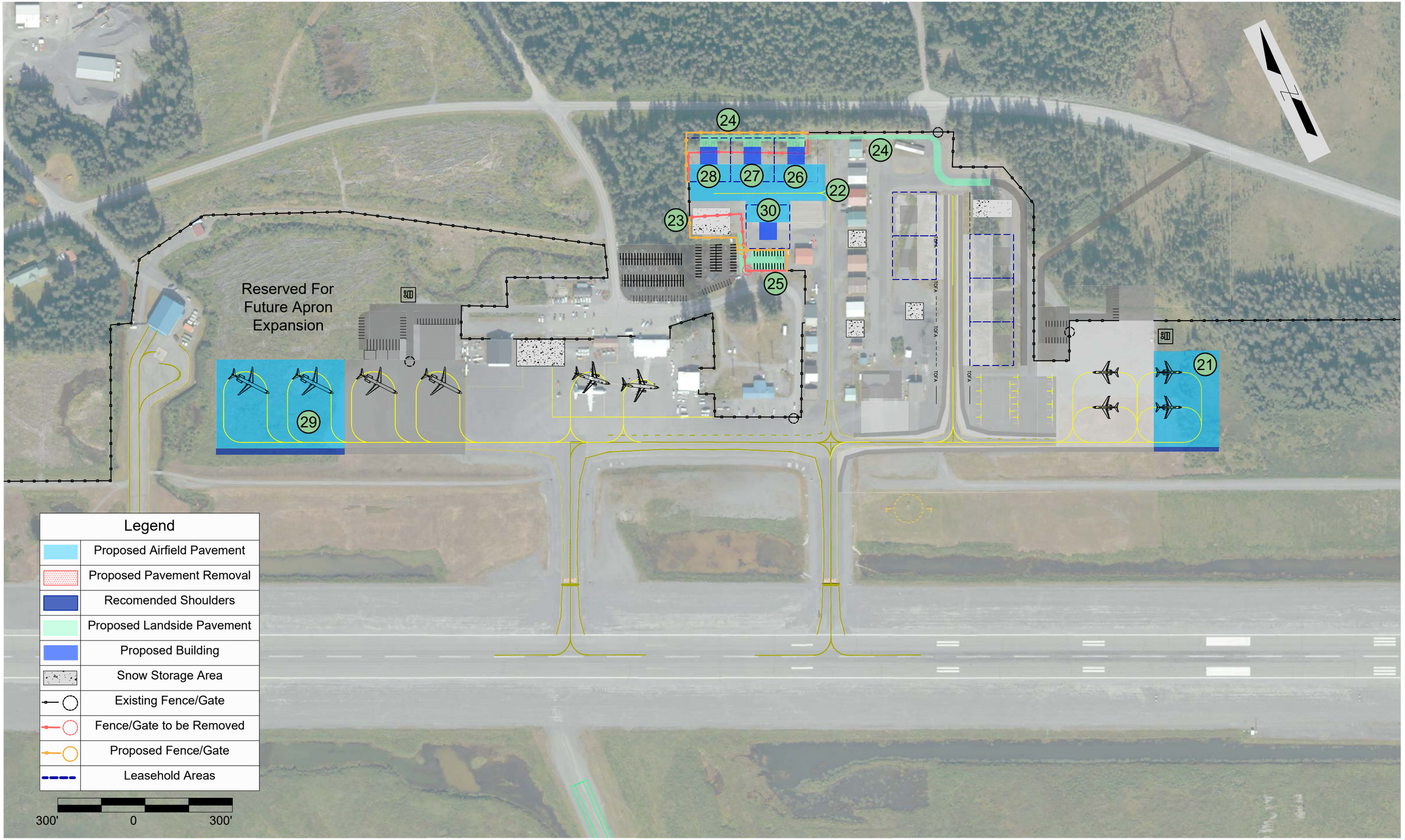
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8.4.1 Project Costs

As shown in **Table 8-3**, a CIP and phasing plan was identified for the 20-year planning period that includes a mixture of the study recommendations and routine maintenance of existing facilities. Privately funded development projects are shown in **Table 8-4** for additional clarity these projects are market driven. It is important to note that the long-term hangar development shown in **Table 8-4** is dependent upon the construction of Taxilane M. In the event market conditions support a more immediate need for these hangars, the timing of Taxiway M may need to be reconsidered. The CIP planning period is defined as 2020 through 2039. Each project in the CIP was assigned to a planning period or development phase (i.e., Short-term, Mid-term, and Long-term). The short-term time period (Phase 1) extends from 2020 to 2024, the mid-term period (Phase 2) extends from 2025 to 2029, and the long-term period (Phase 3) spans from 2030 to 2039. A more detailed breakdown of costs and phasing was produced for short-term projects; however, the mid-term and long-term projects are listed in a more generalized order that should remain flexible. Although this study charts a course for planned development, it must be emphasized that the planning and development of an airport is a continuous process. The rehabilitation of existing facilities and the development of new facilities must be predicated on sustained demand, which justifies the costs of improvements. As aviation demand may change at CDV and specific project requirements and funding mechanisms may also change, DOT&PF should consider the impact on the CIP and the potential need to modify certain elements of the Airport Layout Plan (ALP).

The estimated cost for each of the recommended airport improvements reflects a preliminary opinion of the probable implementation cost for the project. In addition to the estimated construction costs, anticipated fees for design, inspection, permitting, surveying, testing, and administration were included where applicable. Each project cost is presented in 2021 dollars and therefore does not reflect unanticipated increases in labor and material costs or changes in environmental legislation. This is done for planning purposes because the dates of project are generally identified in phases as opposed to specific years. In addition, a contingency was added to the overall costs of some projects to account for unforeseen variables. It is important to revisit and update costs regularly to ensure that an accurate CIP is maintained.

8.4.2 Project Phasing

Since the airport's actual versus forecast activity levels may vary, it is important for the staging of proposed improvement projects to remain sensitive to such variations. Some projects may take precedence over others, depending on their level of priority or due to the availability of funding. Thus, a list of prioritized improvements was established based upon the urgency of need, ease of implementation, and logic of project sequencing. The objective was to establish an efficient order for project development and implementation that meets or exceeds the forecasted aviation demands at CDV.

The total cost of the 20-year CIP (excluding privately-funded projects) is estimated at $70,307,000 which includes all studies, infrastructure improvements, and proposed construction costs necessary to achieve the developments shown in the CIP. The CIP for each period presents the improvements slated for implementation during the period, but it

does not assume how financially feasible it will be for DOT&PF to undertake the projects or whether funding will be available. Privately-funded projects over the 20-year planning period total approximately $27,599,000.

Much of the funding for the projects in the short-term phase has been pre-determined between the FAA and DOT&PF but can be subject to change on a case-by-case and annual basis. The mid-term phase projects include items that will be necessary based on the forecast demand and to provide anticipated maintenance activities. Many of the long-term phase projects include routine maintenance and higher price developments that would likely only be implemented as required by demand at the time. This CIP relies heavily on Federal and State investment to develop facilities over the 20-year development period.

8.4.3 Consumer Price Index Adjustment

The improvements shown in **Tables 8-3** and **8-4** illustrate the facilities needed at CDV to meet the forecast demands through the end of the 20-year planning period. The cost estimates were determined in year 2021 dollars; however, these costs have also been escalated to account for inflation. The US long-term inflation rate averages around 3%; however, the current inflation rate in 2021 was closer to 5%. Therefore, short-term project costs have been escalated by 5% per year, and medium- to long-term projects have been escalated by the long-term average of 3% per year to account for inflation. As time goes by, the values should be reviewed to better determine if any project cost adjustments have occurred. Although the costs for construction projects are highly variable due to the fluctuating cost of materials (e.g., asphalt, steel, and energy production), a reasonable estimate of future costs can be calculated by adjusting the costs by the appropriate Consumer Price Index (CPI) inflation factor. The Bureau of Labor Statistics provides an online CPI inflation calculator that may be used to compare historical costs to present-day costs and is available on this website: http://www.bls.gov/data/inflation_calculator.htm.

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Table 8-3: Capital Improvement Program (2020-2039)								
ID	Project	2021 Cost	Actual Cost (Adjusted for Inflation)	Federal AIP	Federal Other	State	Local	Private
Phase 1 (2020-2024)								
1	New SREB/ARFF and Apron	$18,700,000	$18,700,000	$17,765,000		$935,000		
2	New GA Roads, Vehicle Parking and Fence Improvements	$553,000	$581,000	$551,950		$29,050		
2A	Construct New Perimeter Fence and Service Road	$4,549,000	$4,777,000	$4,538,150		$238,850		
3	Runway Improvements - Runway 9-27 LOS and EMAS and Runway 16-34 Widening	$36,148,000	$37,956,000	$36,058,200		$1,897,800		
7	Terminal Area Vehicle Parking Area Expansion	$562,000	$620,000	$589,000		$31,000		
8	Commercial Aircraft Parking Reconfiguration	$29,000	$32,000			$32,000		
9	Terminal Area Access Road Improvements	$99,000	$115,000	$109,250		$5,750		
31	Remove Obstructions Various Obstruction Removal	$250,000	$290,000	$275,500		$14,500		
Phase 2 (2025-2029)								
11	Taxilane K and Taxilane L TDG-2B Improvements - Includes Tie-Down Re-marking	$848,000	$1,083,000	$1,028,850		$54,150		
12	Terminal Area Apron Expansion I	$1,446,000	$1,677,000	$1,593,150		$83,850		
15	Itinerant Apron Expansion I	$1,605,000	$1,917,000	$1,821,150		$95,850		
Phase 3 (2030-2039)								
21	Itinerant Apron Expansion II	$1,106,000	$1,106,000	$1,050,700		$55,300		
22	Taxilane M (ADG-I)	$478,000	$478,000	$454,100		$23,900		
23	Fence Reconfiguration	$128,000	$128,000	$121,600		$6,400		
24	Northwest GA Vehicle Parking Area and Access Improvements	$289,000	$289,000	$274,550		$14,450		
25	Central GA Parking and Road Relocation	$130,000	$130,000	$123,500		$6,500		
29	Terminal Area Apron Expansion II	$428,000	$428,000	$406,600		$21,400		
	Total		$70,307,000	$66,761,250		$3,545,750		
	Average Per Year		$3,515,350	$3,338,063		$177,288		
	Phase 1 (2020-2024)		$63,071,000	$59,887,050		$3,183,950		
	Phase 2 (2025-2029)		$4,677,000	$4,443,150		$233,850		
	Phase 3 (2030-2039)		$2,559,000	$2,431,050		$127,950		

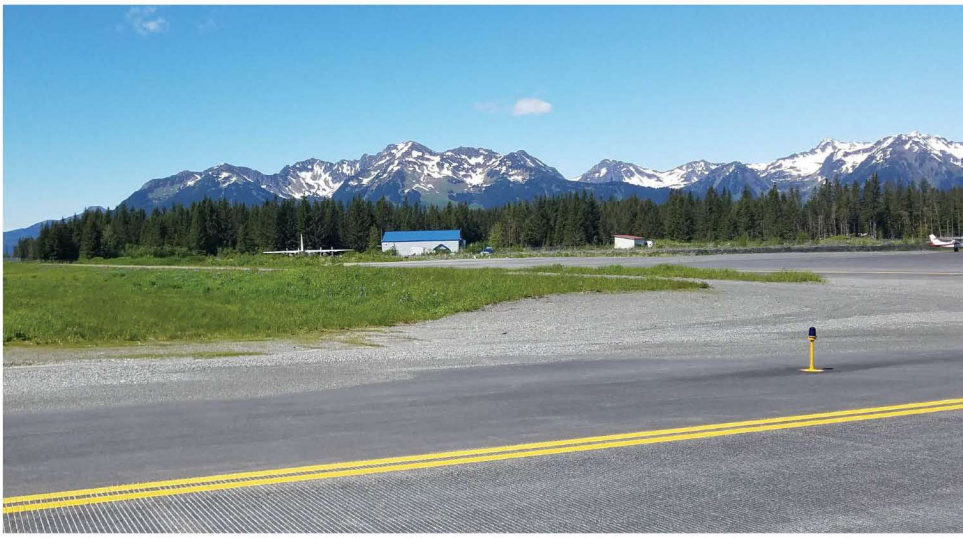
Source: Michael Baker International, Inc., 2021.

Table 8-4: Capital Improvement Program (Privately Funded) (2020-2039)								
ID	Project	2021 Cost	Actual Cost (Adjusted for Inflation)	Federal AIP	Federal Other	State	Local	Private
Phase 1 (2020-2024)								
4	Box Hangar (ADG-I) and Ramp	$1,347,000	$1,415,000					$1,415,000
5	Box Hangar (ADG-I) and Ramp	$1,347,000	$1,415,000					$1,415,000
6	Box Hangar (ADG-I) and Ramp	$1,347,000	$1,415,000					$1,415,000
10	Terminal Area Fuel Farm	$877,000	$1,016,000					$1,016,000
Phase 2 (2025-2029)								
13	Maintenance Building and Parking	$4,821,000	$5,427,000					$5,427,000
14	GA Fuel Farm	$877,000	$1,017,000					$1,017,000
16	Box Hangar (ADG-I) and Ramp	$1,343,000	$1,604,000					$1,604,000
17	Box Hangar (ADG-I) and Ramp	$223,730	$268,000					$268,000
18	FBO	$363,000	$447,000					$447,000
19	Air Cargo and Vehicle Parking Area	$1,356,000	$1,718,000					$1,718,000
20	Box Hangar (ADG-II), Access Route and Vehicle Parking	$4,826,000	$6,114,000					$6,114,000
Phase 3 (2030-2039)								
26	Box Hangar (ADG-I) and Ramp	$1,747,000	$1,747,000					$1,747,000
27	Box Hangar (ADG-I) and Ramp	$1,800,000	$1,800,000					$1,800,000
28	Box Hangar (ADG-I) and Ramp	$1,854,000	$1,854,000					$1,854,000
30	Box Hangar (ADG-I) and Ramp	$342,000	$342,000					$342,000
	Total - Privately Funded Projects		$27,599,000					$27,599,000
	Average Per Year		$1,379,950					$1,379,950
	Phase 1 (2020-2024) - Privately Funded Projects		$5,261,000					$5,261,000
	Phase 2 (2025-2029) - Privately Funded Projects		$16,595,000					$16,595,000
	Phase 3 (2030-2039) - Privately Funded Projects		$5,743,000					$5,743,000

Source: Michael Baker International, Inc., 2021.

Chapter 9
Airport Layout Plans Set

CORDOVA MERLE K. "MUDHOLE" SMITH AIRPORT MASTER PLAN UPDATE



9 AIRPORT LAYOUT PLANS SET

9.1 Introduction

The purpose of an approved Airport Layout Plan (ALP) is to serve as the blueprint for future airport development. One condition of accepting and utilizing grant funding for airport improvement projects is to maintain an updated ALP. For the Merle K. (Mudhole) Smith Airport (CDV), the updated development recommendations presented in this study are pictorially summarized in the ALP drawing set and include the preferred concepts for airfield development, landside facility development, and other reserved areas for non-aviation use. The ALP drawing set represents a scaled, graphic presentation of the airport's 20-year development program, thereby providing the airport with a feasible improvement plan that would increase the capability and safety of aircraft operations, promote compatibility with existing and proposed developments, and further upgrade the airport to effectively serve the anticipated demands of general aviation, corporate, and recreational aircraft traffic. The drawings depict the recommendations of this study with regard to aviation development for the short, intermediate, and long-term planning periods.

The dimensional information provided in the drawings demonstrates compliance with minimum airport design standards established by federal, state, and local authorities. The ALP Drawing Set was developed in accordance with the guidance outlined in Federal Aviation Administration (FAA) Advisory Circular (AC) 150/5070-6B, *Airport Master Plans* (Change 2), AC 150/5300-13B, Airport Design (Change 1), *FAA ARP Standard Operating Procedure (SOP) 2.0, Standard Operating Procedure for FAA Review and Approval of Airport Layout Plans, FAA ARP SOP 3.0 FAA Review of Exhibit "A" Airport Property Inventory Maps,* and other supporting circulars and orders.

The ALP drawing set includes the following individual drawing sheets:

- Title Sheet (Sheet 1)
- Airport Data Sheet (Sheet 2)
- Existing Airport Layout Plan (Sheet 3)
- Ultimate Airport Layout Plan (Sheet 4)
- Existing Runway Profiles (Sheet 5)
- Ultimate Runway Profiles (Sheet 6)
- Runway 9 Inner Approach Plan and Profile (Sheet 7)
- Runway 27 Inner Approach Plan and Profile (Sheet 8)
- Runway 16-36 Inner Approach Plan and Profile (Sheet 9)
- Terminal Area Drawing (Sheet 10)
- Airport Airspace Plan (Sheet 11)
- Airport Airspace Profiles (Sheet 12)
- Airport Airspace Obstructions (Sheet 13)
- Land Use Plan (Sheet 14)
- Property Map (Sheet 15)

9.2 Title Sheet (Sheet 1)

The Title Sheet serves as the introduction to the ALP drawing set. It includes the airport name, a location map, vicinity map, and an index of drawings included in the ALP drawing set. Also highlighted on the Title Sheet are the project name, sponsor's name, and the State Award ID number.

9.3 Airport Data Sheet (Sheet 2)

The Airport Data Sheet summarizes key elements that are depicted on the Airport Layout Plan Drawing such as airport coordinates, runway end elevations, runway high and low points, and true azimuths for each runway. Supplemental tables, as required by the FAA ALP Review Checklist, are depicted on the Airport Data Sheet including the airport data table and runway data table.

9.4 Existing Airport Layout Plan (Sheet 3)

The Existing Conditions Drawing depicts all existing facilities at CDV. This drawing provides clearance and dimensional information required to show conformance with applicable FAA design standards as outlined in FAA AC 150/5300-13B, *Airport Design*. The features of the drawing include, but are not limited to the runway, taxiways, lighting, navigational aids, terminal facilities, hangars, other airport buildings, aircraft parking areas, automobile parking, and airport access elements.

9.5 Ultimate Airport Layout Plan (Sheet 4)

The Airport Layout Plan Drawing, also referred to as the ALP, depicts all existing facilities and proposed developments planned over the 20-year planning period and beyond at CDV. These plans are reviewed by and must be approved by the DOT&PF and FAA prior to authorizing Federal and state funding for future improvement projects. An example of a state funded improvement is widening Runway 16-34. The ALP provides clearance and dimensional information required to show conformance with applicable FAA design standards as outlined in FAA AC 150/5300-13B, *Airport Design*. The features of the ALP include, but are not limited to the runway, taxiways, lighting, navigational aids, terminal facilities, hangars, other airport buildings, aircraft parking areas, automobile parking, and airport access elements.

9.6 Existing and Ultimate Runway Profiles (Sheets 5 and 6)

The existing and ultimate profiles for Runway 9-27 and Runway 16-34 are shown in Sheets 5 and 6. This information is provided to reflect the proposed improvements needed to address runway line-of-sight design criteria in accordance with AC 150/5300-13B, *Airport Design*.

9.7 Inner Portion of the Approach Surface Plan and Profile (Sheets 7, 8, and 9)

The Inner Portion of the Approach Surface Drawings show both plan and profile views of the approach surfaces beyond each runway end. The purpose of these drawings is to locate and document existing objects which represent obstructions to navigable airspace within the

existing and proposed approach slopes for each runway. Additionally, the drawings show the ground profile and terrain features along the extended centerline of each runway end.

Any controlling structures, such as roadways, natural ground elevations, and trees, are also shown on the Inner Portion of the Approach Surface Drawings, if applicable. Additionally, fixed objects located along the extended runway centerlines are also illustrated on the sheets to provide an indication of the relative distance to the approach surfaces. As applicable, obstructions to navigable airspace are listed in an obstruction data table along with a recommended action for each obstruction. Obstruction Tables are included on each sheet.

Key dimensional criteria for the runways was based on Runway Design Code (RDC) and shown in Table 9-1. The RDC and other runway approach factors are used to determine the physical characteristics of the runways (e.g., length, width, and strength), taxiway widths, and dimensions for the Runway Safety Area (RSA), Runway Object Free Area (ROFA), Building Restriction Line (BRL), clearance areas around navigational aids, etc.

Table 9-1: Future Runway Design Code

Runway	RDC
9	D-III-2400
27	D-III-2400
16	A-1-VIS
34	A-1-VIS

Source: Michael Baker International, Inc., 2021

9.8 Terminal Area Plan (Sheet 10)

The Terminal Area Drawing presents an enlarged view of the terminal area at CDV and therefore provides additional dimensional details such as apron areas (existing and proposed) that are not easily visible on the ALP. This drawing denotes the short and long-term developments and improvements within the vicinity of the Terminal Building and also illustrates many of the surrounding landside development recommendations. Existing and proposed automobile access and parking improvements are also included.

9.9 Airport Airspace Drawings (Sheets 11, 12, and 13)

Federal Aviation Regulations (FAR) Part 77, Safe, Efficient Use, and Preservation of the Navigable Airspace, prescribes airspace standards, which establish criteria for evaluating navigable airspace. Airport imaginary surfaces are established relative to the airport runways and types of approaches they provide. The size of each imaginary surface is based on the runway category with respect to the existing and proposed visual, non-precision, or precision approaches for that runway. The slope and dimensions of the respective approach surfaces are determined by the most demanding, existing or proposed, approach for each runway.

- Primary Surface – A rectangular area symmetrically located about the runway centerline and extending a distance of 200 feet beyond each runway end. Its elevation

is the same as the nearest point along the runway edge. The primary surface 1,000 feet wide for Runway 9-27 and 250 feet wide for Runway 16-34.

- Horizontal Surface – An oval shaped, flat area situated 150 feet above the published airport elevation of 52.49 feet Above Mean Sea Level (AMSL) at CDV. Its dimensions are determined by connecting 10,000-foot arcs starting 200 feet beyond the future runway ends. The horizontal surface elevation for CDV is 202.49 feet AMSL.
- Conical Surface – A sloping area whose inner perimeter conforms to the shape of the horizontal surface. It extends outward for 4,000 feet measured horizontally, and slopes upward at a 20:1 ratio. At CDV, the conical surface extends upward to an elevation of 402.49 feet AMSL.
- Transitional Surface – A sloping area beginning at the edges of the primary and approach surfaces and sloping upward and outward at a ratio of 7:1.
- Approach Surface – This surface begins at the ends of the primary surface and slopes upward at a predetermined ratio while at the same time flaring out horizontally. The width and elevation of the inner ends conform to that of the primary surface, while the slope, length, and outer width are determined by the runway service category and existing or proposed non-precision instrument approach procedures.

FAR Part 77 Obstruction Tables associated with these drawings are included in Sheet 13 listing the object description, location, and its recommended disposition.

9.10 Land Use Drawing (Sheet 14)

The Land Use Drawing designates various sectors of the property for specific uses and also shows an aerial view of the land surrounding CDV. The drawing serves to depict existing and planned future land uses both on and off the airport as identified and classified by local government and/or planning agencies.

9.11 Property Map or Exhibit A (Sheet 15)

The Airport Property Map defines the existing and proposed airport boundaries in a graphical form. The purpose of the drawing and associated tables is to identify how property and easements have been acquired in the past and to illustrate properties that should be obtained in the future as necessary to accommodate the proposed development plan.

In general, property acquisition was shown when additional land was required to accommodate future development (i.e., runway extensions, taxiway extensions, etc.). No land acquisition is proposed for CDV. A complete boundary survey was completed, and a property line is depicted in this Airport Property Map.

9.12 Summary

The ALP Drawing Set is intended to depict CDV's capital development program in graphical form. Prior to incorporating the developments herein, preliminary plans were presented to the DOT&PF, the Working Group, and to the public for their review and approval. Thus, this plan set accurately reflects the goals and intentions of airport management and the adjacent community throughout the 20-year planning period.

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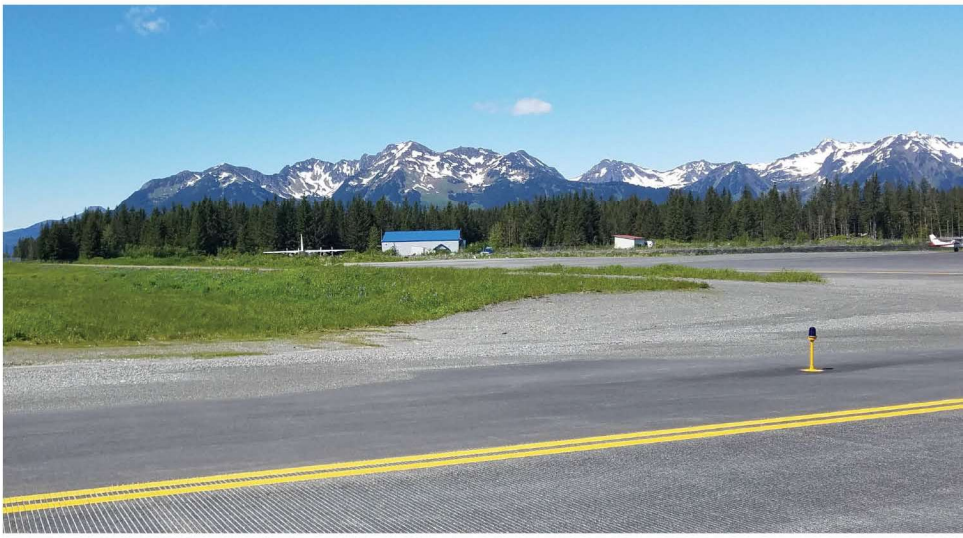
Appendix A
Environmental Overview

CORDOVA MERLE K. "MUDHOLE" SMITH AIRPORT MASTER PLAN UPDATE



A. ENVIRONMENTAL OVERVIEW

This environmental overview presents a summary of potential and known environmental resources within or near the Merle K. (Mudhole) Smith Airport (CDV) study area, and describes the potential impact that may occur as a result of the CDV Airport Master Plan update. This review is in accordance with Federal Aviation Administration (FAA) Advisory Circular 150/5070-6B and the Alaska Department of Transportation & Public Facilities (DOT&PF) guidance.

To accommodate future actions that may occur as a result of the Master Plan Update, this review identifies resource categories as listed in FAA Order 1050.1F to ensure compliance with the National Environmental Policy Act (NEPA). Resources include:

- Air Quality
- Biological Resources (including fish, wildlife, and plants)
- Climate
- Coastal Resources
- Department of Transportation Act, Section 4(f)
- Farmlands
- Hazardous Materials, Solid Waste, and Pollution Prevention
- Historic, Architectural, Archaeological, and Cultural Resources
- Land Use
- Natural Resources and Energy Supply
- Noise and Compatible Land Use
- Socioeconomics, Environmental Justice, and Children's Environmental Health and Safety Risks
- Visual Effects (including light emissions)
- Water Resources (including wetlands, floodplains, surface water, groundwater, and Wild and scenic rivers)

Resources listed under FAA Order 10501F are applicable nationwide and therefore are broad in scope. For the purposes of this Master Plan Update, this overview will focus on the resources that exist or may potentially be found within the vicinity of the study area. Environmental resources listed below are either not present in the area or otherwise do not apply due to regulatory changes, and therefore will not be described in greater detail:

- Farmlands: There are no farmlands in or near CDV
- Wild and Scenic Rivers: There are no designated Wild and Scenic Rivers in the vicinity of Cordova or CDV (USFWS, 2020a)
- Threatened & Endangered Species: According to U.S. Fish & Wildlife Service (USFWS), there are no threatened or endangered species within the airport vicinity (USFWS, 2020b)
- Coastal Resources: As of July 2011, Alaska no longer participates in the National Coastal Zone Management Program under the Coastal Zone Management Act, thus coastal zone consistency reviews do not apply

A.1 Air Quality

Air quality in the Cordova area is considered "good." The community is not on the Alaska Department of Environmental Conservation's (ADEC) list of impaired communities for particulate matter of 10 microns or less (PM10), primarily from dust, nor for 2.5 microns or less (PM2.5), primarily from woodsmoke. The community does not appear to be participating in the Dust Monitoring and Community Self-Assessment program. Cordova is expected to meet all National Ambient Air Quality Standards as established by the U.S. Environmental Protection Agency.

A.2 Biological Resources

Biological resources in the study area include plants, wildlife, avian species (birds) and aquatic species. Marine species and habitat will not be evaluated, as the study area is sufficiently distant from the coast and mean high tide line. As previously mentioned, threatened and endangered species will not be discussed as there are no listed or candidate species in or near the study area (USFWS, 2020a).

A.2.1 Flora and Terrestrial Habitat

The City of Cordova and CDV are located along the eastern end of Prince William Sound at its confluence with the Gulf of Alaska. Both the town and the airport, 13 miles out of town, fall within the Gulf of Alaska Coast ecoregion, which falls within the temperate coastal zone of Alaska (Nowacki et al., 2001). The climate is maritime, with substantial precipitation. The CDV lies along a line of broad outwash and alluvial plains associated with glacial streams and rivers. Ten miles east, the Copper River Delta provides the best example of this as the largest intact, contiguous wetland on the Pacific Coast (Alaska Department of Fish and Game ([ADFG], 2006).

Terrestrial habitat in this area consists of primarily needleleaf upland forests of Sitka spruce and hemlock, broadleaf colonies of mostly shrub (alder and willow) and some cottonwood along waterways and gravel floodplains. Wetlands, discussed in detail later, include muskeg and black spruce bogs and wet meadows

A.2.2 Fauna

Numerous mammal species are present in the vicinity, from rodents such as shrews and voles, to mustelids, foxes, lynx, coyotes, wolves, ungulate generalists such as moose and Sitka black-tailed deer, and of course black and brown bears. At the airport, beavers have proven to be an occasional management challenge, as they can dam up the small drainages around and under the airport and runway.

Marine and aquatic mammal species in Prince William Sound and the nearshore waters of Gulf of Alaska include both river and sea otters, harbor seals and Steller sea lions. The marine waters also host multiple species of porpoise and whale, including harbor and Dall's porpoise, and humpback, killer, minke, fin and beluga whales.

Reptiles and amphibian species are limited to wood frogs and western toad; however, Olive Ridley sea turtle carcasses have washed ashore in this area (ADFG, 2006), and other aquatic reptiles may live in offshore waters.

A.2.3 Birds

The south coast of Alaska provides habitat for a wide range of avian species, many of which are seasonal migrants into or through and some of which are permanent, year-round inhabitants of the nearshore waters, wetlands and upland ecosystems. As the marine environments are approximately 5 miles from the study area, this study will focus on the terrestrial avian species.

The Copper River Delta is renowned as a birding location due to the breadth of species that can be spotted here (U.S. Forest Service, 2020). The area hosts an annual shorebird festival, and a checklist of potentially viewable species includes 27 species of wetland birds, 21 passerine or terrestrial birds, 19 species of intertidal waders and dippers, 9 additional species of marine birds, and 7 species of generalists that may be seen right in town (Cordova Chamber of Commerce, 2020). Bald eagles have been known to nest on or near the airport property.

Many bird species are protected under the Migratory Bird Treaty Act (MBTA). In addition, bald and golden eagles are protected under the Bald and Golden Eagle Protection Act. USFWS oversees these regulatory protections, and provides consultation and guidance on avoiding deliberate or incidental 'taking' of the protected birds, their nests, or eggs. Consultation with USFWS may be necessary in the event that future action requires clearing of vegetation, to identify appropriate measures, such as seasonal timing, to avoid impacts to these protected species.

A.2.4 Fish

Cordova is known for its fishing opportunities and it forms the basis for the local economy. Marine and coastal waters host halibut, rockfish and lingcod, as well as all five species of Pacific salmon. In addition, there are Dolly Varden char, steelhead, rainbow and cutthroat trout in the freshwater. Eulachon (hooligan) and stickleback are also present in some waterways and lakes.

There are multiple waterways providing anadromous habitat within the CDV area, as shown in Figure A.1 (ADFG, 2006). Little Glacier Slough, immediately west of the airport, hosts coho and sockeye salmon, as well as cutthroat trout and Dolly Varden char. In addition, the unnamed small waterways that run immediately east and even under the central runway area via culvert host coho salmon.

Any future work that may involve replacement or removal of culverts, rerouting of waterways and drainages, or any other work below ordinary high water of a flowing waterbody will likely require consultation with ADFG and a subsequent Title 16 Fish Habitat Permit. In addition, coordination with the Copper River Watershed Project, a local non-profit that collaborates with applicable State and Federal regulatory agencies on area waterways and restoration, may provide an opportunity for cooperative improvement and mitigation to waterways on or near the airport property.

A.3 Climate

The study area falls within the Temperate Coastal zone of Alaska, with a maritime climate featuring significant precipitation and relatively modest diurnal temperature shifts. The area is subject to cloud cover and fog.

With regards to potential for climate change and the effects thereof, only very general probabilities may be ascribed at this time, until climate models get more accurate and precise. Sea level rise, and the potential for more potent storms bringing greater energy and precipitation appear to be the primary features of a changed climate. Flood potential in this region, typically from the combination of rapid snow and ice melt in combination with rainfall, may increase in frequency and severity. Increased wind energy may also lead to direct effects, and contribute to increased erosion along water margins and the coast.

A.4 Department of Transportation Act, Section 4(f)

Section 4(f) of the U.S. Department of Transportation Act requires careful consideration of any project that may affect specifically protected resources or properties. It requires that there be no "feasible or prudent alternative" to any detrimental use of: dedicated local, state or federal parklands or recreation areas; wildlife or waterfowl refuges, or; historic sites that are either on or eligible for listing on the National Register of Historic Places.

There are no identified Section 4(f) properties or resources on or near CDV. The lands surrounding the airport are undeveloped, however there do not appear to be any dedicated local, state or federal parklands or wildlife refuges. Much of the surrounding area is managed by U.S. Forest Service as the Chugach National Forest.

It is possible that some of the historic features and buildings previously identified on or near CDV may, upon evaluation, be considered eligible for listing. Prior to any proposed activity, a cultural resources survey should identify any such properties.

A.5 Hazardous Materials, Solid Waste and Pollution Prevention

Hazardous materials and pollution prevention include prevention of contamination to the surrounding environment through appropriate transportation, storage and disposal, and existing contaminated sites, both historic and contemporary.

The presence, type, and relative location of ADEC-listed contaminated sites are shown in Figure A-1, and summarized in Table A-1.

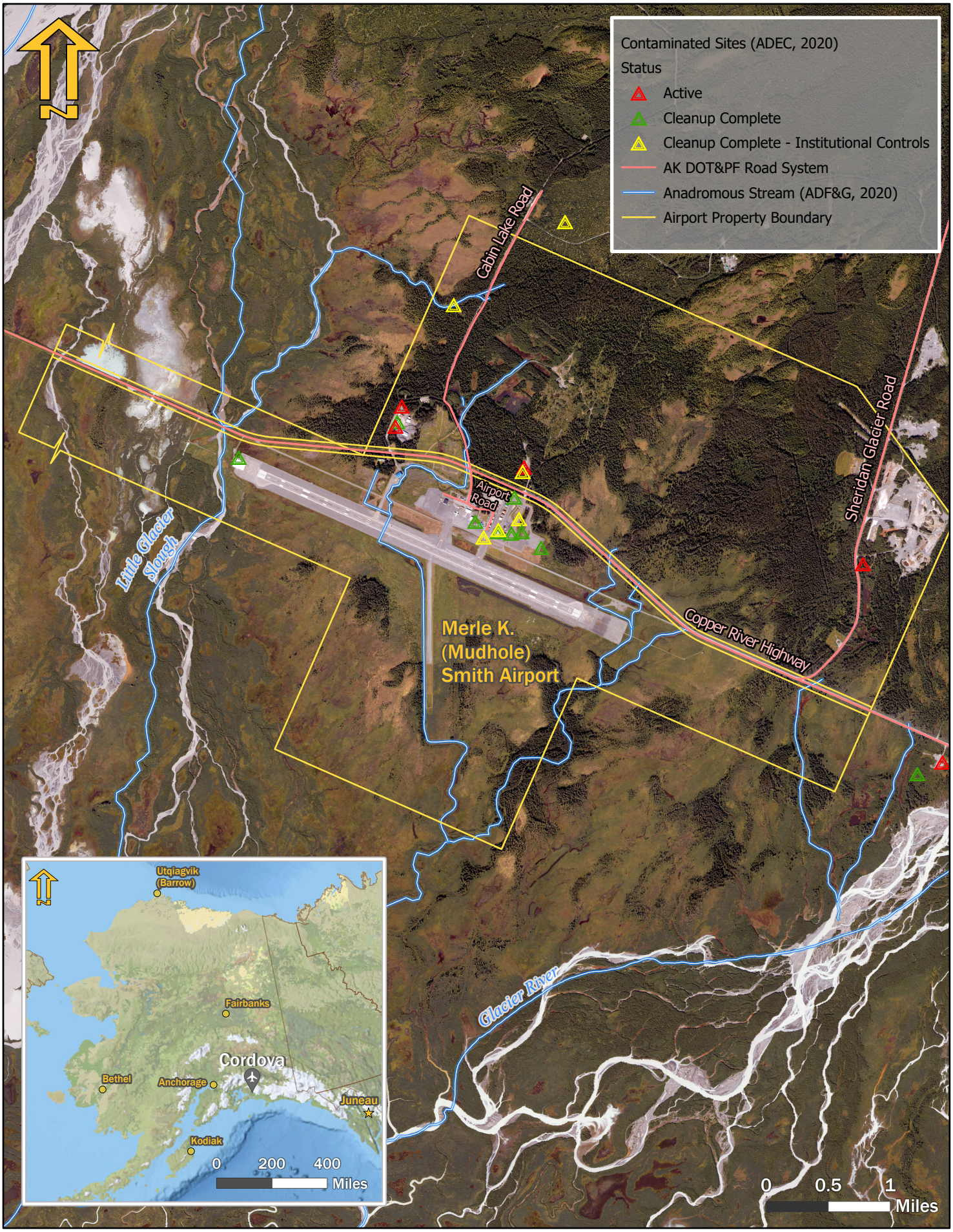

Contaminated Sites (ADEC, 2020)
Status
Active
Cleanup Complete
Cleanup Complete - Institutional Controls
AK DOT&PF Road System
Anadromous Stream (ADF&G, 2020)
Airport Property Boundary
Cabin Lake Road
Sheridan Glacier Road
Airport Road
Little Glacier Slough
Merle K. (Mudhole) Smith Airport
Copper River Highway
Glacier River
Utqiagvik (Barrow)
Fairbanks
Cordova
Bethel
Anchorage
Juneau
Kodiak
0 200 400 Miles
0 0.5 1 Miles

Table A-1. ADEC-listed Contaminated Sites at Cordova Airport			
Name	Site ID	Status	Location
FAA Cordova FLQ Bldg. 104	2215.39.001	Institutional Controls	On airport property
FAA Cordova Carpenters Bldg. 606	2215.38.001	Cleanup Complete	On airport property
USCG Cordova AVSUPFAC	2215.26.004	Institutional Controls	On airport property
FAA Cordova Water House Bldg. 601	2215.38.001	Cleanup Complete	On airport property
FAA Cordova FLQ Bldg. 105	2215.38.001	Cleanup Complete	On airport property
FAA Cordova FLQ Bldg. 100	2215.38.001	Cleanup Complete	On airport property
FAA Cordova Vehicle Fuel Pump Area	2215.38.001	Cleanup Complete	On airport property
FAA Cordova COMSERFAC Lot	2215.38.001	Institutional Controls	On airport property
FAA Cordova Localizer Facility	2215.38.001	Cleanup Complete	On airport property
FAA Cordova Warehouse #203	2215.38.001	Cleanup Complete	On airport property
FAA Cordova Shop Site Bldg. 304	2215.38.001	Institutional Controls	0.25 miles N of airport
FAA Cordova UST 2	2215.38.001	Active	0.25 miles N of airport
DOT&PF Cordova Maintenance Station Class V Injection Well	2215.38.030	Active	0.25 miles N of airport
DOT&PF Cordova Maintenance Station	2215.26.003	Cleanup Complete	0.25 miles N of airport
DOT&PF Cordova Maintenance Station	2215.38.023	Active	0.25 miles N of airport
DOT&PF Cordova Locke Salvage Yard	2215.38.020	Institutional Controls	0.5 miles N of airport
Eyak NALEMP Cordova Airfield Garrison & Staging Area	2215.38.032	Active	1 mile E of airport

Compiled by: Michael Baker International, 2021

According to ADEC, there are three sites on airport property under monitoring by ADEC. Seven sites are considered "closed" by ADEC, meaning the department is satisfied that cleanup is complete and remaining contamination is below statutory cleanup levels. Off airport property, additional three sites were identified: one is considered "Active," one site under monitoring, and one closed site. Additional sites are present in the area; however, are located more than 0.5 miles from the CDV.

In addition, CDV has an Aircraft Rescue and Fire Fighting (ARFF) operation on the premises. These operations have recently been found to have a very high correlation with

perfluorooctane sulfonate (PFOS) contamination from fire-retardant foam. This potential contamination source may require investigation prior to conducting earth-moving activities in the area where ARFF training or operations occurred.

A.6 Historic, Architectural, Archaeological, and Cultural Resources

The Cordova area has historically been home to the Eyak people, associated with the Athabascan natives of interior Alaska and the Copper River Basin. Tlingit and Alutiiq natives have also made forays into the area, in many cases mingling with the Eyak. The teeming salmon runs would have provided a substantial harvest.

The area near Cordova was originally named "Puerto Cordoba" in 1790 by Don Salvador Fidalgo, a Spanish explorer leading an expedition on behalf of the Spanish crown. Attracted by the plentiful salmon runs and marine resources, canneries opened at Odiak Slough, at approximately the same location as the Eyak village of Orca. This community was later named Cordova by Michael Heney, who began constructing the Copper River & Northwestern Railway (CR&NW) from Cordova east and up the Copper River, to provide a route for supplies moving inland and goods, most notably copper ore from Kennecott Mine, to move to port for shipment to markets.

The airport was originally constructed as Cordova Staging Field by the U.S. Army Air Corps under the Civil Aviation Administration (CAA) in 1942, as the U.S. entered the Second World War (Thompson and Buzzell, 2004). The airstrip was originally constructed parallel to the CR&NW rail line. The CAA, and following reorganization the FAA, maintained management responsibilities over the airport until 1967, when DOT&PF assumed ownership and maintenance responsibilities for the airport. It was renamed "Merle K (Mudhole) Smith" airport after a well-known early Alaska bush pilot who had lived and worked in Cordova.

According to the Alaska Department of Natural Resources, Office of History and Archaeology, there are no known prehistoric or archaeological resources in or around the study area, while there are multiple historic resources. Most of the historic resources are associated with the CAA airfield and its development, although the Copper River Highway and the former CR&NW railbed are also in the immediate vicinity. Table A-2, below, summarizes the historic resources present on or near the airport. None have been determined eligible for listing on the National Register of Historic Places.

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Table A-2. Known Historic and Cultural Sites on or Near Cordova Airport

Site Name	Resource Nature	Period	Date Range
Building 208, Storage Building, Walk In Freezer	Building	Historic	1943
Sheridan Glacier #3 Bridge	Site	Historic	1962
Building 601, Pump House Lot	Building	Historic	1942
WWII Aircraft Wreckage	Structure	Historic	
Cordova Garrison at CAA Airfield	District	Historic	ca 1942
Building 302, COMSERFAC Building	Building	Historic	1941
Cordova Garrison at CAA Airfield WWII Revetment	Structure	Historic	1941-1945
Naval Radio Station Cordova, Hanscom Site	Site	Historic	1917-1925
Building 203, Storage Building	Building	Historic	1942
WWII Quonset Hut Ruins	Structure	Historic	
Gun Emplacement	Structure	Historic	
World War II Bunker	Site	Historic	
Building 602, Sewage Lift/Utility Building	Building	Historic	1940s
Copper River Highway	Structure	Historic	
Utilidor Structure	Structure	Historic	ca. 1942
Gun Emplacement	Site	Historic	ca. 1942
Copper River & Northwestern Railway Railbed	Structure	Historic	1907-1938
WWII Power Plant Building Ruins	Site	Historic	ca. 1943

Source: SHPO, 2020

Historic and cultural resources can include sensitive information and therefore are not included in maps or figures in this document. In addition, the lack of known prehistoric, archaeological or cultural resources does not indicate that these resources do not exist in the area; any action that will lead to activity, particularly ground-disturbing activity, on location should first involve an appropriate review by a professional cultural resources specialist.

A.7 Land Use

Land in the vicinity of the airport is generally undeveloped, native terrain. Land around the airport property is owned or managed by the State, Native corporation, or Federal agencies such as the U.S. Forest Service (Figure A-2). According to the Cordova Comprehensive Plan, future land use at the airport is intended for “Community Facilities” while the land surrounding the airport is undesignated for any future use (City of Cordova, 2019). All other future land uses lie closer to the central township, which is 13 miles west of the study area.

A.8 Natural Resources and Energy Supply

A.8.1 Natural Resources Energy Supply

Natural resources, as they relate to CDV, include fill material and surface paving material. There are at least three material sites in close proximity to the airport; one approximately 0.5 miles north-northeast on Cabin Lake Road, and the others approximately one mile east on Sheridan Glacier Road. The former appears to be on airport property, while the latter, off Sheridan Glacier Road, appears to be owned and operated by Eyak Corporation.

Specialty material unavailable in the immediate vicinity of Cordova would have to be brought in by ferry or barge.

A.8.2 Energy Supply

Energy supply at CDV consists of electrical utility supply. Electrical service is provided by Cordova Electric Cooperative and is largely generated and supplied via hydroelectric operations on Power Creek above Eyak Lake. During the months when hydroelectric generation is not available, they have a diesel-powered facility.

Both FAA and DOT&PF have back up power generators for their respective facilities.

A.9 Noise & Compatible Land Use

A.9.1 Noise

Noise is defined as: 'A sound, especially one that is loud, unpleasant or disturbing.' Noise can affect quality of life for humans, and can also affect behavior among many other species. Noise comes from a wide range of sources, and takes different forms, Prime examples include sharp, instantaneous noise such as that from firearms, and continuous or repetitive noise such as that from roadways or construction activity.

Noise from CDV comes primarily from vehicular traffic to or from the airport, maintenance operations such as grading and snow removal, and aircraft operations. The CDV typically averages 40 or fewer operations per day, approximately half of which are single-engine general aviation craft.

A.9.2 Compatible Land Use

The lands surrounding CDV are generally comprised of undeveloped, native terrain. There are very few "sensitive receiver locations" (for example, residences, churches, hospitals, or other locations requiring reduced noise levels) near the airport. Land uses in some proximity of the airport appear to involve heavy industrial activity, including material sites and logging operations. In addition, there appears to be a small arms shooting range approximately one mile northeast of the airport. These land uses are not considered to be sensitive receiver locations. Noise has not, in the past, been a problem at the airport with regards to surrounding land use (DOT&PF, 2000).

Any future action that may involve a change in airport operations, aircraft type, or other potential noise increases should involve a noise study to determine what, if any, sensitive

receiver locations may exist in the study area, as well as the current and anticipated noise levels associated with the airport.

A.10 Socioeconomics, Environmental Justice and Children's Environmental Health and Safety

A.10.1 Socioeconomics

Cordova is a home rule city within the Valdez-Cordova Census Area, with no incorporated borough government. Following the Alaska Native Claims Settlement Act, this area is within the Chugach Native Corporation's boundaries. Locally, the Eyak Corporation is the village corporation for the native Eyak community, a Federally recognized tribe based in Cordova.

Cordova's economy is based largely on commercial fishing. There are small quantities of State and Federal employment opportunity in the area, as well as local (municipal) and school-affiliated professions and general support services. Tourism plays a small but relevant role in the area's economy as well.

A.10.2 Environmental Justice

Cordova does not appear to constitute a disproportionately "low-income" or "minority" population with regards to socioeconomics and environmental justice. According to 2019 census data, Cordova's population is 2,343. Of this, 127 persons (5.4 percent) are expected to be living at or below the poverty line, compared to average state and national levels of 10.1 and 10.5 percent, respectively.

The population of Cordova is primarily Caucasian (73.2 percent), followed by Asian (8.7), Alaska Native / American Indian (7.9), Pacific Islander (1.2). Approximately 8.7 percent of respondents indicated 'Two or more' ethnicities. By comparison, average Alaska state percentages are as follows: Caucasian (66.7), Alaska Native / American Indian (14.8), Asian (5.4), Black (3.6), Pacific Islander (1.0), Other (1.7), and Two or more (7.3).

There are no neighborhoods in immediate proximity to the airport to evaluate for concentrations of low-income or minority residents. The former Eyak community of Alaganik was located approximately 10 miles east of the airport on Alaganik Slough. This community ceased to exist in the early 1900s, as residents migrated to central Cordova.

A.10.3 Children's Environmental Health and Safety

There are no schools, daycare centers, or other youth-oriented programs or land uses associated with the properties on or near the study area. Operations and activity at CDV, and any potential changes to operations and activity at the airport, are highly unlikely to affect children's environmental health and safety.

A.11 Visual Effects

Visual effects describes the lands in which the project or study area sits, and the potential for the existence of, or changes to, the project or study area to affect the visual appeal of that landscape or scenery. While visual effects are typically prone to assign greater appeal to pristine, natural environments, there are cases wherein development within that context

can add to the appeal; Kennecott Mine in Wrangell-St Elias National Park is one such notable example.

The CDV sits on the alluvial outwash plain between the Chugach Mountains and Gulf of Alaska. It is a generally flat area, with substantial native shrub and forest growth covering the surrounding lands. The airport itself is unlikely to be visible from many readily accessible areas off of airport property; Mount Eyak Ski Area and any informal trails on the hills south of Cordova are the likeliest locations to see the airport and surrounding terrain.

There are no parks, refuges, or lands dedicated to unusual or unique vistas in or around the study area. Visual effects stemming from specific actions that may come about as a result of this Master Plan Update may be evaluated specifically for each action or project, to determine the probability and severity of impacts to the viewshed.

A.12 Water Resources, Wetlands, and Floodplains

Given its cool, northern maritime climate and substantial annual precipitation, CDV and the surrounding area hosts a wide array of water resources, most notably multiple waterways and alluvial delta wetlands. Waterways in the study are shown in Figure A-2, based on the USFWS National Wetlands Inventory (NWI), a centralized dataset of wetland mapping for the U.S. However, it should be noted, this dataset has fairly low resolution and reliability, as the mapping techniques typically do not include field investigations and ground-truthing of wetland boundaries.

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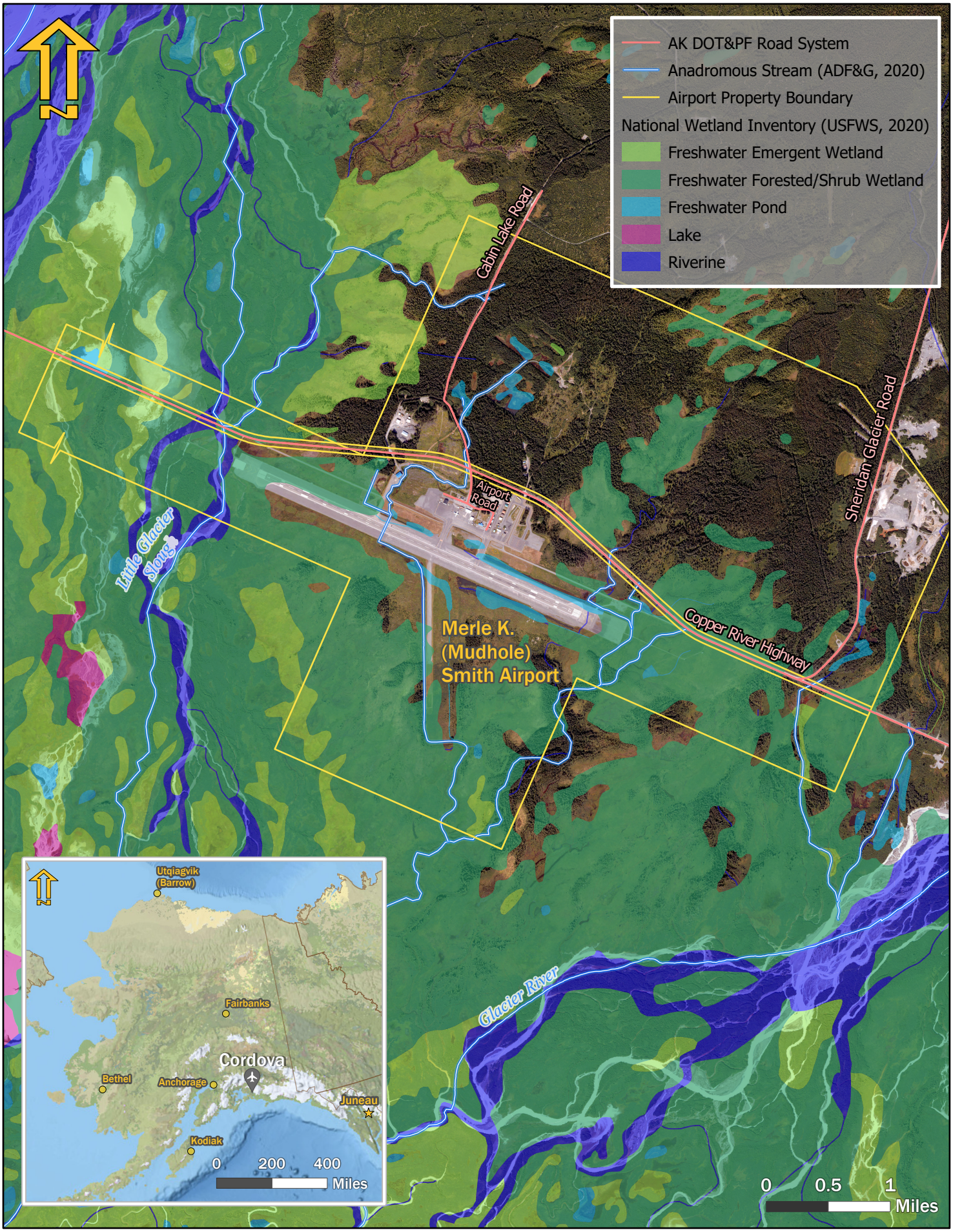
AK DOT&PF Road System
Anadromous Stream (ADF&G, 2020)
Airport Property Boundary
National Wetland Inventory (USFWS, 2020)
Freshwater Emergent Wetland
Freshwater Forested/Shrub Wetland
Freshwater Pond
Lake
Riverine
Cabin Lake Road
Airport Road
Sheridan Glacier Road
Copper River Highway
Little Glacier Slough
Glacier River
Merle K.
(Mudhole)
Smith Airport
Utqiagvik
(Barrow)
Fairbanks
Cordova
Bethel
Anchorage
Juneau
Kodiak
0 200 400
Miles
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Miles

A.12.1 Waterways

Little Glacier Slough sits adjacent to the airport property on the west. This is a slough or side channel that splits off of Scott River, the main stem of which lies further west. Little Glacier Slough demarcates the easternmost extent of the Scott River delta. The waterway is glacial-fed, with additional inputs from the surrounding, steeply sloped terrain. Little Glacier Slough is approximately 70 feet across in the area of the airport, and is a simple channel (i.e., not a braided gravel channel).

A small, unnamed waterway also flows immediately east of the main runway and Runway Safety Area (RSA). This waterway appears to have a very flat gradient and is not glacial in origin; it is fed entirely from groundwater or overland flow and small tributary inputs from the land immediately around the airport and from the airport itself. One branch of this waterway also runs along and adjacent to the crosswind runway, and crosses under the main runway and RSA in a culvert, capturing drainage from the areas west and north of the airport apron and landside facilities.

A.12.2 Wetlands

According to NWI data, the airport is almost completely surrounded by freshwater emergent, freshwater forested/shrub, and freshwater pond wetland types. In some cases, the wetlands are mapped on top of the runway and runway safety area, which is clearly incorrect. Multiple wetlands and open water ponds cover lands to the east, south and west of the airport.

Based on aerial photo interpretation, the both runways and RSAs appear to be largely surrounded by herbaceous wetlands and open water ponds, many of which are connected to the small waterways which capture drainage from the airport property and empty into one of the sloughs of Glacier River.

A.12.3 Floodplains

Initial flood mapping from the Federal Emergency Management Agency (FEMA) is available for both the town and airport in Cordova (FEMA, 2020). All of CDV, as well as the surrounding terrain, is mapped as “Zone D,” indicating “Area with Undetermined Flood Hazard.” The accuracy of this mapping may be in question, as it indicates that even areas elevated above the surrounding outwash plain are under the same flood risk.

Any subsequent project that involves ground-disturbing activity outside of the surface and slopes of the existing runway and RSA is likely to involve wetland impacts. Surface waters are clearly visible, and nearly surrounding the developed airport surfaces. Any subsequent activity will likely require a wetland delineation by an experienced professional to determine the extent of wetland coverage and to inform wetland permitting efforts.

The remainder of this page is intentionally left blank.

A.13 References

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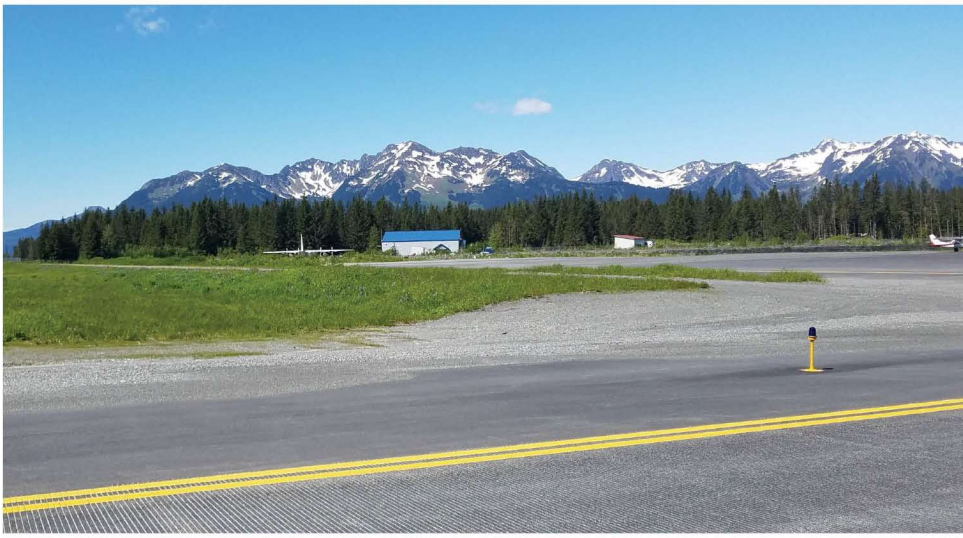
Appendix B
Public Involvement

CORDOVA MERLE K. "MUDHOLE" SMITH AIRPORT MASTER PLAN UPDATE



B. PUBLIC INVOLVEMENT SUMMARY

B.1 Introduction

The goal of public participation on this project was to provide timely and accurate information about the project and to receive feedback from agency and public stakeholders. Using a variety of tools, including public meetings, the team provided information about how, when, and where people can be involved in project decision-making and why their input is important. The team acknowledged comments and concerns in the format received and provided feedback on how the input influenced project decisions, or if it did not, then why not.

B.2 Events & Outreach Summary

The team used the following outreach tools to inform the public about the project and gather feedback. The **bold** text in **Table B-1** indicates a meeting.

Table B-1: Events and Outreach Summary

Date	Description
Project duration	Correspondence and documentation
Project duration	Mailing list and email list updates
Project duration	Website updates
12/10/2020	**Working Group Meeting 1**
1/4/2021	Flyer
1/5/2021 1/13/2021	Email notice
1/5/2021	Postcard
1/6/2021	State of Alaska online notice
1/7/2021	Radio advertisement
1/8/2021	Cordova Times print advertisement
1/8/2021 to 1/14/2021	Cordova Times online advertisement
1/13/2021	Facebook post
1/13/2021	Facebook event
1/13/2021	Twitter post
1/14/2021	**Airport Conditions and Needs Public Meeting, 298 total views**
2/1/2021	**Meeting with Mayor**
4/22/2021	**Working Group Meeting 2**
7/22/2021	*Cordova Times* online calendar
7/22/2021	Email notice

Table B-1: Events and Outreach Summary	
Date	**Description**
7/22/2021	State of Alaska online notice
7/22/2021	Website update
7/23/2021	Postcard
7/26/2021	Flyer
7/26/2021	Groups forwarding request
7/26/2021	Radio advertisement
7/26/2021	Radio advertisement
7/30/2021	*Cordova Time*s print advertisement
7/30/2021 to 8/5/2021	*Cordova Time*s online advertisement
8/4/2021	Email reminder
8/5/2021	**Working Group Meeting 3**
8/5/2021	**Airport Alternatives Public Open House** 12 people attended in-person, 8 people online, 1 person by phone
11/4/2021	**Working Group Meeting 4**
12/16/2021	**Working Group Meeting 5**

Source: Yehle & Associates LLC, 2021

B.3 Comment Summary

The team received the following summarized public comments over the course of the project. Team responses are included if available. The comments primarily originate from the two public meetings. Working group member comments and discussions are included separately in the working group meeting notes. Original comments and outreach documents are included in the public engagement closeout documents.

B.3.1 Airport Layout

- Is it even an option to consider developing a plan for a float pond for seaplane operators? What about a ski strip? *Team response: We will consider these in the planning process. RaeAnne Hebnes, Project Manager, Michael Baker International. We could potentially designate an area for a ski strip. Jennifer Keller, Project Manager, DOT&PF. Can you please send us more information about the ski strip, and we can look into it more? Philip Jufko, Aviation Planner, Michael Baker International.*
- I would like to see a 1,500-foot extension to the east end of the runway to accommodate heavy cargo aircraft to enable the expansion of fresh pink marketing.
- Extending apron freight capacity without providing runway capacity appears to be an expansion without a clear purpose.

- Requesting a float pond to support the GA need in CDV. Lake Eyak is not a viable option to meet or sustain GA and commercial current or future demand.

B.3.2 Critical Aircraft

- What is the wingspan of the critical aircraft? Also, does the FAA have guidance for other airport facilities as they relate to the critical aircraft, such as weight restrictions on taxiways? Would new lease lot development accommodate a 60-foot wingspan? This could accommodate an air ambulance. *Team response: The Boeing 737 is the critical aircraft for the major design improvements at the airport; however, we want to make sure other improvements throughout the airport accommodate other users as well. Different design criteria can be used for different areas of the airport. Mike Thompson, Aviation Planner, Michael Baker International.*
- In planning new taxiways, will group two (ADG II) aircraft (up to 69-foot wingspans) be considered? The current hangar row is too narrow for ADG-II. *Team response: Our planning group will look at past and best usage of the airport. This will include where those wider pathways could or should be. Mike Thompson, Aviation Planner, Michael Baker International.*

B.3.3 Environmental Considerations

- What counts as ground disturbing activity? Would that be taxiway development, berms, any dirt work at all? *Team response: Anything that requires digging is a ground disturbing activity. This could include digging contaminated sites and replacing fill, or construction. Wetland impacts and checking for contaminated soils comes into play. Patrick Whitesell, Environmental Specialist, Michael Baker International.*
- My primary concerns are about stormwater run-off into surrounding wetlands if impervious cover is increased substantially. Also concerned about degrading salmon stream habitat if new streams are crossed. Please plan to clean up the downed trees that are falling into the watercourse on airport lands and allow for at least a 100-foot vegetative buffer of the watercourses on airport land.

B.4 Forecasting

- Does the planning process take into consideration possible increases in airport use due to decrease in the ferry system? The air cargo demand seems to have increased. *Team response: This is not something that is currently being considered, but this is an impact. Mike Thompson, Aviation Planner, Michael Baker International. 2019 was the base year for this project. 2020 has not been a good year to base forecasts on. Philip Jufko, Aviation Planner, Michael Baker International.*

B.4.1 General Aviation

- There is no access to the new transient parking area other than across Alaska Airlines lot or through the woods because the fence hasn't been completed on that side. It is difficult to know where to go. Currently, transient aircraft are taxiing

on the unfinished taxiway and parking behind hangars overnight. Additional signage and a walk gate would help. The gates are an ongoing problem and are frequently inoperable. There is no fuel available. Is there a way to encourage a private self-serve fuel operation? There is no fuel between Anchorage and Yakutat. Finishing asphalt paving on the taxiways and near the hangars would be helpful for snow removal and maintenance. *Team response: We have heard many of these concerns from the working group and they will be addressed as the project moves forward. RaeAnne Hebnes, Project Manager, Michael Baker International.*

- General aviation needs a fuel farm.
- General aviation concept 2 preferred.

B.4.2 Lease Lots

- Has taken too long to complete Master Plan. Multiple people are waiting to build hangars; myself since mid-2018. Why moratorium when City of Cordova and State of Alaska need tax revenue? What can be done to speed up the process? *Team response: This sounds like a leasing issue and we will get back to you on that. RaeAnne Hebnes, Project Manager, Michael Baker International.*

B.4.3 Operational Comments

- Its [The Airport's]continued operation is absolutely critical to Cordova and our economy.
- I would hope that there would be space set aside for a fuel service. It is surprising that there is not currently a fuel option located at the airport itself. *Team response: We heard this concern from the working group, and it will be looked at as the project moves forward. RaeAnne Hebnes, Project Manager, Michael Baker International.*
- The terminal needs to be larger-after you get through the TSA checkpoint it is definitely much too small, especially considering the times we are living in (COVID) and our need to maintain socially distanced from others, right now they've got people crammed together and also overflowing out into the hallway. I'd also like to see the area where the trees have been removed, cleaned up, as it's a terrible eyesore and not to mention a waste of wood that's eventually going to just rot. *Team response: Thank you for your comment. We will consider it during our upcoming planning process. Philip Jufko, Aviation Planner, Michael Baker International.*
- Responsiveness from Management.
- Need for more space in the security check areas. There is not enough space for passengers and staffing, waiting to board planes. *Team response: Thank you for your comment. We will consider it during our upcoming planning process. Philip Jufko, Aviation Planner, Michael Baker International.*
- I think there needs to be a larger post security holding space with more seating, a bathroom, and drinking fountains or vending machines. *Team response: Thank you for your comment. We will consider it during our upcoming planning process. Philip Jufko, Aviation Planner, Michael Baker International.*

- Does your plan include interior terminal issues, such as the request for more room for TSA? *Team response: Thank you for your question. We will consider it during our upcoming planning process. Philip Jufko, Aviation Planner, Michael Baker International.*
- The Cordova Airport needs to be constantly staffed, in order for proper station, equipment and light maintenance. *Team response: This is more about airport operations than planning, but we will make a note of it. Philip Jufko, Aviation Planner, Michael Baker International.*

B.5 Working Group Meetings

Working group meetings were the primary method of agency coordination and project input at key technical milestones. All meetings were noticed by email and held online and by phone. Meeting summaries can be found as Attachment A.

- Working Group Meeting 1, December 10, 2020
- Working Group Meeting 2, April 22, 2021
- Working Group Meeting 3, August 5, 2021
- Working Group Meeting 4, November 4, 2021
- Working Group Meeting 5, December 16, 2021

B.6 Public Meetings

The team hosted two public meetings over the course of the project. The first one meeting was to assess conditions and needs, this meeting was help online and by phone. The second meeting presented alternatives and receive feedback, this meeting was help in person at the Cordova Public Library, online, and by phone. Meeting summaries can be found as Attachment B.

- Airport Conditions and Needs Public Meeting, January 14, 2021
- Airport Alternatives Public Open House, August 5, 2021

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B.7 Project Logo

The project team primary used the Department of Transportation and Public Facilities logo and the following project logo for branding.

Figure B-1: Project Logo for Branding

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ATTACHEMENT A: WORKING GROUP MEETING SUMMARIES

WORKING GROUP MEETING NOTES

SUBJECT:	Merle K. “Mudhole” Smith Airport Master Plan Update
PROJECT NUMBER:	State: NFAPT00466, Federal: 3-02-0067-015-2019 & 3-02-0067-016-2020
GROUP:	Working Group #1
DATE:	December 10, 2020
TIME:	1 pm
LOCATION:	https://mbakermeet.webex.com/mbakermeet/j.php?MTID=m92a7011a72c9efe4972b128c3ecac3d2
OUTREACH:	By phone and email
MATERIALS:	Story map project presentation
STAFF PRESENT:	ADOT&PF: Jennifer Keller, Judy Chapman, Daniel Phillips Michael Baker International: RaeAnne Hebnes, Philip Jufko, Patrick Whitesell, Pamela Belalcazar, Karin McGillivary, Cynthia Little, Jazmond Gamble, Michael Thompson Yehle & Associates: Camden Yehle

ATTENDANCE:

Organization	Name	Position
Alaska Airlines	Bridget Thompson Amy Lyman	Southeast Director
Copper River Watershed Project	Kate Morse	Program Director
Cordova Airport	Robert Mattson	Airport Manager
Eyak Corp	Brennan Cain	Vice President
City of Cordova Cordova Electric Cooperative	Clay Koplin	Mayor Chief Executive Officer

Orca Adventure Lodge	Wendy Ranney	Operator
City of Cordova	Leif Stavig	City Planner
Prince William Sound Economic Development District	Kristin Carpenter Jake Borst	Executive Director
Valdez Airport	Robert Dunning	Airport Superintendent

SUMMARY:

Judy Chapman (ADOT&PF) welcomed attendees and thanked them for their time. RaeAnne Hebnes (Michael Baker International) introduced the team and asked each attendee to introduce themselves. After the introductions the team presented an overview of the project and the master planning process. The project team also covered the existing conditions, the need/impact of the aviation forecast, and an environmental overview of the airport property.

Questions & Comments

Clay Koplin (City of Cordova Mayor and Cordova Electric Cooperative Chief Executive Officer): There is new underground electrical service out to airport with a 50-year service life. They are looking at solar energy production at the airport because the area is kept clear. Lease prices are a barrier. There is battery energy storage for the Cordova Electric Cooperative, which supports the airport, especially during emergencies. East and north of the airport are gravel pits that are at or near the end of their service life. They may be graded and returned to the wetlands bank. It is also an attractive solar power site. Cold storage at the airport is important for fishing industry and freight aggregation. The threshold to fill a freighter plane is 40,000 pounds. There is an opportunity for increased international trade with sufficient cold storage at the airport. The project team will contact Clay to discuss further.

Wendy Ranney (Orca Adventure Lodge): The general aviation area is difficult to access and there is an issue with the transient apron. There could be an opportunity to make additional space for other commuter flights. The team will interview her offline.

RaeAnne asked attendees to fill out the following poll questions.

In your opinion what are the major issues of the Cordova Airport?

- There is currently an insufficient traveler parking area. If another small commuter would return to Cordova, there needs to be more, secure parking available. Also, the availability of apron space for a small commuter needs to be looked into.
- Easy access for transient aircraft pilots.

In your opinion what is the main objective of the Cordova Airport Master Plan?

- To develop a realistic development/maintenance plan for the Cordova Airport focusing on the safety and economical needs of the community.

WORKING GROUP MEETING NOTES

SUBJECT:	Merle K. "Mudhole" Smith Airport Master Plan Update
PROJECT NUMBER:	State: NFAPT00466, Federal: 3-02-0067-015-2019 & 3-02-0067-016-2020
GROUP:	Working Group #2
DATE:	April 22, 2021
TIME:	1 pm
LOCATION:	https://mbakermeet.webex.com/mbakermeet/j.php?MTID=m02d21cb8179125646e6328844ab810a5
OUTREACH:	By email invitation
MATERIALS:	Presentation
STAFF PRESENT:	DOT&PF: Jennifer Keller, Daniel Phillips Michael Baker International: RaeAnne Hebnes, Philip Jufko, Jazmond Gamble Yehle & Associates: Camden Yehle

ATTENDANCE:

Organization	Name	Position
Alaska Airlines	Bridget Thompson Amy Lyman Erin Taubitz	Southeast Director
Orca Adventure Lodge	Wendy Ranney	Operator
Prince William Sound Economic Development District	Kristin Carpenter	Executive Director
Alaska Department of Transportation & Public Facilities	Robert Dunning	Valdez District Superintendent

SUMMARY:

Jennifer Keller (DOT&PF) welcomed attendees and thanked them for their time. RaeAnne

Hebnes (Michael Baker International) introduced the team and asked each attendee to introduce themselves. After the introductions the team presented a project update including facility requirements and schedule. Questions from the group are summarized below.

Questions & Comments

Note: Wendy Ranney, with Orca Adventure Lodge, provided all the following comments.

- Wendy described how Alaska Airlines' two passenger flights can be on the ground at the same time, which limits parking for other large private aircraft. Alaska flights 61 and 66 come in approximately the same time now. Philip Jufko responded the master plan will look at parking arrangements. Note: There were other discussions outside of the meeting about if the flights were on the ground at the same time or if the second flight landed soon after the first flight took off. The team will follow up.
- Wendy reiterated she would like to see a fuel provider at the airport sooner rather than later.
- The taxiway can be dangerously busy with a mix of different uses. It might be good to have different access to the taxiway for some of the uses.
- Better long-term parking would be helpful.

WORKING GROUP MEETING NOTES

SUBJECT:	Merle K. “Mudhole” Smith Airport Master Plan Update
PROJECT NUMBER:	State: NFAPT00466, Federal: 3-02-0067-015-2019 & 3-02-0067-016-2020
GROUP:	Working Group #3
DATE:	August 5, 2021
TIME:	2 pm
LOCATION:	In-person: Cordova Center, Community Room, 601 1st St, Cordova, AK 99574 Online: https://us02web.zoom.us/j/84954017529?pwd=Rm56WUJsRTl1eSs2WkZTdXl4UHcydz09
OUTREACH:	By email invitation
MATERIALS:	Story map presentation, same as Public Meeting #2
TEAM PRESENT:	DOT&PF: Jennifer Keller, Daniel Phillips Michael Baker International: RaeAnne Hebnes, Philip Jufko, Michael Thompson, Pamela Belalcazar Yehle & Associates: Camden Yehle

ATTENDANCE:

Organization	Name	Position
Alaska Airlines	Amy Lyman	Southeast Director
Prince William Sound Economic Development District	Kristin Carpenter	Executive Director
Alaska Department of Transportation & Public Facilities	Robert Dunning	Valdez District Superintendent
Alaska Department of Transportation & Public Facilities	Robert Mattson	Cordova Airport Manager

Alaska Department of Transportation & Public Facilities	Margaret Moody	Leasing
FAA	Heather Edic	FAA Community Planner
Aircraft Owners & Pilots Association	Tom George	Alaska Regional Manager

SUMMARY:

RaeAnne Hebnes (Michael Baker International) introduced the team and asked each attendee to introduce themselves. After the introductions Phil Jufko (Michael Baker International) presented a project update including facility requirements, schedule, and alternatives. A summary of questions and comments organized by concept/alternative follows.

Runway Development - Concept 2

Robert "Robbie" Mattson (Cordova Airport Manager) prefers concept 2 for the runway because it has fewer impacts and is more cost effective. He recommended the team consider maintenance cost when comparing the alternative concepts.

RaeAnne asked Robbie to clarify if adding pavement would increase maintenance. He responded that 500 feet of additional pavement would add to maintenance staff workload and maintenance cost with snow clearing and chemicals.

Amy Lyman (Alaska Airlines) agreed option is 2 is better after a first look. However, she will further review the concepts with her team.

Terminal Area - Concept 1

Jennifer asked if there is a concern with the apron expansion so close to the coast guard hangar. Robbie responded that an apron expansion would not impact them so long as we don't directly impact their lease lot.

Margaret Moody (DOT&PF leasehold management) asked how the apron and the new lease lots would connect. Phil responded the lease holder area in Terminal Area Concept 1 would be reserved for future lease lots. There is not demand for new lease lots currently, but the plan can reserve the space. Margaret clarified that lease lots usually have 50 feet of the apron included. She has current requests for more lease lots in the general aviation area that cannot be filled by current capacity.

Terminal Area - Concept 2

Kristin Carpenter (Prince William Sound Economic Development District) expressed concerns about wetland and stormwater impacts for the alternatives. Also, there are buried pipes in the treed area on the north side. Phil clarified there would be an environmental process to design and install culverts, apron, paved areas, etc. The Master Plan develops what's possible; the future detailed design of specific projects included in the plan would include an environmental process

and the design could change to reduce/mitigate impacts.

General Aviation - Concept 1

Margaret mentioned there are a couple of applicants waiting for Taxiway K lease lots. They are working to complete the AGIS survey which will move the leasing process forward. We don't want to have a conflict with upcoming lease lots and planned lease lots in the master plan.

General Aviation - Concept 2

Phil asked Margaret if she saw any other lease lot issues. She responded that she would like people to be able to rent lease lots and build hangers in a straightforward way.

They expect to have survey markers in January for the new lease lots. The applicants are looking at the last two lots at the end of Taxiway K. They are for smaller hangers, but not as tiny as the lots on Taxiway D. Robbie added that Taxiway K was built for larger aircraft than Taxiway D.

WORKING GROUP MEETING NOTES

PROJECT:	Merle K. “Mudhole” Smith Airport Master Plan Update
PROJECT NUMBER:	State: NFAPT00466, Federal: 3-02-0067-015-2019 & 3-02-0067-016-2020
SUBJECT:	Alternative refinement
GROUP:	Working Group
DATE:	November 4, 2021
TIME:	9 am
LOCATION:	Online and by phone
OUTREACH:	Email invitation and reminder
MATERIALS:	Story map presentation https://storymaps.arcgis.com/stories/455d6ce5511e4239b2a85c0a96174a64
TEAM PRESENT:	DOT&PF: Jennifer Keller, Daniel Phillips Michael Baker International: RaeAnne Hebnes, Philip Jufko, Michael Thompson, Pamela Belalcazar, Jazmond Gamble, Patrick Whitesell Yehle & Associates: Camden Yehle

ATTENDANCE:

Organization	Name	Position
Prince William Sound Economic Development District	Kristin Carpenter Lindsey Hammer	Executive Director Program Manager
Alaska Department of Transportation & Public Facilities	Robert Mattson	Rural Airport Foreman
Alaska Department of Transportation & Public Facilities Aviation Leasing	Margaret Moody Diana Osborne	Aviation Leasing Leasing Specialist for Cordova Airport

Alaska Department of Transportation & Public Facilities Statewide Aviation	Tammi Schreier	Airport Safety and Security Officer
Copper River Watershed Project	Kate Morse	Program Director
Alaska Airlines	Amy Fuller-Lyman	Operations

SUMMARY:

Jennifer Keller (DOT&PF) welcomed the group and RaeAnne Hebnes (Michael Baker International) introduced the team. After the introductions Phil Jufko (Michael Baker International) presented a project update including alternatives refinement and the preferred alternative.

Below is a summary of the discussion that followed.

Float Pond

Tammi Schreier (DOT&PF Statewide Aviation) asked how many people would use the float pond? How would people get from the float pond to the general aviation area? Would it justify the maintenance costs? Phil responded that the team was asked to look for a location for a possible float pond as requested by previous public comments. There would have to be gate access to the secure general aviation area. We don't have a forecast that supports building a float pond anytime soon. Float use is supported by other locations currently.

Tammi followed up and asked if it will be a recommendation or a reservation of area for future use. Phil clarified that it would likely be a recommendation to reserve the space for the future. There are a few people who told us they would use it, but not enough to justify building it soon.

Kate Morse (Copper River Watershed Project) asked for clarification on fish and water impacts caused by the float pond. Would water in this pond be diverted from the water system? Kate is working on a project near the airport to improve fish passage. Patrick Whitesell (Michael Baker International) responded that any changes at the airport, including the float pond, would impact wetlands because of the nature of the area. This would elevate the environmental document from a Categorical Exclusion to a full Environmental Assessment. This would require in-depth evaluation of impacts and mitigation measures.

Robbie Mattson (Cordova Airport Manager) is already challenged by wildlife on the approach to runway 27. He thinks the float pond would increase bird strike hazards with larger birds. Jennifer Keller (DOT&PF) added that the float pond was a need brought up by community members, and the evaluation was to consider a possible location. It is possible to fit a float pond, but there would be many more steps to decide if it should move forward. Phil added the next step would be to decide if the pond should be included in the master plan as a project. The other location on the south side appears to have greater impacts and was already dismissed from consideration.

Tammi asked who would make the decision if the float pond would be included as a project.

Jennifer would bring it to the DOT&PF aviation group for a final decision. Tammi added there is very little information on the maintenance and environmental impacts. Phil clarified the pond may not make it into the implementation plan because of these concerns.

Kate encouraged the team to not include the float pond in the plan, but to record the comments.

RaeAnne suggested the plan show the area as reserved for "future aviation use," but not specifically as a float pond.

Phil added that much of the aviation activity in the area is on floats which made it worth looking at, however that does not mean it should be included in the plan. Bringing it to this group was important to have this discussion about concerns.

Kate asked if this meeting is the first time the float pond is shown and if the team will go back to the public. Phil responded to that we will post the refined alternatives to the website and seek more comments outside this group.

Fuel Farm

Kate inquired if the fuel farm could be moved over to the west to be further away from the salmon stream. Phil responded that it could be moved to the west.

Taxiways

Tammi asked about building a parallel taxiway for an alternative landing area for use during runway rehabilitation. Phil responded the costs outweigh the benefits in this case. The aviation forecast does not justify the addition of taxiways. Using taxiways for runways is challenging for larger aircraft. Tammi added that it has been done at other airports.

Fencing

Tammi asked if the perimeter fence is part of the plan. Phil responded the fence is a requirement and is shown in the plan.

Lease Area

Kate approved of the proposed lease area development and fuel farm inside the fence.

Diana Osborne (DOT&PF Aviation Leasing) asked for verification about impacted area of future hangers. Phil responded the pavement area, and any disturbed area were included plus the hanger. Diana added the space between the hangers is too small. Phil responded the planned lease areas have more room in front of the hangers than the existing hangers. Pamela Belalcazar (Michael Baker International) added the setback allowance is usually 40 feet between the hangers. Margaret Moody (DOT&PF Aviation Leasing) indicated 150 by 150 feet is usually the minimum lease lot size. Each lease holder is responsible for storing their own snow and for vehicle parking. Robbie added the snow sluffing off the roofs is a serious consideration that requires extra lease lot space. Phil added there is snow storage and parking outside the lease areas in this case. Diana wanted the team to be aware lease holders often want to include extra sheds and fuel tanks. The team will look at making the lease lots larger.

WORKING GROUP MEETING NOTES

PROJECT:	Merle K. “Mudhole” Smith Airport Master Plan Update
PROJECT NUMBER:	State: NFAPT00466, Federal: 3-02-0067-015-2019 & 3-02-0067-016-2020
SUBJECT:	Draft Implementation and Master Plan
GROUP:	Working Group
DATE:	December 16, 2021
TIME:	9 am
LOCATION:	Online and by phone
OUTREACH:	Email invitation and reminder
MATERIALS:	Slideshow presentation
TEAM PRESENT:	DOT&PF: Jennifer Keller, Daniel Phillips Michael Baker International: RaeAnne Hebnes, Philip Jufko, Pamela Belalcazar, Jazmond Gamble, Patrick Whitesell Yehle & Associates: Camden Yehle

ATTENDANCE:

Organization	Name	Position
Prince William Sound Economic Development District	Kristin Carpenter	Executive Director
Alaska Department of Transportation & Public Facilities	Robert Dunning	Valdez Airport Manager
Alaska Department of Transportation & Public Facilities Aviation Leasing	Margaret Moody Diana Osborne	Aviation Leasing Leasing Specialist for Cordova Airport

Alaska Department of Transportation & Public Facilities Statewide Aviation	Tammi Schreier	Airport Safety and Security Officer
Alaska Department of Transportation & Public Facilities Planning	Judy Chapman	Planning Director
Aircraft Owners & Pilots Association	Tom George	Alaska Regional Manager
Orca Adventure Lodge	Wendy Ranney	Operator

SUMMARY:

Jennifer Keller (DOT&PF) welcomed the group and RaeAnne Hebnes (Michael Baker International) introduced the team. After the introductions Phil Jufko (Michael Baker International) presented a project update including the draft implementation plan.

The following is a summary of the questions and discussion from the working group.

Helicopters

Wendy Ranney (Orca Adventure Lodge) asked about adding dedicated areas for helicopters that are away from the fixed wing use. Pilots land on the taxiway, which is disruptive. Current lease areas don't allow helicopter use. Phil responded that they could use the area north of the second itinerant area.

Wendy added there are two organizations interested in operating helicopters if they are successful in securing hanger space, R66 or R44 sized. Phil requested Wendy send the team a detailed comment regarding helicopter use. There are two types of helicopter use to consider, those based at the airport and itinerant.

Line of Sight

Tammi Schreier (DOT&PF Statewide Aviation) asked if the proposed runway line of sight improvements project includes resurfacing. Jennifer responded that yes, it would include resurfacing.

Lease Lots

Tammi asked if there is a need to have different sized hangers. Phil explained the hangers are shown 60 by 60 feet in the graphics. They can be built a bit wider and still accommodate required setbacks. The benefit of 150 by 150-foot lease lots is it would allow some flexibility. The hanger size shown accommodates aircraft currently used at the airport. Margaret Moody (DOT&PF Aviation Leasing) added that applicants for a lease lot must submit a plan showing the hanger, fuel tanks, vehicle storage, and setbacks.

Tammi pointed out that only smaller aircraft can fit on the taxiway leading to the north side of the airport where future lease lots are shown. Phil responded that DOT&PF Aviation Leasing requested all lease lots be 150 by 150 feet and that is how they are shown on the graphic, however the next master plan update could re-evaluate the arrangement.

Members of the working group thanked the team for including the airport users in the process.

ATTACHEMENT B: PUBLIC MEETING SUMMARIES

PUBLIC MEETING NOTES

SUBJECT:	Merle K. “Mudhole” Smith Airport Master Plan Update
PROJECT NUMBER:	State: NFAPT00466, Federal: 3-02-0067-015-2019 & 3-02-0067-016-2020
GROUP:	Public
DATE:	January 14, 2021
TIME:	5 to 7 pm
LOCATION:	https://publicinput.com/CordovaSmithAirport
OUTREACH:	See Table 1. Outreach below
MATERIALS:	Story map project presentation
STAFF PRESENT:	DOT&PF: Jennifer Keller, Daniel Phillips Michael Baker International: RaeAnne Hebnes, Philip Jufko, Patrick Whitesell, Pamela Belalcazar, Karin McGillivary, Cynthia Little, Jazmond Gamble, Michael Thompson Yehle & Associates: Camden Yehle
ATTENDANCE:	298 total views, 16 comments/questions

SUMMARY:

Jennifer Keller, Project Manager with DOT&PF, and RaeAnne Hebnes, Project Manager with Michael Baker International, introduced the team and described the purpose of the project to update the airport master plan. After introductions the team presented an overview of the project and the master planning process. The project team also covered the existing conditions, the need/impact of the aviation forecast, and an environmental overview of the airport property.

The team received the following questions and comments during the meeting. Verbal questions and team responses are summarized. Written comments are verbatim. All comments are sorted by primary topic.

Airport Layout

Is it even an option to consider developing a plan for a float pond for seaplane operators? What about a ski strip? *Team response: We will consider these in the planning process. RaeAnne Hebnes, Project Manager, Michael Baker International. We could potentially designate an area*

for a ski strip. Jennifer Keller, Project Manager, DOT&PF. Can you please send us more information about the ski strip, and we can look into it more? Philip Jufko, Aviation Planner, Michael Baker International.

Critical Aircraft

What is the wingspan of the critical aircraft? Also does the FAA have guidance for other airport facilities as they relate to the critical aircraft, such as weight restrictions on taxiways? Would new lease lot development accommodate a 60-foot wingspan? This could accommodate an air ambulance. *Team response: The 737 is the critical aircraft for the major design improvements at the airport, however we want to make sure other improvements throughout the airport accommodate other users as well. Different design criteria can be used for different areas of the airport. Mike Thompson, Aviation Planner, Michael Baker International.*

In planning new taxiways, will group two aircraft (up to 69-foot wingspans) be considered? The current hanger row is too narrow for group two. *Team response: Our planning group will look at past and best usage of the airport. This will include where those wider pathways could or should be. Mike Thompson, Aviation Planner, Michael Baker International.*

Environmental Considerations

What counts as ground disturbing activity? Would that be taxiway development, berms, any dirt work at all? *Team response: Anything that requires digging is a ground disturbing activity. This could include digging contaminated sites and replacing fill, or construction. Wetland impacts and checking for contaminated soils comes into play. Patrick Whitesell, Environmental Specialist, Michael Baker International.*

Forecasting

Does the planning process take into consideration possible increases in airport use due to decrease in the ferry system? The air cargo demand seems to have increased. *Team response: This is not something that is currently being considered, but this is an impact. Mike Thompson, Aviation Planner, Michael Baker International. 2019 was the base year for this project. 2020 has not been a good year to base forecasts on. Philip Jufko, Aviation Planner, Michael Baker International.*

General Aviation

There is no access to the new transient parking area other than across Alaska Airlines lot or through the woods because the fence hasn't been completed on that side. It is difficult to know where to go. Currently transient aircraft are taxiing on the unfinished taxiway and parking behind hangers overnight. Additional signage and a walk gate would help. The gates are an ongoing problem and are frequently inoperable. There is no fuel available. Is there a way to encourage a private self-serve fuel operation? There is no fuel between Anchorage and Yakutat. Finishing asphalt paving on the taxiways and near the hangers would be helpful for snow removal and maintenance. *Team response: We have heard many of these concerns from the working group and they will be addressed as the project moves forward. RaeAnne Hebnes, Project Manager, Michael Baker International.*

I was able to jump on and really appreciated the comments from Steve Richards....glad to see we are on the same page with other pilots regarding the needs for the General Aviation aspect.

Lease Lots
Has taken too long to complete Master plan. Multiple people are waiting to build hangers; myself since mid 2018. Why moratorium when City of Cordova and State of Alaska need tax revenue? What can be done to speed up the process? *Team response: This sounds like a leasing issue and we will get back to you on that. RaeAnne Hebnes, Project Manager, Michael Baker International.*

Operational Comments
Its continued operation is absolutely critical to Cordova and our economy.

I would hope that there would be space set aside for a fuel service. It is surprising that there is not currently a fuel option located at the airport itself. *Team response: We heard this concern from the working group, and it will be looked at as the project moves forward. RaeAnne Hebnes, Project Manager, Michael Baker International.*

The terminal needs to be larger-after you get through the TSA checkpoint it is definitely much too small, especially considering the times we are living in (COVID) and our need to maintain socially distanced from others, right now they've got people crammed together and also overflowing out into the hallway. I'd also like to see the area where the trees have been removed, cleaned up, as it's a terrible eyesore and not to mention a waste of wood that's eventually going to just rot. *Team response: Thank you for your comment. We will consider it during our upcoming planning process. Philip Jufko, Aviation Planner, Michael Baker International.*

Responsiveness from Management.

Need for more space in the security check areas. There is not enough space for passengers and staffing, waiting to board planes. *Team response: Thank you for your comment. We will consider it during our upcoming planning process. Philip Jufko, Aviation Planner, Michael Baker International.*

I think there needs to be a larger post security holding space with more seating, a bathroom, and drinking fountains or vending machines. *Team response: Thank you for your comment. We will consider it during our upcoming planning process. Philip Jufko, Aviation Planner, Michael Baker International.*

Does your plan include interior terminal issues, such as the request for more room for TSA? *Team response: Thank you for your question. We will consider it during our upcoming planning process. Philip Jufko, Aviation Planner, Michael Baker International.*

The Cordova Airport needs to be constantly staffed, in order for proper station, equipment and light maintenance. *Team response: This is more about airport operations than planning, but we will make a note of it. Philip Jufko, Aviation Planner, Michael Baker International.*

Table 1. Outreach

Date	Outreach method	Description
1/4/2021	Flyer	Flyer sent to airport manager and city clerk
1/5/2021 1/13/2021	Email notice	Meeting notice sent to the project subscriber list
1/5/2021	Postcard	Mailed to all boxholders in 99574 and stakeholders
1/6/2021	State of Alaska online notice	Meeting notice sent to DOT&PF official notice system subscribers
1/7/2021	Radio advertisement	Played on KCHU/KXGA/KXKM and KLAM/KCDV
1/8/2021	*Cordova Times* print advertisement	Display style advertisement ran in the local newspaper
1/8/2021 to 1/14/2021	*Cordova Times* online advertisement	Advertisement posted on the *Cordova Times* website https://www.thecordovatimes.com/
1/13/2021	Facebook post	Meeting notice posted to DOT&PF Facebook page https://www.facebook.com/AlaskaDOTPF
1/13/2021	Facebook event	Event created on the DOT&PF Facebook page https://www.facebook.com/AlaskaDOTPF
1/13/2021	Twitter post	Meeting notice posted to DOT&PF Twitter https://twitter.com/AlaskaDOTPF

CDV Merle K. "Mudhole" Smith Airport MASTER PLAN UPDATE

PUBLIC MEETING NOTES

SUBJECT:	Merle K. "Mudhole" Smith Airport Master Plan Update
PROJECT:	NFAPT00466 / 3-02-0067-015-2019 & 3-02-0067-016-2020
GROUP:	Public
DATE:	August 5, 2021
TIME:	5 to 7 pm
LOCATION:	In-Person: Cordova Center, Community Room, 601 1st St, Cordova Online: https://us02web.zoom.us/j/87479571597?pwd=MEx5cnFkZm1pOW8wbnkvMTVwcURSdz09 Phone: 253-215-8782, Meeting: 874 7957 1597, Code: 933426
OUTREACH:	See Table 1. Outreach
MATERIALS:	Story map, concept boards, comment sheet, sign-in sheet
STAFF PRESENT:	DOT&PF: Jennifer Keller, Daniel Phillips Michael Baker International: RaeAnne Hebnes, Philip Jufko, Pamela Belalcazar, Jazmond Gamble, Michael Thompson Yehle & Associates: Camden Yehle
ATTENDANCE:	In-Person: 12 people signed in Online: 8 people on Zoom Phone: 1 person called into Zoom
COMMENTS:	5 written comment sheets and 2 map comments submitted Team members answered many verbal questions

SUMMARY:

The team received the following questions and comments in response to the prompts on the comment sheet and to discussions with team members. Verbal questions are summarized. Written comments are verbatim.

What elements do you like from the alternatives and why?

Runway, #2: slightly less expensive, area DOT [Department of Transportation] manager prefers it.

I would like to see a 1500-foot extension to the east end of the runway to accommodate heavy cargo aircraft to enable the expansion of fresh pink marketing.

Terminal area concept 2.

Terminal concepts, no firm preference.

(Concept 2) Long term plan for future fuel farm in the GA [General Aviation] area. Requesting a more near-term fuel farm option in the terminal area.

GA concept 1 and 2. Fuel farm option meets need. Power will be an option.

GA concept 2 preferred.

What elements do you dislike from the alternatives and why?

My primary concerns are about storm water run-off into surrounding wetlands if impervious cover is increased substantially. Also concerned about degrading salmon stream habitat if new streams are crossed. Please plan to clean up the downed trees that are falling into the watercourse on airport lands and allow for at least a 100' vegetative buffer of the watercourses on airport land.

Extending apron freight capacity without providing runway capacity appears to be an expansion without a clear purpose.

Requesting a float pond to support the GA need in CDV. Lake Eyak is not a viable option to meet or sustain GA and commercial current or future demand.

GA concept 1 and 2: Provide option for fueling at cargo area of terminal.

Please provide option for water runway at mile 13. GA need Cess 206, Beaver, Otter, Cub.

Please consider float pond.

Other comments?

5-year plan → fueling farm area on west apron near AWOC [Alaskan Wilderness Outfitting Company].

Please clarify vehicular access for GA.

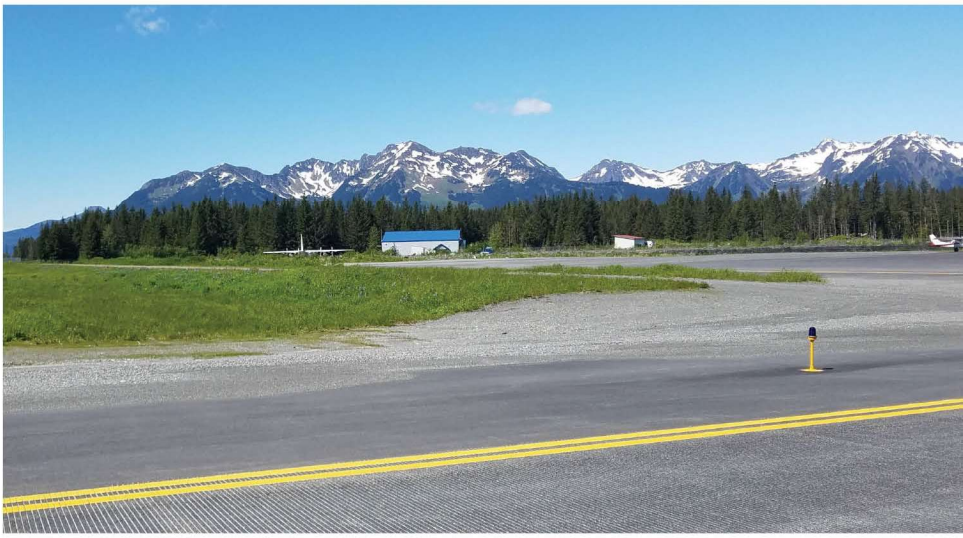
Table 1. Outreach

Date	Outreach method	Description
7/22/2021	*Cordova Times* online calendar	Meeting notice submitted to online calendar
7/22/2021	Email notice	Meeting notice sent to the project subscriber list
7/22/2021	State of Alaska online notice	Meeting notice sent to DOT&PF official notice system subscribers
7/22/2021	Website update	Meeting information posted to project website
7/23/2021	Postcard	Mailed to all boxholders in 99574 and stakeholders
7/26/2021	Flyer	Flyer sent to airport manager and city clerk
7/26/2021	Groups forwarding request	Requested community groups forward meeting invitation to memberships
7/26/2021	Radio advertisement	Played on KCHU/KXGA/KXKM
7/26/2021	Radio advertisement	Played on KLAM/KCDV
7/30/2021	*Cordova Times* print advertisement	Display style advertisement ran in the local newspaper

Date	Outreach method	Description
7/30/2021 to 8/5/2021	*Cordova Times* online advertisement	Advertisement posted on the *Cordova Times* website https://www.thecordovatimes.com/
8/4/2021	Email reminder	Reminder sent to the project subscriber list

Appendix C
Agency Coordination

CORDOVA MERLE K. "MUDHOLE" SMITH AIRPORT MASTER PLAN UPDATE



From: Keller, Jennifer C (DOT) <jennifer.keller@alaska.gov>
Sent: Tuesday, April 20, 2021 9:11 AM
To: Hebnes, RaeAnne
Subject: EXTERNAL: Fwd: CDV Merle K. Mudhole Smith Airport Forecast Resubmittal for Approval

For your records.

Begin forwarded message:

> **From:** "Edic, Heather M (FAA)" <Heather.M.Edic@faa.gov>
> **Date:** April 15, 2021 at 10:09:44 AM AKDT
> **To:** "Keller, Jennifer C (DOT)" <jennifer.keller@alaska.gov>
> **Subject: RE: CDV Merle K. Mudhole Smith Airport Forecast Resubmittal for Approval**
>
> Hi Jennifer,
>
> Thank you for the effort that went into this.
>
> FAA approves D-III as the existing and future design critical aircraft for Runway 9-27 and A-I as the existing and future design critical aircraft for Runway 16-34.
>
> *This forecast was prepared at the same time as the evolving impacts of the COVID-19 public health emergency. Forecast approval is based on the methodology, data, and conclusions at the time the document was prepared. However, consideration of the impacts of the COVID-19 public health emergency on aviation activity is warranted to acknowledge the reduced confidence in growth projections using currently-available data.*
>
> *Accordingly, FAA approval of this forecast does not constitute justification for future projects. Justification for future projects will be made based on activity levels at the time the project is requested for development. Documentation of actual activity levels meeting planning activity levels will be necessary to justify AIP funding for eligible projects.*
>
> Thank you,
>
> **Heather Edic**
> Community Planner, FAA
> Alaskan Region Airports Division
> heather.m.edic@faa.gov
> Tel: (907) 460-1684

CORDOVA AIRPORT MASTER PLAN UPDATE				
COMMENT NO.	**NAME**	**SECTION/PAGE (REF.#)**	**COMMENT**	**RESPONSE**
MPU - FAA Comments from Final Draft (April 6, 2023)				
1	D. Sanches	1.3/1-5	Land Use Drawings add "(Exhibit A)"	Added "or Exhibit A" after "Airport Propoerty Map"
2	D. Sanches	5.5.1.1-5-4	Last Paragraph - recommended runway length - FAA concurs with this runway length	Noted.
3	D. Sanches	6.3/6-4	first bullet of Option 1 Disadvantages - Relocating streams will involve an extensive environmental analysis	Added clarification that impacts to wetlands and adadromous streams could involve an extensive environmental process.
4	D. Sanches	7.1/7-25	Preferred Airport Facility Inprovment Program list - There is no mention of the SREB replacement project	Included SREB project in list of future projects
5	D. Sanches	9.1/9-1	AC 150/5300-13A should be 13B, update as required.	13A updated to 13B from Refinement chapter on.
6	D. Sanches	9.1/9-1	Insert "Exhibit A" after Land Use Plan (Sheet 14)	An Exhibit A is not included with this ALP, however a Airport Property Plan (Sheet 15) is. Will add Airport Property Plan (Sheet 15) to list of sheets.
7	L. Sample	Figure 1-1	Will this be updated to reflect the timeline?	This timeline reflects a snapshot in time and will not be updated.
8	L. Sample	Chapter 6	I don’t have further comments on the ENV disadvantages that the COAs present in Chapter 6. The appropriate process would just have to be followed for a given alternative, and ADOT is tracking the potential timelines associated with the preparation of an EA.	Noted.
9	L. Sample	7.2	Concur with section 7.2. I would only comment that we would need to consider the cumulative impacts of these projects, and they may require us to raise a level of analysis depending on which projects proceed at a given time. Agency consultation and reviews of independent utility for the projects would inform on this consideration. The update of FAA Order 1050.1F to 1050.1G, and any other agency regulatory updates at the time of project development, may also influence the final NEPA determination of a given project.	Agree. Revised Section 7.2.` to indicate that 'implementing multiple (or all) projects in Table 7-1 may have cumulative effects requiring a review or elevation of the anticipated class of action'.
10	D. Sanches	ALP Sht 2	PACS and SACS – As part of Please ensure that new PACS and SACS are submitted to NGS to become permanent published benchmarks.	Bluebooking process has been completed and new datasheets have been published. PACS and SACS have been updated within ALP.
11	D. Sanches	ALP Sht 2	Change nonstandard condition from “RW 9-27 Safety Area Length” to “RSA prior to runway threshold for RW 9”. - Standard is for 600’; existing shows 500’. - Installation of EMAS is currently used to meet standards of AC 5300-13B for RSA beyond runway end. Only piece of RSA configuration that does not appear to be standard is mentioned above – the 600-feet prior to RW threshold to protect for undershooting aircraft.	Revised "RW 9-27 Safety Area Length" to relfect "RW 9 RSA" dimension
12	D. Sanches	ALP Sht 2	ROFA LENGTH BEYOND RW ENDS 9 = 500 should be listed in Non Standard Conditions	Agree. ROFA Length beyond rw end for rw 9 to be added to non standard table
13	D. Sanches	ALP Sht 2	NONSTANDARD CONDITIONS: RW 16-34 Standard shows 30’ when it should be 60’, Existing shows 60’ when it should be 30’.	Agree, will update dimensions as apporiate.

CORDOVA AIRPORT MASTER PLAN UPDATE				
COMMENT NO.	**NAME**	**SECTION/PAGE (REF.#)**	**COMMENT**	**RESPONSE**
14	D. Sanches	ALP Sht 2	RW 16-34 ultimate shows widening to 60'. To be clear, this RW is not AIP eligible and any improvements would have to be paid for by other means.	Understood. Widending of Runway 16-34 is listed in section 9.5 as an example of a state funded project.
15	D. Sanches	ALP Sht 3	Taxilane L east of C, and Taxiway D south of L: -Taxiway data shows TWY D south of L designated for ADG IV aircraft. Taxilane L west of D is designated for ADG III aircraft. -This creates a clearance problem if an ADG IV aircraft uses TWY D. this "dead ends" with no ADG IV apron, nor ADG IV connecting taxiway/taxilane. o Recommend designating/protecting Taxilane L east of C for ADG IV wingtip clearances. OR o Recommend designating/protecting Taxiway D south of L for only ADG III wingtip clearances. -Note that ultimate layout does not show for any different configuration where ADG IV aircraft are accommodated for TWY D.	As Taxilane L is classified as TDG3, Taxiway D (south) has been updated in Taxiway Data Table to reflect current ADG III/TDG3 conditions. Sheet 4 also updated to reflect above conditions.
16	D. Sanches	ALP Sht 13	The Surface Obstruction Table shows a large amount of trees that penetrate the imaginary surfaces and that they will be removed. There is no mention of tree removal in the Master Plan. Is there an implementation plan to remove these trees?	The last tree removal activities were completed in 2017, near the USCG lease area. Additional tree removal will continue to be implemented in support of FAA airspace requirements, during construction projects. A Tree removal recommendation will be included within the requirements chapter of the Master Plan.
17	D. Sanches	ALP General	The buildings or boxes in the RWY 27 RPZ (near obstruction 37) should be identified. Maybe easiest on the inner approach drawing.	This box is labled as "juntion box" likely flush with the ground. These have been turned off in the ALP set.
18	D. Sanches	ALP General	Ultimate ALP shows fencing around entire airport property. Has this been identified in the Wildlife Management Plan?	A fence around the entire airport is identified in the existing Wildlife Hazard Assessment. Modify Appendix A to indicate 'existing security fencing' in Section A.2.1 or A.2.2.
	R.Hebnes	9-1 & 9-2	Add "Property Map (Sheet 15)" to list and paragraph explaination	Addressed.
	R.Hebnes	ALP Sht 8	Correct Runway 9 Inner Approach Plan to Runway 27 Inner Approach Plan	Addressed.
	R.Hebnes	Chapter 1	Add statement about change of 150/5300-13A to 13B	Addressed.
	R.Hebnes	7-25	correct page number	Addressed.
7-6-2023 Comments from FAA				
MPU				
1	D. Sanches	pg 21 Section 1.3	Please include ARP SOP 3.0, FAA Review of Exhibit "A" Airport Property Inventory maps	Will add ARP SOP 3.0 to list of Guidence and Requirements
2	D. Sanches	pg 38 Section3.1.1	How does RWY 16-34 have a reportable PCI? Please remove a reference to PCI for a gravel runway.	A PCI for RWY 16-34 was provided within the 2018 PCI Report. That runway is indeed gravel and is currently listed as "Fair Condition"
3	D. Sanches	Pg 41-42 Table 3-3	Please be sure that all of this information matches AC 5300-13B a. Inner-Transitional OFZ; for RWY 27, should be as specified per AC 150/5300-13B, Paragraph 3.11.4.2. b. If displaying acreage, calculate correctly (RWY 27 RPZ).	RW 27 RPZ Acreage corrected in Tables 3-3 and 5-3.

CORDOVA AIRPORT MASTER PLAN UPDATE				
COMMENT NO.	**NAME**	**SECTION/PAGE (REF.#)**	**COMMENT**	**RESPONSE**
4	D. Sanches	General Comment	AC 150/5300-13B is the most current, please be sure that it is listed as such throughout the MP and that the data complies with the AC. AC 150/5300-13A is still listed in several places.	13B was adpoted after submittal of the Draft MPU, it was determinded to keep the existing information, Chapters 1 - 6 referencing 150/5300-13A and revise the Alternatives Refinement to 13B. A statement about the change is incorporated within chapter 1 following guidence of FAA documents within Section 1.3
5	D. Sanches	Tables 5-2, 5-3 and 5-4	Please be sure that all of this information is consistent with AC 5300-13B. a. Table 5-2; if showing RPZ acreage, calculate correctly (~80 acres instead of 27.4 acres for approach?) b. Table 5-4; please clarify why RWY 16-34 has no RSA (is there really no grading that meets RSA grading standards outside of usable runway limits? Is really only 30-feet available for landing? And there is no length beyond runway ends that meets RSA grading standards beyond the distance declared for this operational surface? i. If there is truly no RSA available at RWY 16-34 and the available landing surface is half of FAA standard for A-I aircraft, that would warrant discussion in the report. ii. Aerial imagery suggests there may be some degree of RSA available at 16-34. ALP shows a designated RSA on plan-view maps and in tables.	Table 5-2 is correct; Table 5-3 requires updating acrage to 78.914 Table 5-4 RSA should be 120 There is 30 ft of gravel runway with another 90 ft of grassed RSA
6	D. Sanches	pg 140 Sec 5.12.3	Double check the timeline for the project for the ARFF/SREB facility. An ARFF/SREB are also referenced in section 6.6.2 so be sure all the info is correct and matches the current scope of work.	Sections 5.12.3 and 6.6.2 changed to reflect..."ARFF/SREB facility is anticipated to be finished during the short-term planning period; however, the project is currently facing polyfluoroalkyl substances (PFAS) issues that are expected to delay construction of the project for an undetermined period of time." Section 7.1.5.2 changed to reflect ARFF/SREB under construction.
7	D. Sanches	Alternatives Section	Please ensure that the current Runway Rehabilitation, Lighting and Drainage project is mentioned in the alternatives section	Paragraph added at acknowledge current runway project at end of Runway Alternative section
8	D. Sanches	Sec 8.3.1	CDV's federal share is now 95%. However, if the economic climate in CDV improves in the future then it could revert back to 93.75%.	Cost estimates and shares have been revised to reflect 95% federal share.
9	D. Sanches	Sec 9.1 2nd parg	please include ARP SOP 3.0, FAA Review of Exhibit "A" Airport Property Inventory Maps.	Added SOP 3.0 within Sec 9.1
10	D. Sanches		Per our previous comments on the ALP regarding tree removal, we do not see any reference in the Master Plan of a "requirements" chapter addressing or recommending removal of trees that obstruct the approaches.	Removal of tree obstructions is recommended in Section 5.4.2, as follows: "Additional tree removal is needed to meet FAA airspace and obstruction removal requirements. Obstructions to be removed are identified in the FAR Part 77 Surface Obstruction Table found on Sheet 13 of the ALP Set."
11	EPS	Figure 1-1	Update reflect the current timeline	Previously addressed in 4/6 comments

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COMMENT NO.	**NAME**	**SECTION/PAGE (REF.#)**	**COMMENT**	**RESPONSE**
12	EPS	Sec 7.2	Concur with section 7.2. However, we may need to consider the cumulative impacts of these projects, and they may require us to raise a level of analysis depending on which projects proceed at a given time. Agency consultation and reviews of independent utility for the projects would inform on this consideration. The update of FAA Order 1050.1F to 1050.1G, and any other agency regulatory updates at the time of project development, may also influence the final NEPA determination of a given project.	Previously addressed in 4/6 comments
ALP				
1	D. Sanches	Sht 2	ROFA LENGTH BEYOND RW ENDS 9 = 500 should be listed in Non Standard Conditions After further consideration, this row for ROFA should be removed from the Non Standard Conditions Table; No MOS would be required beyond documentation for alternative RSA (EMAS) at RW 09 end.	Will remove "RW 9 ROFA LENGTH BEYOND RUNWAY END" row from Nonstandard conditions table
14	D. Sanches	Sht 2	Modification to Standards table: change “None required” to “None”. Will evaluate during next runway project for whether nonstandard conditions will be addressed through MOS.	Accept.
15	D. Sanches	Sht 2	Runway Data Table, RPZ Dimensions: Runway 9 end designated as Visual (circling approach only, 1 mile vis) Design standard indicates RPZ of 1010’x1700’x500’ for this runway.	Accept. Update RW 9 RPZ dimension.
16	D. Sanches	Sht 2	Runway Data Table, Approach Type and Runway Visual Approach Aids, Ultimate: a. No change needed, just general comment: The report recommends that MALSR replaces ODALS at RW 9 end (5.9.3). The ultimate scenario in the ALP shows ODALS. The ultimate approach type of RW 9 is visual runway (circling). MALSR would typically installed to support a CAT I approach. b. I am assuming this MALSR recommendation is disregarded in the developed ALP; no issues with maintaining ODALS as ultimate layout for CDV (also assuming any change would likely maintain FAA ownership of approach lighting systems). I don’t believe any change is required in the ALP; however, just noting it is vague how ALS fits in with the overall development objectives of the airport and runway. Typically a runway should be considered as instrument if approach lighting is being planned.	It was determined during the refinement of alternatives that the existing ODALs would remain in place. Implemenation of MALSR, associtated precision approach improvments and resulting increased RPZ could require realignment of the Copper River Highway. In addiation, due to environmental concerns, future changes to the ALS should continue to be coordinated between FAA and DOT&PF.

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17	D. Sanches	Sht 13	The Surface Obstruction Table shows a large amount of trees that penetrate the imaginary surfaces and that they will be removed. There is no mention of tree removal in the Master Plan. Is there an implementation plan to remove these trees? Response: The last tree removal activities were completed in 2017, near the USCG lease area. Additional tree removal will continue to be implemented in support of FAA airspace requirements, during construction projects. A Tree removal recommendation will be included within the requirements chapter of the Master Plan. Understood. Note that a plan should be established to mitigate approach hazards prior to receiving further AIP funding. Tree stands appear to penetrate the 34:1 visual portion of the TERPS approach surface for RW 27. If no plan is in place for removal of these obstructions, these obstructions (specifically #42, 47, 48, 49) should be submitted for Obstruction Evaluation to determine whether these present a hazard for the precision approaches currently in place for runway 27 (with minimums to 250' height above TDZE).	Tree removal is referenced in Section 5.4.2. Tree removal project incorporated into Table 8-3, *Capital Improvement Program* to address this issue..
18	D. Sanches	General Comment	The buildings or boxes in the RWY 27 RPZ (near obstruction 37) should be identified. Maybe easiest on the inner approach drawing. Response: this box is labeled as "junction box" likely flush with the ground. These have been turned off in the ALP set. This comment references the FAA equipment buildings (Navaid shelters) located in the RPZ of RWY 27. Please provide a callout reference to FAA equipment buildings at both runway ends.	Will incoporate callouts for FAA equipment buildings within RPZ
19	Inspection 2023 (received 9/7/23) from D. Sanches	ALP	"There is an old anti-aircraft turret that is located on the east side TWY C, outside the Taxiway safety area. It sits just outside the RSA, and maybe 5% of it is above ground. The portion above ground is higher than the nearest point of the RSA. It is sitting in the OFA. I am not sure if SHPO has declared it as historical and a must not move item. If so, should it be on the ALP as a non-standard condition."	According to the Cultural resource summary there are old WWII era gun emplacement assemblies around the airport and are not historically significant. These have no significanace and are considerend to be ineligiable for the NRHP. The turret idenitfied per the inspect has been roughly located and callout out on sheet 9 and included in the Non-standard conditions table on sheet 2